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Toad® Data Modeler 8.0

User Guide

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About Toad Data Modeler

Toad Data Modeler helps organizations create, maintain and document their database systems with an easy-to-use graphical interface.

With Toad Data Modeler you can:

- Create database structures visually (Logical, Universal and Physical Entity Relationship Diagrams ERD)
- Create ERD for various target database systems (Oracle Database, SQL Server, DB2, MySQL, PostgreSQL and more, see Supported Databases)
- · Reverse engineer already existing database structures and see them in a form of a diagram
- · Add logical data to your diagrams and describe existing database structures better
- · Verify model, get a list of Errors, Warnings and Hints and use Quick Fixes to correct issues
- Automatically generate SQL code for selected target database
- · Generate detailed documentation in HTML, RTF or PDF format
- · Export database structures to Microsoft Excel and edit comments, notes and other model item properties
- Synchronize models with already existing databases (using Change Script Generation and Update Model features) and much more

Benefits

Toad Data Modeler allows you to:

- · Reduce errors in development
- · Significantly improve your productivity
- · Visualize your database structures and get better understanding of your existing databases
- · Verify your work automatically
- · Generate very detailed HTML, RTF or PDF reports
- · Work with existing database structures
- · Keep existing database structures up-to-date

Key Features

- Physical Model, Universal Model (Generic Relational Model) and Logical Model
- Support for Various Databases
- Reverse Engineering
- Version Control System (support for Apache Subversion and Git) and Internal Version Manager
- Projects for storing models and additional documentation
- SQL/DDL Script Generation
- HTML/RTF Reports (including Alter reports)
- Model Merge, Model Compare
- Model Verification
- Autolayout
- Refactoring Utility
- Automation
- Customization and Scripting
- Templates, Gallery, Default Values, Application Variables, Macros
- Undo/Redo
- To-Do List
- Zoom, Loupe, Model Overview features and many more...

Toad Data Modeler delivers increased level of efficiency, quality and comfort to all database professionals.

New in Toad Data Modeler 8.0

Database Support

The following databases are supported in the current release:

- Oracle 21c
- Microsoft SQL Server 2022

Operating Systems Support

The following operating systems are supported in the current release:

- Windows 11*
- Windows Server 2019
- Windows Server 2022

Note: Windows 11 24H2 patch and higher are not supported.

Product Improvement Program

To prioritize enhancements in future releases, Toad Data Modeler collects data about the use of its different features, and periodically, this data is communicated back to us. Initially, this usage data includes an IP address. Upon its receipt at a temporary server in the U.S.A., the IP address is removed, and then the anonymous data is aggregated before it is sent to our servers in California. Our product team analyses the aggregated data to understand our user community's preferences and common practices. This analysis influences our future releases.

No personal information is collected and you can stop participating at any time.

Freeware users are required to participate in the product improvement program and cannot reject to participate. When you insert you license key the freeware version becomes full and you might modify product improvement program settings.

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- 1. Go to Help Menu | Product Improvement Program
- 2. Select Yes, I want to participate or No, thank you

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Visit Toad World Community

Watch instructional flash movies that will guide you through great features of Toad Data Modeler, learn about tips and tricks, read how-to's, tutorials, download sample scripts and user packages, dictionary files and templates for reports, join our discussion forum and much more at: https://www.toadworld.com.

Submit Your Ideas and Suggestions

If you are already the community member, feel free to post any **ideas and suggestions for new features and improvements** for Toad Data Modeler.

Supported Databases

Toad Data Modeler provides full support to the databases listed below:

- Amazon® Aurora MySQL 5.6
- Amazon® Aurora PostgreSQL 9.5
- Amazon® Redshift 1.0
- IBM® DB2® z/OS® 11
- IBM® DB2® LUW 9.7, 10.1, 10.5, 11.1, 11.5
- Greenplum Database® 4.2
- Ingres 9.3, 10.0
- EDB Postgres Advanced Server 10
- Microsoft® Access® 2010-2019, incl. Office 365
- Microsoft® Azure® SQL Database V12
- Microsoft® SQL Server® 2012, 2014, 2016, 2017, 2019, 2022
- MySQL 5.6, 5.7, 8.0
- Oracle® 11g R1, 11g R2, 12c R1, 12c R2, 18c, 19c, 21c
- PostgreSQL 9.5, 10, 11, 12
- SQLite 3.7, 3.32
- SAP® SQL Anywhere 17
- SAP® ASE 16.0
- Sybase® ASE 15.7
- Sybase® IQ 15.2
- Teradata 13, 16.2
- Vertica Database 8.0
- Other (Universal Model)
- **i IMPORTANT:** You can also create and work with models from other versions of databases that have been deprecated by their production companies. Toad Data Modeler cannot provide fixes and provide support for more features of these databases. Uncheck **Show Supported Databases Only** to display all databases that you can create and open models for.

Details of Database Support

Supported Database System	From a Database	From a SQL File	Change Script Generation	SQL/DDL Code Generation
Amazon Aurora MySQL	•	٠	•	•
Amazon Aurora PostgreSQL	•	•	٠	•
Amazon Redshift	٠	•		٠
IBM DB2 z/OS	٠	•		٠
IBM DB2 LUW	•	•	٠	•
Greenplum	•	•	٠	٠
Ingres	•	•		•
EDB Postgres Advanced Server	•	•	٠	•
Microsoft Access	•	•		•
Microsoft Azure SQL Database	٠	•	٠	٠
Microsoft SQL Server	•	•	٠	٠
MySQL	•	•	٠	٠
Oracle	•	•	٠	٠
PostgreSQL 9.5 and newer	•	•	٠	٠
SQLite	•	•		٠
SAP ASE	•	•		٠
Sybase ASE	•	•		٠
Sybase IQ	•	•		٠
SAP SQL Anywhere	•	•		٠
Teradata	•	•		٠
Vertica Database	٠	•		٠
Other databases (Universal Model)	•	•		

Reverse Engineering

i Note: Toad Data Modeler includes also support of Universal DB/ANSI Models. See Universal DB/ANSI Model for more information.

Types of Connections by Databases

Native Native connection via client. The provider does not require installation of any additional software on the client. Some databases do not require installation of a client because it is embedded in Toad Data Modeler (Amazon Aurora PostgreSQL, Greenplum, EDB Postgres, Greenplum, SQLite and PostgreSQL).

ODBC Connection via ODBC Database Connection via ODBC (Open Database Connectivity) Driver. ODBC Driver is not part of Toad Data Modeler. In most cases, it is distributed directly with database.

ADO Connection via ADO Database Connection via ADO (ActiveX Data Objects) with OLE DB Drivers. OLE DB Drivers are not part of Toad Data Modeler. In most cases, they are distributed directly with database.

TCP/IP Connection via TCP/IP This connection type allows you to connect to your database without client. To make the connection successfully, you need to know the TCP/IP server name and port.

Supported Database System	Native	ODBC	ADO	Other
Amazon Aurora MySQL 5.6				TCP/IP
Amazon Aurora PostgreSQL 9.5	٠	٠		
Amazon Redshift 1.0		٠		
DB2 z/OS v. 11	۲	٠		
DB2 v. 11.1 (LUW)	٠	٠		
DB2 v. 10.5 (LUW)	٠	٠	٠	
DB2 v. 10.1 (LUW)	٠	٠	٠	
DB2 v. 9.7 (LUW)	٠	٠	٠	
DB2 v. 9.5 (LUW)	٠	٠	٠	
Greenplum 4.2	٠			
Greenplum 4.1	۲			
Ingres 10.0		٠		
Ingres 9.3		٠		
EDB Postgres Advanced Server 10	•	•		
Microsoft Access 2010				ADO and DAO
Microsoft Azure SQL Database V12	•		•	
Microsoft SQL Server 2022	٠		•	
Microsoft SQL Server 2019	٠		•	
Microsoft SQL Server 2017	٠		•	
Microsoft SQL Server 2016	٠		•	
Microsoft SQL Server 2014	٠		٠	

Supported Database System	Native	ODBC	ADO	Other
Microsoft SQL Server 2012	•		•	
MySQL 8.0		٠		TCP/IP
MySQL 5.7		٠		TCP/IP
MySQL 5.6		٠		TCP/IP
Oracle 21c	٠		٠	TCP/IP
Oracle 19c	٠		٠	TCP/IP
Oracle 18c	٠		٠	TCP/IP
Oracle 12c R2	٠		٠	TCP/IP
Oracle 12c R1	٠		٠	TCP/IP
Oracle 11g R2	٠		٠	TCP/IP
Oracle 11g R1	٠		٠	TCP/IP
PostgreSQL 12	٠	٠		
PostgreSQL 11	٠	٠		
PostgreSQL 10	٠	٠		
PostgreSQL 9.5	٠	٠		
SQLite 3.7	٠			
SAP ASE 16.0	٠	٠	٠	
Sybase ASE 15.7	٠	٠	٠	
Sybase ASE 15.5	٠	٠	٠	
Sybase IQ 15.2		٠	٠	
SAP SQL Anywhere 17		٠	٠	
Sybase SQL Anywhere 11		٠	٠	
Teradata 13				
Vertica Database 8.0		٠		
Other databases (Universal Model)				Universal ADO

Toad Data Modeler Freeware

- **i Important**: Toad Data Modeler Freeware:
 - expires on February 11, 2026 or 380 days after first run.
 - has some limitations. For more information see the list of limitations in Installation Guide.

Freeware Version Limitations

Freeware version of Toad® Data Modeler does not require a license.

Functionality Restrictions

Freeware version of Toad Data Modeler has the following restrictions:

- Save Model You can save a model with max 25 entities.
- Preview You can preview a model with max 25 entities.
- Print You can print a model with max 25 entities.
- Export to Graphic File You can export a model with max 25 entities to graphic file.
- Alter Report You can generate alter report for a model with max 25 entities.
- **Report** PDF reports with watermark are limited to a maximum of 25 entities. Number of reported other objects is not limited. HTML and RTF reports cannot be generated.
- XSL Transformation Report You can generate the XSL Transformation report only for first 25 entities of the model. Other objects (procedures, functions etc.) don't have any limitation.
- **SQL/DDL Script Generation** You can generate SQL/DDL script only for first 25 entities of the model. Other objects (procedures, functions etc.) don't have any limitation.
- Change Script Generation This feature is not available at all.
- **Reverse Engineering** Reversing database schema is limited to 25 entities. Other objects have no limitation.
- Undo Only one step back is available in Freeware version.

About Us

Quest creates software solutions that make the benefits of new technology real in an increasingly complex IT landscape. From database and systems management, to Active Directory and Office 365 management, and cyber security resilience, Quest helps customers solve their next IT challenge now. Around the globe, more than 130,000 companies and 95% of the Fortune 500 count on Quest to deliver proactive management and monitoring for the next enterprise initiative, find the next solution for complex Microsoft challenges and stay ahead of the next threat. Quest Software. Where next meets now. For more information, visit www.quest.com.

Technical Support Resources

For sales or other inquiries, visit www.quest.com/company/contact-us.aspx or call +1 949 754-8000.

Technical support is available to Quest customers with a valid maintenance contract and customers who have trial versions. You can access the Quest Support Portal at https://support.quest.com.

The Support Portal provides self-help tools you can use to solve problems quickly and independently, 24 hours a day, 365 days a year. The Support Portal enables you to:

- Submit and manage a Service Request
- View Knowledge Base articles
- Sign up for product notifications
- Download software and technical documentation
- View how-to-videos
- Engage in community discussions
- Chat with support engineers online
- · View services to assist you with your product

User Interface

Toad Data Modeler offers these basic ways how to work in it and control all its features and functions:

- Menus
- Toolbars
- Toad Data Modeler Application Layout

Toad Data Modeler Application Layout

Simple and Minimalist Layout

Layout of Toad Data Modeler can be both simple and complex. Various panes can be docked on the left side, the right side or at the bottom of the application and some of the areas can be collapsed using tiny buttons in the middle of window splitters. The default layout for basic operations and tasks can be similar to this:



Expanded Area



Application View

All currently opened projects, models and their workspaces are listed in the Application View (AV). There, you can:

- Manage your models (activate, save, close, etc.)
- Edit model names (F2 or Rename)
- Work with Workspaces and Designers

Application View is by default docked on the bottom left side, next to the **Message Explorer**. You can close it at any time and open it later.

To open the Application View

Click in on the Window Toolbar (or go to Window Menu | Application View).



• Application View also displays versions and revisions of items checked out from Version Manager.

Application View Right-Click Options

Right-click a Model to see the following options:

Option	Description
Activate Model	Highlights the selected model and enables menu and toolbar options for the model.
Add Workspace	Adds a new workspace (WS) to the selected model. You can define the workspace name, description and objects in the automatically opened Workspace Properties dialog.

Option	Description	
	ITIP: To disable this function, go to Settings Menu Options General and uncheck the Open Workspace PropertiesDialog after Add Workspace checkbox.	
Model Properties	Opens the Model Properties dialog.	
Save	Saves the model.	
Save as	Allows you to save the selected model in another file format or to another location.	
Object Viewer	Displays a complete list of model objects, e.g. attributes, triggers, check constraints, views, etc. See Object Viewer for more information.	
Add to Project	Adds the model to a chosen Project.	
Rename	Renames the model.	
Close Model	Closes the selected model. If any changes have been made in the model, a confirmation dialog is displayed.	
Create Indexes to All Foreign Keys	Creates Indexes for all foreign keys that don't already have one. Note: This option is only available for Universal and Physical models.	
Infer Indexes of Foreign Keys	Binds suitable Indexes of foreign keys to an entity relationship.iNote: This option is only available with Universal and Physical models. Indexes can only be bound to Non-Identifying Relationship.	
In Expert Mode,	additional options are available:	
Add to Version Manager	Allows you to add the model to Version Manager.	
Test Model	Runs internal test of model consistency.	
Repair Model	Tries to fix errors found during Test Model. Fixes roughly 60 % of problems.iNote: Verify Model versus Test Model: Verify Model checks your model from the modeling point of view. If your model is verified and you still encounter problems, you can run Test Model. Test messages will be displayed in the Message Explorer where they can be saved to a text file.	

Right-click the Workspaces node to see the following options:

Option	Description
Add Workspace	Creates a new workspace (WS) in the model.
Open All Designers	Opens Designers for all existing Workspaces in the model.

Right-click a specific Workspace to see the following options:

Option	Description
Activate Designer	Activates already opened Designer of the selected WS, or opens Designer for this WS in the Application Window.
Open Designer	Opens another Designer for the selected WS.
Edit	Opens the Workspace Properties dialog where you can define the name of the WS and description.
Model Properties	Opens the Model Properties dialog.
Workspace Format	Opens the Workspace Format dialog.
Copy Workspace Layout to	Copies this layout to another Workspace
Add All Model Objects to Workspace	Adds shortcuts of Model objects to the selected workspace.
Fill Relationships to Workspace	Adds shortcuts of relationships to the selected WS. Note that this function only adds shortcuts of existing relationships between objects in case they are not present on the selected workspace.
Optimal Style for All Lines	Seeks an optimal relationship line arrangement and adjusts them accordingly.
Straighten All Lines	Straightens all relationship lines wherever it is possible.
Copy Workspace	Creates a copy of the selected WS.
Rename	Renames the Workspace name.
Delete Workspace	Deletes the selected WS from model.

Application Window

Application Window (AW) represents a work area where you design your models, work with scripts etc. Toad Data Modeler allows you to work with several models of the same or different databases simultaneously. The opened models, their workspaces and even Script Editor or Scripting Window are organized using the system of tabs.



The system of tabs used by the Application Window can be divided into two levels:

- Top level tabs Models, Script Editor, Scripting
- Sub level tabs Designers (for Models), Scripts (for Script Editor, Scripting)

Closing a top level tab will close all of its sub level tabs (e.g. closing a model tab will close all its designer tabs)

Designer and Workspace

Designer

- Designer is the are where a workspace is displayed.
- One workspace can be displayed in multiple designers (e.g. each designer can display a part of an especially large workspace)


Workspace

- Workspaces can be seen as a sub-models. They may contain all or just some of the model objects.
- A default workspace is automatically created for all models *All Items* and it contains all of the model objects.
- A model can have several workspaces. In case of large models, it is often convenient to divide a model into multiple workspaces for easier management.



i TIP: It is possible to undock designers, for example if you need to work with designers of multiple models at once (you can also simply run **multiple instances** of Toad Data Modeler).

To create a new workspace in your model, you can:

- Click 📴 on the tabs toolbar
- Go to Model Menu | Workspace and select New Workspace

• Right-click the model in Model Explorer or Application View and select Add Workspace

The **Workspace Properties** dialog opens automatically. In this dialog, you can define the name of the workspace, its description and which objects it should contain.

TIP: To not display the Properties dialog every time you create a new Workspace, go to Settings Menu |
 Options | General and uncheck the Open Workspace Properties Dialog after Add Workspace checkbox.

To open another designer for a workspace

Right-click the selected workspace in Model Explorer (or Application View) and select Open Designer.

Navigation on Workspace

- CTRL + scroll mouse to zoom in/zoom out
- CTRL +, CTRL + Page Up to zoom in
- CTRL-, CTRL+ Page Down to zoom out
- Scroll up/down to move up/down
- SHIFT + scroll up/down to move to the right/left
- · Hold down the middle mouse button and move the mouse to move the entire workspace
- Page Down or CTRL + down to move to next page
- Page Up, CTRL + up to move to the previous page
- CTRL + left to move to the left page
- CTRL + right to move to the right page
- Click 🔛 on **Zoom Toolbar** to fit your entire ERD to screen.
- Press F11 to display the application in full screen mode.
- TIP:

Other useful shortcuts are:

- F2 to rename the selected object name/description on workspace.
- Enter to open Properties dialog of the selected object(s) on workspace.
- CTRL+F4 to close the currently active Workspace.
- · Keyboard arrows to move selected objects on workspace.
- SHIFT + keyboard arrows to resize objects on workspace.

Workspace Right-Click Options

Option	Description
Edit	Opens the Workspace Properties dialog.
Model Properties	Opens the Model Properties dialog.

Option	Description
Workspace Format	Opens the Workspace Format dialog. See Format Objects for more information.
Copy Workspace Layout to	Copies this layout to another Workspace
Add All Model Objects to Workspace	Adds shortcuts of all objects of the model to the selected WS.
Fill Relationships to Workspace	Adds shortcuts of relationships to the WS.
Optimal Style for All Lines	Changes all relationship lines into letter Z or L shapes while not moving the endpoints.
Straighten All Lines	Straightens all relationship lines where possible while moving the endpoints.
Copy Workspace	Creates a copy of the WS.
Select Objects	Selects objects by category or schema/owner on Workspace. Define a category or owner or category and owner and click Select.
Macros	Offers you available macros to ease your work on the WS.

Graphic Options on the Workspace

Select **Settings** | **Options** | **Graphics** to access the Settings. See <u>Graphics Options</u> for more information.

Docking

Docking means moving an UI element (window, toolbar) to a custom position. This feature allows you to customize the Toad Data Modeler interface to meet your needs and requirements. You can dock the following UI elements:

- Big windows (Designer, Script Editor, etc.)
- Small windows (Message Explorer, Application View, etc.)
 - Model Specific exists for one model only (Model Explorer)
 - Non-Model Specific exists across multiple models (Application View)
- Toolbars

Docking rules

Big windows• Can be undocked and moved out of the applicationSmall windows - Model Specific• Can be undocked and moved out of the application • Can be docked to right side and left side of a Big Window (Model explorer -> right side of Designer) • Can be docked to any side of another Model Specific Window (Object Viewer -> above Model Explorer)Small windows - Non-Model Specific• Can be undocked and moved out of the application • Can be docked to any side of a Big Window (Message explorer -> above Scripting Window] • Can be docked to any side of another Non-Model Specific Window (Application View -> below Verification Log)Toolbars• Can be undocked and moved out of the application • Can be docked to any side of a Big Window (Alignment Toolbar • right side of Designer)	UI Element	Rules
Small windows - Model Specific• Can be undocked and moved out of the application • Can be docked to right side and left side of a Big Window (Model explorer -> right side of Designer)Small windows - Non-Model Specific• Can be undocked and moved out of the application • Can be undocked to any side of a Big Window (Message explorer -> above Scripting Window] • Can be docked to any side of another Non-Model Specific Window (Application View -> below Verification Log)Toolbars• Can be undocked and moved out of the application • Can be docked to any side of a Big Window (Alignment Toolbar • right side of Designer)	Big windows	Can be undocked and moved out of the application
Small windows - Non-Model Specific• Can be undocked and moved out of the application • Can be docked to any side of a Big Window (Message explorer -> above Scripting Window] • Can be docked to any side of another Non-Model Specific Window (Application View -> below Verification Log)Toolbars• Can be undocked and moved out of the application • Can be docked to any side of a Big Window (Alignment Toolbar -> right side of Designer)	Small windows - Model Specific	 Can be undocked and moved out of the application Can be docked to right side and left side of a Big Window (Model explorer -> right side of Designer) Can be docked to any side of another Model Specific Window (Object Viewer -> above Model Explorer)
 Can be undocked and moved out of the application Can be docked to any side of a Big Window (Alignment Toolbar -> right side of Designer) 	Small windows - Non-Model Specific	 Can be undocked and moved out of the application Can be docked to any side of a Big Window (Message explorer -> above Scripting Window] Can be docked to any side of another Non-Model Specific Window (Application View -> below Verification Log)
	Toolbars	 Can be undocked and moved out of the application Can be docked to any side of a Big Window (Alignment Toolbar -> right side of Designer)

i Note: Model Specific Windows cannot be docked to Non-Model Specific Windows. The opposite also applies.

To dock windows using SHIFT key

When you are dragging a window, Toad Data Modeler by default shows you available docking positions. If you don't like this behavior, you can enable it only when you are dragging a window and holding down SHIFT key simultaneously.

- 1. Go to Settings Menu | Options.
- 2. In section General, check Use SHIFT to Dock Forms checkbox.

General

Open Only One Instance of Forms	
Expert Mode	
Check for Updates on Startup	
Provide User Experience Feedback	
Show Hints in Designers	
Run Only One Instance of Application	
Open Workspace Properties Dialog aft	er Add Workspace
Save Models and Projects as Formatte	d XML Files
Always Use CTRL to Select Attribute	
Use SHIFT to Dock Forms	
General Font:	Font Preview
	Font Settings
Select Unit of Length	(inch 🔹
Icons Theme:	Classic Toad Data Modeler
Number of "Undo/ Redo" Steps:	500
Toolbars and Menu Style:	Office 2010 Blue
Top Toolbar Rows:	2
Recent Files Count:	5

To dock a window

Drag a window to the desired position and drop.

To dock a form/pane with SHIFT

- 1. Hold down SHIFT key.
- 2. Drag a window to the desired position.
- 3. Release the mouse button and then SHIFT to dock the window.

The changed layout will be automatically saved after you close the application (.txe file).

To undock a form/pane

Press SHIFT and double-click the top of the form (pane)

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Hot Keys

Shortcut	Description
CTRL+N	Opens the New Model dialog.
CTRL+O	Opens already existing model.
CTRL+S	Saves a model.
CTRL+W	Creates a new Workspace (WS).
CTRL+F9	Opens the Model Verification dialog.
CTRL+E	Creates a new entity.
CTRL+R	Creates an identifying relationship.
CTRL+C	Copies selected object(s).
CTRL+X	Cuts selected objects(s).
CTRL+V	Pastes copied or cut object(s).
CTRL+Z	Undo step.
SHIFT+CTRL+Z	Redo step.
CTRL+A	Selects all.
CTRL+F	Opens the Find dialog.
CTRL+ALT+F	Opens the Find in Scripts dialog.
CTRL+M	Minimizes all undocked forms.
Del	Removes selected object(s) from Workspace.
SHIFT+Del	Deletes selected object(s) from model.
ALT+O	The Delete Confirmation dialog - OK button.
ALT+C	The Delete Confirmation dialog - Cancel button.
CTRL+M	Minimizes Forms.
CTRL+ALT+S	Synchronizes metamodel.
CTRL+I	Creates Inheritance (Logical Model).
F1	Opens the Help file.
F2	Renames model/object.
F9	Opens the DDL Script Generation dialog.

Shortcut	Description
F11	Displays Toad Data Modeler in full screen mode.
CTRL+Up	Moves selected object(s) up. (Order of Generated Objects)
CTRL+Down	Moves selected object(s) down. (Order of Generated Objects)
Keyboard arrows	Moves shapes in Workspace (select a shape first).
SHIFT+keyboard arrows	Changes size of entity box.
CTRL+scroll mouse	Zooms in/out.
CTRL+, CTRL+Page Up	Zooms in.
CTRL-, CTRL+Page Down	Zooms out.
SHIFT+scroll mouse	Moves to the right/left on the Workspace.
Scroll mouse	Moves up/down on the Workspace.
Holding down the middle mouse button	Moves in entire page/Workspace.
Page Down, CTRL + down	Moves to next page.
Page Up, CTRL + up	Moves to previous page.
CTRL + left	Moves to the left page.
CTRL + right	Moves to the right page.
SHIFT + drag&drop the heading of a form/pane	Docks the selected form/pane on a particular place in the Application Window.
SHIFT + double-click the heading of a form/pane	Undocks the selected form/pane.
SHIFT	Multiple selection of objects (on the WS, dialogs, forms, Model Explorer etc.)
Drag&Drop techniques+CTRL+SHIFT	Creates a shortcut of object on the WS.
Drag&Drop techniques from Model Explorer	Creates a shortcut of object on the WS.
Drag&drop techniques+CTRL	Copies objects on the WS/Object dialog (e.g. Entities dialog)/Model Explorer.
CTRL+Drag&Drop techniques	Copies attributes between entities in WS.
CTRL+click an attribute	Selects an attribute to move it to another entity box on the WS. (Click the attribute and release CTRL key to

Shortcut	Description
	move the selected attribute.)
CTRL+click attributes	Multiple selection of attributes in entity box on the WS.
CTRL+double-click an object name	Renames the object name on the WS (including attributes).
CTRL+click a relationship line	Adds a handle point.
CTRL+click a handle point	Deletes the selected handle point.
ALT+click a relationship line	Selects a relationship line segment.

Inplace Editor

Toad Data Modeler allows you to edit items directly in appropriate place (Workspace, frame). E.g. you can change names of entities, attributes, indexes, relationships, views, categories, stamp items etc. directly on the WS. See the following examples.

To change an entity name on the Workspace

- 1. Click an entity on the Workspace.
- 2. Press F2.

Customer	7
Que Customer ID NN (PK) Name (IX1)	ļ
Address	╣

To change an attribute name on the Workspace

- 1. Click an entity on the Workspace.
- 2. Press CTRL and click the attribute you want to rename.
- 3. Press F2 or hold the mouse left button for a while without moving (as in Windows).



To edit attribute properties directly in an entity frame:

- 1. Open the Entity Properties form.
- 2. Select the attribute property that you want to edit and press **F2** (or click the item that you want to change, wait a second and click it again). Note that not every property is editable from this form.

- 3. Change the value and click somewhere else in the grid.
- 4. Confirm by clicking on Apply.

送 Entity Pro	perties - E		-								×
Caption								<u>N</u> ame			
Customer							2	T_CUSTOMER		1	ь
Notes General	SQL F Attributes	Preview	Relationshi Indexes Cl	ips neck Constrai	Physic ints	al Properti Triggers	es Perm	Table Properties	Cust Before Scrip	omer Feedback ot After Scrip	 t
Key	Caption	Name	Data Type		p1	p2	Not Null	Comments		Status	
₽	Customer ID Name Address	customer_id name address	integer important i	2(x) dress_Type	20	СН		Name column can	contain First and	Midd A	
Add		jit 📃	Add Delete	* *							
🦇 🗸 <u>G</u>	enerate						Ō	Cancel	Apply	<u>H</u> elp	

Message Explorer

In Message Explorer you can see hints, errors, warnings and other messages that appear during your work with Toad Data Modeler.

Message Explorer is by default docked at the bottom of the application window. However, you can hide or close it at any time.

To open Message Explorer again

Select Window | Message Explorer Log.

× Id		Date	Time	Message
	1	7.8.2007	11:33:33	Connecting to database
	2	7.8.2007	11:33:33	Connecting to Oracle version: 10.2.0.1.0
	3	7.8.2007	11:33:33	Fetching tables from schema SYSTEM
	4	7.8.2007	11:33:34	Disconnected from database
	5	7.8.2007	11:33:56	Connecting to database.
	6	7.8.2007	11:33:57	Reversing table details
	7	7.8.2007	11:33:58	Reversing table comments
	8	7.8.2007	11:33:58	Reversing columns
	9	7.8.2007	11:34:00	Reversing primary keys

You can sort messages by IDs, date, time and message type, simply click on the appropriate column.

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Message Explorer versus Log Area

Log area in appropriate forms/dialogs/wizard displays information only on the operation taking place in the particular form/dialog/wizard. (Show/Hide Log options are available.)

Message Explorer displays information about all ongoing operations.

Message Explorer Right-Click Options

ld	Date	Time	Message 🔺	
19	7.8.2007	11:34:05	Reversing synonyms	
7	7.8.2007	11:33:58	Reversing table comments	
6	7.8.2007	11:33:57	Reversing table details	
15	7.8.2007	11:34:05	Reversing triggers	Details
20	7.8.2007	11:34:06	Reversing users	⊻iew Options
14	7.8.2007	11:34:03	Reversing views	<u>⊂</u> lear Messages
26	7.8.2007	11:35:31	Verification Videorental	<u>S</u> ave Messages
31	7.8.2007	11:36:11	Verification Videorental	Save Selected Messages

Right-click the selected message to see the following options:

Option	Description
Details	Displays details on the selected message.
	i TIP: Double-click the selected message opens the details too. Use Next and Previous buttons for quick navigation among messages.
View Options	Opens the Message Explorer Properties dialog where you can define:
	 What information you want to see in the Message Explorer (Date, Time, Format, Type),
	Type of messages (Errors, Warnings, Information, Hints etc.),
	 Path to save the Log.txt file on tab Message Saving.
	Save Messages to File - If this checkbox is checked, the messages displayed in Message Explorer will be saved to the Log.txt file continuously.
	Overwrite File - If this checkbox is checked, new messages overwrite old messages. If this checkbox is unchecked, new messages are listed after the older messages in the Log.txt file.
	By default, the following path is set up in the Settings menu Options Paths Message Explorer Log Path :
	C:\Documents and Settings\%UserName%\My Documents\Toad Data Modeler\Log
Clear Messages	Clears the Message Explorer.
	Note: Undo/Redo cannot be applied here.

Option	Description
Save Messages	Opens the Save As dialog via which you can save all messages to LocalLog.txt file.
Save Selected Messages	Opens the Save As dialog via which you can save the selected messages to LocalLog.txt file.

Model Explorer

In Model Explorer, you can see all objects that exist in your model.

Model Explorer is by docked on the left side of the **Application Window** by default. You can always undock it and move it somewhere else or close it.

To display Model Explorer

Click 🔹 on the toolbar *or* go to **Window Menu** | **Model Explorer**.

The contents of Model Explorer depend on type of your model (Physical/Universal/Logical) and used database platform and version.

Example of Physical Model Explorer of Oragle 10g model:

Physical Model Explorer			×
Filter	♣	✤	×
🖃 🗊 Videorental			*
🚊 😳 WorkSpaces			
🕀 🗁 🔂 All Items			
🕀 🛅 Borrowing			
🕀 🛅 Customer Rating Movie			
🖽 🗁 Ordering			
🗄 🗁 🔂 Views			
🗄 💼 Entities			
🕀 💼 Relationships			Ξ
🖶 🛅 Views			
🖶 💼 Procedures			
🖶 🛅 Functions			
🖶 🛅 Categories			
🖶 💼 Defaults			
🖶 🖻 Domains			
🕀 💼 Notes			
💼 Check Constraint Rules			
🖶 💼 User Data Types			
💼 User Groups			
🗄 🖻 Users			
💼 Directories			
🛅 Images			-
Videorental			

Note: Objects of your model that have the **Generate** checkbox disabled in their **Properties** dialogs are displayed in Model Explorer this way:



Model Explorer settings

You can access the settings by **right-clicking** in **Model Explorer** and selecting **Settings**.

In settings, you can change the background color of the Explorer or enable the **Use Colors of Category to Draw** option to color items in the Explorer according to their category.

You can also hide/show specific item categories or make them bold to make the important objects stand out.

Folders		
Folders (Visible)	Bold	
⊡- Model		
🖶 🔽 WorkSpaces	\checkmark	
Entities	\checkmark	
Shortcuts		
Permissions		=
🕀 🗹 Attributes		
Check Constraints		

Managing Items in Model Explorer

In Model Explorer, you can:

- · View objects Properties dialog by double-clicking them
- Place object shortcuts on workspace (or even workspace of another model) using drag and drop
- Create a copy of the object in the Explorer or on workspace using CTRL + drag and drop
- Locate shortcuts of an object on workspace easily (using Find on Workspace context menu option)

Object Navigator Dropdown Menu

Object Navigator Dropdown Menu, together with the modeless dialogs, can ease and speed up your work in Toad Data Modeler significantly.

Object Navigator Dropdown Menu:

- Is available in Object Properties dialogs and forms (entity, attribute, check constraint, view, function, users, user groups etc.).
- Allows you to select items for edit from one (the same) place.

Scenario

You need to edit several entities of your model.

- 1. Double-click ANY entity on the Workspace to edit it.
- 2. Click the small black arrow on top right-hand corner.

Caption				<u>N</u> ame			· · · · · · · · · · · · · · · · · · ·
Customer			>	T_CUSTO	MER		6
After Script General	Notes SG Attributes K	QL Preview F ievs Indexe	Relationships Physical s Check Constraints	Properties Triggers	Table Permi	Properties issions	Customer Feedback
	Cantion	Name	Data Type	p1	p2	Not Null	Comments
Key	Caption	1 Martine -					
Key	Customer ID	customer_id	integer			1	
Rey 9	Customer ID Name	customer_id	 Integer Varchar2(x) 	20	СН	1	Name column can co

3. The form navigator area appears on the form.

🔁 Entity Properties 📃 🗖 💌						
SCOTT.T_CUSTOMER						
Capt <u>ion</u>	<u>N</u> an	ne				
Customer	> T_(CUSTOMER			6	
General Attributes Keys	Indexes Check Constraints T	riggers Perm	issions	To Do Before Scr	ipt	
Key Caption Nam	ime Data Type	p1 p2	Not Null	Comments		
Customer ID cus	ıstomer_id 🧓 İnteger		1			
Name nam	ime 🧓 Varchar2(x)	20 CH		Name column can o	cont	
Address add	ldress 🛛 🚵 Cust_Address_Type					

- 4. From the Object Navigator Dropdown, select the entity you need to edit (Borrowing).
- Change its properties and confirm Apply. -> The changes will be saved and the Entity Properties form remains opened.
- 6. Again, from the Object Navigator Dropdown, select another entity you need to edit (*Customer*). Confirm **Apply** to save the changes.
- 7. Take the same steps until you edit all entities you need.
- 8. For the last entity, you can confirm the changes OK to close the Entity Properties form.

Feel free to take advantage of this box when editing relationships, procedures, views, functions, users etc.

Object Types and Properties - OTPs

OTPs (Object Types and Properties) enable you to select objects and properties on various forms, define default OTPs selection and store and load them.

Example: See the **Sync & Convert Wizard**, the **Select Object Types** page, **Detailed Settings** button where you can define object types and properties for model compare/merge/conversion. If a particular object is selected (e.g. entities, relationships, functions etc.), it means you want to compare the object between the Left model and Right model. (All objects are selected by default). uncheck the checkboxes at particular objects if you do not want to compare them and therefore ignore the possible changes.

By default, only basic selection of objects and properties is available. Saving, loading and creating default OTPs are options for Experts.

Object Types and Properties are available in:

- Reverse Engineering Wizard and Model Update Wizard What to Reverse page
- DDL Script Generation dialog What to Generate tab
- HTML/RTF Report Wizard What to Report page
- Sync & Convert Wizard Select Object Types page
- Model Verification What to Verify tab

Default (System) Selected OTPs versus User Selected OTPs

In Toad Data Modeler there are:

• Default (System) Selected OTPs

They are stored by default at: C:\Program Files\Quest Software\Toad Data Modeler\Selected OTPs They cannot be modified/overwritten.

User Selected OTPs

They are stored by default at: C:\Documents and Settings\user name\My Documents\Toad Data Modeler\Installation name \Selected OTPs

They are preserved during update of Toad Data Modeler.

To set/change the path for user OTPs, select Settings | Options | Paths | Advanced tab | Selected OTPs.

Define and Save User OTPs

See the differences between the following two dialogs (Expert Mode off versus Expert Mode on). **RE Wizard** (Oracle 10g db), **What to Reverse** page, default OTPs (Expert Mode disabled):

📙 Reverse Engineering Wizard		
 Stored Connections Select Data Source Select Data Provider Connecting What to Reverse Options Save Connection Tables 	Image: Property Name Image: Model Image: Model Image: Property Name Image: Property Name	Extended Value
Show Log Close after Executi	on <u>Previous</u> <u>N</u> ext >	Execute Qose
Id A Date Time	Message	

What to Reverse page, OTPs options (Expert Mode enabled):

🔀 Reverse Engineering Wizard		
- Stored Connections - Select Data Source	Selection [* Default [System]	- 3 🗐 🔒 🗙 🏹
- Select Data Provider - Connecting		
- What to Reverse	Property Name	Extended Value
- Save Connection		
- Tables	Directones	
	Materialized Views	
	Packages	
	✓ Procedures	
	Relationships	
	Sequences	
	💟 Synonyms	
	🗄 🔽 Views	
Show Log Close after Executi	on < <u>Previous</u> Next >	Execute Qose
Id 🔺 Date Time	Message	
		1

In this dialog, you can see options for managing OTPs:

Option	Description
Selection videorental_RE_OTP1 * Default videorental_RE_OTP1 -videorental_RE_OTP2	Select an OTP.
	Saves the changed OTP settings to the OTP selected in the Selection box (either resaves the current OTP or overwrites another OTP).
	Loads OTP settings of the OTP selected in the Selection box.
	Saves the selection to a new OTP (similar to Save as). Define a name of the new OTP and press OK . After you click OK , the OTP will be saved to .txo file to particular database (Oracle 10g.txo in our example).
×	Deletes the selected OTP.

Optic	on	Description
		Click Yes to delete the OTP from the .txo file of particular database (Oracle 10g.txo in our example).
R		Sets the selected OTP as default.
i	Note: The OTP options are the Script Generation dialog or F	e same also in other dialogs and wizards - e.g. DDL Report Wizard etc.

Save User OTPs

Each database supported in Toad Data Modeler has its .txo file (Oracle 10g.txo, Microsoft SQL Server 2005.txo etc.).

Default (System) Selected OTPs are stored by default at: C:\Program Files\Quest Software\Toad Data Modeler\Selected OTPs.

As soon as you install Toad Data Modeler, the default .txo files will copy to the user section at: C:\Documents and Settings\user name\My Documents\Toad Data Modeler\Installation name\Selected OTPs. Here, you can store your user OTPs that will be preserved during update of Toad Data Modeler.

New OTPs, which you create, will be saved in .txo file of the particular database.

Example:

You create a new OTP in the **DDL Script Generation** dialog for your Oracle 10g model and save it. This OTP will be saved to Oracle 10g.txo. This OTP will be available in the **Selection** box in the **DDL Script Generation** dialog for all Oracle 10g models for which you need to generate SQL script. (OTPs are saved separately for every dialog, which means that OTPs defined in DDL Script Generation dialog will not be available in Model Verification dialog etc.)

If you want to save this OTP to a particular model, you have to click **Save Settings**. The OTP, including other settings defined in the **DDL Script Generation** dialog, will be saved within a model. Next time, when you open the **DDL Script Generation** for the model, the OTP will be selected automatically. If you didn't click **Save Settings**, you would have to select the OTP and load it again.

Available OTPs Dialog

To see a list of all OTPs available in your model

Select Expert Mode | Expert Mode Settings menu | Available OTPs.

This option is available for real experts interested in writing their own support for new database systems or for people who need to enhance existing support for the selected database system.

Object Viewer

Toad Data Modeler allows you to display a complete list of selected objects of your model, e.g. attributes, triggers, check constraints, views, etc. with a possibility to open the **Properties** dialog of the selected object(s), delete them or find on the Workspace.

To open Object Viewer

Click on the toolbar.

or

Select Window | Object Viewer....

Object Viewer is docked by default next to the Model Explorer.

Physical Model Explorer, Object \	/iewer ×
Physical Model Explorerx O	bject Viewer x
*customer	
Object Type:	
<all objects=""></all>	•
Delete Previous <u>R</u> esults	cu
Search in Object Names	
Search in Object Captions	
Search in Object Fullnames	
Search in SQL Properties	
Search in Comments and No	otes Properties
Search in <u>All Text Properties</u>	i
Name	Caption
Customer info	
Add indexes to T_Cus	tome
Customer Rating WS	- infor
SCOTT.T_CUSTOME	R Customer
pk_T_CUSTOMER	pk_T_CUSTOMER
Customer rel	Customer rel

Option	Description
Object Name	Type an object name (case sensitive).
Object Type	Select a type of object. Select options for the search process in the checkboxes below.
\mathcal{P}	Click this icon to view the objects.

In the list, you can see:

- Icon of an object type
- Physical object name
- Logical object name
- Information about parent object
- Object type (entity, attribute, key, trigger etc.)

Right-click the selected item in the list to display other options (edit, delete, find on Workspace).

Status of Items in Grids

Various types of status are shown in the following examples of attributes and entities.

1. Normal state

	- +	Name	Caption	Data Type	p1	р2	Not Null	Status
⇒	9	customer_id	Customer ID	Integer			~	۲
		address	Address	Cust_Address				•
		name	Name	Varchar2(20)	20			۲

2. Attribute Customer ID is being edited. - The item is in grey.

	- v	Name	Caption	Data Type	p1	p2	Not Null	Status
⇒		customer_id	Customer ID	Integer			V	۲
		name	Name	Varchar2(20)	20			۲
	[address	Address	Cust_Address				۲

3. A new attribute has just been added, the change has not been confirmed yet. (After the change is confirmed, the status will change and set to Normal. Until creation of the new item is confirmed, it's not possible to edit it.)

	-	Name	Caption	Data Type	p1	p2	Not Null	Status
	9	customer_id	Customer ID	Integer			Image: A start of the start	۲
		name	Name	Varchar2(20)	20			۲
		address	Address	Cust_Address				۲
⇒		Attribute1	Attribute1	Char(20)	20		- E	÷P

4. The attribute has been modified in the grid directly (see the changed name). The change has not been confirmed yet.

	-	Name	Caption	Data Type	р1	p2	Not Null Status
	- 📍	customer_id	Customer ID	Integer			 Image: Image: Ima
		name	Name	Varchar2(20)	20		
		address	Address	Cust_Address			
⇒		New Attribute	New Attribute	Char(20)	20		

5. Item NewAttribute has just been deleted, the change has not been confirmed yet.

				•			•
	- -	Name	Caption	Data Type	p1	p2	Not Null Status
	- 📍	customer_id	Customer ID	Integer			 Image: Image: Ima
		name	Name	Varchar2(20)	20		
		address	Address	Cust_Address			
⇒		New Attribute	New Attribute	Char(20)	20		_

 Deletion of item *NewAttribute* has been confirmed by clicking the **Apply** button. The item is marked as deleted and will not be displayed when you open the **Entity Properties** form/**Attributes** tab next time.

	- v	Name	Caption	Data Type	p1	p2	Not Null	Status
	1	customer_id	Customer ID	Integer			Image: A start of the start	۲
		name	Name	Varchar2(20)	20			۲
	[address	Address	Cust_Address				۲
⇒		New Attribute	New Attribute	Char(20)	20			۲

7. You've opened two instances of the same **Entity Properties** form and started editing properties in one of them. That one will be marked by **E** and will be editable, while the other form will be marked by **n**/a and won't be editable.

🔀 Entity Properties - n/a				
Caption				
Borrowing	Entity Properties - E			
Before Script After Script General Attributes K	SCOTT.T_BORROWING			•
Key Caption Exemplar ID	Caption Borrowing		Name ≥ T_BORROW	ING 🔀
Customer ID Start Date	Before Script After Script General Attributes	Notes SQL Pr	eview Relationships	Physical Properties Table Properties Triggers Permissions To Do
End Date	Key Caption	Name	Data Type p1	p2 Not Null Comments
VAT	💡 Exemplar ID	exemplar_id	integer	V
	💡 Customer ID	customer_id	integer	
	Start Date	start_date	Date	
	Total Price	total price	📾 Date	
	VAT	VAT	S VAT	
•				

i Note: By default, you can open only one instance of a form. To open more instances at the same time, go to Settings | Options | General | and uncheck the Allow One Instance of Form checkbox.

Menus

The following menus are available in Toad Data Modeler:

- File
- Edit
- View

- Objects
- Layout
- Model Menu
- Tools Menu
- Macros Menu
- Expert Mode Menu
- Settings Menu
- Window Menu
- Help Menu
- **TIP:** Find any menu option easily by typing its first letters into **Jump To...**

File

The following options are displayed when there is at least one Designer opened inside the Application Window.



Option	Description			
New Project	Creates a new project, displays the New Project settings dialog.			
New Model	Opens the New Model dialog. Supported models: • Physical Data Model • Universal Data Model • Logical Data Model			
	TIP: Right-click the dialog to select the display of the options (Large Icons, Small Icons, List).			
	Model Name - Define a name of your model. (Also, you can change the name later in the Application View or Model Explorer (press F2).)			
	Notes:			
	Note:			
	Database Name - A database for which the model has been created (e.g. Oracle 10g). The database name information can be found at the bottom of the Application Window, or it is displayed in the pop-up hint when you point your mouse cursor at the Model Name in the Application View or Model Explorer.			
	 Model Name - In Toad Data Modeler, Model Name should be understood as a title of a document that is saved. 			
	 File Name - A name of file under which the model is saved. File Name is defined after you select Save Model or Save Model as. 			
New Gallery	Opens the Gallery Edit dialog. You can create Gallery to store frequently used parts of your models such as entities, attributes, stored procedures and other objects. You can then access these parts from any project.			
Open Project	Displays the Open dialog in your default Projects folder.			
Open Model	Displays the Open dialog in your default Models folder.			
Open Samples	Displays the Open dialog in your default Samples folder.			

Option	Description
Open Gallery	Displays the Open dialog in your default Gallery folder.
Open Sample Gallery	Displays the Open dialog in your default Sample Gallery folder.
Recent Files	Contains a list of recently opened files.
Save Model	Saves opened model or opens the Save file dialog.
Save Model as	Opens the Save file dialog and allows you to save your model to another folder or in another file format.
Reverse Engineering Connections	Opens the Connections dialog.
Reverse Engineering Reverse Engineering Wizard	Opens the Reverse EngineeringWizard .
Import Toad for Oracle Project	Displays the Open dialog in you default Toad Data Modeler folder.
Import Toad for Oracle ERD	Displays the Open dialog in your default Toad Data Modeler folder and also opens Connections dialog.
Import Case Studio 2 Model	Displays the Open dialog in your default Models folder. This option is used for importing model files from Case Studio 2.
Import Import from Excel	Opens the Import from Excel dialog.
Import Import from CSV	Opens the Import from CSV dialog.
Export Export to Excel	Opens the Export to Excel dialog.
Export Export to CSV	Opens the Export to CSV dialog.
Export Export to Image	Opens the Export to Image dialog.
Close Model	Closes currently selected model.
Close All Models	Closes all opened models.
Page Setup	Opens the Page Setup dialog.
Print Preview	Displays a preview of your ER diagram as it will look when printed.
Print	Opens the Print dialog to configure printer settings.
Exit	Finishes your work in Toad Data Modeler. Before closing the application your are asked to save changes you made in your models. This is done in the Application Close dialog (shown on
	the screenshot below), where all of your opened models and projects are listed. Select all the items that you

Description

want to save, all items that have been modified are selected to be saved by default.

Saua	Model	Project	File
	RE MySQL 5.1 Employee ForeignIndexes Universal	eStore New Project	C:\Users\knapek\Documents\Toad Data Modeler\Standard Installation 2\Models\RE MySQL 5_1 - changed.txp C:\Users\knapek\Documents\Toad Data Modeler\Standard Installation 2\Models\Employee.txd C:\Program Files (x86)\Quest Software\Toad Data Modeler 5.3\Samples\ForeignIndexes.txp C:\Users\knapek\Documents\Toad Data Modeler\Standard Installation 2\Projects\Universal.txp C:\Users\knapek\Documents\Toad Data Modeler\Standard Installation 2\Projects\Store.txj C:\Users\knapek\Documents\Toad Data Modeler\Standard Installation 2\Projects\New Project.txj
Select /	All Deselect All		OK Dant Save Cancel

Edit

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The Edit menu mostly contains basic actions such as Copy, Cut, Paste, Undo and Redo and also several options to select objects on Workspace.

Option	Description
Undo	Undoes the last action.
Redo	Redoes the last undid action.
Cut	Cuts selected object to clipboard.
Сору	Copes selected object to clipboard.
Paste	Pastes the copied/cut object from clipboard.
Capture Image into Clipboard	Choosing this option allows you to select an area on your Workspace. This area will be captured as an image and stored in your clipboard (can be pasted to somewhere else).
Select All	Selects all objects on current Workspace.
Select Parent Objects	Selects all Parent objects of the currently selected object.
Select Child Objects	Selects all Child objects of the currently selected object.

Option	Description	
Select Parent and Child objects	Selects both Parent and Child objects of the currently selected object.	
Find	Opens the Find dialog. i TIP: Use wildcards - example: "*user" or "?ser". * - replaces unlimited number of characters ? - replaces any single character	
Quick Search	Opens Quick Search dialog which allows you to search through all objects in a model.	
Select Objects	Allows you to select objects based on their Owner and Category .	

View



Display modes, display levels, used notation and icons are all configured in this menu.

Option	Description
Zoom	Zoom options:
	Zoom In Turns your cursor into a magnifier glass that allows you to zoom in.
	Zoom Out Turns your cursor into a magnifier glass

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Option	Description
	that allows you to zoom out.
	Note: To deactivate zoom tools, press Esc , or right-click the work area.
	Zoom Box - Turns your cursor into a magnifier glass that allows you to draw a selection box. The area will be then zoomed in.
	Fit to Screen - Sets the display level so the whole diagram can be seen completely.
	See Designer and Workspace for more tips on navigation on Workspace.
Grid	 Show Grid - Shows/hides the Grid. Snap to Grid - Toggles Snap to Grid function on/off. When on, it helps you to align objects while moving by snapping them to the Grid. Align Objects to Grid - Aligns already existing objects to the Grid.
	Grid Settings - Allows you to set properties of Grid.
	Minimal Size of Displayed Grid - Determines how big the Grid must be to be displayed at all.
	Grid Size - Sets the horizontal and vertical distance between points of Grid.
Move/Pan	Activated the Move/Pan tool. Drag your mouse to move around workspace. Deactivate by right-clicking or pressing ESC.
Display Mode	Determines which property is shown in object headers - captions/names/full names (eg. Customer/T_CUSTOMER/SCOTT.T_ CUSTOMER)
Display Level	In Physical model sets the level of details displayed:
	Entities
	Primary Keys
	PK and FK Keys
	• All Keys
	Attributes
	In Logical model determines the objects you want to display:
	Entities
	Primary Identifiers

Option	Description
	Unique IdentifiersAttributesDescriptions
Notation	Allows you to switch between two types of notations used in ER Diagram: • IE • IDEF1X
Icons Theme	Allows you to use Toad Data Modeler icons or Toad for Oracle icons.
Minimize Forms	Minimizes all currently opened forms and dialogs.
Full Screen Mode	Displays Toad Data Modeler in full screen mode (F11).

Objects

The **Objects** menu is model dependent. Different items appear in different Models.



Option	Description
Add New	Adds a new object to the currently selected Workspace.
	• Enuly
	Relationship
	Solf Polotionship
	Sell Relationship
	MiN Relationship (universal physical)
	Wink Relationship (universal, physical) View (universal, physical)
	View Relationship (universal, physical)
	Meterialized View (physical)
	Diagram objects:
	Note
	• Line
	• Stamp
	Categories
	• Image
	Rectangle
	• Ellipse
	Text (universal, physical)
	Label
	Label Quadrangle
	Label Ellipse
	i Note: If not followed by parentheses containing Model type, the object is available in all Models.
Edit	Edits currently selected object.
Object Format	Opens Object Format dialog of the currently selected object.
Add to New Workspace	Creates new Workspace and adds the selected object to it.
Add to Existing Workspace	Adds object to an already existing Workspace.
Add to Category	Adds object to new or existing Category.
Add to Gallery	Adds object to new or existing Gallery.

Option	Description
Delete Object	Deletes selected object from Model.
Remove Object from Workspace	Removes selected object from Workspace.
	Note: The object still remains in the Model, only its graphical representation is removed.
Arrange	Contains various options for arranging objects into layers:
	• Bring to front - brings the object to the top layer.
	 Bring forward - brings the object one layer up.
	 Send backward - sends the object one layer down.
	• Send to back - sends the object to the bottom layer.
	• Setting - opens the Object Format dialog where you can specify Z-Order - number which determines the layer arrangement of objects on workspace (objects with higher Z- Order are shown on top of objects with lower Z-Order)
Align	Aligns multiple selected objects:
	• Top
	• Left
	Right
	Bottom
	Horizontal Center
	Vertical Center
Match size	Matches sizes of multiple selected objects:
	• Width
	• Height
	Width and Height
Space	Offsets selected objects by the same amount:
	Vertical Equally
	Horizontal Equally
	 Anchor Points - Offsets anchor points of an object by the same amount)

Layout

Layout Menu contains various tools to organize your objects on Workspace.



Option	Description
Left to Right Autolayout	Automatically organizes all objects from left to right hierarchically.
Top to Bottom Autolayout	Automatically organizes all objects from top to bottom hierarchically.
Alphabetic/Square Autolayout	Automatically organizes all objects to square shape and sorts them alphabetically.
i TIP: Not selecting any object select multiple objects before show up and you will be aske should be organized. Draw a	s will organize all objects on Workspace. You can e choosing Autolayout style. In that case a prompt will ed to choose the area where the selected objects rectangle and the objects will move into the drawn

area. The other way is to simply click, which defines the upper left corner of

Line Style

autolayout area.

Changes relationship and note lines into shapes of letters:

- Optimal Style
- U Style
- A Style
- C Style
- D Style

Option	Description
	 Vertical Style Horizontal Style Z Style L Style
Optimal Style On Move	As you move the object shapes on Workspace, all lines will automatically change their style to the most optimal one. This function can change the number of break points on lines.
Line Autolayout	Automatically tries to reorganize lines on Workspace to the most optimal variant.
Fill Relationships	Adds missing relationships between entities in Workspace. The relationships already have to be a part of the Model, this function does not create new ones.
Relationship Captions	 Moves or hides the relationship captions: Move to Parent Move to Child Move to Center Hide
Align Self-Relationships	Resets Self-Relationship lines into their default position.
Unhide Lines	Displays lines hidden behind object shapes.

Model Menu

The options in the Model menu are model dependent. From here, key features such as Verify model, generate SQL script, generate report, synchronize model etc. can be accessed.



Option	Description
Workspace New Workspace	Creates a new Workspace, prompting you to name it and select objects it should contain.
Workspace Edit Workspace	Allows you to edit active Workspace properties such as name and description. You can also select objects that will be shown or hidden in the Workspace.
Workspace Delete Workspace	Deletes Workspace selected from list of currently opened Workspaces.
Workspace Workspace Format	Contains mostly graphical settings that can be changed to your liking.
Verify Model	Displays Model Verification dialog which allows you

Option	Description
	to quickly check for errors in your model and fix them.
Generate DDL Script	Allows you to generate SQL code which can be run to create a database identical to your Toad Data Modeler model.
Generate Report Report Wizard	Opens Report Wizard , allowing you to generate customizable HTML, RTF or PDF reports
Generate Report Reports / XSL Transformation	Allows you to generate reports using customized XSL templates.
Order of Generated Objects	The generation order of objects during DDL script generation can be changed here.
Compare and Generate Report	Opens Model Compare Wizard, showing you the differences between two selected models. You can generate a report by clicking Report button in Compare Tree dialog.
Generate Change Script	Opens Generate Change Script Wizard which compares two different models (or a model and a database) and generates a SQL script reflecting all the changes you made in the first model to your target.
Update Model From Database	Compares local model with target database and changes the model to match the database.
Merge Models Run	Opens Merge Model Wizard which is able to merge two selected models into one.
Merge Models Simple Merge	Merges two selected models, bypassing a lot of options in Merge Model Wizard.
Convert Model Run	Opens Convert Model Wizard which converts selected model to another database platform or version.
Convert Model Simple Conversion	Converts selected model to another database platform or version, bypassing a lot of options in the Convert Model Wizard.
Manage Model Actions	Opens Model Actions tool which contains key model functions.
Model Items	Allows you to see all objects in selected object group in and add, edit or delete.
To Do	You can create your own tasks and assign them priority and deadline. These are only for organizing your work and they do not have impact on the model itself.
Categories	This option allows you to create, edit and delete categories, which are used to graphically organize objects in your model. Each category has a certain color and objects which are part of a category will share its color (e.g. entity headers).
Export Dictionary	Exports dictionary types, user data types and

Option	Description
	domains into .txl file.
Import Dictionary	Imports dictionary types, user data types and domains from .txl file.
Statistic	Displays information and various statistics about your model and workspaces.
Properties	Opens the Model Properties dialog which contains information about the model itself, its description and statistics.

Tools Menu

Tools Menu is not shown in Logical Models since it only contains options applicable to Universal and Physical Models.



Option	Description
Refactoring Utility	If you rename object in your model, the Refactoring Utility can be used for changing the old object name in SQL properties of other objects.
	Example: Rename an attribute and use the Refactoring Utility to replace the old name with new name in SQL properties of database views, triggers, stored procedures etc.
Schema/Owner Assignment	Allows you to assign multiple objects to a Schema/Owner/Database at once.
Naming Conventions	Manage rules and naming standards for object groups. Also contains an option to verify current names.
Infer Relationships	Creates relationships between identically named Primary or Alternate Key attributes, if they don't exist already.

Macros Menu

The Macros menu contains items that can be customized by users or new features developed by users.
Macros Expert Mode	Setting	js Window <u>H</u> elp
All	Attrib	outes 🗸 🛛 🗸 🕨 🖌 🌆 📃 🧕
Selected Objects	·	
Productivity	•	Add Entities
Rename	•	Add Attribute to Selected or All Entities
× All Items ×	Worksp	pace1 x

Option	Description
All	Displays sample macros that you can use for your currently active model. The selected macro will be applied to all objects on all Workspaces of the model. Sample macros: • Convert Names to Lower Case
	Convert Names to Upper Case
	Alphabetic Autolayout—Autolayout
Selected Objects	 Displays sample macros that you can use for your currently active model. The selected macro will be applied only to selected objects on the currently active Workspace. Sample macros: <i>Remove Spaces from Names</i> <i>Display Entities Note on Workspace</i>
Productivity	 Displays macros which allow you to do multiple actions at once, enhancing your productivity. Add Entities— This macro allows you to add multiple entities in your model at the time. Add Attribute to Selected or All Entities— Fast and easy way to add new attributes to entities.
Rename	Displays macros which serve to rename multiple objects at once.

Expert Mode Menu

The Expert Mode Menu appears only if you enabled Expert Mode in Settings | Options | General.

E	xp	ert Mode	<u>S</u> ettings	Windo	w	<u>H</u> elp
		Customi	zation			New Custom Package
		<u>S</u> cripting	y Window			Import Custom Package い
		Reference	e Guide		٩	Package Explorer
		Version I	Manager	×		Script <u>E</u> xplorer
-		Expert M	ode Settings	•		Find in Scripts Ctrl+Alt+F
		Generate	XSD File		_	

Option	Description		
Customization New Custom Package	Allows you to create a new custom Package.		
Customization Import Custom Package	Imports Packages or Metamodels saved as .txg and .txm files.		
Customization Package Explorer	Opens an instance of Package Explorer window.		
Customization Script Explorer	Opens an instance of Script Explorer window.		
Customization Find in Scripts	Allows you to quickly search through all system and user scripts.		
Scripting Window	Opens an instance of Scripting Window.		
Reference Guide	Opens the Reference Guide.		
Version Manager Internal Version Manager	Allows you to use TDM integrated Version Manager.		
Version Manager Add to Version Manager	Adds currently active model to TDM integrated Version Manager project.		
Expert Mode Settings Data Type Conversion Settings	Here you can affect how Toad Data Modeler converts various data types during Model Conversion to another database platform or version.		
Expert Mode Settings Available OTPs	 Advanced settings that can be set for: Model Definition - specify model structure depending on database platform Other Model Features - define structure of selection trees in certain dialogs 		
Generate XSD File	Generates an XSD file which contains the structure definition of Toad Data Modeler XML model files(*.txp, *.txl).		

Settings Menu



Option	Description
Options	Displays the Options dialog, where most of the Toad Data Modeler settings are located.
Add/Remove Databases	Opens a dialog where you can enable/disable installed databases.
Reset to Default Layout	Resets the application layout to default, requires restart.
Default Values	Allows you to set various default properties (e.g. Names, Captions, Values).
Templates	Displays the Template Editor where you can add or edit your own templates. These can be used when editing SQL code of some objects.
Dictionaries	Contains terms used in generated reports. Feel free to add your own new terms, export/import dictionaries or translate them to another language.

Window Menu

Window Menu is a basic access point for displaying dockable windows, panes and toolbars.



Option	Description
Toolbars	Used to show/hide all available toolbars.
Application View	Shows/hides Application View window.
Model Explorer	Opens an instance of Model Explorer window.
Object Viewer	Opens an instance of Object Viewer window.
Model Actions	Opens Model Actions window.
Align Pallete	Opens Align Palette where you can click buttons to align selected objects on workspace.
Loupe	Shows/hides Loupe window.
Overview	Shows/hides Overview window.
Message Explorer Log	Opens an instance of Message Explorer window.
Verification Log	Opens an instance of Verification Log window.

Help Menu

Through the Help menu you can access many helpful resources (such as product documentation, Toad Web Site, community page on ToadWorld.com...) and manage Licenses for Toad Data Modeler.

Window	<u>H</u> elp		
ሰት 🦥	H	Help Topics	butes
	N	Web Site	-
05010	C	Community Site	
o PER' Pack	1	Foad World	-
	L	icensing	-
	F	Product Improvement Program	
	4	<u>A</u> bout	

Search Bar

Using Search Bar you can easily search for a term in multiple destinations, such as Help, ToadWorld.com and the Internet.



Toolbars

The following toolbars are available in Toad Data Modeler:

- Main Toolbar
- Window Toolbar
- Views Toolbar

- Model Toolbar
- Display Toolbar
- Users Toolbar
- Naming Conventions Toolbar
- Grid Toolbar
- Undo/Redo Toolbar
- Model Objects Toolbar
- Graphics Objects Toolbar
- Zoom Toolbar
- Colors and Alignment Toolbar
- Layout Toolbar
- Expert Mode Toolbar
- Scripting Window
- Alignment Toolbar
- Help Search
- •
- Style

Main Toolbar



Option	Description
New Model	Opens the New Model dialog. Supported models:
	Physical Data ModelUniversal Data ModelLogical Data Model
	TIP: Right-click the dialog to select the display of the options (Large Icons, Small Icons, List).
	Model Name - Define a name of your model. (Also, you can change the name later in the Application View or Model Explorer (press F2).)

Option	Description		
	Notes:		
	 Note: Database Name - A database for which the model has been created (e.g. Oracle 10g). The database name information can be found at the bottom of the Application Window, or it is displayed in the pop-up hint when you point your mouse cursor at the Model Name in the Application View or Model Explorer. 		
	 Model Name - In Toad Data Modeler, Model Name should be understood as a title of a document that is saved. 		
	 File Name - A name of file under which the model is saved. File Name is defined after you select Save Model or Save Model as. 		
Open Model	Displays the Open dialog in your default Models folder.		
Save Model	Saves opened model or opens the Save file dialog.		
Connections	Opens the Connections dialog.		
Reverse Engineering	Opens the Reverse EngineeringWizard .		
Run Compare	Opens Model Compare Wizard, showing you the differences between two selected models. You can generate a report by clicking Report button in Compare Tree dialog.		
Run Generate Change Script	Opens Generate Change Script Wizard which compares two different models (or a model and a database) and generates a SQL script reflecting all the changes you made in the first model to your target.		
Update Model	Compares local model with target database and changes the model so it's the same as the database.		
Run Merge	Opens Merge Model Wizard which is able to merge two selected models into one.		
Run Convert	Opens Convert Model Wizard which converts selected model to another database platform or version.		
Print	Opens the Print dialog to configure printer settings.		
Print Preview	Shows preview of the model as it will be printed.		

Description

Options

Displays the Options dialog, where most of the Toad Data Modeler settings are located.

Window Toolbar



Option	Description
Application View	Toggles Application View on/off.
Physical Model Explorer	Opens an instance of Physical Model Explorer.
Object Viewer	Opens an instance of Object Viewer.
Quick Search	Displays Quick Search Window.
New Gallery	Creates a new Gallery and displays Gallery Edit , where you can edit its properties.

Views Toolbar



Option	Description
Move	Turns your cursor into a hand allowing you to move around easily by dragging on the workspace
Loupe	Toggles Loupe on/off. Use it to see the area around cursor more clearly.
Overview	Toggles Overview on/off. Useful for seeing the whole diagram when working with large models.
Minimize All Undocked Forms	Minimizes all undocked windows and forms so they don't block your view.

Model Toolbar



Option	Description
New Workspace	Creates a new Workspace.
Verify Model	Displays Model Verification window, where you can select the items you want to verify and change verification settings.
Generate DDL Script	Displays DDL Script Generation window, where you can select the items you want to generate and change generation settings.
Report	Opens Report Wizard , a tool that you can use to generate HTML, RTF and PDF reports.

Display Toolbar



Option	Description
Captions Captions Names Full Names	Determines what property should be displayed in object headers and workspace properties. • Captions - The label of an object • Names - The identification of an object used in database
	 Full Names - Shows the Schema/Owner/User of the object followed by object name
Attributes -	The level of detail shown in entities. Selecting an option will cause all options above it to be shown as well.
Primary Keys PK and FK Keys All Keys Attributes	EntitiesPrimary KeysPK and FK Keys

Description

• Attributes

Users Toolbar



Option	Description
Users	Displays Users dialog where you can manage users and their memberships in groups.
User Groups	Displays User Groups dialog where you can manage user groups and their members.

Naming Conventions Toolbar



Option	Description
Set up Naming Conventions to Model	Displays dialog in which you can link existing Naming Convention to models, or create new Naming Conventions.
Naming Convention Verification and Synchronization	Verifies if the model meets the criteria of currently linked Naming Convention. Displays an overview of items, whose names are invalid.

Grid Toolbar



Option	Description
Snap to Objects	Toggles Snap to Objects function on/off. When on, shows guidelines when you move an object to help

Option	Description
	you align it better.
Snap to Grid	Toggles Snap to Grid function on/off. When on, it helps you to align objects while moving by snapping them to the Grid.
Show Grid	Shows/hides the Grid.
Grid settings	Opens Grid Settings. Grid size and minimum size is configured here.

Undo/Redo Toolbar



Option	Description
Undo	Reverses the last action.
Redo	Redoes the last undone action.

Model Objects Toolbar



Option	Description
Select Tool	Defines what object types you can select by creating a selection box with your mouse. Default is Select All. Other options are:
	Select Entities
	Select Views
	Select Materialized Views
	Select Relations
	Select View Relations
	Select All Shapes
	Select All Lines

Option	Description
Create	The remaining buttons in the toolbar create specific objects. These are:
	Non-identifying relationships
	Identifying relationships
	M:N relationships
	Self relationships
	Views
	 Materialized Views (available only in supported databases)
	View Relationships
	Categories
	Stamps

Graphics Objects Toolbar



Option	Description
Create	The buttons in this toolbar create specific graphical objects:
	Notes
	• Lines
	• Images
	Rectangles
	• Ellipses
	Text fields
	Label Quadrangles
	Label Ellipses

Zoom Toolbar



Option	Description
Zoom Box	Turns your cursor into a magnifying glass that allows you to draw a selection box. The area will be then zoomed in.
Zoom Out	Turns your cursor into a magnifying glass that allows you to zoom out.
Zoom In	Turns your cursor into a magnifying glass that allows you to zoom in.
Fit to Screen	Sets the display level so the whole diagram can be seen completely.
100	Sets the display level of the workspace. You can either enter a number, use the arrows or choose a preset by clicking the little arrow on the right.

Colors and Alignment Toolbar



Option	Description
Brush Color	Sets the main color of selected objects that are not already part of a category.
Pen Color	Sets the border color of selected objects.
Align	Displays/hides Alignment Toolbar.

Layout Toolbar

Layout					
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Option	Description	
Autolayout	Automatically organizes selected objects in one of these three ways:	
	Top to Bottom	
	Left to Right	
	Alphabetic/Square	
Line Autolayout	Automatically tries to reorganize lines on Workspace to the most optimal variant.	
Fill Relationships to the Workspace	Adds missing relationships between entities in workspace. The relationships already have to be a part of the model, this function does not create new ones.	
Hide Captions	Hides relationship captions.	
Optimal Style On Move	As you move the object shapes on Workspace, all lines will automatically change their style to the most optimal one. This function can change the number of break points on lines.	

Expert Mode Toolbar

Expert Mode	e x
🧈 🤹 💈	

Option	Description
Package Explorer	Opens an instance of Package Explorer.
Script Explorer	Opens an instance of Script Explorer.
Scripting Window	Opens Scripting Window for writing scripts.
Internal Version Manager	Opens Version Manager dialog which contains internal version manager.

Scripting Window



Option	Description
Show Windows Automatically	Displays a corresponding side tab. When you are writing a script, Code Explorer is displayed. When a

Option	Description
	script is being executed, Log is displayed.
Show Log	Displays a log window that shows log messages and errors related to Scripting Window .
Show Code Explorer	Displays a side tab that lists code segments.
Execute Script	Executes a script in Scripting Window.
Stop Script	Stops a running script.
Туре	Switch between:
	JScript
	VBScript
	Internal Script
Load Script from File	Load a script from a file.
Save Script	Saves a script.
Save Script as	Saves a script under a new name.

Alignment Toolbar

Option	Description	
Align	Aligns selected objects:	
	• Left	
	Horizontal Center	
	Right	
	• Тор	
	Vertical Center	
	Bottom	
Match Size	Matches selected objects:	
	• Width	
	• Height	
	• Both	
Space Equally	Offsets selected objects by the same distance:	
	• Vertical	

Option	Description
	Horizontal
Same Space Between Anchor Points	Offsets anchor points of selected objects by the same distance:
	On Left Edge
	On Right Edge
	On Top Edge
	On Bottom Edge
	On All Edges
Line Style	Changes the selected lines shape:
	• Letter styles (A, U, C, D)
	Straight line styles (horizontal, vertical)
	• Z line styles (horizontal, vertical)
	L line styles (left, right, top, bottom)
	 Line style Optimal - Toad Data Modeler automatically tries to change the shape of the line to the best possible variant. This function does not change the number of lines break points.
Unhide Lines	Changes shape of all lines hidden under object shapes, making them visible.
Align Self Relationships	Resets Self Relationship lines to their default position.
Insert Break Point	Click once to activate this function. Select a line and then click anywhere on the line to create a new break point. Finish the action by moving one of the parts of the line divided by the newly added break point.

Help Search

Help Search	

This tool allows you to search in multiple locations to find the information you need. Simply enter a query and click on the location you wish to search. These locations are:

Toad® Data Modeler Documentation

- Help
- Reference Guide

Toad World

- Forums
- Media
- Blogs
- Wikis
- Content
- Comments

Web search

Intelligence Central Toolbar



Option	Description
Intelligence Central	Shows/hides Intelligence Central window.
Download File from Intelligence Central	Displays Pull Model File dialog, where you can download a model from Toad Intelligence Central server. The model will be then immediately opened.
Publish to Intelligence Central	Displays a dialog where you can publish your current model to Toad Intelligence Central server. See Publishing Models/Reports for more information.
Notifications	Displays Notifications log. Notifications are fetched from TIC server, their purpose is to notify users about changes to objects made by other users.

Style

Select your preferred visual style from the popup menu.

Models and Model Objects

There are three types of models in Toad Data Modeler:

- About Physical Data Modeling
- About Logical Data Modeling
- and About Universal Data Model

Model Properties

Select Model | Properties.

塔 Model Proper	ties		[
Naming Conv	vention St	atistics	Databas	e Parameters
General	Before Script	Arter Sc	npt	Description
1 insert 2 /	into T_GENRE	values (1,'crim	ie') 4
<pre>3 insert 4 /</pre>	into T_GENRE	values (2,'west	ern')
5 insert	into T_GENRE	values (3,'dram	a')
7 insert	into T_GENRE	values (4,'biog	raphy')
9 insert	into T_GENRE	values (5,'come	dy')
11 12 insert	into T MEDIU	M values	(1.'CD	- DivX')
13 / 14 insert	into T MEDIU	M values	(2. 'CD	- VideoCI
15 /	into T MEDIU	M walwaa	(2, 02	
16 insert 17 /	into I_MEDIU	M Values	(3, . DAD	
18 insert 19 /	into T_MEDIU	M values	(4,'Vid	eotape')
20 21 insert	into T_FILM	values (1	,'The S	hawshank
23 insert	into T_FILM	values (2	,'The G	odfather',
•				•
		<u>о</u> к	<u>C</u> ancel	Apply

Tab	Description
General	General information on the model (project, model, author, company, version etc.)
Before Script	Whatever you write on the Before Script tab, it will be generated before the generated SQL code.
After Script	Whatever you write on the After Script tab, it will be generated after the generated SQL code.

Tab	Description
Description	Notes on the model
Naming Convention	Here you can select a naming convention for the model.
Database Parameters	The value in the Length Semantics box shows which default length semantics (BYTE or CHAR) was set in the database for reverse engineering of Oracle database. i Note: This tab is available only in Oracle models.
Naming Convention	Here you can link or unlink a naming convention to/from your model. Manage Naming Conventions - Opens the Naming Convention dialog (available also from the Tools menu) Edit Naming Convention - Opens the Naming Convention Properties dialog.

Model Statistics

To display details on your model, its Workspaces, objects etc.

Select Model | Statistic

To change some of the General Information (e.g. model name, author or company)

Select Model | Properties....

TIP: You can also change it via the shortcut of Stamp on the Workspace - just double-click the Stamp.

About Physical Data Modeling

Toad Data Modeler allows you to design **Entity Relationship Diagrams** of specific database platforms, convert physical model from one database platform to another, create an ER Diagram directly from your database (Reverse Engineering feature), update physical models, generate DDL/SQL scripts and Change Scripts, create Dictionary Types, Views, Triggers, Functions, generate detailed documentation to your model (in HTML, RTF, PDF, XSLT formats) and much more.

This chapter describes features and functions related to Physical Data Modeling. Look around each section to get the information you need.

i Note: See the sample physical model *Videorental* (Oracle 10g db) that is included in the installation package of Toad Data Modeler. Default location is: C:\Program Files (x86)\Quest Software\Toad Data Modeler 8.0\Samples.

Benefits of Physical Data Model

- Detailed definition of database structure, including database specific items, for example:
 - Stored procedures
 - Functions
 - Triggers
 - Views
 - Materialized views
 - Sequences (auto increments) etc.
- · Possibility to synchronize local model with existing database.
- Possibility to specify logical names for objects (captions for tables, attributes and other objects).
- Detailed database specific information can be exported to HTML/RTF/PDF or XML/XHTML/CSV reports.
- Automatic generation of SQL code for selected objects (SQL code generation is not available in Logical and Universal Model)
- Automatic migration of PK attributes to child entities (Attributes don't migrate to child entities in Logical Model)

Create Entities

In Toad Data Modeler, there are several ways how to create entities - on the Workspace, via **Model Explorer** and in the **Entities** dialog (**Model | Model Items | Entities**). Create entities directly on the Workspace.

Scenario

Create entity Customer on the Workspace in your Videorental model.

- 1. Click on the toolbar (also CTRL+E) and then click anywhere on the Workspace.
- 2. Double-click the entity to edit it.
- 3. Define the entity caption and name

Entity Prope	rties - E		<u>_</u>			
Caption			Name			
Customer			≥ T_CU	STOMER		
Before Script General	After Script Attributes	Notes SQL	Preview Relationshi	ps Physical Prop s Triggers	perties Table Permissions	Properties
User / Scher	na					
- Not Speci	fied		▼			
Temporary	Table					
Globa	Temporary Tab	le				
	mmit Preserve F	c lows (for Temporary T	able)			
	Initial Preserve In	ows (or remporary r	abic)			
Comment						
Basic custor	ner contact infor	mation should be stor	ed in this table.			*
						-
Category						
Category			-			
Category	-		▼			
Category			▼			
Category	-		▼			
Category	-		•	Court C		

Caption	Logical	entity na	me - <i>Cu</i>	stomer.
ouption	Logioui	officity file		0.011101.

Name Physical entity name - *T_CUSTOMER*.

4. Define other properties on tab **General** and other tabs (e.g. **Notes**, **Comments** etc.). To save the changes simultaneously and leave the form open, click **Apply**.

Edit Entities

To edit entities:

• Double-click the entity on the Workspace.

or

• Edit the entity in Model Explorer | Entities folder | double-click the selected entity (or right-click | Edit).

i Note: You can also edit entities in the Entities dialog (Model Menu | Model Items |Entities | Edit).

Example: The **Entity Properties** form (Oracle 10g db). Object navigator collapsed.

🔀 Entity Properties - E	<u>\</u>		- • ×
Capt <u>ion</u> Customer	Name	R	6
Before Script After Script Notes SQL Previe General Attributes Keys Indexes	w Relationships Check Constraints	Physical Properties Triggers Permiss	Table Properties
User / Schema Not Specified			
Temporary Table Global Temporary Table On Commit Preserve Rows (for Temporary Table)			
Comment Basic customer contact information should be stored in t	this table.		*
Category			
Senerate	<u>O</u> K <u>C</u> ar	icel <u>A</u> pply	<u>H</u> elp

Example of tab Attributes, Object Navigator expanded.

Entity Properties	
SCOTT.T_CUSTOMER	 ▼ (♠) ♦
Caption Customer	Name T_CUSTOMER
After Script Notes S General Attributes Key Caption Customer ID Name Address	GQL Preview Relationships Physical Properties Table Properties Customer Feedback Keys Indexes Check Constraints Triggers Permissions To Do Before Script Name Data Type p1 p2 Not Null Comments customer_id Integer <
Option	Description
Object Navigator Dropdown Menu	All entities in your model are listed here. It allows you to edit entities quickly and comfortably from one place. Tip: After you finish editing an entity, click Apply to confirm changes and select another entity from the Object Navigator box.
	Buttons Previous and Next for quick navigation among entities.
General Tab	General properties of entity
Caption	Logical name of entity
Name	Physical name of entity About Naming Conventions Tip: You can choose if you want to display objects physical names, logical names, or full names by selecting an option from dropdown menu on Display Toolbar. Captions Names Full Names
Schema	Schema selection box. Click the small button on the right to access the Schema dialog. (User/Schema stands only for Oracle models.)
Category	Category selection box. To see a list of Categories of your model, click the small button on the right.
Generate	Select it to generate the entity in final SQL (DDL) script. (It is selected by default.)

Option	Description				
	Note: Objects of your model that have the Generate checkbox disabled in their Properties dialogs are displayed in Model Explorer this way:				
	🚍 🕗 Entities				
	🗈 🔂 Borrowing				
	🕀 📴 Customer				

Note: Other options on the **General** tab vary depending on a target database. See the specific options for your database in the "Databases" chapter.

Attributes, Keys, Indexes, Check Constraints, Triggers, Permissions Tabs	On these tabs, you can add, edit and delete particular items. More details on each of them can be found in appropriate topics that follow.
To Do Tab	On this tab, you can write some tasks on the selected entity. To see all To Do tasks, select Model To Do .
Before Script Tab	Whatever you write into the Before Script section, it will be generated before the Entity definition.
After Script Tab	Whatever you write into the After Script section, it will be generated after the Entity definition.
Notes Tab	Write notes on the entity on this tab. The text will display in a pop-up box when you point your mouse cursor at the entity name in ER diagram.
SQL Preview Tab	Click at the bottom of this tab to see the part of SQL code for the entity. Select the WordWrap checkbox to wrap the code on this tab.
Relationships Tab	Information on parent and child entities, relationships and key attributes. Double-click the selected object to open the Properties dialog.
Physical Properties Tab	Storage characteristics of table can be defined on this tab.
Table Properties Tab	Other table characteristics can be defined here.
Comment Tab	Write comments on the entity on this tab. Note: CTRL+A, CTRL+C, CTRL+X and CTRL+V functions are available on this tab.

Buttons:



- opens the Application Variables form

OK - confirms all changes and closes the form

Cancel - cancels the changes you have made and closes the form

Apply - confirms the changes (the form will remain opened for further edit)

Help - opens Help file

Copy Entities

In Toad Data Modeler there are several methods to copy entities. You can select from the following options.

TIP: If you find yourself copying objects too much, consider using the **Gallery** feature. See Gallery for more information.

A. Drag&Drop techniques + CTRL on Workspace

Where to use: On a Workspace Example:

- 1. Click an entity on Workspace and hold the mouse button down.
- 2. Press CTRL key.
- 3. Drag the entity to another place.
- 4. Release the mouse button and the key.

B. Copy&Paste functions: Edit | Copy/Paste (CTRL+C, CTRL+V)

Where to use:

- On a Workspace
- Between Workspaces
- Between Models

Example: Copying an entity to another Workspace

- 1. Select an entity.
- 2. Press CTRL+C. Activate the Workspace in which the entity copy will be created. It can be in your current model or in another model.
- 3. Press CTRL+V
- 4. A copy of the entity is created on the Workspace you selected.

C. In the Entities dialog: Drag&Drop techniques + CTRL

Where to use:

- In the Entities dialog itself (Model Menu | Model Items | Entities)
- Between the Entities dialog and a Workspace

- Between the Entities dialog and Model Explorer | Entities folder
- Between the Entities dialogs of two different models

Example: An entity in the Entities dialog of Model A needs to be copied to Model Explorer of Model B:

- 1. Open the Entities dialog in *Model A* in Model Menu | Entities.
- 2. Open Model Explorer in Model B.
- 3. Select an entity in the Entities dialog of Model A, hold down CTRL key.
- 4. Drag the entity over the Entities folder in Model Explorer and drop.

D. In Model Explorer: Drag&Drop techniques + CTRL

Where to use:

- In Model Explorer itself
- Between Model Explorer and a Workspace
- Between Model Explorer and the Entities dialog (in a different model as well)
- Between Model Explorer and Entities dialog of two different models

Example 1: Making a copy of an entity in Model Explorer.

- 1. Unfold the **Entities** folder in the Model Explorer tree.
- 2. Click an entity and hold the mouse button down.
- 3. Press CTRL.
- 4. Drag the entity to the **Entities** folder and drop.

A copy of the selected entity is listed in the Model Explorer tree and the entity appears on all the Workspaces of your model where the **Auto Complete** option is enabled.

Example 2: Copying an entity from Model Explorer to a Workspace.

- 1. Unfold the **Entities** folder in the Model Explorer tree.
- 2. Click an entity and hold the mouse button down.
- 3. Press CTRL.
- 4. Drag the entity to a Workspace.

Example 3: Creating an entity copy between Model Explorers of two models. The entity will be copied from *Model A* to *Model B*:

- 1. Open Model Explorers in both models. You may want to undock at least one of the Model Explorer windows.
- 2. Click an entity in *Model Explorer A* and hold the mouse button down.
- 3. Press CTRL.
- 4. Drag the entity to the **Entities** folder of the *Model Explorer B* an drop.

- Note:
 - A copied entity has the same properties as its source.
 - In some cases, entities cannot be copied between models. It's because they contain specific properties, that do not exist in the target mode. For example, copying two entities from Microsoft SQL 2019 model to MySQL 8.0 model. *Entity A* has Partition Schema, *Entity B* has Fulltext Catalog. Since these features do not exist in MySQL 8.0, the entities will not be copied.
 - Even though it is possible to copy and paste objects to a different model of different database platform or version, it is encouraged to use **Model Convert** function, even for single objects. The copy-pasting method is faster, but more error-prone, while the **Model Convert** method is slower, but more robust.

Move Entities

In Toad Data Modeler there are several methods to move entities. You can select from the following options.

To move entities on a Workspace, use

• Drag&Drop techniques

or

Keyboard arrows

TIP:

- 1. Select Settings | Options | Graphics | Move Objects by (mm/10) to set the size of a step to move (in tenths of millimeters).
- 2. Select an entity, press SHIFT, hold it down and use the keyboard arrows to change size of the entity box.

To move multiple entities at once

- 1. Make multiple selection of entities (see Select Objects for more information).
- 2. Point your mouse cursor at any of the selected entities, click and hold the mouse button down.
- 3. Drag the objects to the required position and drop. All selected entities will be moved there, including their relationships.

To move entities to another Workspace or another model, select from the following options:

- Cut&Paste functions: Edit | Cut/Paste, or via shortcuts CTRL+X, CTRL+V
- Drag&Drop techniques between the Entities dialogs of two different models
- Drag&Drop techniques between the Entities dialog and Model Explorer
- Drag&Drop techniques in or from Model Explorer
- Drag&Drop techniques between Entities dialog/Model Explorer and Workspace

Example: Moving an entity from *Model A* to *Model B* using **Model Explorer**: *Method 1*: Moving an entity between Model Explorers of the two models.

- 1. Open Model Explorers in both models. You may want to undock at least one of the Model Explorer windows.
- 2. Select an entity in *Model Explorer A* and hold the mouse button down.
- 3. Drag the entity to the Entities folder in the Model Explorer B and drop.

Version B: Moving an entity from Model Explorer A directly to a Workspace of Model B.

- 1. Undock the *Model Explorer A* if it's docked, and click the Workspace tab of *Model B* in the Application Window.
- 2. Select an entity in *Model Explorer A* and hold the mouse button down.
- 3. Drag the entity to a Workspace of *Model B* and drop.

Entity Right-Click Options

Right-click the selected entity on the Workspace to see the following options:

•	Custo m	er IDNN (PK)	 _			
		Format Add into Workspace Add into New Workspace				
•		Remove from Workspace Delete Object Arrange	,	name city title director	Customerhas Varchar2(20 ([expr] Varchar2(50 (Varchar2(30 (lim CHAR) CHAR) CHAR)
		Add Object to Gallery	F			
	✓	Recalculate Size				
		Align Self Relationship		_		
		Edit				
		Add			Attribute	
		Edit Attribute			Key	15
		Select	٠Ļ	1	Index	
		Fill	۲			
		Add to Category	×			
		Macros	F			

Option	Description
Format	Opens the Object Format dialog for the selected entity.
Add into Workspace	Opens the Workspaces dialog where you can select

Option	Description		
	a Workspace to add the entity to.		
Add into New Workspace	Creates a new Workspace and adds the entity to it.		
Remove from Workspace	Removes the selected shortcut from particular Workspace.		
Delete Object	Deletes selected entity from model.		
Arrange	Arranges the entity in another layer. Arrange Objects in Layers		
Copy Object Layout to	Copies the layout of the selected object to another Workspace		
Add Object to Gallery	Adds objects to selected Gallery.		
Recalculate Size	Adjusts the entity size to the length of its columns.		
Align Self Relationship	Aligns self relationship.		
Edit	Opens the Entity Properties form.		
Add	Creates a new object (Attribute, Key or Index) in the selected entity.		
Change Script	Contains one option that allows you to compare selected entity with any other entity in another model or database and generate Change Script.		
Edit Attribute	Opens Attribute Properties form (the item is active if attribute is selected)		
Select			
Select Parent Objects	Selects parent objects of the selected entity on Workspace.		
Select Child Objects	Selects child objects of the selected entity on Workspace.		
Select Parent and Child Objects	Selects parent and child objects of the selected entity on Workspace. i TIP: Use these options for next multiple copy, move, format change etc.		
Fill			
Fill Parent Objects	Displays shortcuts of parent objects of the selected entity on Workspace.		
Fill Child Objects	Displays shortcuts of child objects of the selected entity on Workspace.		
Fill Parent and Child Objects	Displays shortcuts of parent and child objects of the		

Option	Description
	selected entity on Workspace.
Add to Category	Adds object to selected category.
Macros	Shows available macros for the selected entity.

Create Attributes

You can create attributes in:

- Entity right-click menu on Workspace
- Entity Properties dialog
- Attribute Properties dialog
- Model Explorer

To create an attribute on the Workspace

Right-click an entity on the Workspace and select Add | Attribute. The Attribute Properties dialog opens.

Note: Select the **Primary Key** (**Unique**) checkbox to set the attribute as PK or unique attribute.

To create an attribute in the Entity Properties form

- 1. Double-click an entity on Workspace.
- 2. In the Entity Properties form, switch to the Attributes tab and click Add.

😕 Entity Pro	perties - E							- • ×
Caption							Name	
Customer						2	T_CUSTOMER	6
Notes General	SQL Attributes	Preview Keys Ir	Relationships ndexes Check Const	Physional Physion Physion Physion Physion Physical PhysicaPhysicaPhysicaPhysicaPhysicaPhysicaPhysicaPhysicaPhysicaPhysicaPhysicaPhysicaPhysicaPhysi	cal Properties Triggers	 Perm	Table Properties Custon issions To Do Before Script	ner Feedback
Key	Caption	Name	Data Type	p1	p2 N	ot Null	Comments	Status
→	Customer ID Name Address	customer_id name address	 Integer Varchar2(x) Cust_Address_Type 	20	СН		Name column can contain First and N	idd A
			Add					
A <u>d</u> d		dit	Delete 🗙 🛠					
✓ Get	enerate				(Ōk	Cancel Apply	<u>H</u> elp

Entity Properties attribute columns

Column/Option	Description	
Кеу	Graphical representation of keys of a particular attribute	
Caption	Logical attribute name	
Name	Physical attribute name	
Data Type	Data Type of an attributeiTIP: You can set a default data type for newly created attributes. See Settings Menu Options Physical Model *database platform and version* Default Data Type combo-box. (The selected data type will be also applied to Dictionary Types and Domains.)	
p1	Parameter 1. Only some of the available data types have this parameter. Defines properties of the selected data	

Column/Option	Description
	type, e.g. length in case of the Char data type.
p2	Parameter 2. Only some of the available data types have two parameters. E.g. the Decimal data type has two parameters, which define precision and scale.
Not Null	When checked, the attribute cannot be empty.
Comments	Comments or descriptions related to the attribute
Status	Shows status of attributes in grid. Status of Items in Grids

Buttons:



- opens the Application Variables form

Smaller Add button- adds new attributes quickly, just enter attribute name and then click Add.

Bigger Add button - adds an attribute

Edit - opens Attribute Properties of the selected entity

Delete - deletes the selected attribute



- moves the selected attribute up or down in the list

To create another attribute in the Attribute Properties form

Click OK+Add.

Attribute Properties - T_CUSTOMER - E	
Caption	Name
Customer ID	EUST_ID 🚯
General Check Constraints Foreign Keys Permissions	Notes
Data <u>T</u> ype	Domains
🥌 Integer 🔻 🏠	· · · · · · · · · · · · · · · · · · ·
Default Value Image: Primary Key Image: Not Null Image: Unique (New AK)	Default Rule None
Comment	
Customer ID - unique number.	*
Not Null Constraint Constraint Name Deferrable Initially Deferred Disable No Validate Rely	Other Database Specifics Used Sequence (trigger) None Encryption Specification REF Type Use REF Type Inline REF Constraint
∞ €	Ok <u>+</u> Add <u>C</u> ancel <u>A</u> pply <u>H</u> elp

To create an attribute in Model Explorer

Unfold the Entities folder | Unfold the specific entity folder | Right-click the Attributes folder | Add Attribute.

Edit Attributes

• In the Entity Properties dialog | Attributes tab, double-click the selected attribute.

or

• Find the attribute in Model Explorer | EntityName folder | Attributes | Double-click the selected attribute.

Attribute Properties - T_CUSTOMER - E	
Capt <u>ion</u> Customer ID	Name CUST_ID ₺
General Check Constraints Foreign Keys Permissions	Notes
De <u>f</u> ault Value Primary Key Not Null Unique (New AK) Comment Customer ID - unique number.	Default Rule
Not Null Constraint Constraint Name Deferrable Initially Deferred Disable No Validate Rely	Other Database Specifics Used Sequence (trigger) None Encryption Specification REF Type Inline REF Type Inline REF Constraint
<u>ок</u>	Ok <u>+</u> Add <u>C</u> ancel <u>A</u> pply <u>H</u> elp

Example: The Attribute Properties dialog (Oracle 10g db):

Tab/Option	Description
Object Navigator Dropdown Menu	Object Navigator Dropdown Menu can be expanded or collapsed by clicking the right black arrow in top right corner. All attributes in your entity are listed here. This allows you to edit them quickly and comfortably from one place.
	Tip: After you finish editing an entity, click Apply to confirm changes and select another entity from the Object Navigator box.

Tab/Option	Description	
General Tab	General properties of attribute	
Caption	Logical column name	
Name	Physical attribute name See About Naming Conventions for more information.	
Primary Key	Select this checkbox to set the attribute to be a part of primary key.	
Not Null	Select this checkbox to set the attribute Not Null. See NotNull Property for PK and AK Attributes for more information.	
Unique	Select this checkbox to set the attribute as unique. See Unique Attributes for more information.	
Data Type	Data Type selection box i TIP: • Before you create new attributes, set a default data type, including parameters, for particular database. See the Settings menu Options Physical Model particular database version Default Data Type combo-box. (The selected data type will be applied also for Dictionary Types and Domains.) • Set maximal length for display of data types in the physical ERD. Select Settings Options Graphics Maximal Number of Characters for Displayed Data Type.	
Domains	Domains selection box Note: It's not possible to assign an attribute a data type and a domain at the same time. If you select a domain, data type will be set automatically from the domain.	
Default	Default value definition	
Default Rule	Default rule selection	
Note: Other options on the General tab vary according to a database type. Options specific for your database can be found in the Databases chapter.		
Check Constraints Tab	On this tab, you can add, edit and delete check constraints.	
Foreign Keys Tab	Details of a foreign key attribute are listed here.	
Entity	Name of parent entity	
Tab/Option	Description	
----------------------------	--	
Relationship	Name of relationship connecting the parent entity and child entity	
Attribute	Name of attribute	
Permissions Tab	On this tab, you can assign a User or User Group permissions for the selected attribute.	
Notes Tab	A tab for notes on the attribute. The text will display in a pop-up box when you point your mouse cursor at the attribute name in ER diagram (the Attributes item has to be selected in Display Level).	
Not Null Constraint Tab	Options related to Not Null Constraint definition.	
	Click this button to open the parent form (Entity Properties form). i Note: Above the Object Navigator Dropdown Menu, you can see name of the entity that the attribute belongs to. The Properties dialog of this entity will open.	

Display Attributes in Model

To display attributes in your ER diagram

From the **Display Level** box on the toolbar, select **Attributes**.

To define a display level for particular Workspace

Right-click the work area | Workspace Format... | Entities tab | Display Level | select Attributes.

To set the default Display Level properties for all models that you will create Select Settings | Options | Physical Model | Entity tab | Display Level.

To define different colors for attributes on your Workspace

Select Settings | Options | Model section | Physical Model | Entity tab | Attribute Colors area.

Physical Model	
General Workspace Shape Note Line	Entity
Default	
Display Level	Attributes 👻
Align	
Display Data Types	\checkmark
Display Dictionary Types as Data Types	
Display Keys Graphically	
Display Key and Index Marks	
Display Indexes	
Display Not Null Mark	
Gradient Effect	
Attribute Colors	
Primary Key	Red 🗸
Primary Foreign Key	Blue 🔻
Foreign Key	Green 👻
Mandatory Attribute	Black -
Optional Attribute	Medium Gray 🗸
Form Settings	
Disalau Data Wasahawaa Tung and Sar	
Display Data Warehouse Type and Size	

Order Attributes

In the Entity Properties form | Attributes tab, you can order attributes:

- Manually via the green arrows at the bottom of the form
- Automatically (e.g. by Name, Caption, Data type etc.)

Manual Order

The order you will set via the green arrows will be applied in particular entity box in the Designer (all workspaces). Example: Attributes in the Film Entity Properties form have been ordered manually using the green arrows and finally confirmed Apply. Now see the Film entity in Designer and compare its order of attributes with the order set in the Film Entity Properties form. The order is identical.

Automatic Order

Click the appropriate column name - e.g. click the Name column to sort attributes alphabetically.

This function offers you just a different view on the attributes in the **Entity Properties** form. It does not influence order of attributes in entity box in the Designer.

If you sort attributes this way, you cannot manually change order of attributes via the green arrows. If you click a green arrow, this message will display:

Confirm	
?	Attributes are sorted by the column "Caption" now. In this view, it is not possible to change the ordinal order of attributes. Would you like to change the sorting method and set the ordinal order?
	OK Cancel

Click OK to activate the green arrows and order the attributes manually.

Note:

- No green arrow is enabled when there is no attribute or when there are attributes but none is selected.
- If any sorting function is turned on (e.g. sorting by name), green arrows are both active, so you can click any of them to turn off the sorting and set the ordinal order.

Copy Attributes

In Toad Data Modeler there are several methods and places where to copy attributes. You can select from the following options.

A. CTRL + Drag&Drop techniques on the Workspace

Use: This way, you can copy attributes within an entity and between entities on one WS. You can copy one or more attributes at one jump.

Example:

- 1. See Display Attributes in Model for more information.
- 2. Select an entity of which attributes you want to copy.
- 3. Press CTRL and hold the key down. Click the attributes that you want to copy.
- 4. Release CTRL key.



- 5. Now click the selected objects, hold the mouse button down. Press CTRL again and hold the key down.
- 6. Drag the selected attributes to a target entity. (If you want to copy the attributes within the entity, drag it a little in the entity box itself.)
- 7. Release your mouse button and CTRL.

B. In the Entity Properties form | Attributes tab: CTRL + Drag&Drop techniques

Use:

- In the **Entity Properties** form, you can copy attributes within an entity and between entities of the same model or a different model.
- From the Entity Properties form and Workspace, and vice versa
- Between the Entity Properties form and Model Explorer
- Multiple selection is possible here use SHIFT or CTRL keys

Example:

- 1. Open the *Customer Properties* form of the *Customer* entity and the *Employee Properties* form of the *Employee* entity.
- 2. Click the Attributes tabs in both forms.
- 3. Press CTRL and hold the key down.
- 4. Click the *Name* attribute in the *Customer Properties* form and drag it to the *Employee Properties* form | **Attributes** tab.
- 5. Release your mouse button and CTRL.

C. In Model Explorer

Use: You can make copies of attributes:

- In Model Explorer itself
- From Model Explorer to a Workspace and vice versa
- Between Model Explorer and the Entity Properties form | Attributes tab
- Between two Model Explorers of two different models (see the following examples)
- Multiple selection is possible here use SHIFT or CTRL keys

Example: Making a copy of attributes from Model Explorer to a WS.

- 1. Unfold the Entities folder | 'EntityName' | Attributes tab in Model Explorer tree.
- 2. Make selection of attributes.
- 3. Press CTRL, hold it down.
- 4. Click any selected attribute and drag the attribute to the appropriate entity box on the Workspace.
- 5. Release the mouse button and CTRL.

- Note:
 - An attribute is copied with all its properties.
 - It's possible to copy objects between models of a different database. However, some specific object properties cannot be copied properties that are in the source model but do not exist in target model.
 E.g. Copy of entity from Microsoft SQL 2019 to MySQL 8.0. *Entity A* has Partition Schema, *Entity B* has Fulltext Catalog. In these cases, the entities will not be copied to MySQL model.

Move Attributes

In Toad Data Modeler there are several methods how to move attributes. You can select from the following options.

A. Drag&Drop techniques on the Workspace

Use: This way, you can move one or more attributes to another entity at one jump.

Example:

- 1. Display attributes in your model.
- 2. Select an entity of which attribute/attributes you want to move.
- 3. Press CTRL and hold the key down. Click the attributes that you want to move.
- 4. Release CTRL.
- 5. Drag the selected attributes to a target entity.

B. In Entity Properties Form | Attributes tab: Drag&Drop techniques

Use:

- In the **Entity Properties** form, you can move attributes within an entity and between entities. (To change order of attributes within an entity, use the green arrows.)
- From the Entity Properties form to a Workspace, and vice versa
- Between the Entity Properties form and Model Explorer
- · Multiple selection is possible use SHIFT or CTRL keys

Example:

- 1. Open the *Customer Properties* form of the *Customer* entity and the *Employee Properties* form of the *Employee* entity.
- 2. Click the Attributes tabs in both forms.
- 3. Select attributes in the *Customer Properties* form and drag them to the *Employee Properties* form | **Attributes** tab.

C. In Model Explorer

Use: You can move attributes:

- Between entities in Model Explorer itself
- From Model Explorer to an entity on the Workspace directly
- · Between Model Explorer and the Entity Properties form | Attributes tab

- Between two Model Explorers of two different models
- Multiple selection is possible use SHIFT or CTRL keys

Tip: Use CTRL to select attributes of various entities in Model Explorer, and move them at one jump to another entity (of the same model or even a different model).

Example: Moving an attribute in Model Explorer.

- 1. Unfold the Entities folder in Model Explorer tree.
- 2. Select attributes (SHIFT or CTRL) and drag them to the Attributes or 'EntityName' folder of another entity.

Delete Attributes

• In the Entity Properties form | Attributes tab, select the attribute and click Delete.

or

• Find the attribute in Model Explorer | EntityName folder | Attributes | right-click and select Delete Item.

Parent Attributes (Rolenames)

You can change the attribute name e.g. in the following cases:

- When you create a self-relationship.
- Whenever you want to change a Foreign Key attribute name.

Scenario:

You have just added a self-relationship to the Film entity.

1. A copy of your identifying key attribute has been created in the entity - *Film ID*. Now you have two *Film ID* attributes in the *Film* entity.



2. Edit the newly created Film ID attribute, define a new **Name**. The link to parent attribute is displayed on top right-hand corner of the form.

Attribute Properties - SCOTT.T_FILM	
Caption Film ID Episodes	Name film id
General Check Constraints Foreign Keys Permissions 1 Data Type Implication Integer Integer Implication Int	Notes
De <u>f</u> ault Value Primary Key Not Null Unique (New AK) Comment	Default Rule
Not Null Constraint Constraint Name Deferrable Initially Deferred Disable No Validate Rely	Other Database Specifics Used Sequence (trigger) ~ None ~ Encryption Specification REF Type Use REF Type Inline REF Constraint
	Ok±Add Cancel Apply Help

3. Confirm **OK** and see the change on the Workspace.



Has More Episodes

Display Keys in Model

To display keys in your ER diagram

From the **Display Level** dropdown menu on the **Display Toolbar**, select **Primary Keys** or **PK and FK Keys** or **All Keys**.



To define display level for a specificWorkspace

Right-click the work area | Workspace Format | Entity tab | Display Level.

To display keys graphically in your ER diagram

Right-click the work area | Workspace Format | Entity tab | check the Display Keys Graphically checkbox.

To change the default key attributes color

Select Settings | Options | Model section | Physical Model | Entity tab | Attribute Colors area.

To highlight key attributes on your Workspace

Point your cursor at a relationship line.

TIP: When you point your mouse cursor at a relationship line, parent and child attributes are highlighted on the Workspace. You can set the color at: Settings | Options | Graphics | Colors area | Highlight Color.



Create Keys

An entity can have a primary key and many alternate keys. The keys are stored in the **Keys** tab in the **Entity Properties** form.

To create a key

• Right-click an entity on the Workspace and select Add | Key. The Key Properties dialog opens.

To create a PK (unique) attribute

- 1. Right-click an entity on the Workspace and select Add | Attribute. The Attribute Properties dialog opens.
- 2. On tab General, select the Primary Key (Unique) checkbox.

To assign an attribute to key

• In the Entity Properties dialog, Attributes tab, double-click the empty space in the Key column next to the selected attribute.

or

• In the Key Properties dialog | Attributes tab.

Note: i

· Primary keys are graphically marked by red key by default.



- A primary key can be added to more attributes.
- It is possible to delete primary keys. It is not possible to delete alternate keys of unique attributes.

NotNull Property for PK and AK Attributes

Toad Data Modeler allows you to check/uncheck the NotNull property for PK and AK attributes. This is possible only if the Allow Null Attributes in Keys checkbox is selected (unchecked by default).

To select this checkbox

Select Settings | Options | Physical Model and select the checkbox.

If this checkbox is not selected, Toad Data Modeler doesn't allow you to uncheck the NotNull checkbox in key attributes.

The availability of this option differs by database:

Database	Allow NULL in PK	Allow NULL in AK
DB2 z/OS v. 11	n/a	n/a
DB2 v. 8, 9.x, 10.x	n/a	n/a
Greenplum	n/a	available
Ingres 9.3, 10	n/a	n/a
Microsoft Access	available	available
Microsoft Azure SQL Database	n/a	available

Database	Allow NULL in PK	Allow NULL in AK
SQL Server 2012	n/a	available
SQL Server 2014	n/a	available
MySQL 5.5 and higher versions	n/a	available
Oracle	available	available
PostgreSQL	n/a	available
SQLite 3.7	available	available
Sybase ASE, Sybase IQ	n/a	n/a
Sybase SQL Anywhere	n/a	n/a
Teradata	n/a	n/a

If the Allow Null Attributes in Keys checkbox is selected:

- When you assign an attribute to a key (PK, AK), the Not Null checkbox of the attribute will be checked. (But you are able to uncheck it)
- During propagation of the key via the identifying relationship, the Not Null property in child attribute is inherited from the parent attribute. The only exception is when a database doesn't support Null value in primary key, which would be created via the propagation.
- During Model Conversion, different settings of the Not Null property and its support in different databases are taken into consideration.
- For databases that support Null value in child attribute, the Mandatory Parent checkbox is selected in the Relationship Properties dialog and should behave coherently to Null value in child attribute as well as it behaves for non-identifying relationships.
- · For databases that support Null value in child attribute, the settings of the Synchronize NotNull with Mandatory Parent option work the same way for PFK as for FK.

See Synchronization of NotNull and Mandatory Parent for more information.

Edit Keys

• In the Entity Properties dialog | Keys tab | double-click the key.

or

• Find the key in Model Explorer | EntityName folder | Keys | Double-click (or right-click and select Edit).

Attributes Tab	Description
Available	A list of all non-assigned attributes of the entity
Selected	Attribute(s) that have been assigned the key.
	Assigns selected attribute to the key.
	Tip: - For multiple selection of attributes, use SHIFT or CTRL.

<	Removes the selected attribute from the key. Tip: - For multiple selection of attributes, use SHIFT or CTRL.
>>	Assigns all attributes at once.
<<	Removes all attributes from the key at once.
Notes Tab	You can write notes related to the key you are editing.
Using Index Properties Tab	Definition of other Key properties, dependent on the database platform and version you are using.

Delete Keys

• In the Entity Properties form | Keys tab, select a key and click the Delete button.

or

• Find the key in Model Explorer | EntityName folder | Keys | right-click the key and select Delete Item.

Note: It is possible to delete a primary key. It's not possible to delete an alternate key of unique attribute.

Select Parent Key for Relationship

Linking Method

In Toad Data Modeler, you can link parent and child entities:

- Through a Key (Primary or Alternate key) of parent entity
- Through Unique Index of parent entity

To set a linking method

- 1. Double-click the selected relationship.
- 2. From the **Parent Key** box, select the appropriate linking method.

Relationship Properties	
Caption Is Rated	Name is_rated
General To Do Notes SQL Preview Index to Foreign Relationship Type Identifying Non-Identifying Parent Key Ittle-director Parent Child Title Ittle V Director	Referential Integrity Parent UPDATE Restrict Parent DELETE Restrict Settings Deferrable Deferrable Deferred Disable No Validate Rely
Cardinality ✓ Mandatory Parent Cardinality ✓ Mandatory Child 11 to 1n Parent Entity + SCOTT.T_FILM +	Category □ None
Generate Generate	QK Cancel Apply Help

Unique Attributes

Toad Data Modeler creates new alternate keys for unique attributes automatically. **Example:** There are two attributes in the T_GENRE entity.

🔀 Entity Pro	perties							
Caption				Name				
Genre			2	T_GENRE				6
After Script General	Notes So Attributes	QL Preview Keys Indexe	Relationships Physical s Check Constraints	Properties Triggers	Table Permi	Properties ssions	Custo To Do	omer Feedback Before Script
Key	Caption 🔺	Name	Data Type	p1	p2	Not Null	Comme	nts
	Genre ID Name	genre_id name	integer Varchar2(x)	20	CH			
4								
			Add					
Add	E	dit	Delete 🗙 🛠		6			
	enerate		<u>o</u> k		ancel		ply	Help

No alternate key exists in this entity.

🔀 Entity Prop	erties			- • •
Caption			Name	
Genre		2	T_GENRE	10
After Script	Notes SQL Preview	Relationships Physica	Properties Table Propertie	s Customer Feedback
General A	ttributes Keys Ind	lexes Check Constraints	Triggers Permissions	To Do Before Script
PK (Caption	Name	Items	Status
9	pk_T_GENRE	pk_T_GENRE	genre_id	۲
Add	Edit	Deļete		
	nerate	<u></u> K	<u>C</u> ancel A	pply <u>H</u> elp

Edit the Name attribute and select the Unique checkbox.

name		-
aption	Name	
Name	≥ name	
eneral Check Constraints Foreign Keys Permis	ssions Notes	
Deta Tara	Develop	
Vara Type		
Length Column Length in		
20 CHAR	_	
Default Value	Default Bule	
	- None	▼
	New Aro	
	New ANJ	
Comment		
	Other Database Specifics	
Constraint Name	Used Sequence (trigger)	
	None	▼
Deferrable	None Encryption Specification	•
Deferrable	None Encryption Specification	•
Deferrable Initially Deferred Disable	- None Encryption Specification	•
Deferrable Initially Deferred Disable No Validate	None Encryption Specification	•
Deferrable Initially Deferred Disable No Validate Rely	None Encryption Specification REF Type Use REF Type	•
 Deferrable Initially Deferred Disable No Validate Rely 	None Encryption Specification REF Type Use REF Type Inline REF Constraint	
 Deferrable Initially Deferred Disable No Validate Rely 	None Encryption Specification REF Type Use REF Type Inline REF Constraint	
 Deferrable Initially Deferred Disable No Validate Rely 	None Encryption Specification REF Type Use REF Type Inline REF Constraint	
 Deferrable Initially Deferred Disable No Validate Rely 	None Encryption Specification REF Type Use REF Type Inline REF Constraint	
 Deferrable Initially Deferred Disable No Validate Rely 	None Encryption Specification REF Type Use REF Type Inline REF Constraint	

New alternate key has been added to the entity automatically.

🔀 Entity Pro	perties									
Caption					N	ame				
Genre					2	[_GENRE				6
After Script General	Notes Attributes	SQL Prev Keys	iew Relatio Indexes C	nships Check Cons	Physical F straints	roperties Triggers	Table Prop Permissio	perties ns T	Custo o Do	mer Feedback Before Script
PK	Caption		Name			Items			Stat	us
- 7	pk_T_GEN	IRE	pk_T_G	IENRE		genre_id			۲	
	Name		Name			name			۲	
Add		<u>E</u> dit	Delete							
Sector 10 mm ≤ 10	enerate				<u>о</u> к		ancel	Appl	y	Help

Foreign Keys in Toad Data Modeler

As soon as you create a relationship in Toad Data Modeler, foreign keys are created automatically in the child entity (automatic key migration).

There are two types of foreign keys:

- Foreign keys (FK, graphically marked by green key by default)
- Primary Foreign keys (PFK, graphically marked by blue key by default)

The type of FK depends on what relationship you create, see **Relationship Types** for more information.



Synchronization of Not Null and Mandatory Parent

Select Settings | Options | Physical Model | General tab | Synchronize Not Null with Mandatory Parent. By default, this checkbox is selected. You can change the settings during your modeling, the new setting will be used by default in all new items you create in your model.

- Synchronization enabled: If cardinality has set Mandatory Parent, a FK attribute will be automatically Not Null. If you clear the **Not Null** checkbox of the FK attribute, Mandatory Parent option will be unchecked.
- Synchronization disabled: If you uncheck the **Not Null** checkbox of a FK attribute, the Mandatory Parent current status remains unchanged.

Foreign Keys in the Attribute Properties Dialog

If you open the Attribute Properties dialog | Foreign Keys tab, you can see details on particular foreign key:

- Name of the parent entity
- · Name of relationship connecting the parent and child entity
- Name of PK Attribute

Foreign Keys in the Relationship Properties Dialog

In the **Relationship Properties** dialog | **Foreign Keys** tab, you can set a linking method between parent and child entities.

See Select Parent Key for Relationship for more information on available linking methods.

FK Mapping

In Toad Data Modeler, you can control your foreign keys. Foreign keys mapping feature allows you to create Compound Keys, use existing keys etc.

Scenario

In the *Genre* entity, there is a *Genre ID* attribute (primary key), and in the *Film* entity the *Genre ID* attribute exists too.



If you create a new relationship between the two entities, a new foreign key will be created automatically.



Solution: Map the newly created foreign key:

- 1. Double-click the new relationship to edit it.
- 2. Click the *Genre ID* item in the **Child** column to expand the combo-box with other attributes of the child entity.

Caption Name Relationship3 = Relationship3 Image: Constraint of the second secon	階 Relationship Propertie	s - E		
Relationship Type Referential Integrity © Identifying Non-Identifying Parent Key Parent UPDATE None Parent DELETE Parent DELETE Parent DELETE None Parent DELETE None Parent DELETE Parent DELE	Caption Relationship3)	Name Relationship3	ß
Parent Child Genre ID genre_id film_id title director production_company min_age film_ID_episodes genre_id genre_id	Relationship Type Identifying Parent Key pk_T_GENRE Parent Genre ID	© Non-Identifying © Non-Identifying Child genre_id film_id title director production_company min_age film_1D_episodes genre_id genre_id	Referential Integrity Parent UPDATE None Parent DELETE None Settings Deferrable Deferred Disable No Validate Rely	•

- 3. Select the first Genre ID item and confirm OK.
- 4. **Result:** There is only one *Genre FK* in the *Film* attribute.



i TIP: To restore the original foreign key later, go to the **Relationship Properties**, double-click the *genre_id* item in Child column and select *genre_id* (*New*). This created a new *genre_id* Foreign Key instead of mapping it to the already existing *genre_id* attribute.

Automatic FK Mapping

You can also set Automatic FK Mapping in Settings | Options | Model | Physical Model.

Phys	ical Mod	el					
General	Workspace	Shape	Note Line	Entity			
Word W	rap for SQL P	review					
Word W	rap for SQL, B	efore Sci	ipt and After	Script			
Synchro	nize NotNull w	ith Mand	atory Parent				
Allow Nu	ull Attributes in	Keys					
Alphabe	tic Order in Att	ribute Na	vigator List				
Inverse	Relation Name	•					
Attribute	Properties Pro	opagatior	n	AII PK	Properties		
Self Rel	ation Attribute	Name:		FK_<	FK_<%ParentAttributeName%>		
Self Rel	ation Attribute	Caption:		Foreig	Foreign <%ParentAttributeCaption%>		
Relation	Attribute Nam	ne:		<%Pa	<%ParentAttributeName%>		
Relation	Relation Attribute Caption:		<%Pa	<%ParentAttributeCaption%>			
Automat	Automatic EK Manning:		Enabl	Enable			
- SQL so	nipt			Disab	le 🖓		
Encor	' ding Used for '	SQL Serie	te	Enabl Alway	e s Show Dialog		
UTF	-8		-				
Code Editor Type							
Use Internal Editor				•			
External Editor for generated Code			Code				

- Disable FK mapping is OFF
- **Enable** Toad Data Modelersearches for matching attributes. If a single possible mapping option is found, the FK is mapped. If multiple possible mapping options are found, a dialog appears where you choose the attribute the FK should be mapped to.
- Always Show Dialog Displays a dialog whenever there is one or more possible mapping options. You get to choose the attribute the FK should be mapped to.

🔀 Automatic FK Mapping	×
Equally Named Attributes Found in Both	Parent and Child Entities. Select Action:
Settings Parent Entity - Keys pk_T_MEDIUM	Attributes To Be Mapped medium_id
	ОК

Indexes

To create an index

• Right-click an entity on Workspace and choose Add | Index. The Index Properties dialog opens.

or

• In the Entity Properties form, select the Indexes tab and click Add.

To edit indexes

• In the Entity Properties dialog | Indexes tab, double-click the index or Edit.

Option	Description
	Above the Object Navigator Dropdown Menu, you can see name of entity that the index belongs to. Click the button on top right-hand corner to open the parent form (Entity Properties form).
Object Navigator Dropdown Menu	All indexes of selected entity are listed here. The box allows you to edit indexes quickly and comfortably from one place. Use buttons to change order of indexes. Use Ctrl + Up to move index upwards or Ctrl + Down to move it downwards.

Option	Description			
General Tab	Description			
Caption	Logical attribute name.			
Name	Physical attribute name.			
Schema	Schema selection.			
Unique	Select this option to set the index as unique. Via unique indexes, you can link entities together. See Select Parent Key for Relationship for more information on available linking methods.			
Bitmap Index	Database dependent item (Oracle). Select this checkbox to define the index as bitmap index.			
Generate	Select it to generate the index in final SQL (DDL) script. (It is selected by default.)			
Note: Other op you're using. C chapter.	tions on the General tab vary according to the database platform ptions specific to your database can be found in the "Databases"			
Items Tab	Option			
Available	A list of all attributes of the entity.			
Selected	Attribute(s) that have been assigned to the index.			
Notes Tab	Tab for notes on the index.			
Index Properties Tab	Description			
Tablespace	Select a tablespace or click the button on the right to define a net tablespace.			
Indextype	Index type definition			
ODCI Parameters	ODCI parameters definition			

To display indexes on the Workspace

Right-click the WS, select **Workspace Format** | **Entity** tab and select the **Display Indexes** checkbox. See how indexes are displayed:

T_CUSTOMER
🗣 customer_id NN (PK)
name NN (IX1,IX2)
address NN (IX2)
i_name (IX1)
i_name_address (IX2)

Note: Even when the indexes are not displayed, you can see which attribute belongs to which index (e.g. attribute *Name* is assigned to indexes *i_name* and *i_name_address* - (IX1,IX2)

To delete an index

In the Entity Properties dialog select the Indexes tab, choose the index and click Delete.

Check Constraints

Check constraints can be created in the **Check Constraints** tab in **Entity Properties** form (for multiple column check constraints) or in the **Attribute Properties** dialog (for single column check constraint).

To add a check constraint

In Entity Properties form, select the Check Constraints tab and click Add.

To edit a check constraint

In Entity Properties form | Check Constraints tab, double-click the selected check constraint or press Edit .

General Tab	Description
Caption	Logical check constraint name
Name	Physical check constraint name
Check Constraint Rule	Select rule or click the button on the right to define a new rule.
Generate	Select it to generate the check constraint in final SQL (DDL) script (selected by default).
SQL Tab	Write SQL script for the check constraint here. See About Templates for more information.
Notes Tab	Space for your notes on the check constraint.

Note:

- To copy a check constraint, press CTRL and drag the constraint over the **Check Constraints** folder of a target entity in **Model Explorer**.
- To move a check constraint, drag it over the **Check Constraints** folder of a target entity in **Model Explorer**.
- To delete a check constraint, select it and click Delete in the Check Constraints tab of the Entity Properties form.

Triggers

To add a trigger

In Entity Properties form, select the Triggers tab and click Add.

To edit a trigger

In Entity Properties form, Triggers tab, double-click the selected trigger or press Edit. Example: Trigger Properties dialog (Oracle 10g db)

🔀 Trigger Properties	
Entity: SCOTT.T_BORROWING	
SCOTT.tri_BORROWING	-
General SQL Notes	
Caption Name tri_BORROWING = tri_BORROWING	
User / Schema SCOTT	
Trigger Fire BEFORE	
Trigger Events Delete Insert Update	
Correlation Names (REFERENCING) Image: For Each Row Old New When Condition	
Generate Generate SQL Only	
OK Ok±Add Cancel Apply	/ <u>H</u> elp

Option	Description
	Above the Object Navigator Box, you can see name of entity the trigger belongs to. If you click the button in top right-hand corner, the parent form will open (Entity Properties in this case).
General Tab	Description
Caption	Logical trigger name
Name	Physical trigger name
Schema	Schema selection box
Trigger Fire	Before, After (database dependent) - select a trigger fire.
Trigger Events	Delete, Insert, Update - select a trigger event.

Option	Description
Generate	Select to generate the trigger in final SQL (DDL) script (selected by default.)
Generate SQL Only	Select to generate the SQL code written in tab SQL only.
SQL Tab	Write SQL script for the trigger here. About Templates
Notes Tab	Space for your notes on the trigger.

Example: Trigger Properties dialog | SQL tab (Oracle 10g db)

🔁 Trigger Properties 📃 📼 💌
Entity: SCOTT.T_BORROWING
SCOTT.tri_BORROWING
General SQL Notes
Templates: Body
<pre>declare price number(10,2); begin select price_per_day into price from T_EXEMPLAR where T_EXEMPLAR.exemplar_id = :new.exemplar_id; :new.total_price := Price_Type((:new.end_date-:new.start_date)*price); end; </pre>
OK Ok±Add Cancel Apply Help

Note:

- To copy a trigger, press CTRL and drag the trigger over the **Triggers** folder of a target entity in **Model Explorer**.
- To move a trigger, drag it over the Triggers tab (folder) of a target entity in Model Explorer.
- To delete a trigger, select it and click **Delete** on the **Triggers** tab in the **Entity Properties** form.

Permissions

In Toad Data Modeler, you can assign permissions to the following objects:

- Entity
- Attribute
- User Data Type
- View
- Procedure
- Schema
- Users and User Groups.

This list is dependent on your current database platform and version. For example, some databases do not support assigning permissions to Users.

For every object, different permissions can be set (SELECT, INSERT, UPDATE etc.), depending on current database platform.

Options for permissions are described in the following example. Permissions for attributes, user data types etc. are set in the **Properties** dialog of particular object | **Permissions** tab (e.g. **Attribute Properties** | **Properties**).

Add Permissions

To be able to add a Permission, **it's necessary to define a User or User Group**. In case you forget, Toad Data Modeler allows you to define them directly from any **Permissions** tab of a particular object - click **Users** or **User Groups**.

To add a permission for entity

In the Entity Properties form, select the Permissions tab and click Add.

Example: Creating permission for user SCOTT in Entity Properties form:

Entity Properties - E				
Capt <u>i</u> on		<u>N</u> ame		
Customer		T_CUSTON	1ER	6
Before Script After Script Notes General Attributes Keys	SQL Preview	Relationships	Physical Properties Triggers Permis	Table Properties
User (User Group) Grantor	INSERT	REFERENCES	UPDATE	Status
SCOTT - None Administrator1 Administrator2 SCOTT	Unchanged	Unchanged	Unchanged	U

If you want to change the permission User or User Group, select the permission **User (User Group)** column, **press F2** and choose from the list.

TIP: This kind of editing properties is usable anywhere in Toad Data Modeler. For more information, see Inplace Editor.

Permissions Tab	Description
User (User Group)	Name of user (group) that the permission has been assigned to.
Grantor	Name of user (group) that assigns the permission.
Permissions: SELEC	CT, INSERT, UPDATE, DELETE, RULE, REFERENCES, TRIGGER

To edit a permission

In the Entity Properties form | Permissions tab, double-click the selected permission or press Edit .

General Tab	Description
Permissions	List of all available permissions to a specific object.
Status	 Shows if the particular permission has been assigned or not. Unchanged - No change has been made. Grant - Permission has been granted. Deny - Permission has been denied. (E.g. in Microsoft SQL 2005 models.)
with Grant Option	Yes/No - Determines if the permission User (Group) can assign the permission to another User (Group).

User Data Types

In Toad Data Modeler, you can define your own data types (in case the database platform you use supports this feature).

To add a user data type

Select Model Menu | Model Items | User Data Types and click Add in the User Data Types dialog. Example: User Data Types listed in User Data Types dialog

🔀 User Data Types		- • ×
Caption	Name	Status
Price_Type	SCOTT.Price_Type	۲
Cust_Address_Type	SCOTT.Cust_Address_Type	۲
Phone_List_Type	SCOTT.Phone_List_Type	۲
Add <u>E</u> dit Delete	<u>O</u> K <u>C</u> ancel	<u>Apply</u>

To edit a user data type

Double-click the selected data type or click **Edit** in the **User Data Types** dialog. **Example:** The **User Data Type Properties** dialog (Oracle 10g)

🔁 User Data Type Properties	- • •
SCOTT.Price_Type	-
General Permissions To Do Used in Notes SQL Preview Object T	ype
Caption <u>N</u> ame	@
User / Schema	Ľo
SCOTT 🔹	
Type Object Type	
Specification la Wranned	
Body Definition Is Wrapped	
Generate Generate SQL Only	
OK Ok±Add Cancel Apply	Help

General Tab	Description
Caption	Logical user data type name
Name	Physical user data type name
Schema	Schema selection box
Туре	This option is available in Oracle models only. Contains specific types of user defined types.
Generate	Select this option to generate the user data type in final SQL script.

Generate SQL Only	This option is available only for Oracle user data types. If this checkbox is selected, only the SQL code that you manually entered in appropriate tab (Object Type or Varray Type or Nested Table Type) will be generated in final DDL script.
i Note: All ch attributes c	nanges in your selected user data type will be automatically applied to all of this data type.
To Do Tab	On this tab, you can write some tasks related to the user data type. I TIP: To see all To Do tasks in your entire model, select Model Menu To Do.
Used In Tab	All objects where the user data type is used are listed here.
Permissions Tab	On this tab, you can assign a User or User Group permissions for selected user data type.
Notes Tab	Write notes related to the user data type.
Object Type Tab	See example of specification and definition in the following screenshot.
TIP: Click C	DK+Add to create another user data type.

Example: User Data Type Properties dialog | Object Type tab (Oracle 10g)

😕 User Data Type Properties	×
SCOTT.Price_Type	•
General Permissions To Do Used in Notes SQL Preview Object Type Create Object Type Specification AS OBJECT (price NUMBER(10,2), MEMBER FUNCTION total_price_VAT (vat number) RETURN NUMBER) NUMBER	*
	-
IS MEMBER FUNCTION total_price_VAT (vat NUMBER) RETURN NUMBER IS BEGIN RETURN (price*((vat+100)/100)); END; END;	4
OK Ok <u>+</u> Add Cancel Apply Help	

To assign a User Data Type to an attribute

- 1. Open the Attribute Properties dialog of the selected attribute | General tab.
- 2. From the **Data Type** box, select the required user data type.
- TIP: You can reach the User Data Types dialog from the Attribute Properties dialog see the small icons next to the Data Type box.

Attribute Properties - SCOTT.T_BORROWING		
Capt <u>ion</u> Total Price	Name total_price	
ieneral Check Constraints Foreign Keys Permissions 1 Data Type S Price_Type	Notes	▼
Default Value Primary Key Not Null Unique (New AK) Comment	Default Rule None	•
Not Null Constraint Constraint Name Deferrable Initially Deferred Disable No Validate Rely	Other Database Specifics Used Sequence (trigger) None Encryption Specification REF Type Use REF Type Inline REF Constraint	

- Note:
 - 1. To copy user data types, use CTRL + Drag&Drop techniques.
 - 2. To move user data types, use Drag&Drop techniques. You can copy and move your user data types:
 - In User Data Types dialog (Model Menu | Model Items)
 - Between Model Explorer and User Data Types dialog
 - 3. To delete user data types:
 - Go to Model Menu | User Data Types, select a user data type and click Delete.
 - In Model Explorer | User Data Types folderRight-click and select Delete Item.
- Note: When you delete an user data type, the changes will reflect in all attributes that had this type assigned. There, the user data type will be replaced with data type that it was originally created from. To find out which attributes use a specific user data type, go to **User Data Type Properties** dialog | **Used in** tab.

Dictionary Types

In Toad Data Modeler, you can define dictionary types. Dictionary is an alias of data type (must be supported by database).

Note: Oracle databases support user data types only, Microsoft SQL Server supports both user data types and dictionary types.

To add a dictionary type

Select Model Menu | Model Items | Dictionary Types and click Add in the dialog.

To edit a dictionary type

Select Model | Model Items | Dictionary Types and double-click the selected dictionary type or click Edit.

General Tab	Description
Caption	Logical dictionary type name
Name	Physical dictionary type name
Data Type	Data Type selection box

Note:

Other options on the **General** tab vary according to the current database platform. Options specific for your database can be found in the "Databases" chapter.

All changes in your selected dictionary type will be automatically applied to all attributes of the dictionary type.

To Do Tab

You can enter To Do tasks related to the object here.

Note: To display all To Do tasks, select **To Do** from **Model Menu**. **Used In Tab** All objects using this dictionary type are listed here.

Notes Tab Tab for notes related to the dictionary type.

To select a dictionary type for attributes

- 1. Open the Attribute Properties dialog of a selected attribute.
- 2. In General tab, select the dictionary type from the Data Type dropdown menu.

Note:

- 1. You can reach the **Dictionary Types** dialog also from the **Attribute Properties** dialog see the small icons next to the **Data Type** box.
- Click OK+Add in the Dictionary Type Properties dialog to apply changes and create another dictionary type at once.
- 3. To copy dictionary types, use CTRL + Drag&Drop techniques.
- To move dictionary types, use Drag&Drop techniques. You can copy and move your dictionary types within a model and between models of the same and different databases:
 - In the Dictionary Types dialog (ModelMenu)
 - Between Model Explorer and the Dictionary Types dialog
- 5. To delete dictionary types, select:
 - Model | Dictionary Types | Select a dictionary type and click Delete.
 - Model Explorer | Dictionary Types folder | Right-click and select Delete Item.
- **i** Note: When you delete a dictionary type, it will be also removed from all attributes in which it was used and replaced with the data type that it was based on (e.g. deleting dictionary type based on char data type will cause all attributes to revert back to the char data type). To find out which attributes will be changed when you delete a dictionary type, open the **Dictionary Type Properties dialog | Used In** tab.

Domains

Domain is another dictionary item in Toad Data Modeler. Domains only have logical meaning and are not generated. If a domain is used in a attribute, only the values of the domain are transferred to the attribute and are generated.

To add a domain

Select Model Menu | Model Items | Domains and click Add in the Domains dialog.

To edit a domain

Select **Model Menu | Model Items | Domains** and double-click the selected domain or click **Edit** in the **Domains** dialog.

Example: The Domain Properties dialog (Oracle 10g)

👺 Domain Properties	
VAT	•
General Check Constraints To Do Used in Notes	
Capt <u>ion N</u> ame	
VAT = VAT	6
Data Type Prec Number(x.y)	ision Scale
Default	
Default Rule	
None 🗸 🛄	
Encryption Specification	
OK Ok±Add Cancel	Apply Help

Gene	eral Tab	Description
Caption		Logical domain name
Name Physical domain name		Physical domain name
Data Type		Data Type selection box
i	Note:	
	1.	Other options on the General tab vary according to the current database platform. Options specific for your database can be found in the " Databases " chapter.
	2.	All changes made to your domain will be automatically applied to every attribute which uses the domain.

Check Constraints On this tab, you can add, edit and delete check constraints of a Tab domain.

To Do Tab	On this tab, you can write some tasks related to the domain.
Used In Tab	All attributes with this domain are listed on this tab. Double-clicking any attribute will open its Attribute Properties .
Notes Tab	Tab for notes on the domain.

To select domains for attributes

- 1. Open the Attribute Properties dialog of the selected attribute | General tab.
- 2. From the **Domains** box, select a domain.

Attribute Properties - SCOTT.T_BORROWING		
Caption VAT	Name VAT	
General Check Constraints Foreign Keys Permissions 1 Data Type Precision Scale 4 Default Value 19	Votes	
Primary Key Not Null Unique (New AK) Comment	•	
Not Null Constraint Constraint Name Deferrable Initially Deferred Disable No Validate Rety	Other Database Specifics Used Sequence (trigger) None Encryption Specification REF Type Use REF Type Inline REF Constraint	
	Ok <u>+</u> Add <u>C</u> ancel <u>Apply</u> <u>H</u> elp	
Note:

- 1. To copy domains, use CTRL + Drag&Drop techniques.
- To move domains, use Drag&Drop techniques. You can copy and move your domains within a model and between models of the same and different databases:
 - In Domains dialog (Model menu)
 - In Model Explorer | Domains folder
 - Between Model Explorer and Domains dialog
- 3. To delete domains, select:
 - Model | Domains | Select a domain and click Delete.
 - Model Explorer | Domains folder | Right-click and select Delete Item.
- **i** Note: Deleting a domain will remove it from all attributes that are using it. To find out which attributes they are, open the **Domain Properties dialog | Used In** tab.

Export/Import Dictionary

Toad Data Modeler allows you to use dictionary items also in other models. You can simply export all of them to the .TXI file, and then import them to any model at any time. You can save the .TXI file where you want, no default path is defined.

Dictionary items are:

- User Data Types
- Dictionary Types
- Domains

Domains

They have only a logical meaning. They are not generated in DDL/SQL script. If a domain is used in attribute, only values of the domain are transferred to the attribute during the DDL script generation process.

User Data Types

They are data types defined by users and can be generated in final DDL script. User data types are not derived from data types.

Dictionary Types

They are data types that are derived from other data types. They can be generated in final DDL script.

How to Export/Import Dictionary

You want to use dictionary items of Model A in Model B:

- 1. Open Model A.
- 2. Select Model | Export Dictionary.
- 3. Save the .txi file.
- 4. Open Model B.
- 5. Select Model | Import Dictionary.
- 6. Select the .txi file and click **Open**.
- Note:
 - Domain Check Constraints are imported/exported too.
 - It's not possible to make selection of the dictionary items for the import/export. All the dictionary items are always imported/exported at one jump.

Notation and Cardinality

IE Notation



Cardinality

One-to-many relationship is represented by this symbol:

One-to-one relationship is represented by this symbol:

Parent: mandatory Child: mandatory



Parent: mandatory Child: optional



Parent: optional Child: mandatory



Parent: optional Child: optional



IDF1X Notation





Parent: mandatory Child: mandatory



Parent: mandatory Child: optional



Parent: optional Child: mandatory



Parent: optional Child: optional



See Synchronization of Not Null and Mandatory Parent for more information.

Relationship Types

Identifying Relationship



Non-identifying Relationship





Non-identifying Self-relationship



M:N Relationship





Relationship Types

Toad Data Modeler supports the following relationship types (physical model):

- Identifying
- Non-identifying
- Self-relationship for non-identifying relationship
- M:N relationship

Identifying Relationship

۳ę

Primary key migrates from parent entity to child entity and there becomes a part of the primary key. It is used when the primary key of the child entity is unable to provide definite identification.

An entity, connected with a parent entity through an identifying relationship, is called "dependent" entity and is shown in a model with rounded corners.



The Order Record entity cannot exist itself. It is dependent on entities Customer and Film. Therefore the Identifying relationship is used. The Order Record entity is a dependent entity, and the Customer ID and Movie ID items are its unique record identifiers.

Non-Identifying Relationship

τ_€

Primary key migrates from parent entity to child entity and does not become a part of the primary key. Nonidentifying relationships are represented by dashed lines. In the dependent table, the attribute is referred to as a foreign key.



The *Film ID* as the unique identifier for Film is sufficient. Therefore the non-identifying relationship is used. The *Genre ID* is only a foreign key. The film can exist without being assigned to a genre, therefore the Film entity is an Independent entity.

Self-Relationship for Non-identifying Relationship



M:N Relationship

Ğң



Create Relationships

- 1. Select a relationship type click the appropriate relationship icon on the toolbar:
 - Identifying relationship (also CTRL+R)
 - M:N relationship
- 2. Move your mouse cursor over the work area. (The cursor changes its appearance.)
- 3. Click the first entity (parent) and then the target entity (child).
- TIP: Hide relationship names:
 - 1. Right-click the Workspace and select Workspace Format.
 - 2. In the Workspace Format dialog | General tab, select Hide Line Captions checkbox.

To create self-relationship for non-identifying relationship

- 1. Click the Non-identifying relationship icon on the toolbar
- 2. Move your mouse cursor over the work area.
- 3. Double-click the selected entity on the Workspace.
- **i** TIP: Before you create a self-relationship, select **Settings | Options | Physical Model | Self Relation Attribute Name/Caption** and define a name for propagated attributes there (e.g. via prefix, suffix, application variable.)

To add multiple relationships

- 1. Press SHIFT and click the Relationship icon. See the blue frame in the icon now.
- 2. Create as many relationships in you model as you need.

3. Right-click the work area (or click the Relationship icon again) to turn this function off.

Edit Relationships

Double-click the relationship on the Workspace.

or

Edit the relationship in **Model Explorer** | **Relationships** folder | double-click the selected relationship (or right-click | **Edit**).

Example: The Relation	nship Properties	dialog (Oracle	10g db)
-----------------------	------------------	----------------	---------

🔀 Relationship Properties	
Capt <u>ion</u> Is Related to	Name is_related_to
General To Do Notes SQL Preview	
Relationship Type	Referential Integrity
 Identifying Non-Identifying Parent Key 	Parent <u>U</u> PDATE Restrict
pk_T_EXEMPLAR	Parent DELETE
Parent Child	Restrict
Exemplar ID exemplar_ic Exemplar ID exemplar_ic Cardinality	Settings Deferrable Disable No Validate Rely
☑ Mandatory Parent Cardinality I ☑ Mandatory Child 11 to 11	Category
Parent Entity +	+ Child Entity <u>SCOTT.T BORROWING</u>
Cenerate	OK <u>Cancel</u> <u>Apply</u> <u>H</u> elp

i TIP: When you point your mouse cursor at a relationship line, parent and child attributes are highlighted on the Workspace. You can set the color at: **Settings | Options | Graphics | Colors** area | **Highlight Color**.

Option	Description
Caption	Logical name of relationship
Name	Physical name of relationship About Naming Conventions
General Tab	Description
Relationship Type	Select this option to set the relationship as identifying or non- identifying. There are also several setting related to Parent and Child entities. The last checkbox gives you the option to create Index to Foreign Key in Child Entity.
Parent Key	Linking Method selection box. Available options: primary key, alternate key, unique item. Select Parent Key for Relationship
Referential Integrity	Referential Integrity
Cardinality Area	Cardinality settings definition. Toad Data Modelerallows you to set up synchronization of NotNull and Mandatory Parent. Synchronization of Not Null and Mandatory Parent
Settings	Database dependent options (Oracle in our example).
Parent Entity Name and Child Entity Name	Names of entities that the relationship connects. Click the buttons next to these boxes to open the Entity Properties form of appropriate entities.
To Do Tab	On this tab, you can write some tasks on the selected relationship. Note: To see all To Do tasks, select Model To Do .
Notes Tab	Tab for notes on particular relationship. The text will display in a pop-up box when you point your mouse cursor at the relationship name in ER diagram.
SQL Preview Tab	Click at the bottom of this tab to see the part of SQL code for the relationship. Select the WordWrap checkbox to wrap the code on this tab. Tip: To select this option by default, select Settings Options Physical Model General tab Word Wrap for SQL Preview .

Buttons:



- opens the Application Variables form

 \mathbf{OK} - confirms all changes and closes the form

Cancel - cancels the changes you have made, and closes the formApply - confirms the changes (The form will remain opened for further edit.)Help - opens the Help file

Referential Integrity

To define integrity rules of a relationship related to changing, adding or deleting a record inside parent or child entity

Set values in **Referential Integrity** group box.

🔀 Relationship Properties	
Caption Makes General To Do Notes SQL Preview Index to F	Name ≥ makes © oreign Key
Relationship Type ⓒ Identifying ⓒ Non-Identifying Parent Key pk_T_CUSTOMER Parent Child Customer ID customer_ic ▼	 Referential Integrity Parent UPDATE Restrict Parent DELETE Restrict Settings Deferrable Deferred Disable No Validate Rely
Image: Cardinality 5 Image: Mandatory Parent Cardinality Image: Mandatory Child 11 to 15 Parent Entity + SCOTT T. CUSTOMER	Category □- None Child Entity SCOTT T. PORPOWING

Option Description

Parent Update An event when the primary key of the record is going to be changed

Option	Description
	inside the parent entity. The rules are:
	None
	No rule.
	Restrict
	If the primary key is changed inside the parent entity record, and inside the child entity there are records allocated to the original parent record primary key, the change will not be made and database will report an error.
	Cascade
	If the primary key is changed inside the parent entity record, and inside the child entity there are records allocated to the original parent record primary key, the database will change appropriate foreign keys inside the child entity.
	Set NULL
	If the primary key is changed inside the parent entity record, and inside the child entity there are records allocated to original parent record primary key, the database will set appropriate foreign keys inside the child entity to NULL. Set Default
	If the primary key is changed inside the parent entity record, and inside the child entity there are records allocated to the original parent record primary key, the database will set appropriate foreign keys inside the child entity to a default value.
Parent Delete	An event when a record inside the parent entity is being deleted. The rules are:
	None
	No rule.
	Restrict
	If a record inside the parent entity is being deleted, and inside the child entity there are records allocated to parent entity, the command won't be executed.
	Cascade
	In case of record deletion inside the parent entity, the records inside the child entity will be deleted as well.
	Set NULL
	In case of record deletion inside the parent entity, the foreign keys inside the child entity will be set to NULL.

Set Default

In case of record deletion inside the parent entity, the foreign keys inside the child entity will be set to a default value.

TIP: Define default values for referential integrity type. Default Values

Edit Relationship Lines

Relationship lines consist of:

- Lines
 - Solid lines represent identifying relationships.
 - Dashed lines represent non-identifying relationships.
- Anchor Points End points directly connected to entity boxes. You can alter them as you need.
- Handle Points Other points that can be added on relationship lines via CTRL key. Handle points allow you to select a part of relationship line to move or delete.



Move Lines, Handle Points and Anchor Points

To move part of line, handle point or anchor point

- 1. Select a relationship line.
- 2. Place mouse cursor over the line or point.
- 3. Use drag and drop technique to change position of the line or point.



To move single anchor point and break a line

- 1. Select a relationship line.
- 2. Place mouse cursor over the anchor point.
- 3. Use drag and drop technique to change position of the break point.



Column to Column Alignment

Lines can be rearranged manually and self-explanatory links from parent to child entities can be displayed in ER diagram.



Add Handle Points

To add handle point to a relationship line and break horizontal line:

- 1. Click the selected relationship line.
- 2. Press CTRL and click the line. Red cross icon will show up. Release CTRL key.
- 3. Move your mouse cursor left or right and then move the highlighted part of the line up or down.



Result:



To break horizontal line using two handle points:

- 1. Click the selected relationship line.
- 2. Press CTRL and click the line. New red cross icon will show up.
- 3. Do the same for the second position.
- 4. Move your mouse cursor between the two handle points and then move the highlighted part of the line up or down.



Add Horizontal or Vertical Lines Only

To create horizontally or vertically straight lines

(Entities are beside or below each other.)

- 1. Click the identifying or non-identifying relationship icon on the toolbar.
- Click parent entity and press and hold SHIFT key. Wherever you move your mouse cursor, only horizontal or 2. vertical straight lines are offered.
- 3. Move your mouse cursor to the desired position (over child entity)
- 4. Click the target entity and release SHIFT key.



- TIP: Using this method (via SHIFT key), you can lead the relationship as you need. E. g. you want to go i around some entities in a particular way. If you just click the parent and child entity, the relationship will be created automatically and you will have to do some improvements later. To create your own track for the relationship:
 - 1. Click the identifying or non-identifying relationship icon on the toolbar.
 - 2. Click parent entity and press and hold SHIFT key. Wherever you move your mouse cursor, only horizontal or vertical straight lines are offered.
 - 3. Move your mouse cursor where you need to lead the line. Click the WS where you need to break it (still holding the SHIFT key). Make as many break points as you need.
 - 4. Finally, click the target entity and release SHIFT key.

Move, Hide, Find Relationship Names

To move the name of relationship on the Workspace

Right-click the selected relationship in particular place and select Move Caption Here, Move Caption to Parent or Move Caption to Child.

To hide relationship names on the Workspace



Click Hide Captions on the toolbar.

(Also right-click the Workspace | Workspace Format | General tab | select Hide Line Captions.)

To find the relationship line by its name on the Workspace

Click the relationship name (caption). The appropriate relationship line will be highlighted on the Workspace.

To find the relationship name (caption) by its line on the Workspace

Click the relationship line, its name (caption) will be highlighted in a frame.

Multiple Selection/Move of Relationships

Relationships are moved together with selected group of entities. (Select Objects

To edit the selected relationships and change their format at one jump, use SHIFT for multiple selection. Then rightclick any selected relationship and select Edit or Format.

Format Relationship Lines

In Toad Data Modeler, you can change format of a particular relationship or more relationships at one jump. (Use SHIFT key for multiple selection.)

To change format of all relationship lines on the Workspace

Right-click the WS and select Workspace Format.

To change format of the selected relationship(s)

Right-click the relationship and select Format.

To change format of the relationship name (caption)

Right-click the relationship | Format | Click Font Settings and define the settings in the Font dialog.

TIP: Use the Inplace editor to change the relationship name in your diagram directly. Inplace Editor

Relationship Right-Click Options

Format
Add into Workspace
Add into New Workspace
Remove from Workspace
Delete Object
Arrange •
Add Object to Gallery
Line Style >
Delete Part of Line
Move Caption Here
Move Caption to Parent
Move Caption to Child
Go to Parent
Go to Child
Edit
Edit Entities
Add to Category
Macros >

Option	Description
Format	Opens the Object Format dialog for the selected relationship.
Add into Workspace	Opens the Workspaces dialog where you can select a WS to add the relationship to. (The entities that the relationship connects will be inserted as well.)
Add into New Workspace	Creates a new Workspace in the Application Window and adds the relationship to it (including the entities that the relationship

Option	Description		
	connects).		
Remove from Workspace	Removes the selected shortcut from particular Workspace.		
Delete Object	Deletes the selected relationship from model.		
Arrange	Arranges the relationship in another layer. Arrange Objects in Layers		
Add Object to Gallery	You can add the relationship in a gallery.		
Line Style	There are several predefined patterns of line style. The letter in symbolizes the shape of the resulting relationship line:		
	Optimal Style U Style A Style C Style D Style Unhide Line		
	entity/view boxes.		
Delete Part of Line	Removes selected part of line.		
Move Caption Here	Moves the caption of the relationship to the position where you pressed the right-click.		
Move Caption to Parent	Moves the caption of the relationship to the parent table of the relationship.		
Move Caption to Child	Moves the caption of the relationship to the child table of the relationship.		
Go to Parent	Locates parent entity in ERD.		
Go to Child	Locates child entity in ERD.		
Edit	Opens the Relationship Properties dialog.		
Edit Entities/Views	Parent: T_CUSTOMER Child: v_Customer_Has_Film		
Add to Catogony	Add the relationship to current or new category		
Macros	Provides available macros for relationships		
Macros			

Views

Toad Data Modeler allows you to display and model views in your ER diagrams visually.



You can manage Views via:

- Model menu | Model Items |Views
- Model Explorer | Views folder

View properties and options are database dependent.

To create a new view

- 1. Click **click** on the toolbar and then click the workspace.
- 2. Click on the toolbar and draw view relationships between some existing table or view and your newly created view.

3. Double click the view relationship line to edit it. In Alias field you can specify a new alias name for the linked table.

🔁 Customer rel	
Customer rel	▼
General	
Caption Customer rel	Name Customer rel
Alias	
Categories None	
	OK Cancel Apply

- 4. Double-click the view to edit it.
- 5. Define properties on **General** tab and other tabs.
- 6. On tab **Attributes** you can select columns from the linked tables. Relationship aliases and names of entities are displayed.

	review	Attributes	Where	Order	Group	Hav	ving
Name c(T_CUSTOM customer_id address b(T_BORRON exemplar_id customer_id start_date end_date total_price VAT e(T_EXEMPL	IER) ≁ING) AR)		Source c.nam f.title f.direce Alias:	e Attribute ne ctor	Alias		\$ \$
Add Select Settings Comment Contain	Remov	e	Nev	w Expressior	D	elete	

- 7. You can use a template on **SQL** tab of the view.
- i NOTE: As well as for entities and relationships, you can create shortcuts of views on the workspaces of your model. List of view shortcuts can be found in **Model Explorer** | in particular Workspace folder and in the **Views** folder | **Shortcuts**.

- NOTE: There are some limitations for modeling and reverse engineering of views in Toad Data Modeler. In i the following cases views are loaded/modeled as "Select in Views as Text" without view relationships:
 - When JOIN is used inside FROM statement. CROSS JOIN is the only supported type of JOIN.
 - · When a simple format for a name of a table is not used in FROM or when anything follows after a name of a table, e.g. functions, subquery, partition extension clause, PIVOT, UNPIVOT, DBLINK, flashback_query_clause, and row_pattern_clause.
 - When "WITH common table expression", UNION, EXCEPT, INTERSECT, MINUS, model clause, and hierarchical query clause are used in view.
 - When another definition exists between ORDER BY and the end of view, e.g. FOR clause in SQL Server.

Materialized Views

Materialized Views are supported in the following databases: Oracle, DB 2, DB2 zOS, , Sybase SQL Anywhere 11, Teradata 13.

Toad Data Modeler allows you to display materialized views graphically in your ER diagram.

To add a materialized view

Click in on the toolbar and then click anywhere on the work area.

or

Model Explorer | Right-click the Materialized Views folder | Add Materialized View.

To edit a materialized view

Double-click the materialized view on the Workspace.

or

Edit the materialized view in Model Explorer | Materialized Views folder | double-click the selected materialized view (or right-click | Edit).

Option	Description
Object Navigator Box	All materialized views of your model are listed here. The combo- box allows you to edit them, one by one from one place. Use Apply to confirm all the changes you make.
General Tab	Description
Caption	Logical materialized view name
Name	Physical materialized view name
Schema	Schema selection box
Categories	Category selection box

Option	Description
Generate	Select it to generate the materialized view in final SQL (DDL) script.
Generate SQL only	Select it to generate only the SQL code written on tab SQL . The rest of items will be ignored.
SQL Tab	Write SQL code of materialized view subquery on this tab. About Templates
Permissions Tab	Here you can assign Users or User Groups permissions to the materialized view.
To Do Tab	On this tab, you can write some tasks on the selected materialized view. i Note: To see all To Do tasks, select Model To Do.
Before Script Tab	I Whatever you write here, it will be generated before the materialized view definition.
After Script Tab	Whatever you write here, it will be generated after the materialized view definition.
Notes Tab	Tab for notes on particular materialized view. The text written here will display in a pop up dialog when you point your mouse cursor at the materialized view shortcut in your ER diagram.
SQL Preview Tab	Click at the bottom of this tab to see the part of SQL code for the materialized view.
Refresh Tab	Use this tab to specify the default methods, modes and times for the database to refresh the materialized view.
Physical Properties Tab	Define storage characteristics of materialized view on this tab.
Materialized Views Properties Tab	Define other materialized view characteristics on this tab.
Create Index Tab	Create index sentences are written on this tab.

Procedures

To add a procedure

Right-click the **Procedures** item in **Model Explorer | Add Procedure**.

To edit a procedure

Double-click the selected procedure in Model Explorer | Procedures (or right-click Edit).

Kored Procedure Properties	- • •
SCOTT.p_Customer_Has_Num_Film	-
General SQL Permissions To Do Before Script After Script Notes SQL P	review
Caption Name p_Customer_Has_Num_Film = p_Customer_Has_Num_Film	6
User / Schema SCOTT Invoker Rights (CURRENT_USER)	
Procedure Arguments cid IN integer, num OUT integer	*
Definition Is Wrapped	
Generate Generate SQL Only	
Cancel Apply	<u>H</u> elp

Example: The Procedure Properties dialog (Oracle 10g)

General Tab	Description
Caption	Logical procedure name
Name	Physical procedure name
Schema	Schema selection box
Procedure Arguments	Define procedure arguments here.
Invoker Rights	Database dependent option. See particular database reference for more information.
Definition is Wrapped	Database dependent option. See particular database reference for more information.
Generate	Select it to generate the procedure in final SQL (DDL) script.
Generate SQL only	Select it to generate only the SQL code written on tab SQL . The rest of items will be ignored.

SQL Tab	SQL code. (See the example in the following screenshot.) About Templates
Permissions Tab	On this tab, you can manage permissions to particular procedure.
To Do Tab	Here you can write some tasks on the selected procedure. Note: To see all To Do tasks, select Model To Do .
Before Script Tab	Whatever you write here, it will be generated before the Store Procedure definition.
After Script Tab	Whatever you write here, it will be generated after the Store Procedure definition.
Notes Tab	Tab for notes on particular procedure.

Example: The Procedure Properties dialog | SQL tab (Oracle 10g)

🔁 Stored Procedure Properties
SCOTT.p_Customer_Has_Num_Film
General SQL Permissions To Do Before Script After Script Notes SQL Preview
Templates: Body 🔹 🕏
<pre>1 AS 2 BEGIN 4 INTO num 5 FROM T_CUSTOMER c, T_BORROWING b, T_EXEMPLAR e, T_FILM WHERE c.customer_id=cid 7 and c.customer_id=b.customer_id 8 and b.exemplar_id=e.exemplar_id 9 and e.film_id=f.film_id; 10 END;</pre>
OK Ok±Add Cancel Apply Help

Compare Procedures in Sync & Convert Wizard

When the Sync & Convert Wizard shows differences between procedures (on page Select Items), you can double-click the SQL item of procedures to display details about differences between them.

Functions

To add a function

Right-click the Functions item in Model Explorer | Add Function.

To edit a function

Double-click the selected function in Model Explorer | Functions (or right-click Edit). Example: The Function Properties dialog (Oracle 10g)

Function Properties
SCOTT.f_Customer_Has_Num_Film
After Script Notes SQL Preview General SQL Permissions To Do Before Script
Caption Name f_Customer_Has_Num_Film = f_Customer_Has_Num_Film @
SCOTT
Function Arguments cid IN integer
Datatype of The Return Value integer Deterministic
Definition Is Wrapped
Generate Generate SQL Only
OK Ok±Add Cancel Apply Help

General Tab

Caption

Description

Logical function name

Name	Physical function name
Schema	Schema selection box
Invoker Rights (CURRENT_USER)	Database dependent option. See particular database reference for more information.
Function Arguments	Write function arguments here.
Datatype of the Return Value	Define data type of the return value.
Deterministic	Database dependent option. See particular database reference for more information.
Definition is Wrapped	Database dependent option. See particular database reference for more information.
Generate	Select it to generate the function in final SQL (DDL) script.
Generate SQL only	Select it to generate only the content of the SQL tab. All other items will be ignored.
SQL Tab	SQL code. (See the example in the following screenshot.) About Templates
To Do Tab	On this tab, you can write some tasks on the selected function.
Permissions Tab	On this tab, you can assign a User or User Group permissions for selected function.
Before Script Tab	Whatever you write here, it will be generated after the function definition.
After Script Tab	Whatever you write here, it will be generated before the function definition.
Notes Tab	Tab for notes on particular function.

Example: The Function Properties dialog | SQL tab (Oracle 10g)

Punction Properties	- • •
SCOTT.f_Customer_Has_Num_Film	•
After Scrint Notes SQL	Preview
General SQL Permissions To Do	Before Script
Templates: Body	- 🛃 📝
1 IS	
<pre>2 sol integer; 2 DECIN</pre>	
3 BEGIN 4 n Customer Has Num Film(cid.sol):	
5 RETURN (sol);	
6 END;	
	E
<	
OK Ok±Add Cancel Apply	<u>H</u> elp

Defaults

To add a default

Select Model | Model Items | Defaults and click Add in the Defaults dialog.

To edit a default

Select Model | Model Items | Defaults and double-click the selected default or click Edit.



i Note: You can also edit/rename/delete defaults in Model Explorer | Defaults folder | Rightclick the selected default.

Example: The Default Properties dialog (Oracle 10g)

🔀 Default Properties	- • ×
today	-
General SQL To Do Notes	
Templates:	- 🛃 🐉
1 sysdate	
	4
OK Ok±Add Cancel Apply	Help

To select a default for attributes

- 1. Open the Attribute Properties dialog of the selected attribute | General tab.
- 2. From the **Default Rule** box, select a default or write your own default to the **Default** box.

Attribute Properties - SCOTT.T_BORROWING		
Caption Start Date	<u>N</u> ame ≥ star_date	
General Check Constraints Foreign Keys Permissions	Notes <u>D</u> omains	
Default Value sysdate Primary Key Not Null Unique (New AK) Comment	Default Rule today ▼	
Not Null Constraint Constraint Name Deferrable Initially Deferred Disable No Validate Rely	Other Database Specifics Used Sequence (trigger) None Encryption Specification REF Type Use REF Type Inline REF Constraint	•
	Ok±Add Cancel Apply H	<u>l</u> elp

Default box versus Default Rule combo-box

Default box - Set a default for particular attribute.

or

Default Rule - Select a default rule from the combo-box or click the button on the right to access the **Defaults** dialog (also accessible via **Model** menu | **Model Items** | **Defaults**). There, you can define a new default rule. Then, if you want to change the default rule, you can simply change it via the **Defaults** dialog. The change will automatically apply in all attributes with this default rule.

Note: You can define defaults for domains too.

Check Constraint Rules

To add a check constraint rule

Select Model | Model Items |Check Constraint Rules and click Add in the Check Constraint Rules dialog.

To edit a check constraint rule

Select Model | Model Items |Check Constraint Rules and double-click the selected check constraint rule or click Edit.

Note: You can also edit/rename/delete check constraint rules in **Model Explorer** | **Check ConstraintRules** folder | Right-click the selected check constraint rule.

To assign a check constraint rule to attribute

- 1. Edit attribute and click the Check Constraints tab.
- 2. Add a new check constraint, confirm Apply and click Edit to open its Properties dialog.
- 3. In the Check Constraint Rule box, select a rule for the attribute.
- Note: You can assign rules to attributes and domains.

Schemas

To add a schema

Select Model | Model Items |Schemas and click Add in the Schemas dialog.

To edit a schema

Select Model |Model Items | Schemasand double-click the selected schema or click Edit.

i Note: You can also edit/rename/delete schemas in **Model Explorer** | Schemas folder | Right-click the selected schema.

Synonyms

To add a synonym

Select Model | Model Items |Synonyms and click Add in the Synonyms dialog.

To edit a synonym

Select Model | Model Items |Synonyms and double-click the selected synonym or click Edit.



Note: You can also edit/rename/delete synonyms in **Model Explorer** | **Synonyms** folder | Right-click the selected synonym.

Users

Toad Data Modeler allows you to define Users and assign them to User Groups. Later you can assign the Users and User Groups permissions to particular objects.

To add a user

Click **Add** in the **Users** dialog.

or

In Model Explorer | Right-click the Users folder | Add User.

To edit a user

Select Model | Model Items |Users | double-click the selected user or click Edit.

or

In Model Explorer | Users folder | double-click the selected user or right-click | Edit.

Option	Description
Object Navigator Box	All users of your model are listed here. The combo-box allows you to edit them, one by one from one place. Use Apply to confirm all the changes you make.
General Tab	Description
Caption	Logical user name
Name	Physical user name
Password	User's password
Membership Tab	 On this tab, you can assign a User to User Group. i Note: One user can be assigned to more User Groups. Select a User Group and click appropriate button: Adds selected item(s). Puts back selected item(s). Adds all items. Puts back all items.
To Do	On this tab, you can write some tasks on particular user.

To assign users to user groups

Example: All admins should be assigned to user group Administrators.

Method A - via the Users dialog

- 1. In the Users dialog, select the SCOTT user and click Edit.
- 2. In the User Properties dialog, click the Membership tab.
- Select the Administrators user group and click the Add arrow button to shift the selected group to the window Selected.

(The User Groups have already been defined in Model | Model Items |User Groups.)

TIP: If you confirm **Apply**, the **User Properties** dialog will remain opened, and you can comfortably assign other users to user groups. - Simply select another user from the object navigator box at the top.

Method B - via the User Groups dialog

- 1. Click 🙆 on the toolbar.
- 2. From the User Groups dialog, select Administrators user group and click Edit.
- 3. In the User Group Properties dialog, click the Members tab.
- 4. Select SCOTT and click the Add arrow button to shift the selected user to the window Selected.

User Groups

Toad Data Modeler allows you to define **Users** and assign them to **User Groups**. You can then assign User and User Groups permissions to objects.

To add a user group

Click dialog.

or

In Model Explorer | Right-click the User Groups folder | Add User Group.

To edit a user group

Go to Model Menu | Model Items | User Groups | double-click the selected user group or click Edit.

or

In Model Explorer | User Groups folder | double-click the selected user group or right-click | Edit.

Option	Description		
Object Navigator Box	All user groups of your model are listed here. The combo-box allows you to edit them, one by one from one place. Use Apply to confirm all the changes you make.		
General Tab	Description		
Caption	Logical user group name		
Opt	ion		Description
------	-----------	---	---
Nan	ne		Physical user group name
Men	nbersh	ip Tab	Description
Ava	ilable		Available user groups
Sele	ected		Selected user groups
Men	nbers 1	ab	Description
Use	r Group	s section	You can create another group in already existing group. (This is possible for some databases.) From the list of existing groups, select a group and click the Add arrow button.
Use	rs sectio	on	Here, you can assign users to a group. Note: You can assign users to a user group also in the Users dialog.
То [Do Tab		On this tab, you can write some tasks on the selected user group. Note: To see all To Do tasks, select Model To Do .
i	Note:		
	1.	To copy us	er groups, use CTRL + Drag&Drop techniques.
	2.	To move u You can co different da	ser groups, use Drag&Drop techniques. ppy and move your user groups within a model and between models of the same and atabases:
		• In U	Jser Groups dialog (Model Menu Model Items User Groups)
		• In I	Model Explorer User Groups folder
		• Be	tween Model Explorer and User Groups dialog
	3.	To delete ι	user groups, go to:
		• Mo	del Menu Model Items User Groups Select a user group and click Delete.
		• Mo	del Explorer User Groups folder Right-click and select Delete Item.

Select Target Database

The first step to create a model in Toad Data Modeler is to choose your target database.

Scenario

Creating new Oracle 10g physical model named Videorental.

- 1. Click on **Main Toolbar** (or press CTRL+N).
- 2. Click the Physical Data Model tab and select the target database Oracle 10g.
- 3. Write Videorental into the Model Name textbox.

4. Confirm by clicking **OK**.

Result:

- The model will be shown in Application View.
- The All Items workspace displays automatically.
- The status bar in of **Application Window** displays the database name. (*DB: Oracle 10g* in our case.)
- · Most of the menus and toolbars become activated.

Note:

Database Name - The target database for which the model is created (e.g. Oracle 10g). The database name can be found at the bottom of the Application Window or in displayed pop-up hint when you hover your mouse cursor on the model name in the **Application View**.

Model Name - A model can be saved to more files. In Toad Data Modeler, Model Name should be understood as a title of a document that can be saved to several files of a different name.

File Name - A name of the file where the model is saved. File Name is defined after you select **Save Model** or **Save Model as**.

Rename

Create Entities

In Toad Data Modeler, there are several ways how to create entities - on the Workspace, via **Model Explorer** and in the **Entities** dialog (**Model | Model Items | Entities**). Create entities directly on the Workspace.

Scenario

Create entity Customer on the Workspace in your Videorental model.

- 1. Click on the toolbar (also CTRL+E) and then click anywhere on the Workspace.
- 2. Double-click the entity to edit it.

3. Define the entity caption and name

👺 Entity Properties - E		- • •
Capt <u>i</u> on	<u>N</u> ame	
Customer	T_CUSTOMER	6
Before Script After Script Notes SQL Previ General Attributes Keys Indexes User / Schema Not Specified Temporary Table	iew Relationships Physical Properti Check Constraints Triqqers P 	ies Table Properties ermissions To Do
Global Temporary Table On Commit Preserve Rows (for Temporary Table Comment	;)	
Basic customer contact information should be stored in	n this table.	~
Category		
✓ Generate	OK Cancel Ar	pply <u>H</u> elp

Caption Logical entity name - Customer.

Name Physical entity name - T_CUSTOMER.

4. Define other properties on tab **General** and other tabs (e.g. **Notes**, **Comments** etc.). To save the changes simultaneously and leave the form open, click **Apply**.

Create Attributes

You can create attributes in:

- Entity right-click menu on Workspace
- Entity Properties dialog
- Attribute Properties dialog
- Model Explorer

To create an attribute on the Workspace

Right-click an entity on the Workspace and select Add | Attribute. The Attribute Properties dialog opens.

i Note: Select the Primary Key (Unique) checkbox to set the attribute as PK or unique attribute.

To create an attribute in the Entity Properties form

- 1. Double-click an entity on Workspace.
- 2. In the Entity Properties form, switch to the Attributes tab and click Add.

🖥 Entity Pro	perties - E						[- • ×
Caption							Name	
Customer						2	T_CUSTOMER	6
Notes General	Attributes	Preview Keys	Relationships Indexes Check Constra	Physica ints	al Properties Triggers	 Permi	Table Properties Custom	er Feedback After Script
Key	Caption	Name	Data Type	p1	p2 No	ot Null	Comments	Status
→	Customer ID Name Address	customer_id name address	 Integer Varchar2(x) Cust_Address_Type 	20	СН		Name column can contain First and Mi	e dd e
			Add					
A <u>d</u> d ↔ <u>⊽</u>	enerate		Delete			OK	Cancel Apply	Help

Entity Properties attribute columns

Column/Option	Description
Кеу	Graphical representation of keys of a particular attribute
Caption	Logical attribute name
Name	Physical attribute name
Data Type	Data Type of an attribute

Column/Option	Description		
	i TIP: You can set a default data type for newly created attributes. See Settings Menu Options Physical Model *database platform and version* Default Data Type combo-box. (The selected data type will be also applied to Dictionary Types and Domains.)		
p1	Parameter 1. Only some of the available data types have this parameter. Defines properties of the selected data type, e.g. length in case of the Char data type.		
p2	Parameter 2. Only some of the available data types have two parameters. E.g. the Decimal data type has two parameters, which define precision and scale.		
Not Null	When checked, the attribute cannot be empty.		
Comments	Comments or descriptions related to the attribute		
Status	Shows status of attributes in grid. Status of Items in Grids		

Buttons:



- opens the Application Variables form

Smaller Add button- adds new attributes quickly, just enter attribute name and then click Add.

Bigger Add button - adds an attribute

Edit - opens Attribute Properties of the selected entity

Delete - deletes the selected attribute



- moves the selected attribute up or down in the list

To create another attribute in the Attribute Properties form

Click OK+Add.

Attribute Properties - T_CUSTOMER - E	
Capt <u>ion</u> Customer ID	Name CUST_ID
General Check Constraints Foreign Keys Permissions	Notes
Data <u>T</u> ype ico Integer • î	Domains
De <u>f</u> ault Value Primary Key Not Null Unique (New AK)	Default Rule
Comment Customer ID - unique number.	* *
Not Null Constraint Constraint Name Deferrable	Other Database Specifics Used Sequence (trigger) - None Encryption Specification
 Initially Deterred Disable No Validate Rely 	REF Type Use REF Type Inline REF Constraint
∞ €	Ok <u>+</u> Add <u>C</u> ancel <u>A</u> pply <u>H</u> elp

To create an attribute in Model Explorer

Unfold the Entities folder | Unfold the specific entity folder | Right-click the Attributes folder | Add Attribute.

Create Keys

An entity can have a primary key and many alternate keys. The keys are stored in the **Keys** tab in the **Entity Properties** form.

To create a key

• Right-click an entity on the Workspace and select Add | Key. The Key Properties dialog opens.

To create a PK (unique) attribute

- 1. Right-click an entity on the Workspace and select Add | Attribute. The Attribute Properties dialog opens.
- 2. On tab General, select the Primary Key (Unique) checkbox.

To assign an attribute to key

 In the Entity Properties dialog, Attributes tab, double-click the empty space in the Key column next to the selected attribute.

or

- In the Key Properties dialog | Attributes tab.
- i Note:
 - Primary keys are graphically marked by red key by default.



- A primary key can be added to more attributes.
- It is possible to delete primary keys. It is not possible to delete alternate keys of unique attributes.

NotNull Property for PK and AK Attributes

Toad Data Modeler allows you to check/uncheck the NotNull property for PK and AK attributes. This is possible only if the Allow Null Attributes in Keys checkbox is selected (unchecked by default).

To select this checkbox

Select Settings | Options | Physical Model and select the checkbox.

If this checkbox is not selected, Toad Data Modeler doesn't allow you to uncheck the NotNull checkbox in key attributes.

The availability of this option differs by database:

Database	Allow NULL in PK	Allow NULL in AK
DB2 z/OS v. 11	n/a	n/a
DB2 v. 8, 9.x, 10.x	n/a	n/a
Greenplum	n/a	available

Database	Allow NULL in PK	Allow NULL in AK
Ingres 9.3, 10	n/a	n/a
Microsoft Access	available	available
Microsoft Azure SQL Database	n/a	available
SQL Server 2012	n/a	available
SQL Server 2014	n/a	available
MySQL 5.5 and higher versions	n/a	available
Oracle	available	available
PostgreSQL	n/a	available
SQLite 3.7	available	available
Sybase ASE, Sybase IQ	n/a	n/a
Sybase SQL Anywhere	n/a	n/a
Teradata	n/a	n/a

If the Allow Null Attributes in Keys checkbox is selected:

- When you assign an attribute to a key (PK, AK), the Not Null checkbox of the attribute will be checked. (But you are able to uncheck it)
- During propagation of the key via the identifying relationship, the Not Null property in child attribute is inherited from the parent attribute. The only exception is when a database doesn't support Null value in primary key, which would be created via the propagation.
- During Model Conversion, different settings of the Not Null property and its support in different databases • are taken into consideration.
- · For databases that support Null value in child attribute, the Mandatory Parent checkbox is selected in the Relationship Properties dialog and should behave coherently to Null value in child attribute as well as it behaves for non-identifying relationships.
- · For databases that support Null value in child attribute, the settings of the Synchronize NotNull with Mandatory Parent option work the same way for PFK as for FK.

See Synchronization of NotNull and Mandatory Parent for more information.

Create Relationships

1. Select a relationship type - click the appropriate relationship icon on the toolbar:



Identifying relationship (also CTRL+R)

Non-identifying relationship

🕂 M:N relationship

- 2. Move your mouse cursor over the work area. (The cursor changes its appearance.)
- 3. Click the first entity (parent) and then the target entity (child).
- TIP: Hide relationship names:
 - 1. Right-click the Workspace and select Workspace Format.
 - 2. In the Workspace Format dialog | General tab, select Hide Line Captions checkbox.

To create self-relationship for non-identifying relationship

- 1. Click the Non-identifying relationship icon on the toolbar
- 2. Move your mouse cursor over the work area.
- 3. Double-click the selected entity on the Workspace.
- **i** TIP: Before you create a self-relationship, select **Settings | Options | Physical Model | Self Relation Attribute Name/Caption** and define a name for propagated attributes there (e.g. via prefix, suffix, application variable.)

To add multiple relationships

- 1. Press SHIFT and click the **Relationship** icon. See the blue frame in the icon now.
- 2. Create as many relationships in you model as you need.
- 3. Right-click the work area (or click the Relationship icon again) to turn this function off.



Notation and Cardinality

IE Notation



Cardinality

One-to-many relationship is represented by this symbol: One-to-one relationship is represented by this symbol:

Parent: mandatory Child: mandatory



Parent: mandatory Child: optional



Parent: optional Child: mandatory



Parent: optional Child: optional



IDF1X Notation



Cardinality



Parent: mandatory Child: mandatory



Parent: mandatory Child: optional



Parent: optional Child: mandatory



Parent: optional Child: optional



See Synchronization of Not Null and Mandatory Parent for more information.

Relationship Types

Identifying Relationship



Non-identifying Relationship



Non-identifying Self-relationship



M:N Relationship



Entity1



Optional/Mandatory Parent/Child

To set Parent/Child entity as Mandatory/Optional

- 1. Double-click a relationship on workspace to open Relationship Properties.
- 2. Switch to the **General tab** and check/uncheck **Mandatory Parent/Child** checkbox in the **Cardinality** section.

Parent: Mandatory

Child: Mandatory

A teacher MUST teach a lecture (the record related to lecture is mandatory), a lecture MUST be taught by a teacher (the record related to teacher is also mandatory. Teacher is Mandatory.)



Parent: Mandatory

Child: Optional

A teacher MAY teach a lecture (the record related to lecture is Optional), a lecture MUST be taught by a teacher (Teacher is Mandatory.)



Parent: Optional

Child: Mandatory

A teacher MUST teach a lecture (lecture is Mandatory), a lecture MAY be taught by a teacher (teacher is Optional).



Parent: **Optional**

Child: Optional

A teacher MAY teach a lecture (lecture is Optional), a lecture MAY be taught by a teacher (teacher is Optional).



The information can be found on Relationship Properties form, see graphical representation at bottom of the form.

Relationship Properties		
Caption		Name
Makes		≥ makes
General To Do Notes S Relationship Type Identifying Parent Key Parent Customer ID	QL Preview Index to Forei	ign Key
Cardinality Image: Cardinality Image: Cardinality Image: Cardinality Image: Cardinality Image: Cardinality Image: Cardinality Image: Cardinality Image: Cardinality Image: Cardinality Image: Cardinality Image: Cardinality Image: Cardinality SCOTT.T CUSTOMER	Cardinality 5 11 to 15 +	Category □- None
		OK Cancel Apply Help

Set up Referential Integrity Rules

To set up referential integrity rules for Parent entities

Open the Relationship Properties form and see the Referential Integrity group box.

Here, you can change the None rule to:

- Restrict
- Cascade
- Set Null
- Set Default

The default rule can be re-configured.

Relationship Properties	
Caption	Name
General To Do Notes SQL Preview Index to Forei	ign Key
Relationship Type	Referential Integrity
○ Identifying <u>P</u> arent Key pk_T_CUSTOMER	Parent <u>U</u> PDATE Restrict ▼ Parent <u>D</u> ELETE
Parent Child	Restrict
Customer ID customer_k	Settings Deferrable Deferred Disable No Validate Rely
☑ Mandatory Parent Cardinality 5 ☑ Mandatory Child 11 to 15	Category
Parent Entity +	+ Child Entity <u>SCOTT.T BORROWING</u>
	QK Cancel Apply Help

i Note: Some databases do not support Referential Integrity (RI) rules.

Connect Parent and Child Entities

Toad Data Modeler allows you to connect Parent and Child entities through the following unique values:

- Key (Primary or Alternate Key) of parent entity
- · Unique Index of parent entity

To change the linking method

- 1. Open the Relationship Properties form and see the Relationship Type group box.
- 2. From the **Parent Key** box, select the method. If neither Unique item, nor Alternate Key exists, only the Primary key is available.

🔀 Relationship Properties	
Caption Is Rated	Name is_rated
Relationship Type Identifying Non-Identifying Parent Key Ititle-director 	Referential Integrity Parent UPDATE Restrict Parent DELETE
Parent Child Title title • Director director •	Restrict Settings Deferrable Deferred Disable No Validate Rely
Cardinality ✓ Mandatory Parent Cardinality N ✓ Mandatory Child 11 to 1n	Category
Parent Entity + SCOTT.T_FILM	← Child Entity SCOTT.T CUSTOMER RATING
Generate	OK Cancel Apply Help

i Note: Some databases do not support Alternate Keys.

Understanding Foreign Keys

There are two types of foreign keys in Toad Data Modeler:

- Primary Foreign keys (PFK, graphically marked by blue key).
- Foreign keys (FK, graphically marked by green key).



PFK

As soon as you create an identifying relationship, Toad Data Modeler automatically adds a copy of the primary key of the Parent table to the Child table - **Primary Foreign Key** (PFK). (The foreign key in Child table is a part of the primary key.)

FK

As soon as you create a non-identifying relationship, Toad Data Modeler automatically adds a copy of the primary key of the Parent table to the Child table - **Foreign key** (FK). (This foreign key in Child table is not a part of the primary key.)

In other words, foreign keys (PFKs and FKs) are imported from parent entities to child entities automatically when you create relationship. Foreign keys cannot exist without relationships. Therefore, you are not allowed to delete FK or PFK from Child tables either. To delete them, you have to delete appropriate relationship.

In Toad Data Modeler, information on foreign keys can be found in:

- The Attribute Properties dialog | Foreign Keys tab where you can see details on particular FK.
- The Relationship Properties dialog where you set linking method between parent and child entities.

Foreign Keys Mapping

In Toad Data Modeler, you can control your foreign keys. Foreign keys mapping feature allows you to create Compound Keys, use existing keys etc.

Example:

You have reverse engineered a model without relationships. In Toad Data Modeler, a new model has been created. However, information about foreign keys has been lost as in Toad Data Modeler stands that foreign keys cannot exist without relationships. Now you need to create relationships in Toad Data Modeler. As soon as you create a new relationship, a new foreign key is added to the child entity automatically or existing attribute is mapped to primary key automatically.

In case you need to choose different column for the relationship, edit the relationship and choose the new column on tab **General**.

Capt <u>ion</u>		Name	
Relationship1		= Relationship1	6
ieneral To Do Notes	SQL Preview Index to Foreig	n Key	
Relationship Type		Referential Integrity	
Identifying	Non-Identifying	Parent <u>U</u> PDATE	
Parent Key		None	-
pk_T_GENRE	•	Parent <u>D</u> ELETE	
Parent	Child	None	-
Genre ID	genre_id	Settings	
	title	Deferrable	
	director	Deferred	
	production_company	Disable	
	film ID episodes	No Validate	
	genre_id	Rely	

Automatic FK Mapping

You can also set Automatic FK Mapping in Settings | Options | Physical Model.

🔁 Options		
Graphics Dialog Boxes	^	Physical Model
Paths Reverse Engineering Boparts		General Workspace Line Shape Note Line Entity
- Version Manager Editable Forms		Word Wrap for SQL Preview Word Wrap for SQL. Before Script and After Script
		Synchronize NotNull with Mandatory Parent
- Print		Allow Null Attributes in Keys
	Ш	Attribute Properties Propagation All PK Properties
DB2 UDB v.8 (LUW) DB2 v.9 (LUW)		Self Relation Attribute Name: FK_<%ParentAttributeName%>
DB2 v.9.5 (LUW) DB2 v.9.7 (LUW)		Self Relation Attribute Caption: Foreign <%ParentAttributeCaption%> Automatic FK Mapping: Enable
		SQL script Disable Enable Awaye Show Dialog
- Ingres - Ingres 9.3		UTF-8
Ingres 10.0 Microsoft Access		Code Editor <u>T</u> ype
Microsoft Access 2000-2003 Microsoft Access 2007-2010		External Editor for generated Code
Microsoft SQL Azure Microsoft SQL Azure (common) Microsoft SQL Azure (common)		
Microsoft SQL Server 2000		
- Microsoft SQL Server 2008 - MySQL		
MySQL 5.0 MySQL 5.1 MuSQL 5.5	-	<u> </u>

- Disable—FK mapping is OFF
- Enable—Toad Data Modeler searches for matching attributes. If a single option is found, it gets mapped. If multiple options are found, a dialog appears.
- Always Show Dialog—The dialog opens even if only a single option is found.

Automatic FK Mapping	×
Equally Named Attributes Found in Both	Parent and Child Entities. Select Action:
Settings Parent Entity - Keys pk_T_MEDIUM	Attributes To Be Mapped medium_id
	ок

Parent Attributes (Rolenames)

You can change the attribute name e.g. in the following cases:

- When you create a self-relationship.
- Whenever you want to change a Foreign Key attribute name.

Scenario:

You have just added a self-relationship to the Film entity.

1. A copy of your identifying key attribute has been created in the entity - *Film ID*. Now you have two *Film ID* attributes in the *Film* entity.



2. Edit the newly created Film ID attribute, define a new **Name**. The link to parent attribute is displayed on top right-hand corner of the form.

Attribute Properties - SCOTT.T_FILM	
Caption Film ID Episodes	Name film id
General Check Constraints Foreign Keys Permissions 1 Data Type Constraint to the second secon	Notes
Default Value Primary Key Not Null Unique (New AK) Comment	Default Rule
Not Null Constraint Constraint Name Deferrable Initially Deferred Disable No Validate Rely	Conter Database Specifics Used Sequence (trigger) None Encryption Specification REF Type Use REF Type Inline REF Constraint
СК ОК	Ok±Add Cancel Apply Help

3. Confirm **OK** and see the change on the Workspace.



Has More Episodes

About Advanced Options

Toad Data Modeler supports several database systems. As there are differences among databases, there are only applicable to specific databases.

For example:

- Microsoft SQL Server 2000 and higher only support Dictionary Types, which are called User-Defined Data Types in database itself
- · PostgreSQL databases do not support Users, only User Groups. Instead of Users, Roles are used for managing permissions.
- and others...

Database platform and version specific information are listed in the respective topics in the Databases chapter.

Alternate Keys

You can create a relationship between a Parent and Child entities using:

- Key (Primary or Alternate Key) of parent entity
- · Unique Index of parent entity

Alternate keys are used when you want to link two entities using two attributes. These two attributes make one unique item.

Scenario

You would like to create a composite alternate key which contains Title and Director attributes in the Film entity.

Solution

- 1. Edit the Film entity.
- 2. In the Entity Properties form click the Keys tab. Here, primary keys and alternate keys are stored, and you can manage them easily using the Add, Edit and Delete buttons. Now click Add to create a new key and confirm by clicking Apply.
- 3. Edit the new key.
- 4. Define its properties on tab General and then switch to the Attributes tab.
- 5. From the window Available, select attributes Title and Director and click the Add arrow button to move them to the Selected window.
- 6. Set properties in other tabs as you wish (e.g. Notes) and confirm.

Scenario: After creating the alternate key, you would like to use it for linking entities.

To select the alternate key for relationship

- 1. Double-click the relationship.
- 2. From the Parent Key box, select the alternate composite key title-director.

Caption		Name
Is Rated		≥ is_rated
General To Do Notes S	QL Preview Index to Forei	an Key
Relationship Type		Referential Integrity
Identifying	Non-Identifying	Parent UPDATE
Parent Key	· · · ·	Restrict
title-director	•	Parent DELETE
Parent	Child	Restrict
Title	title 👻	Settings
Director	director 🚬 🔻	
	5	
		No Validate
		Rely
Cardinality		
Mandatory Parent	Cardinality N	
Mandatory Child	11 to 1n	Category
		U None V
Paraet Eetity	4	
SCOTT.T FILM		SCOTT.T CUSTOMER RAT

Indexes

To create an index

• Right-click an entity on Workspace and choose Add | Index. The Index Properties dialog opens.

or

• In the Entity Properties form, select the Indexes tab and click Add.

To edit indexes

• In the Entity Properties dialog | Indexes tab, double-click the index or Edit.

Option	Description
	Above the Object Navigator Dropdown Menu, you can see name of entity that the index belongs to. Click the button on top right-hand corner to open the parent form (Entity Properties form).
Object Navigator Dropdown Menu	All indexes of selected entity are listed here. The box allows you to edit indexes quickly and comfortably from one place. Use buttons to change order of indexes. Use Ctrl + Up to move index upwards or Ctrl + Down to move it downwards.

Option	Description
General Tab	Description
Caption	Logical attribute name.
Name	Physical attribute name.
Schema	Schema selection.
Unique	Select this option to set the index as unique. Via unique indexes, you can link entities together. See Select Parent Key for Relationship for more information on available linking methods.
Bitmap Index	Database dependent item (Oracle). Select this checkbox to define the index as bitmap index.
Generate	Select it to generate the index in final SQL (DDL) script. (It is selected by default.)
Note: Other op you're using. C chapter.	tions on the General tab vary according to the database platform ptions specific to your database can be found in the "Databases"
Items Tab	Option
Available	A list of all attributes of the entity.
Selected	Attribute(s) that have been assigned to the index.
Notes Tab	Tab for notes on the index.
Index Properties Tab	Description
Tablespace	Select a tablespace or click the button on the right to define a new tablespace.
Indextype	Index type definition
ODCI Parameters	ODCI parameters definition

To display indexes on the Workspace

Right-click the WS, select **Workspace Format** | **Entity** tab and select the **Display Indexes** checkbox. See how indexes are displayed:

T_CUSTOMER
🗣 customer_id NN (PK)
name NN (IX1,IX2)
address NN (IX2)
i_name (IX1)
i_name_address (IX2)

Note: Even when the indexes are not displayed, you can see which attribute belongs to which index (e.g. attribute *Name* is assigned to indexes *i_name* and *i_name_address* - (IX1,IX2)

To delete an index

In the Entity Properties dialog select the Indexes tab, choose the index and click Delete.

Check Constraints

Check constraints can be created in the **Check Constraints** tab in **Entity Properties** form (for multiple column check constraints) or in the **Attribute Properties** dialog (for single column check constraint).

To add a check constraint

In Entity Properties form, select the Check Constraints tab and click Add.

To edit a check constraint

In Entity Properties form | Check Constraints tab, double-click the selected check constraint or press Edit .

General Tab	Description
Caption	Logical check constraint name
Name	Physical check constraint name
Check Constraint Rule	Select rule or click the button on the right to define a new rule.
Generate	Select it to generate the check constraint in final SQL (DDL) script (selected by default).
SQL Tab	Write SQL script for the check constraint here. See About Templates for more information.
Notes Tab	Space for your notes on the check constraint.

Note:

- To copy a check constraint, press CTRL and drag the constraint over the Check Constraints folder of a target entity in Model Explorer.
- To move a check constraint, drag it over the **Check Constraints** folder of a target entity in **Model Explorer**.
- To delete a check constraint, select it and click **Delete** in the **Check Constraints** tab of the **Entity Properties** form.

Triggers

To add a trigger

In Entity Properties form, select the Triggers tab and click Add.

To edit a trigger

In Entity Properties form, Triggers tab, double-click the selected trigger or press Edit.

Example: Trigger Properties dialog (Oracle 10g db)

🔁 Trigger Properties	- • •
Entity: SCOTT.T_BORROWING	
SCOTT.tri_BORROWING	
General SQL Notes	
Caption <u>N</u> ame tri_BORROWING = tri_BORROWING	
User / Schema SCOTT	
Trigger Fire BEFORE	
Trigger Events ☐ Delete ☑ Insert ☐ Update	
Correlation Names (REFERENCING)	
Old New When Condition	
Generate Generate SQL Only	
(%) <u>Ok±Add</u> <u>Cancel</u> <u>Apply</u>	Help

Option	Description
	Above the Object Navigator Box, you can see name of entity the trigger belongs to. If you click the button in top right-hand corner, the parent form will open (Entity Properties in this case).
General Tab	Description
Caption	Logical trigger name
Name	Physical trigger name

Option	Description
Schema	Schema selection box
Trigger Fire	Before, After (database dependent) - select a trigger fire.
Trigger Events	Delete, Insert, Update - select a trigger event.
Generate	Select to generate the trigger in final SQL (DDL) script (selected by default.)
Generate SQL Only	Select to generate the SQL code written in tab SQL only.
SQL Tab	Write SQL script for the trigger here. About Templates
Notes Tab	Space for your notes on the trigger.

Example: Trigger Properties dialog | SQL tab (Oracle 10g db)

🔀 Trigger Properties	
Entity: SCOTT.T_BORROWING	
SCOTT.tri_BORROWING	
General SQL Notes	
Templates: Body	
<pre>1 declare price number(10,2); 2 begin 3 select price_per_day 4 into price 5 from T_EXEMPLAR where T_EXEMPLAR.exemplar_id = :new.exemplar_id; 7 :new.total_price := Price_Type((:new.end_date-:new.start_date); 8 end;</pre>)*price);
Image: Concelter of the second sec	► <u>H</u> elp

Note:

- To copy a trigger, press CTRL and drag the trigger over the **Triggers** folder of a target entity in **Model Explorer**.
- To move a trigger, drag it over the Triggers tab (folder) of a target entity in Model Explorer.
- To delete a trigger, select it and click Delete on the Triggers tab in the Entity Properties form.

Views

Toad Data Modeler allows you to display and model views in your ER diagrams visually.



You can manage Views via:

- Model menu | Model Items |Views
- Model Explorer | Views folder

View properties and options are database dependent.

To create a new view

- 1. Click in the toolbar and then click the workspace.
- 2. Click on the toolbar and draw view relationships between some existing table or view and your newly created view.

3. Double click the view relationship line to edit it. In Alias field you can specify a new alias name for the linked table.

🔁 Customer rel		
Customer rel		•
General		
Caption Customer rel	Name = Customer rel	Ξ.
Alias		_
Categories None	·	
**>	OK Cancel	Apply

- 4. Double-click the view to edit it.
- 5. Define properties on **General** tab and other tabs.
- 6. On tab **Attributes** you can select columns from the linked tables. Relationship aliases and names of entities are displayed.

Notes SUL Prev	view Attributes	Where Order	Group Having
Name c(T_CUSTOME customer_id address b(T_BORROWI exemplar_id customer_id start_date end_date total_price VAT e(T_EXEMPLAF	R) NG) T R) () ()) () ())) ())) ())))	Source Attribute c.name f.title f.director	Alias city
Add Select Settings	Remove	New Expressio	n Delete

- 7. You can use a template on **SQL** tab of the view.
- i NOTE: As well as for entities and relationships, you can create shortcuts of views on the workspaces of your model. List of view shortcuts can be found in **Model Explorer** | in particular Workspace folder and in the **Views** folder | **Shortcuts**.

- **i** NOTE: There are some limitations for modeling and reverse engineering of views in Toad Data Modeler. In the following cases views are loaded/modeled as "Select in Views as Text" without view relationships:
 - When JOIN is used inside FROM statement. CROSS JOIN is the only supported type of JOIN.
 - When a simple format for a name of a table is not used in FROM or when anything follows after a name of a table, e.g. functions, subquery, partition_extension_clause, PIVOT, UNPIVOT, DBLINK, flashback_query_clause, and row_pattern_clause.
 - When "WITH common_table_expression", UNION, EXCEPT, INTERSECT, MINUS, model_clause, and hierarchical_query_clause are used in view.
 - When another definition exists between ORDER BY and the end of view, e.g. FOR clause in SQL Server.

Materialized Views

Materialized Views are supported in the following databases: Oracle, DB 2, DB2 zOS, , Sybase SQL Anywhere 11, Teradata 13.

Toad Data Modeler allows you to display materialized views graphically in your ER diagram.

To add a materialized view

Click in on the toolbar and then click anywhere on the work area.

or

Model Explorer | Right-click the Materialized Views folder | Add Materialized View.

To edit a materialized view

Double-click the materialized view on the Workspace.

or

Edit the materialized view in **Model Explorer** | **Materialized Views** folder | double-click the selected materialized view (or right-click | **Edit**).

Option	Description
Object Navigator Box	All materialized views of your model are listed here. The combo- box allows you to edit them, one by one from one place. Use Apply to confirm all the changes you make.
General Tab	Description
Caption	Logical materialized view name
Name	Physical materialized view name
Schema	Schema selection box

Option	Description
Categories	Category selection box
Generate	Select it to generate the materialized view in final SQL (DDL) script.
Generate SQL only	Select it to generate only the SQL code written on tab SQL . The rest of items will be ignored.
SQL Tab	Write SQL code of materialized view subquery on this tab. About Templates
Permissions Tab	Here you can assign Users or User Groups permissions to the materialized view.
To Do Tab	On this tab, you can write some tasks on the selected materialized view. i Note: To see all To Do tasks, select Model To Do.
Before Script Tab	Whatever you write here, it will be generated before the materialized view definition.
After Script Tab	Whatever you write here, it will be generated after the materialized view definition.
Notes Tab	Tab for notes on particular materialized view. The text written here will display in a pop up dialog when you point your mouse cursor at the materialized view shortcut in your ER diagram.
SQL Preview Tab	Click at the bottom of this tab to see the part of SQL code for the materialized view.
Refresh Tab	Use this tab to specify the default methods, modes and times for the database to refresh the materialized view.
Physical Properties Tab	Define storage characteristics of materialized view on this tab.
Materialized Views Properties Tab	Define other materialized view characteristics on this tab.
Create Index Tab	Create index sentences are written on this tab.

Procedures

To add a procedure

Right-click the **Procedures** item in **Model Explorer | Add Procedure**.

To edit a procedure

Double-click the selected procedure in **Model Explorer** | **Procedures** (or right-click **Edit**). **Example:** The **Procedure Properties** dialog (Oracle 10g)

🔁 Stored Procedure Properties	
SCOTT.p_Customer_Has_Num_Film	-
General SQL Permissions To Do Before Script After Script Notes SQL P	review
Capt <u>i</u> on <u>N</u> ame	
p_Customer_Has_Num_Film = p_Customer_Has_Num_Film	6
User / Schema	
SCOTT	
Procedure Arguments	
cid IN integer, num OUT integer	*
Definition Is Wrapped	
Generate Generate SQL Only	
OK Ok±Add Cancel Apply	<u>H</u> elp

General Tab	Description
Caption	Logical procedure name
Name	Physical procedure name
Schema	Schema selection box
Procedure Arguments	Define procedure arguments here.
Invoker Rights	Database dependent option. See particular database reference for more information.
Definition is Wrapped	Database dependent option. See particular database reference for more information.

Generate	Select it to generate the procedure in final SQL (DDL) script.
Generate SQL only	Select it to generate only the SQL code written on tab SQL . The rest of items will be ignored.
SQL Tab	SQL code. (See the example in the following screenshot.) About Templates
Permissions Tab	On this tab, you can manage permissions to particular procedure.
To Do Tab	Here you can write some tasks on the selected procedure. Note: To see all To Do tasks, select Model To Do .
Before Script Tab	Whatever you write here, it will be generated before the Store Procedure definition.
After Script Tab	Whatever you write here, it will be generated after the Store Procedure definition.
Notes Tab	Tab for notes on particular procedure.

Example: The Procedure Properties dialog | SQL tab (Oracle 10g)

Stored Procedure Properties
SCOTT.p_Customer_Has_Num_Film
General SQL Permissions To Do Before Script After Script Notes SQL Preview
Templates: Body 🔻 🖏 🖉
<pre>1 AS 2 BEGIN 4 SELECI count(*) 4 INTO num 5 FROM T_CUSTOMER c, T_BORROWING b, T_EXEMPLAR e, T_FILM WHERE c.customer_id=cid 7 and c.customer_id=b.customer_id 8 and b.exemplar_id=e.exemplar_id 9 and e.film_id=f.film_id; 10 END;</pre>
OK Ok±Add Cancel Apply Help
Compare Procedures in Sync & Convert Wizard

When the **Sync & Convert Wizard** shows differences between procedures (on page **Select Items**), you can double-click the SQL item of procedures to display details about differences between them.

Functions

To add a function

Right-click the Functions item in Model Explorer | Add Function.

To edit a function

Double-click the selected function in **Model Explorer** | **Functions** (or right-click **Edit**). **Example:** The **Function Properties** dialog (Oracle 10g)

Function Properties
SCOTT.f_Customer_Has_Num_Film
After Script Notes SQL Preview General SQL Permissions To Do Before Script
Caption Name F_Customer_Has_Num_Film = f_Customer_Has_Num_Film User / Schema
SCOTT Invoker Rights (CURRENT_USER)
Function Arguments cid IN integer
Datatype of The Return Value integer Deterministic
Definition Is Wrapped
Generate Generate SQL Only
OK Ok±Add Cancel Apply Help

General Tab

Description

Caption	Logical function name	
Name	Physical function name	
Schema	Schema selection box	
Invoker Rights (CURRENT_USER)	Database dependent option. See particular database reference for more information.	
Function Arguments	Write function arguments here.	
Datatype of the Return Value	Define data type of the return value.	
Deterministic	Database dependent option. See particular database reference for more information.	
Definition is Wrapped	Database dependent option. See particular database reference for more information.	
Generate	Select it to generate the function in final SQL (DDL) script.	
Generate SQL only	Select it to generate only the content of the SQL tab. All other items will be ignored.	
SQL Tab	SQL code. (See the example in the following screenshot.) About Templates	
To Do Tab	On this tab, you can write some tasks on the selected function.	
Permissions Tab	On this tab, you can assign a User or User Group permissions for selected function.	
Before Script Tab	Whatever you write here, it will be generated after the function definition.	
After Script Tab	Whatever you write here, it will be generated before the function definition.	
Notes Tab	Tab for notes on particular function.	

Example: The Function Properties dialog | SQL tab (Oracle 10g)

E Function Properties
SCOTT.f_Customer_Has_Num_Film -
After Script Notes SQL Preview General SQL Permissions To Do Before Script
Templates: Body 🗸 🖏 💱
<pre>1 IS 2 sol integer; 3 BEGIN 4 p_Customer_Has_Num_Film(cid,sol); 5 RETURN (sol); 6 END; </pre>
OK Ok±Add Cancel Apply Help

Schemas

To add a schema

Select Model | Model Items |Schemas and click Add in the Schemas dialog.

To edit a schema

Select Model |Model Items | Schemasand double-click the selected schema or click Edit.

Note: You can also edit/rename/delete schemas in **Model Explorer** | **Schemas** folder | Right-click the selected schema.

Users

Toad Data Modeler allows you to define Users and assign them to User Groups. Later you can assign the Users and User Groups permissions to particular objects.

To add a user

Click **Add** in the **Users** dialog.

or

In Model Explorer | Right-click the Users folder | Add User.

To edit a user

Select Model | Model Items |Users | double-click the selected user or click Edit.

or

In Model Explorer | Users folder | double-click the selected user or right-click | Edit.

Option	Description	
Object Navigator Box	All users of your model are listed here. The combo-box allows you to edit them, one by one from one place. Use Apply to confirm all the changes you make.	
General Tab	Description	
Caption	Logical user name	
Name	Physical user name	
Password	User's password	
Membership Tab	On this tab, you can assign a User to User Group. Note: One user can be assigned to more User Groups. Select a User Group and click appropriate button: Adds selected item(s). Puts back selected item(s). Adds all items. Puts back all items.	
To Do	On this tab, you can write some tasks on particular user.	

To assign users to user groups

Example: All admins should be assigned to user group Administrators.

Method A - via the Users dialog

- 1. In the Users dialog, select the SCOTT user and click Edit.
- 2. In the User Properties dialog, click the Membership tab.
- 3. Select the *Administrators* user group and click the **Add** arrow button to shift the selected group to the window **Selected**.

(The User Groups have already been defined in Model | Model Items |User Groups.)

TIP: If you confirm **Apply**, the **User Properties** dialog will remain opened, and you can comfortably assign other users to user groups. - Simply select another user from the object navigator box at the top.

Method B - via the User Groups dialog

- 1. Click [&] on the toolbar.
- 2. From the User Groups dialog, select Administrators user group and click Edit.
- 3. In the User Group Properties dialog, click the Members tab.
- 4. Select SCOTT and click the Add arrow button to shift the selected user to the window Selected.

User Groups

Toad Data Modeler allows you to define **Users** and assign them to **User Groups**. You can then assign User and User Groups permissions to objects.

To add a user group

Click Add in the Users Toolbar and click Add in the displayed dialog.

or

In Model Explorer | Right-click the User Groups folder | Add User Group.

To edit a user group

Go to Model Menu | Model Items | User Groups | double-click the selected user group or click Edit.

or

In Model Explorer | User Groups folder | double-click the selected user group or right-click | Edit.

Option	Description	
Object Navigator Box	 All user groups of your model are listed here. The combo-box allows you to edit them, one by one from one place. Use Apply confirm all the changes you make. 	
General Tab	Description	
Caption	Logical user group name	
Name	Physical user group name	
Membership Tab	Description	

Option	Description
Available	Available user groups
Selected	Selected user groups
Members Tab	Description
User Groups section	You can create another group in already existing group. (This is possible for some databases.) From the list of existing groups, select a group and click the Add arrow button.
Users section	Here, you can assign users to a group. Note: You can assign users to a user group also in the Users dialog.
To Do Tab	On this tab, you can write some tasks on the selected user group. Note: To see all To Do tasks, select Model To Do .

Note:

- 1. To copy user groups, use CTRL + Drag&Drop techniques.
- To move user groups, use Drag&Drop techniques. You can copy and move your user groups within a model and between models of the same and different databases:
 - In User Groups dialog (Model Menu | Model Items | User Groups)
 - In Model Explorer | User Groups folder
 - Between Model Explorer and User Groups dialog
- 3. To delete user groups, go to:
 - Model Menu | Model Items | User Groups | Select a user group and click Delete.
 - Model Explorer | User Groups folder | Right-click and select Delete Item.

Permissions

In Toad Data Modeler, you can assign permissions to the following objects:

- Entity
- Attribute
- User Data Type
- View
- Procedure
- Schema
- Users and User Groups.

This list is dependent on your current database platform and version. For example, some databases do not support assigning permissions to Users.

For every object, different permissions can be set (SELECT, INSERT, UPDATE etc.), depending on current database platform.

Options for permissions are described in the following example. Permissions for attributes, user data types etc. are set in the **Properties** dialog of particular object | **Permissions** tab (e.g. **Attribute Properties** | **Properties**).

Add Permissions

To be able to add a Permission, **it's necessary to define a User or User Group**. In case you forget, Toad Data Modeler allows you to define them directly from any **Permissions** tab of a particular object - click **Users** or **User Groups**.

To add a permission for entity

In the Entity Properties form, select the Permissions tab and click Add.

Example: Creating permission for user SCOTT in Entity Properties form:

Entity Properties - E				
Capt <u>io</u> n		<u>N</u> ame		
Customer		≥ T_CUSTOM	ER	
Before Script After Script Notes	SQL Preview	Relationships	Physical Properties	Table Properties
General Attributes Keys	Indexes Che	eck Constraints	Triggers Permiss	sions To Do
User (User Group) Grantor	INSERT	REFERENCES	UPDATE	Status
SCOTT - None Administrator1 Administrator2 SCOTT	Unchanged	Unchanged	Unchanged	U

If you want to change the permission User or User Group, select the permission **User (User Group)** column, **press F2** and choose from the list.

TIP: This kind of editing properties is usable anywhere in Toad Data Modeler. For more information, see Inplace Editor.

Permissions Tab	Description
User (User Group)	Name of user (group) that the permission has been assigned to.
Grantor	Name of user (group) that assigns the permission.
Permissions: SELEC	T, INSERT, UPDATE, DELETE, RULE, REFERENCES, TRIGGER

To edit a permission

In the Entity Properties form | Permissions tab, double-click the selected permission or press Edit .

General Tab Description

Permissions	List of all available permissions to a specific object.	
Status	 Shows if the particular permission has been assigned or not. Unchanged - No change has been made. Grant - Permission has been granted. Deny - Permission has been denied. (E.g. in Microsoft SQL 2005 models.) 	
with Grant Option	Yes/No - Determines if the permission User (Group) can assign the permission to another User (Group).	

About Universal Data Model

Universal (Generic Relational) Data Model allows you to model entity relationship diagrams without the necessity to select target database platform and database specific items.

Specifics of Universal (Generic Relational) Data Model

- In Universal Data Models PK attributes migrate from parent to child entities as PFK or FK attributes.
- It is necessary to convert model to target database platform if you decide to generate SQL for your Universal Data .Model
- Reports can be generated in various formats.
- Reverse engineering via ADO/ODBC is available.

About Logical Data Modeling

Toad Data Modeler allows you to design and maintain a logical model giving a complete picture of the business area. Logical model is independent of the database platform and is much simpler than physical model. It uses objects such as inheritance, valid values or M:N relationships. From the Logical ER (LER) diagram, you can build a Physical ER (PER) diagram of the selected database platform (LER to PER conversion).

Note:

- This topic contains information on objects and functions that are specific for logical modeling. General information and other features applicable in Logical model as well as in Physical model are contained and described in other sections of this Help file. See e.g. the "Model Objects" chapter, "Model Explorer" topic etc.
- See the sample logical model *Employee* that is included in the installation package for Toad Data Modeler. Default location is: C:\Program Files\Quest Software\Toad Data Modeler\Samples.

To create a logical model

Select File | New | Model |Logical Data Model tab.

New Model			
Model Name Logical model			
Physical Data Model Universal Data Model			
If you don't know what inheritance is, or if you don't plan to use inheritance at all, don't create logical model. Click the Physical Data Model tab and select your target database. A physical model created for Oracle can be easily converted to other database platform, for example Microsoft SQL Server. Logical model should be created only in case you need to specify inheritances.			
Notes: There are three methods how inheritances can be converted to physical models. In logical models, attributes don't migrate to child entities! It is not possible to define certain settings in logical model (autoincrement etc.).			
<u>O</u> K <u>Cancel</u>			

Benefits of Logical Data Model

Logical Data Model allows you to model inheritances in entity relationship diagrams. Universal Data Model and Physical Data Model do not support this feature.

Specifics of Logical Data Model

- There are three methods how inheritance can be resolved when converting to physical model.
- Attributes do not migrate to child entities.
- It is not possible to define database specific items in Logical Model, for example sequences/autoincrements etc.
- You can define Valid Values in logical model (will be converted to physical model).

Benefits of Super and Sub Types

In Logical Model you can define database structure in various ways. See the pictures below. Both of them show a structure modeled in Logical Model and both the models will result in the identical output when converted to Physical Model. The difference is that Model A uses Super and Sub Types while Model B doesn't use inheritance at all.

Model A - Utilizing Super and Sub Types



Model B - Lacking Super and Sub Types



This example shows:

- 1. That you can create logical models in different ways and achieve the same result after conversion to physical model.
- 2. That you can be more productive when using inheritance. For example, you only need to change the Last Name attribute once in the first model. Without using inheritance in model B, you have to change it four times.
- 3. How much "readable" the first model is compared to the second one.
- 4. How important is to select appropriate inheritance resolution when converting your logical model to physical.
- 5. That creating logical models without inheritance has minimal benefits compared to using inheritance.

Disadvantage

The main disadvantage of logical modeling is that direct synchronization with existing database **is not possible**. Only physical models of specific database platforms and versions may be synchronized with an existing database. Therefore, if you want to synchronize your logical model, you need to convert it to the physical model first.

Objects in Logical Model

- Entity
- Relationship (Identifying and non-identifying)
- Inheritance
- Stamp
- Category (Caption of Categories)

All these objects are available in the Objects menu | Add New or via icons in the Designer toolbar.

i Note: Besides these objects you can add also other graphical shapes to your ER diagram. 2-D Shapes

Format Logical Objects

- 1. Right-click the Workspace in your logical model and select Workspace Format.
- 2. Click the Entity tab.

🔁 Workspace Format - E	
General Shape Note Line En	tity
Display Level	Attributes -
Align	Primary Identifiers
Display Data Types	Unique Identifiers Attributes
Display Keys Graphically	Descriptions
Display Unique Identifier Mark	
Display Mandatory Mark	
Gradient Effect	
Display Domains	
	OK <u>C</u> ancel <u>Apply</u>

Display Level - Select items you need to display in your logical model - Entities, Primary Identifiers, Unique Identifiers, Attributes, Descriptions.

See the Display Level box on the toolbar (also View menu | Display Level).

To define colors for attributes on your Workspace

Select Settings | Options | Model section | Logical Model | Entity tab | Attribute Colors area.

Logical model			
General Shape Note Line Entity	Verification		
Default			
Display Level	Attributes		
Align			
Display Data Types			
Display Keys Graphically			
Display Unique Identifier Mark			
Display Mandatory Mark			
Gradient Effect			
Display Domains			
Attribute Colors			
Primary Unique Identifier	Red -		
Mandatory Attribute	Black -		
Optional Attribute	Medium Gray -		

Edit Entities

• Double-click the entity on the Workspace.

or

• Edit the entity in Model Explorer | Entities folder | double-click the selected entity (or right-click | Edit).

Option	Description
Object Navigator Dropdown Menu	All entities of your logical model are listed here. It allows you to edit entities quickly and comfortably from one place.
	Tip: After you finish editing an entity, click Apply to confirm changes and select another entity from the Object Navigator box.
General Tab	Description
Caption	Logical name of entity
Name	Physical name of entity
Category	Category selection box. To see/add/edit categories of your model,

Option	Description	
	click the small button on the right.	
Size	Definition of supposed table size. Toad Data Modeler also converts defined values to physical model.	
Nature	Definition of table nature (Logical information). Select existing value from the box or write a new value.	
Logical Only	Select this checkbox not to convert the entity to physical model during LER to PER conversion.	
Attributes Tab	On this tab, you can add, edit and delete attributes of the entity.	
Unique Identifiers Tab	On this tab, you can manage unique identifiers. A unique identifier for each entity is created by default. Note: Working with attributes and unique identifiers in logical model is similar to working with attributes and primary keys in physical model. More details about the operations can be found in appropriate sections of the "Physical Data Model" chapter.	
Description Tab	You can enter the object description and technical description here.	
To Do Tab	You can enter To Do tasks related to the object here. i Note: To display all To Do tasks, select To Do from Model menu .	

Entity Right-Click Options in Logical Model

	Format
	Add into Workspace
	Add into New Workspace
	Remove from Workspace
	Delete Object
	Arrange •
	Add Object to Gallery
✓	Recalculate Size
	Align Self Relationship
	Edit
	Add +
	Edit Attribute
	Add to Category

Option	Description
Format	Opens the Object Format dialog for selected entity.
Add into Workspace	Opens the Workspaces dialog where you can select a WS to add the entity to.
Add into New Workspace	Creates a new Workspace in the Application Window and adds the entity to it.
Remove from Workspace	Removes the selected shortcut from particular Workspace.
Delete Object	Deletes the selected entity from model.
Arrange	Arranges the entity in another layer. Arrange Objects in Layers
Add Object to Gallery	Adds object to new or selected Gallery.

Option	Description
Recalculate Size	Adjusts the entity size to the length of its attributes.
Align Self Relationship	Aligns self relationship.
Edit	Opens the Entity Properties form.
Add	Adds new object (Attribute, Unique Identifier Attribute or empty Unique Identifier)
Edit Attribute	Opens the Attribute Properties form. This option is active only if attribute is selected in the diagram.
Add to Category	Adds object to selected Category.

Create Attributes

To create an attribute in LER model

• Double-click an entity on the Workspace to open the Entity Properties form | Attributes tab | Add.

or

• Model Explorer | Entities folder | Unfold the selected entity. | Right-click the Attributes item. | Add Attribute.

Entity Properties attribute columns:

Option/Column	Description
ldent.	Graphical representation of unique identifier of particular attributes
Caption	Logical attribute name
Name	Physical attribute name
Data Type	Data Type of an attribute
Mandatory	The Mandatory selection box
Status	Status of Items in Grids

Buttons:

- opens the Application Variables form Add - adds an attribute Edit - opens the Attribute Properties dialog

Delete - deletes selected attribute

- changes position of selected attribute - up and down

Edit Attributes

• In the Entity Properties dialog | Attributes tab, double-click the selected attribute.

or

• Find the attribute in Model Explorer | EntityName folder | Attributes | Double-click the selected attribute.

🔁 Attribute Properties		
Entity: Internal employee		
Health Insurance	-	
General Rules Valid Values Description	1	
Caption	Name	
Health Insurance =	Health Insurance	
Data <u>T</u> ype	Domain	
	▼	
Precision	De <u>f</u> ault Rule	
126	No default 🗸 🛄	
Propagate Name		
Logical Only Mandatory		
<u>Q</u> K Ok±Add	Cancel Apply Help	

Option

Description

	Above the Object Navigator Dropdown Menu, you can see name of entity that the attribute belongs to. Click the button on top right- hand corner to open the parent form (Entity Properties form).
Object Navigator Dropdown Menu	All attributes of selected entity are listed here. The box allows you to edit attributes quickly and comfortably from one place.

Option	Description		
General Tab	Description		
Caption	Logical attribute name.		
Name	Physical attribute name.		
Data Type	Data Type selection box.		
Domain	 Domain selection box. Note: It's not possible to assign a data type and a domain to an attribute at the same time. If you select a domain, appropriate data type will be set automatically from the domain. 		
Default Rule	Default selection box. Defaults are converted to physical model also.		
Logical Only	Select this checkbox to not convert the attribute to physical model during LER to PER conversion.		
Mandatory	Mandatory items will be converted to Not Null items in physical model.		
Rules Tab	A tab where you assign rules to the attribute. Rules are used for the generation of Rules in physical model and later for Check Constraints in the generated SQL code (generated from physical model). In Rules, check constraints for multiple columns can be defined, for example.		
Valid Values Tab	 Valid values can be defined for the following data types: Bigint Float Integer Char VarChar Valid values are used for generation of simple check constraints. Valid values can be defined as Enumeration (for VarChar data type, for Example) or as a Range (for Integer data type.) As soon as you add a new Enumeration, the in-place editor in the Enumeration box will activate automatically. i Note: In Toad Data Modeler, valid values in LER model = check constraints in PER model (feel free to check out the conversion). 		

Option	Description		
	If the Valid Values tab is not available (depends on the selected data type), you can use rules (see the Rules tab).		
Description Tab	Tab You can enter the object description here.		
To Do Tab	You can enter To Do tasks related to the object here. Note: To display all To Do tasks, select To Do from Model menu .		

Create Unique Identifier

To create a unique identifier

In the **Entity Properties** dialog, tab **Attributes**, double-click the space in the **Ident.** column next to the selected attribute.

To create a new key

- 1. In the Entity Properties form | Unique Identifiers tab | click Add.
- 2. Edit the new unique identifier and on tab Attributes, assign an attribute to it.
- Important: Primary keys are graphically marked by red key.

Keys do NOT migrate in Logical models, only in Physical models. In Logical model, only logical information is available and the relationships have only a logical meaning (therefore keys do not migrate). In Physical model the information about foreign keys is necessary, that's why after converting your Logical model to Physical model, FKs will migrate properly. This process is done automatically.

Edit Unique Identifiers

To add or edit the unique identifier

• Open the Entity Properties dialog | Unique Identifiers tab | double-click the unique identifier.

or

• Find the unique identifier in **Model Explorer** | *EntityName* folder | **Unique Identifiers** | Double-click or rightclick it and select **Edit**.

To assign unique identifier to an attribute

1. Click the Attributes tab in the Unique Identifier Properties dialog and select an attribute (attributes).

2. Click to shift the selected attribute(s) to the section **Selected**.

3. Confirm by clicking **OK**.

Select Linking Method

To select a unique identifier before the LER - PER model conversion

- 1. Edit the selected relationship and click the General tab.
- 2. From the **Foreign Unique Identifier** box, select the identifier that will be used during LER to PER conversion.
 - i Note: For inversed relationships, you can select the identifier from the **Opposite Foreign Unique Identifier** dropdown menu.

Relationship Properties	- • •
Relationship4	
General Cardinality Description To Do	
Caption Name	
Relationship4 = Relationship4	
Entity 1 Entity 2	
Building Office	
Foreign Unique Identifier	
Unique Identifier15	
Unique Identifier15	
Unique_Identifier1	
Channe	
None •	
Logical Only	
OK Cancel Apply	Help

Edit Relationships

Logical model supports the following relationship types:

- Identifying relationship
- Non-identifying relationship

- Self-relationship (identifying as well as non-identifying)
- M:N relationship M:N Relationships
 - **i** Note: M:N relationships are created by adding an identifyng/non-identifying relationship and then changing its cardinality to **Many Many**.

To edit a relationship

• Double-click the relationship on the Workspace.

or

• Edit the relationship in **Model Explorer** | **Relationships** folder | double-click the selected relationship (or right-click | **Edit**).

Relationship Properties - E		X
Relationship1		-
General Cardinality Description To Do		
Caption Name Relationship1 =		
Entity 1 Entity 2 Entity1 Entity2		
Foreign Unique Identifier		
Unique_Identifier1		•
Opposite Foreign Unique Identifier		_
Category None		
Logical Only		
OK Cancel Apply	Н	elp

Option	Description	
Object Navigator Dropdown Menu	All relationships of your logical model are listed here. Edit relationships quickly and comfortably from one place. Tip: After you finish editing a relationship, click Apply to confirm changes and select another relationship from the Object Navigator Dropdown Menu.	
General Tab	Description	
Caption	Logical name of relationship	
Name	Physical name of relationship	
Foreign Unique Identifier	Select the linking method for the relationship. According to your selection, the LER model will be converted to PER model. Migration of Keys	
Opposite Foreign Unique Identifier	Select the linking method for the inversed relationship.	
Logical only	Select this checkbox to not convert the relationship during LER to PER conversion.	

Relationship Properties - E	
Relationship1	
General Cardinality Description To D	0
Left Side	Right Side
Dependency	V Dependency
Mandatory	Mandatory
Exactly 2	Exactly 2
✓ Dominant	Dominant
One	One 🔘
© Many	Many
© X 2	© X 2
1.1.1	m
1	
СК	Cancel Apply Help

Cardinality
TabDefine the cardinality.
Left Side:
Dependency - definition of dependency
Mandatory - definition of mandatory item on the left side
Exactly - definition of the lower cardinality range limit
Dominant - definition of a would-be parent for conversion to PER on the
left side (if active and not defined otherwise)
One - definition of one to many or many to many relationship
Many - definition of the higher cardinality range limit

	Right Side:				
	Dependency - definition of dependency				
	Mandatory - definition of mandatory item on the right side				
	Exactly - definition of the lower cardinality range limit				
	Dominant - definition of a would-be parent for conversion to PER on the right side (if active and not defined otherwise)				
	One - definition of one to many or many to many relationship				
	Many - definition of one to many or many to many relationship				
	X - definition of the higher cardinality range limit				
Description Tab	You can enter the object description here.				
To Do Tab	You can enter To Do tasks related to the object here.				
	Note: To display all To Do tasks, select To Do from Model menu .				

i Important: Keys do NOT migrate in Logical models, only in Physical models. In Logical model, only logical information is available and the relationships have only a logical meaning (therefore keys do not migrate). In Physical model the information about foreign keys is necessary, that's why after converting your Logical model to Physical model, FKs will migrate properly. This process is done automatically.

Create Inheritances

- 1. Click on the toolbar (also CTRL+I)
- 2. Move your mouse cursor over the work area and click the parent entity and then the target entity (child).

TIP:

- While creating an inheritance, you can add handle points at the same time. Click the parent entity and then click the work area as many times as many handle points you want to create. Finally click the child entity.
- Create several Children of the existing inheritance:
 - 1. Click the Inheritance icon on the toolbar.
 - 2. Click the inheritance in the model.
 - 3. Click another entity in the model.

Edit Inheritances

• Double-click the inheritance on the Workspace.

or

• Edit the inheritance in **Model Explorer** | **Inheritances** folder | double-click the selected inheritance (or rightclick | **Edit**).

階 Inheritance Properties	- • ×
Inheritance1	_
	•
General Generation Descendents To Do Description	1
Physical Implementation	
Single Table - Parent Inherits All Children	
Discriminator	
N - <u>1</u> Tables - Each Child Inherits the Parent	
\bigcirc <u>N</u> Tables - Physical Model Matches Logical	
OK Cancel Apply	<u>H</u> elp

Option	Description
Object Navigator Dropdown Menu	All inheritances in your model are listed here. Use it to switch between multiple objects and edit them easily.
General Tab	Description
Caption	Logical name of inheritance
Name	Physical name of inheritance
Parent	Name of the parent entity
Logical Only	Select this checkbox to not convert the inheritance during LER to PER conversion.
Exclusive	Definition of exclusive inheritance. For exclusive inheritances, Toad Data Modeler generates triggers that will perform a check whether a correct record in siblings exists or not, and decide whether a record can be added to table or not etc. Exclusive inheritances are displayed with cross in the middle of the graphics:

Option	Description
	Standard inheritances don't have the cross inside the graphics:
Complete	Logical information only. The information says that all records must be complete.
Generation Tab	On this tab, select how do you want to resolve the inheritance during conversion from LER to PER. Inheritance
Descendents Tab	Description
Name	Name of descendent
Discriminator Valid Value	Valid values of Discriminator
Edit Discriminator	Opens the Valid Values dialog for the selected Discriminator.
To Do Tab	You can enter To Do tasks related to the object here. i Note: To display all To Do tasks, select To Do from Model menu .
Description Tab	You can enter the object description here.

Convert Logical Model to Physical Model

Toad Data Modeler allows you to convert your logical model to a physical model of any supported database system.

i Note:

Before you convert your Logical model to Physical model, you should be aware of the following:

- Physical model supports only non-identifying self relationship.
- Inheritance is not supported in PER model. Toad Data Modeler solves this by converting Inheritance object into either Single Table, N-1 Tables or N Tables. See Inheritance.
- Keys in LER models do not migrate.
- You can select a linking method in LER model. ٠
- M:N relationships are supported in both models. •
- Before you start the conversion, you can set up the conversion rules in the Data Type Conversion . Settings dialog. This option is available only if Expert Mode is enabled.
- Cycled relationships will be ignored during LER to PER conversion and will not be converted. A • message informing you about this will be displayed in Message Explorer Log.

🔀 Model Conversion	
- Conversion Settings - Select Object Types - Items Selection - Review	Select Target (Database Platform) DB2 UDB v.8 (LUW) Select a target database system. Your model will be converted to the selected database system.
	< Previous Next > Finish Close

• Select your desired database platform.

243

Nodel Conversion		- • •
- Target - <u>Conversion Settings</u> - Select Object Types - Items Selection - Review	Settings © Comment Out Database Specific Items (code of stored procedure etc.) Resolve Application Variables Log Progress to File	
	Select the Log Progress to File checkbox to store log messages to a file.	
	< Previous Next > Finish	Qlose

• Change any of the conversion settings, if necessary.

🔀 Model Conversion		
 1 arget 2 conversion Settings 3 Select Object Types 4 lems Selection 7 Review 	Se	lect Object Types and Properties Convert All Convert All without Graphics (shapes, colors, fonts, etc.) Custom Settings Convert Entities and Relationships Convert Procedures and Functions Convert Vote, Note Line, ToDo Convert Graphics Convert All Others
	0	Click Detailed Settings to display a list of all available object types and properties.
		< Previous Next > Finish Qlose

• Choose what object types will be converted. You can access full list of Objects and Properties by clicking on **Detailed Settings**.

🔁 Model	Convers	sion		
1 🖻 - 👔	- Q	🖲 😨 🍸 🕴 📪 🗄 Hide All Properties 🔹 🔻		
	⊡ · Vi	ideorental		
	÷.	Entities		
	÷.	Relations		
V		··· makes		
v		··· is_related_to		
V		places		
		···· is_available_on		
V		is_required_by		
		···· is_of		
		has		
J		··· is_rated		E
		has_more_episodes		
	÷.	Defaults		
		today		
	÷.	Domains		
		Notes		
v		All Items WS - information		
		Borrowing WS - information		
v		Customer Rating WS - information		
V		···· Ordering WS - information		
~		Views WS - information		
	±.	ToDoltems		
	-	Categories		
Name: Bom Fullname: B	rowing W Borrowing	/S - information g WS - information		
If you and s	want to select Ch	select checkbox for all entities, right-click the Entities item eck All Children.	Next > Finish	Glose

• Check items you want to convert to another model. For easier item management use buttons located on the top.

Nodel Conversion			
- Target	Information		
- Conversion Settings	Statistic:		
- Select Object Types		Videorental	Commit
- Items Selection	Attribute:	13	13
- Review	Categories Shortcut:	1	1
	Category:	1	1
	Default:	1	1
	Domain:	1	1
	Entity:	6	6
	Entity Shortcut:	19	19
	Model Title Shortcut:	1	1
	Note:	5	5
	Note Shortcut:	5	5
	Relation:	3	3
	Relation Shortcut:	7	7
	To Do:	4	4
	Unique Identifier:	7	7
	Unique Identifier Item.	5	5
	Workarage.	5	5
	workspace.	5	5
	New Model Name		
	Videorental		
	In the Information section, you c example, if you don't select Dom Data Modeler will display such in	can find statistic and o nains for conversion b nformation in this area	other information about necessary actions. What are necessary actions? For ut a domain is used in entity, the domain will have to be converted too. Toad
	S	ave Action	< Previous Next > Finish Qose

- Review the statistic and when you're done, click the Finish button.
- After a short while your Logical model will be converted to Physical model of your desired database platform.

TIP:If you plan to do this action again in the future, you might want to click the **Save Action** button to save this **Action Definition**. See **Model Actions** for more information.

Selection Tree Overview

Collapse All.
Import selection from a saved file.
Save selection to a file.
Checks all items.
Unchecks all items.
Opens the Wildcard Dialog where you can define settings for bulk selection/deselection of the Action box of the items listed on page Select Items.



Refresh Necessitated Items

Explanation: Some objects are related together (e.g. entity and domain, entity and relationship). Let's say you uncheck a Domain in **Select Object Types** dialog. However you keep an Attribute of the Domain type checked for conversion. In the next screen the Domain will be selected for conversion (and highlighted in gray), even if you don't want it to. This is because of its relationship with the Attribute, which cannot exist without the Domain.

Now, if you uncheck the Attribute, the Domain will still be checked for conversion. This is where you use this button. It runs through all checked objects and removes the Domain highlighted in gray since the Attribute is no longer checked. That means the Domain is no longer necessary, since it has no relationships with currently checked objects and you unchecked it in **Select Object Types** dialog.



Right-click an item to see the following options:

Option	Description	
Expand All Children	Expands all sub-items of the selected item.	
Collapse All Children	Collapses all sub-items of the selected item.	

Data Type Conversion

To define rules for data type conversion

Select Expert Mode | Expert Mode Settings | Data Type Conversion Settings. Data Type Conversion Settings

Note: To enable Expert Mode, select Settings | Options | General | Expert Mode checkbox.

12	Data Type Conver	sion Settings					• 🗙
4	🕽 1 Source:	Logical model		 Destinat 	ion: Microsof	t SQL Ser	ver 2012
	Source		D	estination		Param1	Param2
	Bigint		B	igInt			
	Binary		In	nage			
	Boolean		В	it			
⇒	Character(x)		N	archar(%p1)	-		
	Date		Ū	ate			=
	Date & Time		D	ateTime			
	Decimal(x,y)		D	ecimal(x,y)			
	Float(x)		F	oat			
	Integer		Ir	teger			
	Money		Ν	loney			
	Number		В	ig Int			
	<u> </u>						· ·
-							•
				<u>0</u> K	<u>C</u> ancel		<u>A</u> pply

M:N Relationships

LER and PER models both support M:N relationships. See below how they are converted.

LER Model



PER Model (After Conversion)



Migration of Keys

In Logical model, keys **do not migrate** from parent entities to child entities. In Logical model, only logical information is available. The relationships have only a logical meaning (-> FKs do not migrate). However, in Physical model the information on foreign keys is necessary. Therefore when you convert your logical model to a physical model, foreign keys will be displayed properly in the physical model.

Linking Method

Before you start the LER to PER conversion, you can select a linking method in relationships in your LER model. See the following example and the differences after the conversion to PER model:

Example: Department entity has two unique identifiers (non-identifying relationship).

Conorol	nt Attribu	too Unique Identifi	ers Description To Do		-
PI	Auno	Caption	Name	Items	Status
	9	Unique Identifier1	Unique Identifier1	Department ID	 Otdus
	•	Unique Identifier2	Unique Identifier2	Department ID, DepartmentName	۲
			Delate		

a) UI1 has been selected.

🔀 Relationship Properties	
Relation 1	•
General Cardinality Description To Do	
Capt <u>i</u> on <u>N</u> ame	
Relation1 = Relation1	
Entity 1 Entity 2	
Department Employee	
Foreign Unique Identifier	
Unique Identifier1	-
Unique Identifier1	
Category	
None 🔹 📖	
Logical Only	
Cancel Apply	Help

Result after Conversion to Physical Model

- Department ID FK is now in the Employee table (child table).
- Alternate key has been created in the PER model automatically.



b) UI2 has been selected in LER model.

i Note: In previous Toad Data Modeler versions, during conversion to physical model, primary key was always selected for the relationship as a parent key. Now you can select also alternate key (e.g. UI2) and opposite foreign unique identifiers.

Result after Conversion to Physical Model

- Department ID and Department Name FKs are now in the Employee table (child table).
- Alternate key has been created in the PER model automatically.



See the Relationship Properties dialog | Foreign Keys tab in PER model after conversion:
🔀 Relationship Properties	
Relation 1	•
Caption Relation1	Name Relation 1
General To Do Notes SQL Preview Index to Foreign Relationship Type Identifying Parent Key Unique, Identifier?	Referential Integrity Parent UPDATE None
Parent Child	None
Department Name Department Department ID Department Cardinality	Settings Deferrable Deferred Disable No Validate Rely
Image: Mandatory Parent Cardinality N Mandatory Child 11 to 0n	Category
Parent Entity +	- — — — — ≪ Child Entity Employee
Generate	OK Cancel Apply Help

LER to PER Conversion - Self-Relationship

If there is a self-relationship in LER model, the entity has two columns, both of the same name (primary key), in converted PER model. Other modifications are necessary.

Possible solution: You can define a name for the propagated attributes in LER model before the conversion. Open the Attribute Properties dialog | General tab | enter the name to the Propagated Name box.

If this box is empty, Toad Data Modeler will behave standardly (two columns of the same name in PER model).

i Note: It is also possible to set a self relationship attribute name and caption for PER model in Settings Options | Physical Model | Self Relation Attribute Name, Caption.

Inheritance

Inheritance is a special abstract object which can be used in early phases of database development to visualize the inheritance process.



However, Inheritance is only supported in Logical Model. When converting Logical Model to Physical Model, Toad Data Modeler resolves Inheritance one of the three ways:

- Single Table
- N 1 Tables
- N Tables

Before you convert your Model, you have the option to pick one of the three ways to resolve all Inheritance objects:

- 1. Double-click the Inheritance and select tab Generation.
- 2. In the Physical Implementation area, select any of available options:

🔀 Inheritance Properties	- • x
Inheritance1	-
General Generation Descendents To Do Description	
Physical Implementation	
○ Single Table - Parent Inherits All Children	
Discriminator	▼
\textcircled{O} N - $\underline{1}$ Tables - Each Child Inherits the Parent	
M Tables - Physical Model Matches Logical	
<u>O</u> K <u>Cancel</u> App	bly <u>H</u> elp

a) Single Table - Parent Inherits All Children

The conversion output is the following:

	Employee		
ID	Integer	NN	(PK)
Name	NameType		
Surname	NameType		
Status	Varchar2(30)		
Hired	Date		
Fired	Date		
Department ID	Integer	NN	(FK)
Name	Varchar2(30)	NN	(FK)
ID	Integer	NN	(FK)
Bonus	Float(126)		
Health Insurance	Float(126)		
Salary	Float(126)		
Special payments	Float(126)		
Travel expenses	Float(126)		
Gross salary	Float(126)		

b) N - 1 - Each Child Inherits the Parent

The conversion output is the following:



c) N Tables - Physical Model Matches Logical

The conversion output is the following:





Note:

Single Table Generation (Parent Inherits All Children), Discriminator for Child Entities is Set - After the conversion, a check constraint will be created in parent entity in PER model. This check constraint determines conditions for setting Not Null value of attributes taking into account options set in Discriminator.

- Inheritance Exclusive, N 1 Generation (Each Child Inherits the Parent) During the conversion, all attributes of parent entity will be passed to child entities and triggers will be created in the child entities. These triggers determine creation of new items in child entities. Rule: it is not possible that two child entities with the same key of parent entity would exist.
- N Tables Generation (Physical Model Matches Logical) Instead of inheritance, relationship (identifying by default) will be created between parent and child entities in PER model.
- Inheritance conversion Relationship names are made unique in physical model.
 - N 1 Tables Each Child Inherits the Parent: *Relationship name_number* (e.g. Relationship1_1, Relationship1_2)
 - N Tables Physical Model Matches Logical: Parent Entity Name_Child Entity Name

Defaults

To add a default

Select Model | Model Items | Defaults and click Add in the Defaults dialog.

To edit a default

Select Model |Model Items | Defaults and double-click the selected default or click Edit.

Note: You can also edit/rename/delete defaults in **Model Explorer** | **Defaults** folder | Right-click the selected default.

To select a default for attributes

- 1. Open the Attribute Properties dialog of the selected attribute | General tab.
- 2. From the Default Rule box, select a default or write your own default to the Default box.

Note: You can define defaults for domains too.

Rules

To add a rule

Select Model | Model Items | Rules and click Add in the Rules dialog.

To edit a rule

Select Model |Model Items | Rules and double-click the selected rule or click Edit.

Note: You can also edit/rename/delete rules in **Model Explorer** | **Rules** folder | Right-click the selected rule.

To select a rule for attributes

- 1. Open the Attribute Properties dialog of the selected attribute | Rules tab.
- 2. Select a rule and click the Add arrow button.

Note: You can define rules for domains too.

Add Objects

Toad Data Modeler allows you to add objects from multiple places. See the following options:

To add an object on Workspace

- 1. Click the object icon on the toolbar, e.g.
- 2. Click anywhere on the workspace to add the object.

or

- 1. In Objects Menu | Add New select the object you want to add to Workspace
- 2. Click anywhere on the workspace to add the object
- TIP: You can also use hot keys to add some objects, e.g. CTRL+E for entity, CTRL+I for inheritance. See Hot Keys for more information.

To add multiple objects to Workspace

- 1. Press SHIFT and click the object icon on toolbar.
- 2. Click on workspace as many times as many objects you need to add.
- 3. Right-click the work area (or click the object icon again) to turn this function off.

To add objects to Model Explorer

1. Find the object group in Model Explorer (e.g. Entities) | right-click and select Add (e.g. Add Entity).

To add objects from Model menu

- 1. Select Model | Model Items | and the object type (e.g. Entities).
- 2. In following dialog click the Add button.

Edit Objects

Toad Data Modeler allows you to edit objects from multiple places. See the following options.

To edit objects on the Workspace

Double-click or Enter the selected object.

To edit objects from Model Explorer

Find the object in tree and **double-click** it (or **right-click** | **Edit**).

i Note: Double-clicking in Model Explorer does not highlight the object on the Workspace (WS) but opens the **Object Properties** dialog instead. To highlight a object on WS, right-click and select **Find on Workspace**.

To edit objects from Objects menu

- 1. Select an object on Workspace or in Model Explorer.
- 2. Select Objects Menu | Edit

To edit objects from Model menu

- 1. Select Model Menu | Model Items | the object type (e.g. Entities).
- 2. In the dialog (Entities), select the object and click Edit.

Buttons in Object Properties dialogs:



- opens the Application Variables form

OK - confirms changes, closes the form/dialog

Cancel - cancels changes

Apply- confirms changes, doesn't close the form/dialog

Help - Help navigation

Note: Objects of your model that have the **Generate** checkbox disabled in their **Properties** dialogs are displayed in Model Explorer this way:



Format Objects

- Object Format for New Models
- Object Format for Existing Models
- Object Format for Particular Object

To set format for new models (models that you will create)

- 1. Select Settings | Options | Model section | Physical/Logical Model.
- 2. Define options on tabs General, Workspace, Shape, Note Lineand Entity.
- 3. Press CTRL+N to create a new model.

The format will be used for new models/workspaces. Using this option you cannot change format of objects in already existing models.

To change format of objects in existing models

• Right-click the Workspace and select Workspace Format.

The format is applied to all objects on current Workspace, that share the Workspace format and all objects that you will create on the Workspace.

Example

You have two entities on your Workspace. One has blue brush color and the other one has red brush color. Your Workspace has red brush color. When you change your Workspace format brush color from red to white, the entity with red brush will also change.

Description
This option automatically adds newly created objects to all Workspaces where this option is enabled.
Select Settings Options Physical Model Workspace tab where you can: a] Check the Auto Complete checkbox
All newly create Workspaces will have this option enabled.
b] Uncheck the Auto Complete checkbox
 Except for the All Items workspace, all newly created workspaces will have this option disabled.

	 Note: The All Items workspace is intended to serve as a main workspace for your models, containing all model objects. By default, all newly created objects in other workspaces are created in All Items workspace as well. This can be disabled by unchecking Auto Complete option in the Workspace Format dialog (right-click the workspace in Model Explorer). 		
Hide Line Captions	Select this option to hide relationship names on Workspace.		
Font Settings	Contains several font settings such as font type, style, size etc.		
Shape Tab	Description		
Recalculate Size	Select this option to automatically adjust size of an object (entity, note) to fit the length of the text it contains.		
Shadow Effect	Displays shadows in ER diagram.		
Use Brush Color for Full Shape	The object brush color will be used as main color of the object shape.		
Note Line Tab	Description		
End Type 1, 2	You can select endings for note lines here.		
Entity Tab	Description		
Display options	Defines display options for entities such as the display level, what properties should be displayed etc. Options for Physical model differ from those in Logical model.		

To change format of a particular object

Right-click the object on the Workspace and select Format.

🔁 Object Format	
General Shape Entity	
Display Level Align	All Keys
Display Data Types	
Display Keys Graphically	
Display Key and Index Marks	
Display Indexes	
Display Not Null Mark	
Gradient Effect	
	<u>O</u> K <u>Cancel</u> <u>Apply</u>

TIP:

- 1. You can arrange objects on Workspace in different layers. Arrange Objects in Layers
- 2. If you need to preserve format of a particular object when you change the format of your Workspace, select the **Lock Format** option in the **Object Format** | **General** tab.

Select Objects

To select multiple objects on Workspace:

- Hold SHIFT and click the objects you want to select. This option works regardless of the currently used Selection tool.
- Drag your mouse over the objects on Workspace.
 - i Note: If you drag your mouse from the left side, only the objects that are entirely in the selection box will be selected. If you drag your mouse from the right side, all objects that are partly in the frame will be selected.

Scenario

You want to select *Customer* and *Order Record* entities and the relationship between them.

Solution: Drag your mouse from the left side as long as both entities are completely in the frame (see the image below).



Release your mouse button. Objects have been selected.



The result will be the same if you drag your mouse from the right side and include even a small part of the two entities in the frame.



To select more objects on WS by category or schema/owner

- 1. Right-click the Workspace | Select Objects.
- 2. Define a category or owner, or category and owner and click Select.

To select child and parent objects of the selected entity on the Workspace

Right-click the selected entity and select Select | Parent Objects or Select Child Objects or Select Parent and Child Objects.

To select multiple objects in Model Explorer and grids (e.g. Entity Properties form)

Use SHIFT or CTRL keys.

To select a specific type of objects on Workspace:

There are several tools to select specific objects in Toad Data Modeler. All of them are located under the button on **Model Objects Toolbar**. Once you select a tool from the dropdown menu, you are only able to select the object type you chose (e.g. with Select Entities tool you are able to select entities only).

Physical Model Selection tool options:



Logical Model Selection tool options:



Metamodel Selection tool options:

8	🕶 📑 Ն Ն 🖾 🗳	
\square	Select All	model* ×
T <mark>e</mark>	Select All Shapes	
5	Select All Lines	

Align Objects

TIP: When aligning objects manually, you might want to use the **Snap to Objects** function.

To align objects on Workspace

- 1. Select objects you want to align.
- 2. Select align style from the Alignment Toolbar.



	• Top
	• Left
	Right
	Bottom
Match size	Matches sizes of multiple selected objects:
	• Width
	Height
	Width and Height
Space	Offsets selected objects by the same length:
	Vertical Equally
	Horizontal Equally

Rename Objects

To rename objects on Workspace

Select the object (entity, view etc.), press F2.

To rename object in Model Explorer

Select the object and press F2 or right-click and select Rename.

Copy Objects

In Toad Data Modeler you can copy objects between models of the same or different database platforms and versions.

- i Note: Even though it is possible to copy and paste objects to a different model of different database platform or version, it is encouraged to use **Model Convert** function, even for single objects. The copy-pasting method is faster, but more error-prone, while the **Model Convert** method is slower, but more robust.
- **TIP:** Instead of copying one object multiple times, it is better to add it to a **Gallery**. See **Gallery** for more information.

To copy objects on Workspace

- Drag an object on Workspace, hold CTRL and drop the object copy somewhere else on Workspace.
- Select Edit Menu | Copy/Paste
- Use CTRL+C and CTRL+V shortucts

To copy objects between Workspaces/Models

- Select Edit Menu | Copy in source model, Paste in target model
- Use CTRL+C and CTRL+V shortucts

To copy objects in Model Explorer

• Drag an object in Model Explorer, hold **CTRL** and drop the object copy on the object type folder (e.g. Entities).

To copy objects in object type dialogs (Model Menu |Model Items | Entities, Views etc.)

- Drag an object in the dialog, hold CTRL and drop the object.
- Use CTRL+C and CTRL+V shortucts

Combinations of these copy methods are possible - e.g. copy from Model Explorer to Workspace.

TIP:

- To copy more objects at once, make multiple selection and use one of the copy techniques.
- Making a Copy of Multiple Objects in Workspace (CTRL+A, CTRL+C, CTRL+V): Before you press CTRL+V to paste the objects, close the Model Explorer dialog to accomplish the operation much faster. (The larger your model is, the more significant difference in speed you will notice.)

Move Objects

To move objects on Workspace, you can use:

- Drag&Drop technique
- · Keyboard arrows
- TIP: To set the size of a step for moving shapes on Workspace, select Settings | Options | Application |
 Graphics | Move Objects by (mm/10) (in tenths of millimeter).

To move objects between Model Explorers

Use Drag&Drop technique. You need to drop the object onto its root folder in the target Model Explorer.

To move objects in object type dialogs (Model Menu |Model Items | Entities, Views etc.) Use Drag&Drop technique.

To move objects between Workspaces/Models

Use Drag&Drop technique.

- **i** Note: Even though it is possible to move objects from a model to a different model of different database platform or version, it is encouraged to use **Model Convert** function, even for single objects. The Drag&Drop method is faster, but more error-prone, while the **Model Convert** method is slower, but more robust.
- **TIP:** Combinations of the listed methods are possible e.g. moving object from Model Explorer in one Model to Model Explorer in another Model.

Snap to Objects

When moving an object on workspace (e.g. entity or relationship line), light blue guidelines appear and help you to align the object more precisely.



To turn it off

• Click the Snap to Objects icon on the Grid Toolbar.

or

• Select Settings Menu | Options | Graphics and uncheck the Snap to Objects checkbox

Graphics	
General Colors	
Default	
Mouse Scroll Speed	10 凄
Minimal Size of Displayed Grid (mm)	1
Grid Size (mm)	3
Crid On	
Grid Visible	
Move Objects by (mm)	0,5
Join Line Distance	10
Snap to Objects Snap to Objects Distance	10
Autolayout	
Horizontal Distance Coefficient	70 🕃
Vertical Distance Coefficient	70 🕃
Alphabetical Autolayout - Sort By	Name -
Visible Page Boundaries	
Visible Page Numbers	
Maximal Number of Characters for Displayed Data Type	30 🗭

To turn Snap to Objects off temporarily

Press and hold ALT Key while dragging an object.

Delete Objects

Objects in Toad Data Modeler can be deleted in two ways:

- Delete Object (Shift+Del) Deletes an object with all its shortcuts from model.
- Remove from Workspace (Del) Removes an object shortcut from Workspace. The object is still accessible in the model, only its graphical representation is deleted.

Scenario

Your model has two Workspaces - WS1 and WS2. You have added a new entity to your

model. The entity is places on both Workspaces (assuming the **Auto Complete** function is enabled). However, you need to have the entity on **WS1** only.

Solution: You select the entity on **WS2** and simply press **Delete**. The entity graphical representation on **WS2** will be removed, but the entity is still in your model and can be accessed in **Model Explorer**.

If you would have wanted to delete the entity from your model completely (including all its shortcuts on all Workspaces), you would select **Delete Object**option in **Objects Menu** (or press SHIFT+**Delete**).

To remove shortcut of object from Workspace

Select an object (shortcut of object) on the WS and press Delete.

Tip: You can delete shortcuts in **Model Explorer** too - select particular shortcut of an object in the **Shortcuts** folder | right-click | **Delete Item**.

To delete objects from model (including all its shortcuts)

Select the shortcut of object on Workspace and press SHIFT+Delete.

TIP: You can also delete the objects:

i

- In Model Explorer select an object | right-click | Delete Item.
- In the Object dialog (Model menu | Model Items | Entities, Relationships etc.) - select the object and click Delete.

When you press Delete in your ER diagram, the following message will display:

Delete Confirmation Dialog
Define the action you wish to perform:
Remove only graphical representative of object(s)
Delete selected object(s) from model
If you select the first option, only graphical representative of selected object(s) will be removed from your ER diagram on particular workspace. Object(s) will not be deleted from your model and therefore will be accessible via Model Explorer etc.
<u>O</u> K <u>Cancel</u>

Select the action you want to perform.

To set the default Delete options in Toad Data Modeler: Select Settings | Options | Dialog Boxes | Other tab.

Option	Description
Display Dialog	Whenever you press Delete or SHIFT +Delete in your ER diagram, the Delete Confirmation Dialog will pop up and you will be able to select what action you want to perform in particular case.

Option	Description
Remove Graphical Representative of Object	If this option is selected, the Delete will always remove selected shortcut(s) of object from particular Workspace. SHIFT+ Delete will have to be used to completely delete an object from your model.
Delete Object	If this option is selected, the Delete will completely delete selected object(s) from your model, including all the object shortcuts. There is no option to only remove selected shortcut(s) of object. (The Delete will replace SHIFT+ Delete .)

Find Objects

To quickly find any object on any Workspace

• Use the Quick Search function (CTRL + F). It helps you find any object swiftly by showing you instant results as you type.

For more information see Quick Search.

To find a specific object on specific Workspace in your large model

- Use the Find function
 - 1. Activate the Workspace in Application Window.
 - 2. From Edit Menu, select Find (SHIFT + CTRL + F shortcut).
 - 3. Write the name of the searched object to the **Object Name** box and click **OK** to find and highlight the object on the Workspace.



Model Explorer ٠

Right-click an object in Model Explorer | Find on Workspace. The object will be focused and highlighted.

Object Viewer

Object Viewer displays a complete lists of all objects in your model. You can find and highlight any selected object (and also its shortcuts) by right-clicking it and selecting Find on Actual Workspace or Find all Shotcuts on Actual Workspace.

Videorenta	al* × DNN* ×	Microsoft SQL Server 2012* ×
Physica	d Model Explore	r, Object Viewer × All Items ×
Physical	Model Explorer Ob	oject Viewer
custor	ner	
	Name	Caption
	Customer info	address
ă I	Add indexes to T	Custome
	Customer Rating V	VS - infor
⇒ 🛅	SCOTT.T_CUST	DMER Customer
-	customer_id	Edit
۶	pk_T_CUSTOME	NN NN
	customer_id	Delete from Model
	customer_id	Delete from Selection
	SCOTT.T_CUST	Find on Actual WorkSpace red
۶	PK_T_CUSTOM	Find all Shortcuts on Actual Workspace
P 0	SCOTT.p_Custor	This an shoreers on Actual Workspace
5000	SCOTT.v_Custor	Macros •
= f()	SCOTT f Custome	er Has r Customer Has Ivum Him II I

Object Viewer

External Objects

External objects are objects dynamically linked from another model. This feature can help you to divide a large model into several smaller elements.

External objects are read-only, and therefore it is not possible to insert any objects that would have effect on dependencies such as relations. However, it is possible to add entities, procedures, domains and others.

External objects are synchronized with their source objects only when prompted. Both models need to be available during the synchronization process.

Add External Objects to a Model

- Right-click the root of a model in Model Explorer or Application View and select External Sources to import external objects
- · Both models must be opened in Toad Data Modeler in order to use external sources
- · Select the source model to import from and check objects you want to use in your destination model

- If an object with the same name as the imported object already exists in the model you will be asked about overwriting it:
 - Click Yes to overwrite the original object with the external object
 - Click No to insert the external object and keep the name
- If asked about inserting linked objects:
 - · Click OK to insert external objects and the objects that are linked to it
 - Click Cancel to cancel import. The external object will not be inserted into the model
 - For linked objects that are named identically to already existing objects:
 - · Check Overwrite to replace the original target object with the imported linked objects
 - Leave **Overwrite** unchecked to keep the names of both objects

🔁 Confirmation Dialog	-		
Source object " inserted to the r	Entity.Entity5'' has links to obje nodel.	ects below. The linked ob	jects need to be
Object Name	Object Type	Exist in Model	Overwrite
Tablespace1	Tablespace	Yes	
		ОК	Cancel

- **NOTE:** Exist in Model field has four states:
 - No There is no object with the same name as the imported object
 - · Yes There is a non-external object with the same name as the imported object
 - Mapped External There is a external object with the same name as the imported object, which comes from the same source as the currently imported object
 - External There is a external object with the same name as the imported object, which comes from a different source than the currently imported object

Manage External Objects

- Right-click a model and select External Objects | Update All to easily update all external objects
- · Select Window | External Dependencies Explorer to manage imported and exported objects
- Imported Objects shows a list of objects from an external source and Exported Objects shows a list of
 objects inserted into other models
- Click Update to update the imported objects if they had been modified in the source model
- External objects are marked by an icon (¹) in **Designer** and in **Model Explorer**

External Dependencies Explorer Actions

Button	Description
Refresh	Refreshes the list of external objects
Check Item	Performs a validity check against the external source model
Check All	Performs a validity check for all external objects against the external source models
Delete Object	Deletes the object in the target model
Create Reference in Source Model	Creates a dependency reference in the source model in order to indicate that the object has been linked from other models
Delete Reference	Deletes the reference to the target model from this model
View Object/Item	Displays properties of the object
Open Model	Opens the model that contains the external object
Update from External Source	Updates the model with changes from the external source
Propagate to External Source	Updates the source model with changes from this model NOTE: There is one exception when the external source is not read-only. Create an object in the source model and synchronize it with your target model. Then create a relation to the object in the target model and an attributed is created in consequence. This attribute will be propagated to the source model when synchronized.

About Shortcuts of Objects

In Toad Data Modeler, you can create multiple graphical representatives of an object - Shortcuts.

- A shortcut is a graphical representative of an object in the Workspace (WS). It is not a copy of an object.
- A shortcut has the same name as its object + a number indicator.
- A shortcut has the same data properties as its object. You can edit any shortcut and all changes will be applied to its object. Also, changes made to an object will be reflected on its shortcuts.
- An object can have none or many shortcuts. Their number is not limited.
- You can set individual graphical format for each single shortcut of the same object.

You can create shortcuts of these objects:

- Entity
- · Relationship
- Inheritance
- View (Materialized View)
- Note
- Stamp

- Category (caption of Category)
- Image

Shortcuts help you to organize your large models. Let's say you have a model, where an entity is related to a large number of other entities. You can break the model down into multiple workspaces and create a shortcut of the entity for each workspace. The structure of model is not affected, but you get to see the important things more clearly. For further distinction of model objects using colors, see **Categories**.

Scenario

You have a Student entity, which is related to many other entities across the entire model. You want to divide the model into two blocks and you also want the Student entity to be contained in both of these blocks.

Solution: A shortcut of the *Student* entity has been created and used in another part of the model. This way, the model has been logically divided into two blocks and became much clearer and better arranged.



Create Shortcuts

Toad Data Modeler allows you to create shortcuts of objects on Workspaces in many ways.

To add a shortcut within a Workspace

Drag&Drop techniques and CTRL+SHIFT

Example:

Create a shortcut of the Customer entity on one WS - Borrowing WS:

- 1. Click the Customer entity on the Borrowing WS and hold the mouse key down.
- 2. Press CTRL+SHIFT keys and hold them down.
- 3. Drag the Customer entity to any place on the work area (the mouse cursor will change its appearance).
- 4. Release the mouse button and the keys.
- Note: This method cannot be used for creating shortcuts of relationship and inheritance objects.

To add a shortcut from Model Explorer to Workspace

Drag&Drop techniques from Model Explorer to particular WS

Example:

- 1. Activate the Workspace where you want to add a shortcut of the *Customer* entity.
- 2. In Model Explorer, find the Customer entity.
- 3. Click the *Customer* entity and hold the mouse key down.
- 4. Drag the Customer entity to the WS (the mouse cursor will change its appearance).
- 5. Release the mouse button.

To add a shortcut of selected object(s) from one Workspace to another Workspace

Right-click the selected object(s) (e.g. entity) on the WS and select:

• Add into Workspace to select the particular WS.

or

• Add into New Workspace to create a new WS and add the shortcut there. The layout and format of the shortcuts remain preserved when you use this option.

To add a shortcut of objects related to an entity on Workspace (including relationships)

Right-click the entity and select from the following options:

- Fill Parent Objects to add shortcuts of parent objects of the selected entity to the WS.
- Fill Child Objects to add shortcuts of child objects of the selected entity to the WS.
- Fill Parent and Child Objects to add shortcuts of parent and child objects of the selected entity to the WS.

To add a shortcut of object(s) to the selected Workspace

Right-click the selected Workspace and select **Add All Model Objects to Workspace** to add shortcuts of all objects that exist in your model.

Edit Shortcuts

To edit object property

Double-click the selected shortcut on the Workspace.

You can edit any shortcut you want. The changed properties will be automatically applied to the parent object and to any other existing shortcuts of the object.

To change graphical format of a shortcut

Right-click the selected shortcut on the Workspace and select Format.

The changed graphical format will be applied only to the selected shortcut. Toad Data Modeler allows you to define a different graphical format settings for each shortcut of the same object.

Remove and List Shortcuts

To remove a shortcut of object on the Workspace

Select a shortcut on the WS and press Delete.

Only the selected shortcut will be removed from the Workspace. The object itself still exists in the model.

- TIP: More ways to do this:
 - 1. Right-click the shortcut in Model Explorer and select Delete Item.
 - 2. To remove more shortcuts on WS at once, make multiple selection and then press Delete.

List Shortcuts

To list all shortcuts that exist in your model see Model Explorer and the following folders.

List all shortcuts by object type (entity, relationship, inheritance)

Select the particular object folder (e.g. **Entities**) | **Shortcuts** folder. Here, you can also see names of the Workspaces where the particular shortcuts are located.

List all shortcuts by Workspace

Click the **Workspaces** folder | particular workspace folder (e.g. *Ordering*) | **Entity Shortcuts**, **Relationship Shortcuts**, **View Shortcuts**.

To find shortcuts of objects on the Workspace quickly

Double-click the shortcut in Model Explorer to highlight it on the Workspace.

i Note: Shortcuts can also be found in Workspace Properties which can be opened by right-clicking a workspace in Model Explorer, Application View or Designer and selecting Edit.

Shortcut Right-Click Options in Model Explorer

Right-click a shortcut in Model Explorer to see the following options:

Option	Description
Add Object to Gallery	Adds the selected object to gallery.
Edit	Opens the Object Properties dialog.
Select on Workspace	Highlights the shortcut on the Workspace.
Add into Workspace	Adds the shortcut to the WS that you select from the list of existing Workspaces.
Add into New Workspace	Creates a new WS and adds the shortcut there.
Macros	Opens the list of available macros.
Delete Item	Removes the shortcut from Workspace.

Option	Description
Add	Creates a new item in the entity:
	Attribute
	• Key
	• Index
Fill Parent Objects	Displays shortcuts of parent objects of the selected entity on Workspace.
Fill Child Objects	Displays shortcuts of child objects of the selected entity on Workspace.
Fill Parent and Child Objects	Displays shortcuts of parent and child objects of the selected entity on Workspace.

Right-click an entity shortcut in Model Explorer to see other options:

2-D Shapes

Toad Data Modeler allows you to insert the following 2-D shapes to your ER diagram:

- Note
- Line
- Stamp
- Categories
- Image
- Rectangle
- Ellipse
- Text
- Label Quadrangle
- Label Ellipse

The objects are available on **Graphics Objects Toolbar** and in the **Objects Menu** | **Add New** for both physical and logical model.

To change format of these objects

Right-click the object and select Format.

TIP: Feel free to arrange and order the objects on Workspace. Arrange Objects in Layers

Note and Line

A note can refer to a model, Workspace, particular entity, attribute, relationship etc.

To add a note to your model

- 1. Click icon on Graphics Objects Toolbar or select Objects | Add New | Note and click the work area.
- 2. Double-click the Note to edit it.
- 3. Write a text on tab General. The automatic word wrap function is available.

TIP: To change a format of Note, right-click it and select **Format**. To adjust the size of a Note to a length of text contained, click the **Shape** tab and select **Recalculate Size**.

Note Shortcuts

You can also create shortcuts of Notes:

Scenario

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You have a Note which describes your *Customer* entity. The entity is places on multiple Workspaces. You would like to have the Note on every Workspace where is the entity. **Solution:** Create multiple shortcuts of your Note object and place each onto a different Workspace.

To make a connection between a Note and an object that the note relates to, you can use a Line.

Lines

To add a Line

- 1. Click or select Objects | Line.
- 2. Click the object and then click the Note.

To change the look of the lines on the Workspace

- 1. Right-click the WS and select Workspace Format.
- 2. Click the **Line** tab and select the line end type.
- 3. Right-click the line and select Line Style.

Image

You can add logos and other images to your ER diagrams and then relate them to any object on Workspace using a Line.

To insert an image

- 1. Click icon on Graphic Objects Toolbar (or select Objects | Add New | Image).
- 2. Click on the Workspace where you want to insert the image.
- 3. Select the image from the Open dialog and click Open.

Note: Images that you insert to your ER diagrams aren't saved together with your model.

To edit an image

Double-click the image on the Workspace.

Image in Model Explorer

Take notice of the Image item in Model Explorer. From here, you can manage your images as well.



Image and Shortcuts

You can create shortcuts of an Image on every Workspace of your model or create multiple shortcuts on one Workspace.

Stamp

Add a Stamp to the Workspace to display information about your model such as Author, Company, Date of Creation etc.

To add a stamp

1. Click icon on **Model Objects Toolbar** (or select **Objects | Add New | Stamp**), and click anywhere on Workspace.

Project	Videorental Project
Model	Videorental
Author	Radim Mario Tkacik
Firm	Quest Software, Inc.
Version	
Date of Creation	3/15/2007 08:50
Last Change	2/5/2008 13:01

2. To change the format of the Stamp, right-click it and select **Format**.

To edit a stamp

Double-click the Stamp on Workspace. **Model Properties** dialog displays, here you enter the information which is shown in Stamp.

Stamp and Shortcuts

You can create shortcuts of a Stamp on every Workspace of your model or create multiple shortcuts on one Workspace.

Caption of Categories

Caption of Categories is an object that lists all categories used and displayed on your Workspace and their respective colors.

See Categories for more information.

To add Caption of Categories

• Click icon on **Model Objects Toolbar** and place Caption of Categories anywhere on your Workspace.

To change format of Caption of Categories

• Right-click and select Format.

Caption of Categories and Shortcuts

You can create shortcuts of Caption of Categories and add them to several Workspaces.

Scenario

You have created several Categories and colorfully distinguished the objects on Workspace. As some of the objects occur in multiple Workspaces, you would like to display the Caption of Categories there too.

Solution:

- 1. Right-click the existing Caption of Categories and choose Add into Workspace.
- 2. Select a Workspace from list.

Application Variables

In Toad Data Modeler you can use application variables in:

- Names/captions in **Physical Model Explorer** and **Designer** use the percent button ()) to enter the selected variable in the current cursor location
- DDL Script and Change Script Generators
- Report Generation Check Resolve Application Variables in Report Wizard | Options
- Default Values (e.g. relationship names) Select Settings | Default Values to adjust default values for objects
- About Templates
- Certain properties (most notable ones are SQL, Before Script, After Script)
 - Note: To see where you can use application variables, see **Expert Mode Menu** | **Reference Guide**. If a property has **Resolve Application Variables** attribute, you can use application variables within it (e.g. *PEREntity - BeforeScript*).

	minutesorder need only	macang		
E PERCarybionokeyAS15 E PERCarybionKeyAS15 E PERCarybionKeyAS15 E PERCarybionKeyAS15 E PERCarybionKeyAS15 E PERCarybionKeyAS15 E PERCarybionKeyAS15	BeforeScript	widestring	Store property SQL dependent Feature Resolve Application Variables Supports Templates Refactor by rename	PERBase
PEREntityAS	Caption	widestring	Store property	
_				

Application variables are usually resolved during SQL script generation.

Accessing Application Variables

Application variables can be easily accessed via the which can be found in object properties forms. When you click it, the Application Variable dialog opens and displays available variables and in which properties they are supported.

🔁 Application Variables 🔜
AccessParameters
AfterScript
AttributesOrder
Author
BeforeScript
Caption
Comments
Date
DateTime
FullName
FullNameRE
GalleryID
GalleryItemID
GalleryObjectID
LocationSpecifierList
Name
NewProperty
Notes
OwnerCaption
OwnerFullName
OwnerName
PhysicalProp
TableProp
Time
UniqueNumber
Year
Supported Properties
Before Script
After Script
Notes
Comments
Table Properties
Physical Properties

Syntax of Application Variables

- 1. <%ApplicationVariableName%> Example: <%Date%>
- 2. <%<% ApplicationVariableName %>%> Example: <%<%Date%>%>

Syntax 2) is useful in **Templates** and **Default Values**. Variables using this syntax will be resolved only during SQL Script/Report generation as opposed to variables with syntax 1) which are resolved immediately after creating an object.

Note: OwnerName, OwnerCaption - Explanation: E.g. For attribute it is an entity, for entity it is a model. It has nothing to do with object Owner/Schema.

Application Variables - Examples

Application Variables and User Template

orental*	× Employee* × Templates	×						
plate Edit	or x							
<u>C</u> ommit	Commit and <u>S</u> ave <u>R</u> ollbac	sk 😼 Imp	oort Toad for Oracle Templates	Model <u>Type</u> :	Oracle 10	9		
	Object Category	Parent	Template Name		Default	Active	Status	Template
0	Entities							
	Attributes							
Ð	Check Constraints							
•	Check Constraints							
•	Triggers							
	- SQL	Model\Entity	Body		V	V		BEGIN /"trigger_body*/
2			Complete			V	۲	/
_	Domains							
Ð	Check Constraints							
•	Defaults							
[]	Check Constraint Rules							
)
nlate ho	dy for template: Complete							
	ay for template. Complete							
	IOTES.							
1	NOIES:							
****	******	******	*****	*******	1			
CRE/	ATE OR REPLACE TRIG	GER <%<%FullName	≥ 8 > 8 >					
AFTE	ER /*BEFORE*/							
INSE	SRT /*UPDATE DELET	ΓE*/						
DECI	ON <%<%TableFullNar	ne\$>%>						
BEGI	LN							
1.	.ctrddet_podA*\							

Application Variables and Default Values

Example: Define a new name and caption for relationships of your model.

Caption: <%ParentTableName%> - <%ChildTableName%>

Name: <%ParentTableName%>_<%ChildTableName%>



Application Variables and Self-Relationships

Possibility to define a name for propagated attributes in self-relationships (e.g. via prefix, suffix etc.) Select Settings | Options | Physical Model | Self Relation Attribute Name/Caption.

Example: Name: FK_<%ParentAttributeName%>, Caption: Foreign <%ParentAttributeCaption%>

🔀 Options			×
···· General ···· Graphics	*	Physical Model	
···· Dialog Boxes ···· Paths		General Workspace Line Shape Not	te Line Entity
···· Reverse Engineering ···· Reports		Word Wrap for SQL Preview	
···· Version Manager ···· Editable Forms		Word Wrap for SQL, Before Script and After S	Script
Scripting TOAD for Oracle Integration		Synchronize NotNull with Mandatory Parent	
···· Version Control System ···· Print	Ξ	Alphabetic Order in Attribute Navigator List	
····· Model ···· Physical Model		Inverse Relation Name	
DB2 DB2 UDB v.8 (LUW)		Attribute Properties Propagation	All PK Properties
DB2 v.9 (LUW) DB2 v.9.5 (LUW)		Self Relation Attribute Name: Self Relation Attribute Caption:	FK_<%ParentAttributeName %>
DB2 v.9.7 (LUW) DB2 v.10.1 (LUW)		Relation Attribute Name:	<%ParentAttributeName%>
DB2 z/OS DB2 z/OS v.9		Relation Attribute Caption:	<%ParentAttributeCaption %>
DB2 z/OS v.10		Automatic FK Mapping:	Enable 🔻

Application Variables and Text Properties

You can use some text properties of particular objects in a similar way as application variables.

Example: You want to see your comments in a pop-up window on the Workspace whenever you point your mouse cursor at the entity name. But comments are not displayed this way, only notes. OR You want to generate notes in SQL script.

Possible solution: In the Entity Properties form,

- 1. On tab Notes, write the text, e.g. My Description.
- 2. On tab **Comments**, write: <%*Notes%*>.
- 3. Confirm **Apply**.
- 4. See the SQL Preview tab.



5. Click to display a quick help bar with application variables that are possible to use in entity.

Example: Name is property of entity. It is of widestring data type, so you can use application variable <%Name%>. Author is not property of entity. However, you can use the application variable

<%Author%> in entity. - All the application variables that you can use for entity are available in the list.

Note:

- Double-click the selected application variable to use it in the box/place where you have your cursor.
- Press Esc to close the dialog.

Application Variables in Wizards

Sync & Convert Wizard| page Settings and Report Wizard | page Options and the Resolve Application Variables checkbox.

Uncheck the checkbox to compare models/generate report without resolving the application variables.

Check the checkbox to compare models/generate report while resolving the application variables.

Export/Import - Microsoft Excel

Toad Data Modeler allows you to export metadata to Microsoft Excel. Comments, notes and other properties can be modified and the file can be then imported back into Toad Data Modeler.

To export your model to a Microsoft Excel document

- 1. Select File Menu | Export | Export to Excel.
- 2. Select the entities and relationships you want to export.

	Filter:	·	
Entities Relationships	Name T_CUSTOMER T_BORROWING T_EXEMPLAR T_MEDIUM T_ORDER_RECORD T_FILM T_CUSTOMER_RATING T_GENRE	Caption Customer Borrowing Exemplar Medium Order Record Film Customer Rating Genre	

3. Click Export. A new Microsoft Excel document will be created in the specified destination.

To import the data back from a Microsoft Excel document

- 1. Select File Menu | Import | Import from Excel.
- 2. Locate the Excel document and click **Open**.
- 3. Select which tables and relationships should be imported.
4. Click Import. The existing model will be updated to reflect the changes made in the Excel document.

🔀 Import from Excel		
	Filter:	
Entities Relationships	Name Caption Image: Customer T_CUSTOMER Customer Image: T_BORROWING Borrowing Image: T_EXEMPLAR Exemplar Image: T_MEDIUM Medium Image: T_ORDER_RECORD Order Record Image: T_FILM Film Image: T_CUSTOMER_RATING Customer Rating Image: T_GENRE Genre	
File: C:\Users\vnitrova\Documents\To	ad Data Modeler\export.xlsx	
		Import Close

The following table illustrates the modified properties:

Modification	Property type	Properties
Unlocked	String	Alias
		Where
		Having
		SQL
		Comment
		Note
		BeforeS
		AfterS
		Boolean GenerateSQLOnly
		SelectViewsInText
Locked	List	Attributes
		From
		Order
		Group

NOTE: Aliases of entities and attributes are in columns "From" or "Attributes" in a format: "Object AS alias" in i an exported file

Export/Import - CSV

Toad Data Modeler allows you to export metadata to a CSV file. Comments, notes and other properties can be modified and the the file can be then imported back into Toad Data Modeler.

To export your model to a CSV file

- 1. Select File | Export | Export to CSV.
- 2. Select the entities and relationships you want to export.
- 3. Click Export. A new CSV file will be created in the specified destination.

🔀 Export To CSV			
	Filter:		
Entities Relationships	Name ACTIVITY PROJ PROJ PROJ1 Futity1 Hueland	Caption ACTIVITY EMP_ACT PROJ PROJ1 Entity1 Hueland	
File: C:\Users\knapek\Documents\To	ad Data Modeler\export.csv		
Export Settings Import Settings	•	Save Settings Expo	Close

To import the data from a CSV file

- 1. Select File Menu | Import | Import from Excel.
- 2. Locate the CSV file and click Open.
- 3. Select which tables and relationships should be imported.

4. Click Import. The existing model will be updated to reflect the changes made in the CSV file.

🔀 Import fron	n CSV							
∃∃∷ ⊟× ∃×		Filter:		Ť		▼×		
✓ Entities ✓ Relationsh	ips		Name ACTIVITY EMP_ACT PROJ PROJ1 Entity1 Hueland		Caption ACTIVITY EMP_ACT PROJ PROJ1 Entity1 Hueland			
File: C:\U	sers\knapek\Documents\To	ad Data M	odeler\export.csv					
							Import	Close

Export to Graphic File

In Toad Data Modeler, you can export your ER diagram into the following graphical formats:

- BMP
- JPEG
- PNG
- SVG

To export your ER diagram to a graphic file

- 1. Select File Menu| Export | Export to Image.
- 2. Define options on **Settings** tab.

Option	Description
File Type	Choose one of the available formats.
Color	When not enabled, the image will be black and white only.
Pages	Creates an image for each page on workspace. (Not available for SVG)

Option	Description
Paint Frame of Pages	Displays page boundaries. (Not available for SVG)
Scale	Size of the output in percentage scale (Initial value is 100 per cent.)
Width	Changes automatically according to the set percentage scale.
Height	Changes automatically according to the set percentage scale.
Margin	Set Margin for the exported graphics. I TIP: Measurement units can be changes in Settings Menu Options General.
Destination File	The output image destination path.
Open Folder After Export	When checked, the destination folder is opened once the export is finished.

3. Define other settings specific to the selected graphical format on other tabs.

NOTE: Images of large models are generated as multiple smaller ones joined together in a html file.

Export to Image Limitations

Please note that there is a limit to the site of the exported images imposed by Windows interface. The maximum size depends on chosen **Pixel Format**, for **32-bit**, the size limit is about **12500x10000 px**. The lower the Pixel Format, the larger image you are able to export. This limitation affects all image formats.

Import from ER/Studio Data Architect 11

- Toad Data Modeler is able to import physical models for Oracle versions 9, 10, 11, and 12
- ER/Studio Data Architect 11 needs to be installed in order to import physical models into Toad Data Modeler
- Select File | Import | ER/Studio Data Architect to import models



DDL Script Generation Preparation

Before generating a DDL script, you might want to configure the following things:

- Order of Generated Objects
- Script Encoding

Order of Generated Objects

Toad Data Modeler allows you to set the order of objects before SQL/DDL script generation. **Example:** You want to generate Users before User Permissions to a table. You can change order of the following objects:

- Domains
- Entities
- Views
- Dictionary types
- Sequences
- Stored procedures
- Functions
- Users
- User data types

To set an order of objects for SQL/DDL script generation

- 1. Go to Model Menu | Order of Generated Objects.
- 2. Select an object, or an object type.

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3. Use to move your selection up/down by one step or use drag&drop to place your selection wherever you want.

Note: To display full names of objects, click on

4. Switch to **Extension tab** for more options. Press F2 or left-click and hold any of the values to set it as desired.

12	Order of Generated Objects	-	×
General Extension			
Caption	Value		
Entity Triggers	After each CREATE TABLE Statement		
Indexes	After each CREATE TABLE Statement		
Keys	After each CREATE TABLE Statement		
Relationships	After CREATE TABLE Section		
View Triggers	After each CREATE TABLE Statement		
	After CREATE TABLE Section		
	Inside CREATE TABLE Statement		
		-	

You can configure when should be the listed object types generated.

To sort objects automatically according to their relationships

- 1. Select Model | Order of Generated Objects to set the desired order of entities
 - a. Select **Move Parent Entity before Child Entity** lists each parent entity before their respective child entities or
 - b. Select Move Child Entity after Parent Entity lists all child entities after their parent entities
- i Note: When you set *After CREATE TABLE Section* value for an object, the object will not be shown in **Entity SQL Preview**.

Order of Generated Objects dialog is also accessible from DDL Script Generation dialog | Detail Settings tab| Edit.

DDL Script Generation of Videorental		
What to Generate Detail Settings Referential Integrity Select	🔁 Order of Generated Objects	- • •
 Use Quotation Marks Generate User/Schema to Objects Text Case Selection: Preserve Case Generate Constraint Names (Not Null, Foreign Keys) Generate Check Constraint Names Used in Domains Create Triggers for Update of Columns That Uses Sequence Drop Tables with CASCADE CONSTRAINTS Clause Drop Tables with PURGE Clause Create Comments Grant Roles to User/ Role Generate Permissions Only to Object Types Selected on Tab Terminator 	General Extension	
Order of Generated Objects You can change order of generated objects. Click Edit and def	<u>Q</u> K <u>Q</u> ancel	
Save Action Load Action Verify S	Edit Show Log Generate Show Code Help	

Script Encoding

To set encoding for generated scripts

- 1. Go to Settings Menu | Options | Model | Physical Model | SQL Generation Script tab | SQL Script section.
- 2. Choose the preferred encoding from Encoding Used for SQL Scripts box.

Physical Model
General Generation SQL Script Workspace Shape Note Line Entity
SQL script
Encoding Used for SQL Scripts
UTF-8
UTF-8 (without BOM)
External Editor for generated Code
Verification
Verify Model Before Generate SQL Script
Show Verification Alert On
Error, Warnings

How to Generate DDL Script

This topic describes full configuration of a DDL script generation. In most cases, you will not need to configure all of the available settings.

- Selecting Items for Generation
- Detailed Settings
- Referential Integrity
- Select List
- Script Preview

i Note: An **Oracle 10g** model is used in this topic. The dialogs and options available may vary depending on your model database platform and version.

Start by opening DDL Script Generation dialog using any of these methods:

- Click the button on Model Toolbar
- Go to Model Menu | Generate DDL Script | Run
- Use shortcut F9

Selecting Items for Generation

This essential part of script generation, you need to select items which should be generated.

BDL Script Generation of Videorental		
What to Generate Detail Settings Referential Inte	grity Select List	
Scrint sal		
		Annend To File
User/ Schema	-	Append to File
- Not Specified -	•	
Selection		
* Default [System]		
	•	
Property Name	Extended Value	
Model		
After Script		
Before Script		
Directories	Create	
	Create	
Kevs	Create all Keys	E
Physical Properties		
Table Properties		
Triggers	Create	
···· 🗹 Functions	Create	
Java	Create	
Materialized Views	Create	
	Create	
Permissions to Objects		
Procedures	Create	•
Show Preview		
Save Action Load Action 🔹 Verify	Show Log Generate	Show Code Help

Option	Description
Location of SQL File	Select the location where the generated script will be saved. You can also select an already existing script and check Append to File checkbox to append the generated code to the original file.
User/Schema	Choose a user/schema from this box to only generate all of its assigned items.
Selection	You can save/load your custom selections. To do that, simply select the objects you want to be generated from the Objects Grid and then click for button to save your
	selection. If you will generate scripts in the future, you can load your selection 👔 or
	even make it default 👔.
Bulk Selection	This section contains several buttons that help you select multiple objects quickly. You can:

Option	Description
	Select All
	Deselect All
	Invert Selection
	 Auto Check (if enabled, automatically checks sub-items when the parent item is checked)
	There is also a combobox which can be used to assign Extended Value to all items in Objects Grid at once.
Objects Grid	In this grid you select objects you want to generate by checking them in the Property Name column. And in the Extended Value column you can choose the SQL statement which should be used for the specific item in the final script (e.g. create, replace, drop).

Detailed Settings

Specific and database related settings can be found on this tab. Usually it is not necessary to change them in any way.

BDL Script Generation of Videorental	- • ×
What to Generate Detail Settings Referential Integrity Select List	
What to Generate Decknigs Referential integrity Select List Use Quotation Marks Image: Constraint on the end of the e	
 Generate Permissions Only to Object Types Selected on Tab What to Generate Terminator I Order of Generated Objects You can change order of generated objects. Click Edit and define how objects will be generated 	
Edit	
Show Preview	
Save Action Load Action Verify Show Log Generate Show Code	Help

Referential Integrity

The main selection of objects for generation takes place in **Select List**. Referential integrity further specifies which relations are generated. It has the following options:

- Always relationships are always generated if they are included in Select List
- If Child Table is Generated relationship is generated only when its child table is included in Select List
- If Parent Table is Generated relationship is generated only when its parent table is included in Select List
- If Child or Parent Table is Generated relationship is generated only when child, parent or both are included in **Select List**
- If Child and Parent Tables are Generated relationship is generated only when both child and parent tables
 are included in Select List

🔀 DDL Script Generation of Videorental	- • •
What to Generate Detail Settings Referential Integrity Select List	
What to Generate Detail Settings Referential Integrity Select List Generate Referential Integrity (relationships) Aways (no restriction) If Child Table is Generated If Parent Table is Generated If Parent Table is Generated If Child or Parent Table is Generated If Child and Parent Table are Generated If Child and Parent Table are Generated If Child and Parent Table are Generated	
Show Preview	
Save Action Load Action Verify Show Log Generate Show Code	Help

Select List

If you want to generate only a set of specific model objects, you can do exactly that on Select List tab. By default, all objects that have Generate checkbox checked (e.g. Entity Properties) will be generated (unless you edited some other setting). If you uncheck the Generate by Property "Generate", you are able to select any objects you want.

🔁 DDL Scri	pt Gen	eration of Vie	deorental						
What to Ge	enerate	Detail Setting	gs Referen	tial Integrity	Select List				
Workspace	E.	Entire Model				•	Generate I	by Property "(Generate"
<u>F</u> ilter:						Ŷ			
Entities	Views	Procedures	Functions	Relationship	user Data Types	Sequence	Packages	Directories	Synonyms
	Name	9			Caption				
V	T_C	JSTOMER			Customer				
	T_B	ORROWING			Borrowing				
V	T_E	XEMPLAR			Exemplar				
V	T_M	EDIUM			Medium				
	T_O	RDER_RECO	RD		Order Record				
	T_FI	LM			Film				
	T_C	JSTOMER_R	ATING		Customer Rating				
	T_G	ENRE			Genre				
Show Pr	review								
Save Actio	on	Load Action	•	Verify	Show <u>L</u> og	Gene	rate <u>s</u>	how Code	<u>H</u> elp

i Note: This tab is linked to the **What to Generate tab** | **Objects Grid**. If you uncheck an object type there, it you won't be able to select any of its objects in **Select List** tab.

Script Preview

You can preview the generated SQL script at any time. To do that, check the **Show Preview** checkbox on **What to Generate** tab. Then click the **Generate** button. Toad Data Modeler will offer you a preview of the script before you decide to save it. If you wouldn't have checked the **Show Preview** checkbox, the script would be saved first before you could preview it.

i Note: Models are automatically verified before generating DDL script. To learn more, see Model Verification.

Warning	
	Problems found during Verification! See details in Verification Log. Do you want to continue and generate DDL file?
Set	ings

Î	Miller ID Mill (LK) Admin Mellio Hadik	
in o	DDL Script Generation of Videorental	
(4	What to Generate Detail Settings Referential Integrity	Select List
-	Location of SQL File:	
1	C:\Users\Iknapek\Documents\Toad Data Modeler\Gen	eratedScripts\Script2.sql
	User / Schema	
	- Not Specified -	SQL File Viewer
	Selection	1 /* 2 Created: 3/15/2007
	* Default (System)	3 Modified: 6/1/2011 ≡
		4 Project: Videorental Project
		5 Model: Videorental
	Property Name	6 Company: Quest Software, Inc.
	⊡ Model	Author: Radim Mario TRacik 8 Database: Oracle 10g
1	After Script	9 */
	Before Script	10
A	Directories	11
	Entities	12 Create sequences section
	- V Functions	
	🔲 Java	14 CREATE SEQUENCE SCOTT.SeqExemplar
	Materialized Views	16 START WITH 1
	E Packages	17 NOMAXVALUE
	Permissions to Objects	18 NOMINVALUE
	Procedures	19 NOCACHE
	Relationships	20 /
	Sequences	
	Synonyms	22 Create procedures section
	User Data Types	24 CREATE PROCEDURE SCOTT.p Customer Has Num Film(cid IN integer.
	User Groups	25 AS T
	Users	
	Show Preview	
	Save Action Load Action Verify	Hide Log Generate Show Code Help
	ID A Date Time Message	with Ollow Boundary Trad Date Maded Occur
	48 2/20/2015 10:32:33 AM Saving SQL	script to C(Users\iknapek) Documents\ I load Data Modelen Genera
1		

TIP: If you plan to do this action again in the future, you might want to click the **Save Action** button to save this **Action Definition**. See **Model Actions** for more information.

Example of Generated Script

Videorental Model

CREATE TYPE SCOTT.Phone List TypeAS VARRAY(5) OF VARCHAR2(25)/ CREATE TYPE SCOTT.Cust Address TypeAS OBJECT (street address VARCHAR2(40) , postal codeVARCHAR2(10) , cityVARCHAR2(30) , state province VARCHAR2(10) , country idCHAR(2) , phonePhone List Type) / CREATE TYPE SCOTT.Price TypeAS OBJECT (price NUMBER(10,2), MEMBER FUNCTION total price VAT (vat number) RETURN NUMBER)/ CREATE TYPE BODY SCOTT.Price TypeISMEMBER FUNCTION total price VAT (vat NUMBER) RETURN NUMBER ISBEGINRETURN (price*((vat+100)/100)); END; END;/ -- Create sequences section ------CREATE SEQUENCE SCOTT.SeqExemplarINCREMENT BY 1START WITH 1NOMAXVALUENOMINVALUENOCACHE/ -- Create tables section ------- Table SCOTT.T CUSTOMERCREATE TABLE SCOTT.T CUSTOMER(customer id Integer NOT NULL, name Varchar2(20 CHAR), address SCOTT.Cust Address Type) / -- Create indexes for table SCOTT.T CUSTOMERCREATE INDEX i name ON SCOTT.T CUSTOMER (name) / -- Add keys for table SCOTT.T CUSTOMERALTER TABLE SCOTT.T CUSTOMER ADD CONSTRAINT pk T CUSTOMER PRIMARY KEY (customer id) / -- Table and Columns comments sectionCOMMENT ON COLUMN SCOTT.T CUSTOMER.name IS 'Name column can contain First and Middle name. Surname must be in different column.'/ -- Table SCOTT.T GENRECREATE TABLE SCOTT.T GENRE(genre_id Integer NOT NULL, name Varchar2(20 CHAR)) / -- Add keys for table SCOTT.T GENREALTER TABLE SCOTT.T GENRE ADD CONSTRAINT pk T GENRE PRIMARY KEY (genre id) / -- Table SCOTT.T MEDIUMCREATE TABLE SCOTT.T MEDIUM(medium id Integer NOT NULL, medium_type Varchar2(20 BYTE)) / -- Add keys for table SCOTT.T MEDIUMALTER TABLE SCOTT.T MEDIUM ADD CONSTRAINT pk T MEDIUM PRIMARY KEY (medium id) / -- Table SCOTT.T EXEMPLARCREATE TABLE SCOTT.T EXEMPLAR(exemplar id Integer NOT NULL, film id Integer NOT NULL, medium id Integer NOT NULL, price_per_day Integer) /

```
-- Add keys for table SCOTT.T EXEMPLARALTER TABLE SCOTT.T EXEMPLAR ADD
CONSTRAINT pk T EXEMPLAR PRIMARY KEY (exemplar id) /
       ALTER TABLE SCOTT.T EXEMPLAR ADD CONSTRAINT ak exemplar ppd UNIQUE
(exemplar id, price per day) /
        -- Table SCOTT.T FILMCREATE TABLE SCOTT.T FILM(
        film_id Integer NOT NULL,
        title Varchar2 (50 CHAR) NOT NULL,
        director Varchar2(30 CHAR) NOT NULL,
        production company Varchar2(50 CHAR),
        genre id Integer NOT NULL,
        min age Integer,
        film ID episodes Integer
        ) /
        -- Add keys for table SCOTT.T FILMALTER TABLE SCOTT.T FILM ADD CONSTRAINT
pk T FILM PRIMARY KEY (film id)/
       ALTER TABLE SCOTT.T FILM ADD CONSTRAINT ak title director UNIQUE
(title, director) /
        -- Table and Columns comments sectionCOMMENT ON COLUMN SCOTT.T
FILM.production company IS 'Company name must contain also information about company
type - LTD, Inc. and so on.'/
        -- Table SCOTT.T BORROWINGCREATE TABLE SCOTT.T BORROWING(
        exemplar id Integer NOT NULL,
        customer id Integer NOT NULL,
        start_date Date DEFAULT sysdate,
        end date Date,
        total price SCOTT.Price Type,
        VAT Number(4,2) DEFAULT 19,
        CONSTRAINT check end after start CHECK ((end date>start date) or (end date
is null))
        ) /
        -- Add keys for table SCOTT.T BORROWINGALTER TABLE SCOTT.T BORROWING ADD
CONSTRAINT pk T BORROWING PRIMARY KEY (exemplar id) /
        -- Create triggers for table SCOTT.T BORROWINGCREATE TRIGGER SCOTT.tri
BORROWINGBEFORE INSERTON SCOTT.T BORROWINGFOR EACH ROWdeclare price number(10,2);
        beginselect price_per_dayinto pricefrom T_EXEMPLARwhere T_EXEMPLAR.exemplar_
id = :new.exemplar id;
        :new.total price := Price Type((:new.end date-:new.start date)*price);
        end;/
        CREATE TRIGGER SCOTT.tru BORROWINGBEFORE UPDATEON SCOTT.T BORROWINGFOR EACH
ROWdeclareprice number(10,2);
        total price old number(10,2);
        end_d date;
        start_d date;
        beginselect e.price per dayinto pricefrom T EXEMPLAR ewhere e.exemplar id =
:new.exemplar id;
       total price old := :new.total price.price;
        end d := :new.end date;
        start d := :new.start date;
        if (total_price_old is null) thentotal_price_old := 0;
        end if;
        if ((end d-start d)*price != total price old) then
```

```
:new.total price := Price Type((end d-start d)*price);
       end if;
       end;/
       -- Table and Columns comments sectionCOMMENT ON TABLE SCOTT.T BORROWING IS
'Borrowed items'/
       -- Table SCOTT.T ORDER RECORDCREATE TABLE SCOTT.T ORDER RECORD(
       customer id Integer NOT NULL,
       film id Integer NOT NULL,
       order date Date
       ) /
       -- Add keys for table SCOTT.T ORDER RECORDALTER TABLE SCOTT.T ORDER RECORD
ADD CONSTRAINT pk T ORDER RECORD PRIMARY KEY (customer id, film id) /
       -- Table and Columns comments sectionCOMMENT ON TABLE SCOTT.T ORDER RECORD
IS 'All records are stored in list of records. It will be possible to book a
movie.'/
       -- Table SCOTT.T CUSTOMER RATINGCREATE TABLE SCOTT.T CUSTOMER RATING(
       title Varchar2 (50 CHAR) NOT NULL,
       director Varchar2(30 CHAR) NOT NULL,
       rating Integer DEFAULT 3CONSTRAINT check rating CHECK (rating > 0)
       ) /
       -- Add keys for table SCOTT.T CUSTOMER RATINGALTER TABLE SCOTT.T CUSTOMER
RATING ADD CONSTRAINT pk T CUSTOMER RATING PRIMARY KEY (title,director)/
       -- Table and Columns comments sectionCOMMENT ON TABLE SCOTT.T CUSTOMER
RATING IS 'Movie ratings (by customers) '/
       -- Create procedures section -----
       CREATE PROCEDURE SCOTT.p Customer Has Num Film(cid IN integer, num OUT
integer)
       ASBEGINSELECT count(*)
       INTO numFROM T CUSTOMER c, T BORROWING b, T EXEMPLAR e, T FILM fWHERE
c.customer id=cidand c.customer id=b.customer idand b.exemplar id=e.exemplar idand
e.film id=f.film id;
       END;/
       -- Create views section -----
       CREATE VIEW SCOTT.v_Customer_Has_Film ASSELECT DISTINCT c.name,
c.address.city AS city, f.title, f.directorFROM SCOTT.T CUSTOMER c, SCOTT.T
BORROWING b, SCOTT.T EXEMPLAR e, SCOTT.T FILM fWHERE c.customer id=b.customer idand
b.exemplar_id=e.exemplar_idand e.film_id=f.film_id/
       -- Create functions section -----
       CREATE FUNCTION SCOTT.f_Customer_Has_Num_Film(cid IN integer)
       RETURN integerISsol integer;
       BEGINp_Customer_Has_Num_Film(cid, sol);
       RETURN (sol);
       END;/
       -- Trigger for sequence SCOTT.SeqExemplar for column exemplar id in table
SCOTT.T EXEMPLAR -----
       CREATE OR REPLACE TRIGGER SCOTT.ts T EXEMPLAR SeqExemplar BEFORE INSERTON
SCOTT.T EXEMPLAR FOR EACH ROWBEGINSELECT SCOTT.SeqExemplar.nextval INTO
:new.exemplar id FROM DUAL;
       END;/
```

CREATE OR REPLACE TRIGGER SCOTT.tsu T EXEMPLAR SeqExemplar AFTER UPDATE OF exemplar idON SCOTT.T EXEMPLAR FOR EACH ROWBEGINRAISE APPLICATION ERROR(-20010, 'Cannot update column exemplar id in table SCOTT.T EXEMPLAR as it uses sequence.'); END;/ -- Create relationships section -----____ ALTER TABLE SCOTT.T BORROWING ADD CONSTRAINT makes FOREIGN KEY (customer id) REFERENCES SCOTT.T CUSTOMER (customer id) / ALTER TABLE SCOTT.T BORROWING ADD CONSTRAINT is related to FOREIGN KEY (exemplar id) REFERENCES SCOTT.T EXEMPLAR (exemplar id) / ALTER TABLE SCOTT.T ORDER RECORD ADD CONSTRAINT places FOREIGN KEY (customer_id) REFERENCES SCOTT.T_CUSTOMER (customer_id) / ALTER TABLE SCOTT.T EXEMPLAR ADD CONSTRAINT is available on FOREIGN KEY (medium id) REFERENCES SCOTT.T MEDIUM (medium id)/ ALTER TABLE SCOTT.T ORDER RECORD ADD CONSTRAINT is required by FOREIGN KEY (film id) REFERENCES SCOTT.T FILM (film id)/ ALTER TABLE SCOTT.T FILM ADD CONSTRAINT is of FOREIGN KEY (genre id) REFERENCES SCOTT.T GENRE (genre id) / ALTER TABLE SCOTT.T EXEMPLAR ADD CONSTRAINT has FOREIGN KEY (film id) REFERENCES SCOTT.T FILM (film id) / ALTER TABLE SCOTT.T CUSTOMER RATING ADD CONSTRAINT is rated FOREIGN KEY (title, director) REFERENCES SCOTT.T_FILM (title, director) / ALTER TABLE SCOTT.T_FILM ADD CONSTRAINT has_more_episodes FOREIGN KEY (film_ ID episodes) REFERENCES SCOTT.T FILM (film id)/ -- Grant permissions section ----insert into T GENRE values (1,'crime')/ insert into T GENRE values (2,'western')/ insert into T GENRE values (3,'drama')/ insert into T_GENRE values (4, 'biography')/ insert into T GENRE values (5, 'comedy')/ insert into T MEDIUM values (1, 'CD - DivX')/ insert into T MEDIUM values (2,'CD - VideoCD')/ insert into T_MEDIUM values (3,'DVD')/ insert into T MEDIUM values (4,'Videotape')/ insert into T FILM values (1, 'The Shawshank Redemption', 'Frank Darabont', 'Castle Rock Entertainment', 1, 15, null) / insert into T FILM values (2, 'The Godfather', 'Francis Ford Coppola', 'Paramount Pictures', 1, 15, null) / insert into T FILM values (3, 'The Godfather: Part II', 'Francis Ford Coppola', 'Paramount Pictures', 1, 15, 2) / insert into T_FILM values (4,'The Good, the Bad and the Ugly','Sergio Leone', 'PEA', 2, 15, null) / insert into T_FILM values (5,'Pulp Fiction','Quentin Tarantino','Miramax Films',1,18,null)/ insert into T FILM values (6,'12 Angry Men', 'Sidney Lumet', 'Orion-Nova Productions', 3, 15, null) / insert into T_FILM values (7,'Schindler''s List','Steven Spielberg','Universal Pictures',4,15,null)/

```
Forman', 'Fantasy Films', 3, 15, null) /
        insert into T EXEMPLAR values (1,1,3,3)/
        insert into T EXEMPLAR values (2,1,3,3)/
        insert into T EXEMPLAR values (3,1,3,3)/
        insert into T EXEMPLAR values (4,1,4,2)/
        insert into T EXEMPLAR values (5,1,4,2)/
        insert into T EXEMPLAR values (6,2,3,3)/
        insert into T EXEMPLAR values (7,2,4,2)/
        insert into T EXEMPLAR values (8,3,3,3)/
        insert into T EXEMPLAR values (9,4,4,2)/
        insert into T EXEMPLAR values (10,5,3,3)/
        insert into T EXEMPLAR values (11,6,4,2)/
        insert into T EXEMPLAR values (12,6,4,2)/
        insert into T EXEMPLAR values (13,7,4,2)/
        insert into T CUSTOMER values (1, 'Audrey', Cust Address Type('92A Campton
Avenue', '60021', 'Fox River Grove', null, 'us', null))/
        insert into T CUSTOMER values (2, 'Simon', Cust Address Type('12 Hillpeak
Street','60006','Arlington Heights',null,'ca',null))/
        insert into T CUSTOMER values (3, 'Dave', Cust Address Type('31D South
Avenue', '60001', 'Alden', null, 'us', Phone List Type('541 123 456')))/
        insert into T CUSTOMER values (4, 'Chris', Cust Address Type('5 Quiet
Street', '60061', 'Vernon Hills', null, 'us', Phone List Type('541 123 456', '596 815
641')))/
        insert into T_CUSTOMER values (5,'Elen',Cust_Address_Type('47 My
Avenue', '60083', 'Beach Park', 'Illinois', 'us', null))/
        insert into T BORROWING (exemplar id, customer id, start date, end date) values
(11,1,to date('01-01-2010','DD-MM-YYYY'),to date('03-01-2010','DD-MM-YYYY'))/
        insert into T BORROWING (exemplar id, customer id, start date, end date) values
(12,2,to date('02-01-2010','DD-MM-YYYY'),to date('10-01-2010','DD-MM-YYYY'))/
        insert into T BORROWING (exemplar id, customer id, start date) values (1,2,to
date('06-01-2010', 'DD-MM-YYYY'))/
        insert into T BORROWING (exemplar id, customer id, start date) values (6,4,to
date('07-01-2010', 'DD-MM-YYYY'))/
        insert into T BORROWING (exemplar id, customer id, start date) values (7,3,to
date('07-01-2010', 'DD-MM-YYYY'))/
        insert into T BORROWING (exemplar id, customer id) values (9,3)/
        insert into T ORDER RECORD values (1,2,to date('01-01-2010','DD-MM-YYYY'))/
        insert into T_ORDER_RECORD values (1,1,to_date('01-01-2010','DD-MM-YYYY'))/
        insert into T ORDER RECORD values (2,2,to date('03-01-2010','DD-MM-YYYY'))/
        insert into T ORDER RECORD values (3,3,to date('06-01-2010','DD-MM-YYYY'))/
```

Autolayout

There are three autolayout methods available in Toad Data Modeler.



- 1. Top to Bottom
- 2. Left to Right

3. Alphabetic

To re-arrange objects on your Workspace automatically

Click any of the autolayout icons on the Layout Toolbar (these options are also available in Layout Menu). Autolayout is especially handy when you:

- · Reverse engineer a database with a large number of items
- · Add a large number of model objects to a new Workspace

To configure properties of Autolayout

Go to Settings Menu | Options | Graphics | Autolayout.

You can configure horizontal and vertical distance coefficients (the distance between objects) and Alphabetic Autolayout sorting property.

Shapes		
Horizontal Distance Coefficient	70	
Vertical Distance Coefficient	70	۲
Alphabetical Autolayout - Sort By	Name	•

Arrange Objects in Layers

Toad Data Modeler allows you to rearrange/order objects on the Workspace in different layers.



To re-arrange the selected object on the Workspace

Right-click the object | Arrange and select any of the following options:

- **Bring to Front** Brings the object on the top layer.
- Bring Forward Brings the object one layer up.
- Send Backward Sends the object one layer down.
- Send to Back Sends the object to the lowest layer.

Z-Order Box

To specify exact layer for an object on Workspace:

- 1. Right-click the object and select Arrange | Settings.
- 2. In the **Object Format** dialog, change the **Z-Order** value. Object with greater Z-Order value are placed on top of objects with lower Z-Order value.

Arrange Relationship Lines

Relationship lines consist of:

- Lines
- Anchor points End points directly connected to entity boxes. You can move them.
- Handle points Other points that can be added to relationship lines via CTRL key. Handle points allow you • to select a part of relationship line to move or delete.

Move Lines, Anchor Points and Handle Points

To move Line or Handle point

- 1. Select a relationship line.
- 2. Place mouse cursor over a part of the line or over a Handle point.
- 3. Drag and drop to change the position of the line/handle point.



To move single anchor point and break a line

- 1. Select a relationship line.
- 2. Place mouse cursor over an anchor point.
- 3. Use drag and drop technique to change position of the break point.



Column to Column Alignment

Lines can be rearranged manually to clearly express a link between columns in entities.



Add Handle Points

To break a horizontal line using one Handle point:

- 1. Select a relationship line.
- 2. Press CTRL and click the line in any place. A red cross icon appears. Release CTRL key.
- 3. Move your mouse cursor left or right of the cross icon and move the highlighted part of the line up or down.



Result:



To break horizontal line using two handle points:

1. Select a relationship line.

End Date

Total Price

Customer ID NN (PFK)

1///

- 2. Press CTRL and click the line. A red cross icon appears.
- 3. Click the line somewhere else. A second red cross appears.
- 4. Move the highlighted part between the two crosses up or down.

	Film				
	om Film ID T#le	Integer Varobar2/50 CHA			
Borrowing	Director	Varchar2(30 CHA			
g ⇔ ExemplarIDNN (PFK)	Director Deschustise Compose	Varchar2(50 CHA		Evemplar	
🚛 Customer ID NN (FK)	Production Company	varchar2(50 CHA	E. Frankland	LACINPIAI	(0)(2) (A)(2)
Start Date	👍 Genre D	Integer	Car Exemplar ID	integer NN	(PK) (AK1
End Date	MinimalAge	Integer	🛛 🖓 Film ID	Integer NN	(FK)
Total Price	🚛 Film ID Episodes	Integer	🚛 Medium ID	Integer NN	(FK)
VAT	Genre ID1	Integer	Price per Day	Integer	(AK1
	<u> </u>	<u> </u>	Customer ID	Integer NN	(PFK)
Result:	Film				
	Eim D	Integer			
		integer			
Borrowing	Intie	Varchar2(50 CHA			
🚛 ExemplarID NN (PFK)	Director	varcnar2(30 CHA			
de Customer ID NN (FK)	Production Company	Varchar2(50 CHA	<u> </u>	Exemplar	
Start Date	🚛 Genre ID	Integer	🚛 Exemplar ID	Integer NN	(PK) (AK1)

Integer

Integer

Integer

Add Horizontal or Vertical Lines Only

Minimal Age

Genre ID1

Film ID Episodes

To create horizontally or vertically straight lines

(Assuming it is possible to link two entities using only horizontal/vertical line)

- 1. Click the identifying or non-identifying relationship icon on Model Objects Toolbar.
- 2. Click parent entity and hold SHIFT key. As long as you hold it, you can only create vertically/horizontally straight line.
- 3. Move your mouse cursor over the desired position (child entity)
- 4. Click the target entity and release SHIFT key.

🦛 Film ID

🛻 Medium ID

Price per Day

Restorer ID

Integer NN (FK)

Integer NN (FK)

Integer NN (PFK)

(AK1

Inte ger



- **i** TIP: Relationship lines between entities are created automatically once you click the parent and the child entity. The line created may not be ideal and you may have to edit it so it looks as you wish. But you can also create your own custom relationship line from scratch:
 - 1. Click the identifying or non-identifying relationship icon on Model Objects Toolbar.
 - 2. Click the parent entity and hold **SHIFT** key. As long as you hold it, you can only create vertically/horizontally straight line.
 - 3. Lead the line to the child entity. Click on Workspace to create a break point. By using break points, you can create any path you want.
 - 4. Finally, click the target entity and release SHIFT key.

Unhide Line

To display relationship line hidden behind objects on Workspace

Select the relationship and click ^{Perest} button on **Layout Toolbar** or right-click the line | **Line Style** | **Unhide Line**.

Move, Hide, Find Relationship Names

To move relationship name

Right-click the selected relationship in particular place and select **Move Caption Here** or **Move Caption to Parent** or **Move Caption to Child**.

To hide relationship names on the Workspace

Click

Hide Captions button on Layout Toolbar.

i Note: You can also right-click the Workspace | Workspace Format | General tab | Hide Line Captions.

To find a relationship line by its caption on Workspace

Click the relationship caption. The appropriate relationship line will be highlighted on the Workspace.

To find a relationship caption by its line on Workspace

Click the relationship line, its caption will be highlighted in a frame.

Format Relationship Lines

To change format of all relationship lines on Workspace

Right-click the WS and select Workspace Format.

To change format of selected relationship(s)

Right-click the relationship and select Format.

Categories

Categories allow you to colorfully distinguish parts of your model. Categories can be assigned to **entities**, **views** and **relationships**.

Scenario

You would like to graphically distinguish all entities related to Ordering process. Or maybe you want to mark all entities containing personal data of your employees.

Solution: You can simply create a category, select its color and assign it to the appropriate entities. All the entities will share the category color.

To add a category to your model

• Select Model Menu | Categories and click Add in the Category List dialog.

or

• Right-click the Categories folder in Model Explorer and select Add Category.,

or

• In Entity/View/Relationship Properties dialog, click the ... button in the Category section.

To assign category to objects

• Open Category Properties (via Model Menu or Model Explorer) | Switch to Objects tab and move objects to right section.

Customer info)bjects To	Do			
Available Borrowing Exemplar Medium Film Genre Customer has film Makes Is Related to Places Is Available on Is Required by Is of Has	Status •	E	> < >	Selected Order Record Customer Customer Rating	Status
Is Rated Has More Episo	•	Ŧ			

or

• In Entity/View/Relationship Properties, choose the desired category in the Category section on General tab.



TIP:

- If your model contains multiple categories, you can display captions of categories on Workspace. See **Caption of Categories** for more information.
- To use category colors in Model Explorer, right-click in **Model Explorer | Settings |** enable **Use Colors of Category to Draw**. Object names will be now match their category color.

Change Notation

To change notation in your model

• Go to View Menu | Notation | choose IE or IDEF1X.

IDF1X



IΕ



Data Warehouse Types

In physical model, you can define a Data Warehouse Type for your entities and graphically distinguish Fact and Dimension entities.

Example:



By default, the Data Warehouse options are not available and have to be activated in Settings menu.

To display Data Warehouse Type options

Select Settings Menu | Options | Physical Model | Entity tab | Form Settings | check Display Data Warehouse Type and Size.

Data Warehouse Type and Size options then become available in Entity Properties.

Caption				Name				
Genre					E			0
Before Scri General	After Scrip Attributes	t Notes Keys	SQL Previe Indexes	ew Relationships Check Constraints	Physical Pro	operties Permiss	Table F sions	Propertie To Do
User / Sch SCOTT	ema		▼					
Glot	al Temporary Ta	ble	Table)					
Comment	Commit Preserve	Rows (for Te	mporary rable)					
Comment	20mmit Preserve	Rows (for Te	inporary rable)					*
Comment	20mmit Preserve	Rows (tor Te						*
Comment Category Category Category	e	Rows (for Te				Data Warel – Not S	house Ty Specified Specified	pe

Display Modes

In Toad Data Modeler, you can switch between Logical (Captions), Physical (Names) and Full Names view of object names.

Select the display mode on **Display Toolbar** or in **View Menu | Display Mode**.



Logical View (Captions)



Physical View (Names)



Full Names



Display Level of Entities

Toad Data Modeler allows you to display entities on Workspaces in several levels: **PER Model**

- Entities
- Primary Keys
- PK and FK keys
- All Keys
- Attributes

LER Model

- Entities
- Primary Identifiers
- Unique Identifiers

- Attributes
- Descriptions Text written in the **Description** tab of entity will be displayed on the WS.

To set the default display level for the selected Workspace

Change the display level from the Display Level box on the toolbar (also View | Display Level).

To set the default display level for new model (models that you will create) Select Settings | Options | Physical/Logical Model | Entity tab.

Format Workspaces and Objects

You can set format for all Workspaces of your model, for each Workspace separately and also for particular objects.

To set format for new models (models that you will create)

- 1. Select Settings | Options | Model section | Physical/Logical Model.
- 2. Define options on tabs Workspace, Shape, Note Line and Entity.
- 3. Press CTRL+N to create a new model.

To change format of objects in existing models

Right-click the Workspace and select Workspace Format.

To change format of a particular object

Right-click the object on the Workspace and select Format.

i Note: If you need to preserve format of a particular object against changes of format of your WS, select the Lock Format option in the Object Format dialog | General tab.

Line Autolayout

Toad Data Modeler provides you with an useful tool that is capable of automatically organizing your lines in your model diagram.

How to use Line Autolayout

- 1. On workspace select lines which you want to organize (or don't select any to organize all lines).
- 2. Go to Layout Menu | Line Autolayout or click Þ on Layout Toolbar. .4 [C:\Users\Iknapek\Documents\Toad Data Modelei Model Tools Macros ects Layout Expert Mor Left to Right Autolayout -8 ÷ Top to Bottom Autolayout T Æ Alphabetic/Square Autolayout 55 2L 9. Line Style ۲ Items ₽₽ Optimal Style On Move Line Autolayout... 5 1] **₽**€ ☑... Fill Relationships **Relationship Captions** ۲ Align Self Relationships ŝ Unhide Lines y Tr
3. Line Autolayout dialog displays. You can now customize its settings.

ine Autolayou	t			
Speed Settin	gs			
		Q		
Fast	Faster	Average	Better Result	Best Result
Max. Calo	culated Variants o	n Shape		3000
Minimal Dis	tance Between L	ines		25
Cross Lines	es			
			ОК	Cancel

Option	Description
Speed Settings	Line Autolayout function tries to find the most optimal result from a set generated number of line variations. Generally, the more variants, the better the result and the more time Line Autolayout takes. You can select the Simple option and use the slider to set the number of generated variations. Or select the Custom option and enter the maximum number of calculated variants manually. Note that the bigger the number of variants and shapes on workspace is, the more time the process
Minimal Distance Batween Lines	takes.
	edge.
Cross Lines	When checked, variants where lines are crossed are preferred.
Straight Lines	When checked, variants where lines are straight are preferred.

Line Autolayout settings

Go to Settings Menu | Options | Graphics | Autolayout tab.

Autolayout	
Max. Calculated Variants on Shape	7500
Minimal Distance Between Lines	30 🕃
Cross Lines	
Straight Lines	

In Lines | Autolayout section you can define the default settings of Line Autolayout function.

Select Colors for Attributes and Keys

To define different colors for attributes on your Workspace

Select Settings | Options | Model section | Physical Model/Logical Model| Entity tab | Attribute Colors area.

Entity
Attributes
Red 👻
∎ biue ▼
Green 👻
Black -
Medium Gray 🗸

TIP: When you point your mouse cursor at a relationship line, parent and child attributes are highlighted on the Workspace. You can set the color at: **Settings | Options | Graphics | Colors** area | **Highlight Color**.



Show Grid and Grid Size

The Grid options are available directly from the toolbar or from the View menu.

To show grid and set a grid size

- 1. Click to show grid.
- 2. To change a grid size, click
- 3. To snap objects of your ERD to grid, click

Shift and Zoom in Your Model

Toad Data Modeler allows you to move around your large models quickly and views various parts of a model in various zoom levels.

For this purpose, the following functions can be used:

- Zoom (Zoom In, Zoom Out, Zoom Box)
- Loupe (magnifier glass)
- Overview (navigator)
- Move

All these functions are available on Zoom Toolbar or in View and Windows menus.



Navigation Tips on Workspace

- CTRL + scroll mouse to zoom in/zoom out
- CTRL + Page Up/Page Down to zoom in/out
- · Scroll mouse to move up/down on the Workspace
- SHIFT + scroll mouse to move right/left on the Workspace
- · Holding down the middle mouse button to move around the entire page/Workspace
- Page Down, CTRL + down to move down
- Page Up, CTRL + up to move up
- CTRL + left to move left
- CTRL + right to move right
- Click on **Zoom Toolbar** to adjust the zoom level so the entire ER diagram fits on screen.

Objects on Workspace and keyboard arrows

- Move objects on Workspace using keyboard arrows.
 - iTIP: To set the move distance of one keypress, see Settings Menu | Options | Graphics |Move Objects by (mm/10) (in tenths of milimeters).
- Select a shape on Workspace, hold down SHIFT and use the keyboard arrows to change size of the shape.

Model Actions

Basic Information

Model Actions can be opened by clicking **Window | Model Actions** or **Model | Manage Model Actions**. This tool contains following Model features:

- Compare and Generate Report
- Generate Change Script
- Merge Models
- Convert Model
- Generate SQL
- Report



Using Model Actions helps you work more effectively. You can:

- Find the most used Model features all in one place
- Save Action Definitions for future use, even to a file
- Load Action Definitions to reduce time spent configuring Actions, even from a file
- Reduce the number of dialogs using Run Promptly button

i Note: Action Definition is a custom configuration of an Action (e.g. Convert Model). Instead of configuring Action every time from scratch, you are now able to save its Definition for later use (e.g. Convert Model from DB2 10.5 to DB2 10.1). In the future you can simply execute the Action Definition without worrying about its settings.

If you clicked through Action dialogs and forgot to save the Action Definition in progress, worry not. Every executed Action creates an Action Definition called *Last *Action**. It contains the settings of the last Action you ran.

Also please note that all saved Action Definitions are part of the model. You can transfer Action Definitions from one Model to another by saving them to a file in original Model and loading them from the file in target Model.

Option	Description
Run Action Definition Promptly	Allows you to execute Action Definition with minimum of dialogs shown.
Run Action Definition	Executes the selected Action/Action Definition. You can save the configuration as a new Action Definition in progress.
New Action Definition	Executes the selected Action/Action Definition. An extra dialog displays asking you to enter name and comment for new Action Definition.
Edit Action Definition	Allows you to go through the dialogs of an Action Definition and edit any options.
Delete Action Definition	Removes Action Definition from list.
Save Action Definition to file	Allows you to save selected Action Definition to a .txad file.
Load Action Definition from file	Allows you to load an Action Definition from .txad file.

Model Actions Options

Saving Action Definition

Action Definition can be saved by clicking the **Save Action** button which is located in the Review dialog (the last dialog every Action has).

🔀 Models Compare								
Models Compare - Model to Compare - Comparison Settings - Select Object Types - Items Selection - Review	Information Statistic: Attribute: Database: Entity: Entity Shortcut: Foreign Key: Index: Index: Index Item: Key: Key Item: Relation: Relation Shortcut: User: Workspace:	Reverse MySQL 5.1 24 0 6 6 6 7 7 7 6 11 6 6 3 1	RE MySQL 5.1 24 9 6 6 6 7 7 7 6 11 6 6 3 1	+ 0 0 0 0 0 0 0 0 0 0 0 0	- 9 0 0 0 0 0 0 0 0 0 0	O O	= 24 0 6 6 7 7 7 6 11 6 6 3 1	
	In the Information section	n, you can find statistic data.						
		Save Action	< Previous	<u>N</u> ext	>		Finish	

Fill in the new Action Definition name and an optional description. Click **Save**.

Save Action Definition		
Action Definition Name:		
MySQL 5.1 Compare Model v1 and Model v2		
Description		
Compare and Generate HTML report.		*
		-
	Save	Cancel

The newly saved Action Definition will now show up in the list.



Change Script

Change Script is useful for transferring changes done to your database or another model into the model you are currently working with. You can generate change script from a modified model or from a connection to a database or to a DDL script file. For executing the resulting script you will need another application such as Toad for Oracle. See Toad for Oracle® as Default Editor for more information.

For the list of databases for which **Change Script Generation** is supported in Toad Data Modeler see **Supported** Databases. For those supported you can either generate Simple Change Script or complete change script using a **Generate Change Script** wizard:

To generate change script

1. Click Run Generate Change Script button or select Model | Generate Change Script or click Model Actions | Generate Change Script.



- 2. Select your target:
 - Available Model Select any open model of the same type
 - Model File Select and browse for any saved model file of the same type
 - Stored connection to Database/SQL file Select any saved connection. See Connections for more information



 If you select a connection to a database or to a DDL file as the target you need to select the target objects you would like to include in your change script. The following buttons and the filter can be used to easily select objects:

Feature	Description
Schema	Select a specific schema you want to include in the target model, all tables or all selected tables.
Select All on All Tabs	Selects all objects on all tabs.
Deselect All on All Tabs	Deselects all objects on all tabs.
Filter	Type to filter objects.

Feature	Description	
	 TIP: Use wildcards - example: "*user" or "?ser". * - replaces unlimited number of characters ? - replaces any single character 	
Select All	Selects all object on the current tab.	
Deselect All	Deselects all object on the current tab.	
Invert Selection	Inverts selection on the current tab.	
Select Parent Tables	Selects all parent tables of the currently selected tables.	
Select Child Tables	Selects all child tables of the currently selected tables.	
Select Parent and Child Tables	Selects all child and all parent tables of the currently selected tables.	
Export Selection	Export selection as a *.wsxr file.	
Import Selection	Imports a selection from *.wsxr file.	

Import Selection

🔀 Generate Change Script	
T .	Show Tables from:
- Target - Target Objects	
- Comparison Settings	Database. Lemphoyees
- Select Object Types	🖓 🖓 Filter:
- Items Selection	
- Review	Tables Views Procedures Functions
	Table
	employees.departments
	employees.dept_emp
	employees.dept_manager
	employees salaries
	employees titles
	<u>Previous</u> Next > Finish

4. Adjust your comparison rules and settings:

Feature	Description
lgnore Text	Toad Data Modeler will ignore all differences in text case when pairing model objects.
Case	E.g. "Entity1", "eNTITY1", "ENTITY1" are treated as identical.

Feature	Description			
Remove Trailing Whitespace	Trailing whitespace, i.e. any whitespace characters at the end of a line including blank lines at the end of bodies of definitions, will be ignored during comparison. E.g. If checked, the following pieces of script will be treated as identical:			
	"Insert Into "Test" Values("aaa");"			
	"Insert Into "Test" Values("aaa");			
	TH COMPANY AND A COMPANY A COMPANY AND A			
	"Insert Into "Test" Values("aaa"); "			
Ignore Model Name	Ignores the name of the model. Set the name in Model Properties Model .			
Resolve Application	Resolves application variables during comparison. If left unchecked variables will be compared as variables.			
Variabico	i NOTE: In names, application variables are supported in the following objects: Relations, Keys, Check Constraints, and Indexes. For more information on application variables see Application Variables.			
	E.g. Your name is John Doe Your user name is "jdoe". An index is called "Index1_ <%Author%>". If you check Resolve Application Variables the index will be treated as "Index1_jdoe". If unchecked it will be treated as "Index1_<%Author%>".			
Ignore Empty Primary Keys	Primary keys with no attributes will be ignored during comparison.			
Pair Primary Keys Regardless of Names	Primary keys will be mapped with no regard to their names.			
Force Comparison by Data Type	Objects and properties will be compared also according to their data types. E.g. Source and target attributes in domains are named identically but they have different			
	considered identical because their names and the names of the domains are identical.			
Log Progress to File	Progress and errors will be logged to a file.			

階 Generate Change Script		- • •
 Target Target Objects Comparison Settings Select Object Types DDL Code Generation Items Selection Review 	Comparison Rules Ignore Text Case Remove Trailing Whitespace Ignore Model Name Resolve Application Variables Ignore Empty Primary Keys Force Compare by Data Type Settings Log Progress to File Isolect the Log Progress to File checkbox to store log messages to a file.	
	< Previous Next > Finish	Glose

5. By default **Simple Settings** are displayed. Select which object types and properties from several preset options will be compared between the models. Switch to **Detailed Settings** to display finer settings in order to select specific object types and properties.

🔀 Generate Change Script		- I I X
 Target Comparison Settings Comparison Settings Bede Object Types ODL Code Generation Tems Selection Review 	Select Object Types and Properties © Compare All © Custom Settings © Compare Entities and Relationships © Compare Users and User Groups © Compare Note, Note Line, ToDo © Compare All Others	
	Olick Detailed Settings to display a list of all available object types and properties.	d Settings
	< Previous Next > Finish	Close

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6. Adjust settings for **DDL Code Generation**. The following options for **DDL Code Generation** are common for more database types. The wording of the options is dependent on the database type selected.

Option	Description
Use Quotation Marks	Names of objects and properties will be generated in quotation marks (or as delimited identifers etc.).
Generate Database Name to Identifies	Names of objects and properties will be generated together with the name of the related database, user or schema or similar.
Text Case Selection	 Select the case in which the change script will be generated: Preserve Case Lower Case Upper Case
💀 Carrante Charace Saviet	
Venerate Change Script Target Target Objects Comparison Settings Select Object Types DDL Code Generation Tems Selection Review	Use Quotation Marks Generate Database Name to Identifiers Use Temporary Tables to Preserve Data Text Case Selection: Preserve Case Terminator :
	< Previous Next > Finish Qose

7. Map entities and attributes in the last step. Click the **Rename** button (_____) to map an entity or attribute to a target entity or attribute. The Description column in **Rename** dialog displays the current state of the object. Objects can be unmapped.

Compare Tree displays all differences between the two given models. The generated change script modifies the target model on the right so it matches the source model on the left. Check the changes you would like to execute.

12	Generate Change Script					
i 🖻 • 🖶 📭	🕫 😼 🎜 🞜 🔆 🇯 🏗 🖶 🔶 🏫	Show Different Object	s v Show Different Properties v	•		
Operation	Source: Videorental C:\Program Files\Quest Software\	Toad Data Modeler 6.2\	Target: Oracle 10g C:\Users\dbizon\Documents\	Toad Data Modeler\		
Image: A state of the state	⊟- Videorental		⊟- Oracle 10g			
Image: A state of the state	- After Script	insert into T_GENR	- After Script			
V 🔽	- Project	Videorental Project	- Project			
Image: A state of the state	- Model	Videorental	- Model	Oracle 10g		
V 🔽	- Author	Rad	Rename	×		
🖌 🔽	- Company	Que				
2	UserDataTypes	Select entity to	hat should be used for mapping.	- L.		
	Domains		a cross co coco rei mapping.			
	⊕- Users	Entity	Description			
	Entties	Entity1	The entity is currently mapped to "T_0	CUSTOMER".		
V 2	SCOTT.T_CUSTOMER	Entity2	Not mapped to any entity.	- L		
	P- SCOTT.T_BORROWING					
	SCOTT.T_EXEMPLAR	_				
	SCOTT.T_MEDIUM					
	B SCOTT.T_ORDER_RECORD	_				
	SCOTT.T_FILM					
	B- SCOTT.I_CUSTOMER_RATING	_				
	G (cloth)					
	(D Deletions					
	B News					
	C Prestere		01			
	B. Frocedures		OK	Cancel		
	Punctons Defaulte		(i) - Defende			

Compare Tree Overview

Option	lcon	Description
Import Selection	*	Import selection from a saved file.
Export Selection	8	Save selection to a file.
Verify		Runs the verification process.
		The verification might return a warning ⁴ . Details are available in Verification Log .
Check All		Checks all items.
Uncheck All		Unchecks all items.
Check All to Add	₽	Checks all items that exist in the Source model, but not in the Target model (CREATE).
Check All to Remove	5	Checks all items that do not exist in the Source model, but exist in the Target model (DROP).

Option	lcon	Description
Check All to Modify	5	Checks all items that exist in both models and are different (ALTER).
Wildcard Filter	$\dot{\nabla}$	Opens the Wildcard Dialog where you can define settings for bulk selection/deselection of the Action box of the items listed on page Select Items .
Refresh Necessitated Items		Some objects are related together (e.g. entity and domain, entity and relationship). In case you uncheck an object or property in Select Object Types step and a related object or property is selected, the unchecked object or property will be automatically selected too. E.g. You uncheck a domain in Select Object Types but you keep an attribute of the domain type checked for conversion. In the next screen the domain will be selected for conversion (and highlighted in gray). This is because of its relationship with the attribute, which cannot exist without the domain. If you uncheck the attribute, the domain will still be checked for conversion. This is where you use this button. It inspects all checked objects and removes the domain highlighted in gray since the attribute is no longer checked. That means the domain is no longer necessary, since it has no relationships with currently checked objects and you unchecked it in Select Object Types step.
Display options for objects	Show Show Show Show	All ObjeStew All Objects Equal Cation Equal Objects Different Objects
Display options for properties	Show Show Show Show	Compare Tree will show only: All Properties Equal Properties Differer Show Different Properties
Source	-	The updated or modified model.
Target	-	The model for which you want to generate change script.
Operation	-	Check this checkbox to generate change script for the difference. Uncheck this checkbox to not generate change script for the difference. Default selection: Default selection of the Action checkboxes depend on your settings on page Settings in the Options for Default Selection of Items area. If you select all the options in this area, the Action checkboxes will be selected for all changes (CREATE, DROP and ALTER) by default.

Compare Tree Icons

Ŧ

🚊 Entities

Difference between original model and Target model.

🔁 📄 SCOTT.T_MEDIUM

This object exists in original model but does not exist in Target model.

💼 (not exists)

Contexists)

This object is missing in original model but exists in Target model.

Right-click menu

Right-click any item to display the following menu:



Option	Description
Check All Children	Checks the Operation checkbox of all children items.
Uncheck All Children	Unchecks the Operation checkbox of all children items.
Check All Children to Add	Checks the Operation checkbox of children items that exist in
	Source model but not in the Target model (🕒 items) to generate the CREATE statement.

Option	Description
Check All Children to Remove	Checks the Operation checkbox of children items that are missing Source model and exist in Target model (items) to generate the DROP statement.
Check All Modified Children	Checks the Operation checkbox of children items where properties differ (items) to generate the ALTER statement.
Uncheck All Children to Add	Unchecks the Operation checkbox of children items that exist in Source model but not in the Target model (items) to not
	generate the CREATE statement.
Uncheck All Children to Remove	Unchecks the Operation checkbox of children items that are missing Source model and exist in Target model (
	generate the DROP statement.
Uncheck All Modified Children	Unchecks the Operation checkbox of children items where properties differ (items) to not generate Change Script for this change.
Mildoord Filtor	On one the Wildoord Dieless where you can define a stilling for built
	Spens the wildcard Dialog where you can define settings for bulk selection/deselection of the Operation box of the items listed on page Select Items .
Expand All Children	Expands all sub-items of the selected item.
	Collansos all sub itoms of the selected itom
Collapse All Children	Collapses all sub-items of the selected item.

 Review your comparison. You can set your own path for change script output file here. Click Save Action to save the comparison as Model Action for repeated use. See Model Actions for more information. Click Finish to generate the script.

🔁 Generate Change Script									- • •
- Target	Information								
 Target Objects Comparison Settings 	Requested hidde Statistic:	en actions:							
- Select Object Types		MySQL 5.1	RE MySQL 5.1	+	-	\diamond	=	Commit	
- DDL Code Generation	Attribute:	0	14	0	14	0	0	14	
- Items Selection	Database:	0	1	0	1	0	0	1	
- Review	Entity:	1	4	1	4	0	0	5	
	Foreign Key:	0	1	0	1	0	0	1	
	Index:	0	5	0	5	0	0	5	
	Index Item:	0	5	0	5	0	0	5	
	Kev:	0	4	0	4	0	0	4	
	Kev Item:	0	8	0	8	0	0	8	
	Relation:	0	1	0	1	ō	0	1	
	User:	0	3	0	3	0	ō	3	
	Output Settings								
	Output File:								
	C:\Users\knapek\	Documents\Toad	Data Modeler\General	tedScri	pts∖Alter	Script.	sql		
	View File after Ge	eneration							
	In the Information you don't select too. Toad Data	on section, you ca t Domains for alter Modeler will displ	an find statistic and info r script generation but a ay such information in t	ormatior a domai this are	n about r in is use a.	necessa d in ent	ary actionity, the	ons. What are necessary acti code for the domain will have	ons? For example, if to be generated
		Sa	ve Action	Previo	us		<u>N</u> ext :	Finish	Close

Change Script Generation - Temporary Tables

You can decide whether or not to use Temporary Tables during Change Script generation. The settings are available in Settings | Options | Physical Model | *Specific Database*| Change Script Settings.

- Use Temporary Tables to Preserve Data If you uncheck this checkbox, a sequence of commands DROP TABLE / CREATE TABLE will be generated instead of temporary tables. (The exception are the changes in data types where ALTER TABLE command is generated.)
- Use Temporary Tables to Preserve Data on Data Type Change This option is only available with Use Temporary Tables to Preserve Data option checked. Unchecking this option results in generating ALTER commands where there are changes in data types instead of using Temporary Tables.
- i Note: For Microsoft Azure SQL Database, Microsoft SQL Server, and PostgreSQL, if you uncheck the Use Temporary Tables to Preserve Data checkbox, temporary UDT/DictType will not be generated either. (They are created together with Temporary Tables.)

Simple Change Script

Simple Change Script is generated for one entity. You might find it useful when you want to transfer minor changes in your model to your database.

To generate Simple Change Script

• Right-click the entity you want to generate change script for and select Change Script | Run

P		Format		
6		Add into Workspace		
		Add into New Workspace		
		Remove from Workspace		
		Delete Object		
		Arrange	•	
		Copy Object Layout		
		Add Object to Gallery	۲	
	•	Recalculate Size		
		Align Self Relationship		
		Edit		
		Add Custom Property		
		Add	►	
		Change Script	•	Run
		Edit Attribute		
		Select	•	
		Fill	۲	
		Add to Category	•	
		Macros	•	

· Follow the steps in Change Script to create simple change script

Merge Models

Toad Data Modeler offers you two options to merge your models:

- **Simple Model Merge** allows you to merge physical models quickly due to skipping several settings dialogs and Model Comparison. The target model will always be overwritten.
 - Simple Model Merge is available in Model Menu | Simple Merge.
 - Simple Model Merge
- Model Merge in the Model Actions allows you to see differences between two models, select particular items to merge and merge the models either to already existing model or to a new model.

• Example: You work with several models. Use **Model Merge** to compare the models and merge them either to an existing model, or to a new model altogether.

How to Merge Models

Model Merge can be found in **Model Actions** (**Window Menu | Model Actions**), or in **Model Menu | Merge Models | Run**.

🔀 Models Merge		- • ×
<u>- Model to Merge</u> - Comparison Settings - Select Object Types - Items Selection - Review	Select Model to Merge O Available Model MySQL 5.1 O Model File ("txp, "txb, "txl, "tbl) C:\Users\knapek\Documents\Toad Data Modeler\Standard Installation 2\Models\RE MySQL 5_1.txp	•
	Select Model to Merge. This is the model that serves as a basis for the result.	
	< Previous Next > Rinish	Qose

- In the first step select either an opened model or a model from a file.
- i note: The selected model has to be of the same database platform and version. You cannot compare DB2 10.5 and MySQL 8.0 models.

🔀 Models Merge		
- Model to Merge - <u>Comparison Settings</u> - Select Object Types - Items Selection - Review	Comparison Rules Image: Comparison Rules Image: Remove Trailing Whitespace Image: Remove Trailing Whitespace <td></td>	
	< Previous Prinish C	lose

• The next dialog presents you with a couple of setting related to **Model Comparison**. When you're done editing the options, click on Next.

🔁 Models Merge		
- Model to Merge - Comparison Settings <u>- Select Object Types</u> - Items Selection - Review	Select Object Types and Properties Compare All Compare All without Graphics (shapes, colors, fonts, etc.) Custom Settings Compare Entities and Relations Compare Procedures and Functions Compare Vote Une, ToDo Compare Graphics Compare Captions Compare All Others 	
	Otechnic Click Detailed Settings to display a list of all available object types and properties.	32
	< Previous Next > Finish Qose	

- Now you have to choose what types of objects will be included in the comparison. If you wish to select objects in more detail, click on **Detailed Settings**.
 - Entities and attributes can be easily mapped here in the last step
 - Double-click the button (____) to map an entity or attribute to a target entity or attribute
 - The Description column displays the current state of the object. Objects can be unmapped

12		Mod	dels Merg	le			- 🗆 🗙
i 🖻 • 🐻	🕲 😼 🎜 🎜 🎝 🔆 🇯 🎭 🗄 🔸 4	Show Different Objects	s v	Show Different Properties	~		
Operation	Source Model: Videorental C:\Program Files\Quest S	oftware\Toad Data Modele	Model to	Merge: Oracle 10g C:\Users\	dbizon\Docu	ments\Toad Data Modeler\Stan	dard Installation\Mod
V 🔽	⊟- Videorental		- Oracle	10g			^
Image: A state of the state	- Name Mode	0	— N	me Mode		1	
🖌 🔽	- After Script	insert into T_GENRE	- A	er Script			
🖌 🔽	- Project	Videorental Project	- Pr	oject			
🖌 🔽	- Model	Videorental	— M	odel		Oracle 10g	
V 🔽	- Author	Radim Mario Tkacik	- A	thor			
🗸 🔽	- Company	Quest Software, Inc.	- Co	mpany			
	UserDataTypes		⊕- U	erDataTypes			
	Domains			mains			
	⊕- Users		⊕- U	ers			
	- Entities		0- 6	tities			
	B- SCOTT T CUSTOMER		0 -	(not exists)			
	B- SCOTT.T_BORROWING		E E	(not exists)			
V 🖸	SCOTT.T_EXEMPLAR			(not exists)			
	SCOTT.T MEDIUM			(not exists)			
	SCOTT T ORDER RECORD			(not exists)			
	E- SCOTT T FILM			(not exists)			
	E SCOTT T CUSTOMER RATING			(not exists)			
	E SCOTT T GENRE			(not exists)			
	(not exists)			Fetty1			
	(not exists)			Entity2			
	(t) - Relations		(t) - R	lations			~
Name: T_CUS Caption: Custor	TOMER		Name: Caption:				
i f you wa Children.	nt to select checkbox for all entities, right-click the Entities	item and select Check Al		< Previous	Next >	Finish	Close

• You are now presented with Compare Tree dialog displaying all differences between the two given models. Check or uncheck items to select what objects will be merged.

🔀 Models Merge									×
- Model to Merge	Information								
- Comparison Settings	Statistic:								
- Select Object Types	Statistic.	MySOL 5 1	MySOL 5 1	+	_	~	=	Commit	
- Items Selection	Attribute:	14	24		10	õ	14	10	
- Review	Database:	9	9	ň	0	0	9	0	
	Entity:	5	7	1	ä	õ	4	4	
	Entity Shortcut:	5	7	1	ă	0	4	4	
	Foreign Key:	2	6	â	4		2	4	
	Index:	3	7	ŏ	4	õ	2	4	
	Index.	3	7	~	4	ä	3	4	
	Vev.	3	6	0	3	0	3	2	
	Key.	5	11		6	~	5	5	
	Rey Item:	5	11		0	~	5	6	
	Relation:	2	6	0	4	0	4	4	
	Relation Shortcut:	2	0		*		2	4	
	User:	3	3				2	0	
	HOIRDPROCT	-	-	Ŭ		-	Ŭ	-	
	Output Settings								
	Merge to New Model								
	Model Name								
	MySQL 5.1 - newly merged								
	 In the Information section example, if you don't selv Modeler will display such 	n, you can find sta ect Domains for M n information in this	atistic and other inf odel Merge but a (s area.	ormatio domain	n about is used	necess in entity	ary acti , the do	ions. What are necessary actions? For omain will have to be merged too. Toad	Data
		Save Action	n < <u>P</u> rev	/ious		<u>N</u> ex	t >	Finish <u>C</u> lose	

- Check the Review screen which show you the changes for each object type. If you want to merge models into a new model, check **Merge to New Model** and enter its name.
- TIP:If you plan to do this action again in the future, you might want to click the **Save Action** button to save this **Action Definition**. See **Model Actions** for more information.

Option	lcon	Description
Import Selection	P	Import selection from a saved file.
Export Selection	8	Save selection to a file.
Verify		Runs the verification process. The verification might return a warning ¹ . Details are available in Verification Log .
Check All		Checks all items.

Compare Tree Overview

Option	lcon	Description
Uncheck All		Unchecks all items.
Check All to Add	₽	Checks all items that exist in the Source model, but not in the Target model (CREATE).
Check All to Remove	5	Checks all items that do not exist in the Source model, but exist in the Target model (DROP).
Check All to Modify	5	Checks all items that exist in both models and are different (ALTER).
Wildcard Filter	$\dot{\nabla}$	Opens the Wildcard Dialog where you can define settings for bulk selection/deselection of the Action box of the items listed on page Select Items .
Refresh Necessitated Items	, Alexandrian Alex	 Some objects are related together (e.g. entity and domain, entity and relationship). In case you uncheck an object or property in Select Object Types step and a related object or property is selected, the unchecked object or property will be automatically selected too. E.g. You uncheck a domain in Select Object Types but you keep an attribute of the domain type checked for conversion. In the next screen the domain will be selected for conversion (and highlighted in gray). This is because of its relationship with the attribute, which cannot exist without the domain. If you uncheck the attribute, the domain will still be checked for conversion. This is where you use this button. It inspects all checked objects and removes the domain highlighted in gray since the attribute is no longer checked. That means the domain is no longer necessary, since it has no relationships with currently checked objects and you unchecked it in Select Object Types step.
Display options for objects	Show Show Show	All Objects Equal Objects Different Objects • Show Different Objects
Display options for properties	Show Show Show	All Properties Equal Properties Different Properties
Source	_	The updated or modified model.
Target	-	The model for which you want to generate change script.
Operation	-	Check this checkbox to generate change script for the difference.

Option	lcon	Description						
		Uncheck this cher Default selection: your settings on p Items area. If you will be selected fo	ckbox to not g Default select page Settings I select all the or all changes	generate chang stion of the Act in the Option options in this (CREATE, DR	ge script f i on checl s for Def area, the ROP and <i>I</i>	or the differ kboxes dep ault Selec t Action ch ALTER) by	rence. bend on tion of eckboxes default.	s
Compare T	ree Icons							
e	😑 Entiti	es						
Difference be	tween origina	al model and Target	model.					
B	🖶 SCOTI	F.T_MEDIUM					.	(not exists)
This object ex	ists in origina	al model but does no	ot exist in Tar	get model.				
	(not exists)					SCOTT	.v_Custom	er_Has_Film
This object is	missing in or	iginal model but exi	sts in Target r	nodel.				

Right-click menu

Right-click any item to display the following menu:

	Check All Children
	Uncheck All Children
	Check All Children to Add
	Check All Children to Remove
	Check All Modified Children
	Uncheck All Children to Add
	Uncheck All Children to Remove
86 - C	Uncheck All Modified Children
	Wildcard Filter
	Expand All Children
	Collapse All Children

Option	Description
Check All Children	Checks the Operation checkbox of all children items.
Uncheck All Children	Unchecks the Operation checkbox of all children items.
Check All Children to Add	Checks the Operation checkbox of children items that exist in Source model but not in the Target model (¹ items) to generate the CREATE statement.
Check All Children to Remove	Checks the Operation checkbox of children items that are missing Source model and exist in Target model (items) to generate the DROP statement.
Check All Modified Children	Checks the Operation checkbox of children items where properties differ (
Uncheck All Children to Add	Unchecks the Operation checkbox of children items that exist in Source model but not in the Target model (CREATE statement.
Uncheck All Children to Remove	Unchecks the Operation checkbox of children items that are missing Source model and exist in Target model (BROP statement.
Uncheck All Modified Children	Unchecks the Operation checkbox of children items where properties differ (
Wildcard Filter	Opens the Wildcard Dialog where you can define settings for bulk selection/deselection of the Operation box of the items listed on page Select Items .
Expand All Children	Expands all sub-items of the selected item.
Collapse All Children	Collapses all sub-items of the selected item.

Simple Model Merge

This feature allows you to merge two physical models very quickly. However, in comparison to the model merge in the **Sync & Convert Wizard**:

- You cannot select particular items for the model merge (e.g. not to merge particular entity). You can select only Object Types and Properties for the model merge.
- The target model will always be overwritten.

To use the Simple Model Merge feature

- 1. Open both models that you want to merge.
- 2. Make the modified (updated) model active in the Application Window (source model).
- 3. Select File |Synchronization | Simple Model Merge.

- 4. From the **To Model** box, select a model that you want to update (target model). This model will be overwritten.
- 5. See other options.

Option	Description
To Model	Select a target model.
More>>	Click this button to see and modify Object Types and Properties for the model merge.Object Types and Properties - OTPs
Close after Merge	Closes the Merge dialog after the process is finished.
Merge	Executes the process of model merge.
Close	Closes the Merge dialog.

6. Click Merge.

Data Type Conversion Settings

Before you start the conversion process, you can set conversion settings for data types.

- 1. Enable Expert mode: Select Settings | Options | General | check the Expert Mode checkbox.
- 2. From the main menu, select Expert Mode | Expert Mode Settings | Data Type Conversion Settings.

🔊 ‰ Source: Oracle 10g	Destination: Mic	crosoft SQL Ser	ver 2012	-	
Source	Destination	Param1	Param2	Script	
Char(x)	Char(x)				
NChar(x)	NChar(x)				ſ
Varchar2(x)	Varchar(%p1)	-			
NVarchar2(x)	NVarChar(x)	-			
Number(x,y)	Decimal(x,y)				
Number	Decimal(x.y)	38	0		
Integer	Integer				
Real	Real				
Float	Float				
Float(x)	Float				
Date	DateTime2				
Long	Text				
Blob	Image				
Clob	Text				
NClob	NVarChar(max)				
Long raw	Image				
Raw(x)	Binary(x)				
Rowid	VarChar(x)	64			
Urowid(x)	VarChar(x)				
Bfile	Image				
Timestamp(x)	DateTime2(x)				
Timestamp(x) with time zone	DateTimeOffset(x)				
The state 6.0 mile to all the state	D-1-TOff143				

- 3. In the **Source** and **Destination** boxes choose the desired databases.
- 4. Press 🔨 to display available data types. Click ¹⁶ to view only exceptions.

You can see a list of data types of source model that will be converted to data types in destination model.

Example: Oracle **Blob** data type will be converted to Microsoft SQL Server 2012 model as **Image** data type. You can change the destination model data type.

Note: The modified database conversion settings are saved to **DataTypeConversion.txn** file stored by default in: C:\Users**username**\AppData\Roaming\Quest Software\Toad Data Modeler**Installation name**\Configs. If you want to restore the original conversion settings, you can simply delete this .txn file.

5. Confirm OK.

i

Execute Script

If you want to use your own script for data type conversion, click the **Go to Exception Script** button. A dialog offer you to create a new script. Confirm and the newly created script will be shown in **Script Editor**, where you can edit it as you like.

Example:

```
function Convert() {
  var Log = System.CreateObject('Log');
  Log.Information('Konverze');
  Log.Information('Input MD: '+ InputModelDef.Abbrev );
  Log.Information('Output MD: '+ OutputModelDef.Abbrev );
  Log.Information(InputDataType.ConversionID.Code);
  var outDT
  if (InputDataType.ConversionID.Code == 'C_X') {
  Log.Information('HERE');
    for( i = 0; i < OutputDataTypes.Count; i++ )</pre>
    {
      outDT = OutputDataTypes.GetObject( i );
      Log.Information( outDT.Name );
      if (outDT.Name=='Box') {
        return(i);
      }
    }
  }
  return(0);
}
```

PER - PER Conversion Information

See some basic information on what is converted and how during the PER to PER conversion.

- Data Types are converted.
- Permissions are compared by names.
- SQL code is copied and commented not to generate any code.

See other details here:

Item to Convert	Model A (Source Model)	Model B (Destination Model)	Result
Data Types			
	Supported data type	Supported data type	Same data type
Example*:	Integer	Integer	Integer
	Supported data type	Equivalent data type	Equivalent data type
Example**:	Float	Real	Real
Permissions			
	Supported Permission	Supported Permission	Same Permission
Example:	SELECT	SELECT	SELECT
	Supported Permission	Unsupported Permission	None
Example:	DROP (MySQL 8.0)	None (Microsoft SQL 2019)	None (Microsoft SQL 2019)
	Unsupported Permission	Supported Permission	Model B Permission
Example:	None (Microsoft SQL 2019)	DROP (MySQL 8.0)	DROP (MySQL 8.0) (DROP preserved in already existing model.)
Deny Permission			
	Deny Permission Supported	Deny Permission Supported	Deny Permission Converted
	Deny Permission Supported	Deny Permission Unsupported	None
	Deny Permission Unsupported	Deny Permission Supported	Model B Deny Permission
Example:	MySQL 8.0	Microsoft SQL	Microsoft SQL

Item to Convert	Model A (Source Model)	Model B (Destination Model)	Result
		2019	2005 (Deny permission preserved in already existing model.)
Grantor			
	Grantor Supported	Grantor Supported	Grantor Converted
	Grantor Supported	Grantor Unsupported	None
	Grantor Unsupported	Grantor Supported	Grantor is empty.
Example:	MySQL 8.0	Microsoft SQL 2019	Microsoft SQL 2019 (Grantor preserved in already existing model.)
Users and User G	roups		
	Supported	Supported	Converted successfully
	Supported	Unsupported	None
	Unsupported	Supported	None
Example:	Users unsupported in PostgreSQL	Users supported in Microsoft SQL 2019	None

Model A - Currently opened model that you want to convert.

Model B - Model to which you want to convert Model A.

Complete Model A is converted to Model B.

Other Information

 Conversion between PostgreSQL and Microsoft SQL: Serial and BigSerial data types in PostgreSQL are converted to Identity in Microsoft SQL. Identity in Microsoft SQL is converted to combination of sequence and default "nextval" in PostgreSQL.

- Conversion between PostgreSQL and MySQL: Serial data type in PostgreSQL is converted to Autoincrement in MySQL. Autoincrement in MySQL is converted to combination of sequence and default "nextval" in PostgreSQL.
- Conversion between PostgreSQL and Oracle: Serial and BigSerial data types in PostgreSQL are converted to combination of sequence and a sequence selected for attribute in Oracle. A sequence selected for attribute in Oracle is converted to default "nextval" in PostgreSQL (the sequence is converted automatically).
- Conversion from Oracle to Microsoft SQL (and Microsoft SQL to Oracle): Automatic conversion of Identity in Microsoft SQL to Sequence in Oracle (and back).
- Conversion from Oracle to MySQL (and back): Sequence in Oracle are converted to Autoincrement in MySQL (and back).
- Conversion from Microsoft SQL to MySQL (and back): During conversion of Identity (Microsoft SQL) to Autoincrement (MySQL) and back the new IdentitySeed/Initial Autoincrement is taken into consideration. (In version 3.4, only conversion between checkbox Identity and Autoincrement was possible.)
- Model Conversion from MySQL to Microsoft SQL and Oracle: MySQL Enum data type is converted to Char data type, a check constraint for the attribute is created, the parameter is preserved (see the **SQL** tab of the **Check Constraint Properties** dialog).

* Data types conversion examples - conversion from MySQL 8.0 model to SQL Server 2019 model.

** See the equivalent data types for conversion in the Settings menu | Data Type Conversion Settings.

PER - LER Conversion Information

See the following basic information on what is converted during PER to LER and LER to PER conversion and how.

Item to Convert	Notes:	PER - LER Conversion	LER - PER Conversion
Data Types	Similar to PER to PER conversion.	The conversion rules should be defined in the Data Types Conversion Settings dialog.	The conversion rules should be defined in the Data Types Conversion Settings dialog.
Self Relationship	In PER model, only non- identifying self relationship is supported.	Self relationship is converted properly.	Identifying self relationship will change to non-identifying self relationship.
Cardinality	In PER model, cardinality of one side of relationship is 1n.	Cardinality is converted properly.	E.g. 25 cardinality in LER model is converted to 15 in PER model.
Parent Key	Parent key can be defined in LER model. In LER model, open the Relationship Properties dialog General tab Foreign Unique Identifier box.	Parent key in PER model is different than PK (alternate key, unique attribute or index)> Parent key defined in PER model is converted to LER model properly.	Selected UI of LER model is converted to PER model (PK and appropriate alternate keys are created).

Item to Convert	Notes:	PER - LER Conversion	LER - PER Conversion
	(In PER model, Parent Key is defined in the Relationship properties dialog Foreign Keys tab.)		
Foreign Keys	In LER model, keys are not transferred from parent to child entity.	No FKs are displayed in child entity in LER model.	FKs that are not displayed in LER model are visible in child entity in PER model.
Primary Keys		PK (Primary key) in PER -> PUI (Primary unique identifier) in LER	PUI (Primary unique identifier) in LER -> PK (Primary key) in PER
Alternate Keys	You can select alternate key as a parent key.	AK (Alternate key) in PER - > UI (Unique identifier) in LER	UI (Unique identifier) in LER -> AK (Alternate key) in PER
NN versus M Attributes	NN - Not Null in PER model. M - Mandatory in LER model. The values can be displayed in ER diagram.	NN -> M	M -> NN
Inheritance	Inheritance is not supported in PER model.		Conversion of inheritance to PER model will be executed by the rules set in the Inheritance dialog Generation tab.
Valid Values in Attribute	Valid values are supported only in LER model. They can be defined for the following data types: Bigint, Float, Integer, VarChar.	 (Check constraints from PER model are not converted to LER model.)	Default values in LER model -> Check constraints in PER model.
Defaults for Attributes and Domains		Converted properly.	Converted properly.
Rules for Attributes and Domains	In LER model, attributes and domains can have rules.	Attribute check constraint has rules in PER model> Rules for this attribute are	Attribute has rules in LER model> Check constraint with this rule for

Item to Convert	Notes:	PER - LER Conversion	LER - PER Conversion
	In PER model, attributes and domains have check constraints and these check constraints can have rules.	converted to LER model.	the attribute is available in PER model.

LER to PER Conversion - Self-Relationship

If there is a self-relationship in LER model, the entity has two columns, both of the same name (primary key), in converted PER model. Other modifications are necessary.

Possible solution: You can define a name for the propagated attributes in LER model before the conversion. Open the **Attribute Properties** dialog | **General** tab | enter the name to the **Propagated Name** box.

If this box is empty, Toad Data Modeler will behave standardly (two columns of the same name in PER model).

Convert Model

Toad Data Modeler allows you to convert:

- Physical models from one database platform to another (e.g. Oracle 10g model can be converted to SQL Server 2008 model)
- Physical model to Logical model
- Logical model to Physical model

The conversion can be executed via:

- Model Actions | Convert Model or Model Menu | Convert | Run
- Simple Model Conversion in Model Menu | Convert
 - Simple Model Conversion

How to Convert Model

Physical to Physical

🔁 Model Conversion	
- Target - Conversion Settings - Select Object Types - Items Selection - Review	Select Target (Database Platform) Microsoft SQL Server 2012
	< <u>Previous</u> <u>Next</u> > Finish <u>Qose</u>

• Select your desired database platform.
🔀 Model Conversion		
- Target - <u>Conversion Settings</u> - Select Object Types - Items Selection - Review	Settings © Comment Out Database Specific Items (code of stored procedure etc.) Resolve Application Variables Log Progress to File	
	Select the Log Progress to File checkbox to store log messages to a file.	
	< <u>Previous</u> Next > Finish	Qlose

- Pay attention to the Conversion Settings dialog.
- i Note: Converting between different platforms means that some items, which contain SQL code, may not be converted correctly (e.g. After Scripts, Before Scripts, Procedures...). In this case, it is recommended to check the **Comment Out Database Specific Items** checkbox. This way, SQL code, that cannot be successfully converted, will be commented out. You can review these parts of code later and fix them on your own.

🔀 Model Conversion		
 - Target - Conversion Settings - Select Object Types - Items Selection - Review 	Select Object Types and Properties © Convert All © Convert All without Graphics (shapes, colors, fonts, etc.) © Custom Settings © Convert Entities and Relationships © Convert Procedures and Functions © Convert Users and User Groups © Convert Graphics © Convert Graphics © Convert All Others	
	Click Detailed Settings to display a list of all available object types and properties.	Settings
	< <u>Previous</u> <u>Next</u> > Finish	Close

Choose what object types will be converted. You can access full list of Objects and Properties by clicking on
 Detailed Settings.

🔀 Model Conversion	
🗄 📑 🗸 🔚 🛛 😨 🙀 🍹 🔤 🐘 🛛 😽 🗸 🗸	
Image: Constraint of the second se	
V_ustomer_Has_Him Procedures Functions Potes Notes VoteLines VoteLines VoteS Name: T_CUSTOMER_RATING Caption: Customer Rating	
If you want to select checkbox for all entities, right-click the Entities item and select Check All Children.	< Previous Next > Finish Close

• Check items you want to convert to another model. For easier item management use buttons located on the top.

🔁 Model Conversion				
	Information			
- Larget				
- Conversion Settings	Statistic:			*
- Select Object Types		Videorental	Commit	
- Items Selection	Attribute:	30	18	
- Keview	Categories Shortcut:	1	1	
	Category:	1	1	
	Check Constraint Attribute:	1	0	
	Check Constraint Entity:	1	0	=
	Default:	1	1	
	Domain:	1	1	
	Entity:	8	5	
	Entity Shortcut:	27	19	
	Entity Trigger:	2	0	
	Foreign Key:	10	5	
	Function:	1	1	
	Index:	1	1	
	Index Item:	1	1	
	Key:	10	7	
	Key Item:	14	10	
	Line:	1	1	
	Model Title Shortcut:	1	1	
	Note:	5	5	
	Noto Tipo Chortout.	1	1	
	New Model Name			
	Videorental			
	In the Information section, you can fin example, if you don't select Domains f Data Modeler will display such informa	d statistic and other in or conversion but a d ation in this area.	nformation about necessary actions. What are necess formain is used in entity, the domain will have to be con	ary actions? For verted too. Toad
	Save A	ction < <u>P</u> n	evious Next > Finish	Gose

- A review dialog shows with some statistics about how many and what kinds of objects will be converted. Once you're done reviewing, click on Finish.
- **TIP:**If you plan to do this action again in the future, you might want to click the **Save Action** button to save this **Action Definition**. See **Model Actions** for more information.
 - The conversion process occurs and your model is now converted to another database platform.

Physical to Logical

🔀 Model Conversion	
- Target - Conversion Settings - Select Object Types - Items Selection - Review	Select Target (Database Platform) Logical model
	< Previous Next > Finish Qose

• Select Logical model from the list of available database platforms.

🔀 Model Conversion		
 Target Conversion Settings Select Object Types Items Selection Review 	Sel	ect Object Types and Properties Convert Al Convert Al without Graphics (shapes, colors, fonts, etc.) Custom Settings Convert Entities and Relationships Convert Users and Functions Convert Users and User Groups Convert Vote, Note Line, ToDo Convert Graphics Convert All Others
	0	Click Detailed Settings to display a list of all available object types and properties.
		< Previous Next > Finish Qose

- Pay attention to the Conversion Settings dialog.
- Note: Since Logical Model doesn't have any objects which contain SQL, all your procedures, scripts and functions will be lost.

🔀 Model	Conversion	
1 🖻 - 👔	📲 🛛 😨 🐈 🍹 📲 🚛 🗍 Hide All Properties	
	⊡- Videorental	
	Domains	
V	VAT	
	Entities	
1	T_CUSTOMER	
V	T_BORROWING	
1	T_EXEMPLAR	
	T_MEDIUM	
1	T_ORDER_RECORD	
v	T_CUSTOMER_RATING	=
V	T_GENRE	
	Relations	
	Defaults	
	Notes	
V	All Items WS - information	
1	Borrowing WS - information	
V	Customer Rating WS - information	
1	 Ordering WS - information 	
V	Views WS - information	
	ToDoltems	
V	 Add indexes to T_Customer table 	
1	- Analyze requirements	-
		· · · · · · · · · · ·
Name: T_F Caption: Fili	n	
If you and s	want to select checkbox for all entities, right-click the Entities item elect Check All Children.	<u>Previous</u> Next > Finish

• Check items you want to convert to another model. For easier item management, use buttons located on the top.

🔀 Model Conversion			
Kodel Conversion - Target - Conversion Settings - Select Object Types - Items Selection - Review	Information Statistic: Attribute: Categories Shortcut: Category: Default: Domain: Entity: Entity Shortcut: Key: Key Item: Note Table Comments	Videorental 20 1 1 1 1 8 27 10 9	Commit 13 1 1 1 1 1 1 1 1 7 5 1 1 1 1 1 1 1 1 1 1
	Model Title Shortcut: Note: Note Shortcut: Relation: Relation Shortcut: To Do: Workspace:	1 5 9 23 4 5	1 5 3 7 4 5
	New Model Name Videorental		
	In the Information section, yo example, if you don't select I Data Modeler will display suc	u can find statistic ar)omains for conversio h information in this a	d other information about necessary actions. What are necessary actions? For n but a domain is used in entity, the domain will have to be converted too. Toad rea.
	[Save Action	< <u>Previous</u> <u>Next</u> > Finish <u>Close</u>

- Review the statistic and when you're done, click the Finish button.
- After a short while your Physical model will be converted to Logical model.
- **i** TIP:If you plan to do this action again in the future, you might want to click the **Save Action** button to save this **Action Definition**. See **Model Actions** for more information.

Logical to Physical

Note:

Before you convert your Logical model to Physical model, you should be aware of the following:

- · Physical model supports only non-identifying self relationship.
- Inheritance is not supported in PER model. Toad Data Modeler solves this by converting Inheritance object into either Single Table, N-1 Tables or N Tables. See Inheritance.
- Keys in LER models do not migrate.
- You can select a linking method in LER model.
- M:N relationships are supported in both models.
- Before you start the conversion, you can set up the conversion rules in the **Data Type Conversion Settings** dialog. This option is available only if Expert Mode is enabled.
- Cycled relationships will be ignored during LER to PER conversion and will not be converted. A
 message informing you about this will be displayed in Message Explorer Log.

Nodel Conversion	
<u>- Target</u> - Conversion Settings - Select Object Types - Items Selection - Review	Select Target (Database Platform) DB2 UDB v.8 (LUW) • • Select a target database system. Your model will be converted to the selected database system.
	< <u>Previous</u> Next > Finish <u>C</u> lose

• Select your desired database platform.

🔀 Model Conversion		
- Target - <u>Conversion Settings</u> - Select Object Types - Items Selection - Review	Settings © Comment Out Database Specific Items (code of stored procedure etc.) Resolve Application Variables Log Progress to File	
	Select the Log Progress to File checkbox to store log messages to a file.	
	< Previous Next > Finish	

• Change any of the conversion settings, if necessary.

🔀 Model Conversion		
 - Target - Conversion Settings - Select Object Types - Items Selection - Review 	Sel	ect Object Types and Properties Convert Al Convert Al without Graphics (shapes, colors, fonts, etc.) Custom Settings Convert Entities and Relationships Convert Procedures and Functions Convert Vote, Note Line, ToDo Convert Graphics Convert All Others
	0	Detailed Settings Click Detailed Settings to display a list of all available object types and properties.
		< Previous Next > Finish Qlose

• Choose what object types will be converted. You can access full list of Objects and Properties by clicking on **Detailed Settings**.

🔁 Model	Convers	sion		
1 🖻 - 👔	8	🖲 😨 🍸 🕴 📪 🗄 Hide All Properties 🔹 🔻		
	⊡ · Vi	ideorental		
	÷.	Entities		
	÷.	Relations		
V		··· makes		
v		··· is_related_to		
V		places		
		···· is_available_on		
V		is_required_by		
		···· is_of		
		has		
J		··· is_rated		E
		has_more_episodes		
	÷.	Defaults		
		today		
	÷.	Domains		
		Notes		
v		All Items WS - information		
		Borrowing WS - information		
v		Customer Rating WS - information		
V		···· Ordering WS - information		
~		Views WS - information		
	±.	ToDoltems		
	-	Categories		
Name: Bom Fullname: B	rowing W Borrowing	/S - information g WS - information		
If you and s	want to select Ch	select checkbox for all entities, right-click the Entities item eck All Children.	Next > Finish	Glose

· Check items you want to convert to another model. For easier item management use buttons located on the top.

🔀 Model Conversion			
- Target	Information		
- Conversion Settings	Statistic:		
- Select Object Types		Videorental	Commit
- Items Selection	Attribute:	13	13
- Review	Categories Shortcut:	1	1
	Category:	1	1
	Default:	1	1
	Domain:	1	1
	Entity:	6	6
	Entity Shortcut:	19	19
	Model Title Shortcut:	1	1
	Note:	5	5
	Note Shortcut:	5	5
	Relation:	3	3
	Relation Shortcut:	7	7
	To Do:	4	4
	Unique Identifier:	7	7
	Unique Identifier Item.	5	5
	Workapage.	5	5
	workspace.	5	5
	New Model Name		
	Videoretal		
	videorentai		
	 In the Information section, you c example, if you don't select Dom Data Modeler will display such in 	can find statistic and o nains for conversion b nformation in this area	other information about necessary actions. What are necessary actions? For ut a domain is used in entity, the domain will have to be converted too. Toad i.
	S	ave Action	< Previous Next > Finish Qose

- Review the statistic and when you're done, click the Finish button.
- After a short while your Logical model will be converted to Physical model of your desired database platform.
- **i** TIP:If you plan to do this action again in the future, you might want to click the **Save Action** button to save this **Action Definition**. See **Model Actions** for more information.

Selection Tree Overview

Option	Description
P	Import selection from a saved file.
8	Save selection to a file.
2	Checks all items.
	Unchecks all items.
Ÿ	Opens the Wildcard Dialog where you can define settings for bulk selection/deselection of the Action box of the items listed on page Select Items .
	Refresh Necessitated Items Explanation: Some objects are related together (e.g. entity and domain, entity and relationship). Let's say you uncheck a Domain in Select Object Types dialog. However you keep an Attribute of the Domain type checked for conversion. In the next screen the Domain will be selected for conversion (and highlighted in gray), even if you don't want it to. This is because of its relationship with the Attribute, which cannot exist without the Domain. Now, if you uncheck the Attribute, the Domain will still be checked for conversion. This is where you use this button. It runs through all checked objects and removes the Domain highlighted in gray since the Attribute is no longer checked. That means the Domain is no longer necessary, since it has no relationships with currently checked objects and you unchecked it in Select Object Types dialog.
÷÷	Expand All.
♥ ♥	Collapse All.
Hide All Hide All Hide En Show A	Properties Properties pty Properties Il Properties

Right-click an item to see the following options:

Option	Description
Expand All Children	Expands all sub-items of the selected item.
Collapse All Children	Collapses all sub-items of the selected item.

Simple Model Conversion

This feature allows you to convert your logical models to physical models and your physical models to models of another database system very quickly.

Scenario

You want to convert your Oracle 10g model to Microsoft SQL Server 2005.

- 1. Open your Oracle 10g model.
- 2. Select File | Synchronization | Simple Model Conversion.
- 3. Define the settings in the **Conversion** dialog.

Option	Description
To Database	Select a target database system - Microsoft SQL Server 2005.
New Model Name	Define a name for the converted model.
More>>	Click this button to see and modify Object Types and Properties for the conversion. No modification is necessary. Object Types and Properties - OTPs
Close after Conversion	Select it to close the Conversion dialog after the process is finished.
Convert	Executes the process of conversion.
Close	Closes the Conversion dialog.

4. Click Convert.

Compare Models, Generate Change Report

Toad Data Modeler allows you to view differences between two models and for physical models you can generate change reports in HTML, RTF and PDF formats. Change reports are not available in logical models. You can compare your models and generate the change report via the **Model Actions**.



How to Compare Models and Generate Change Reports

s\iknapek\Documents\Toad Data iviodeler\Standard Installation 2\iviodels

 Click on Compare and Generate Report | Run in Model Menu or Run Compare and Generate Report Action in Model Actions.

🔀 Models Compare		
- Model to Compare - Comparison Settings - Select Object Types - Items Selection - Review	Select Model to Compare Available Model RE MySQL 5.1 Model File (".txp, ".tbp, ".txl, ".txl) C:\Users\knapek\Documents\Toad Data Modeler\Standard Installation 2\Models\RE MySQL 5_11xp Select Model to Compare (right side) that will be compared with actual Model (left side).	
	< Previous Next > Finish	

- Select another model for comparison. It can be either a model opened in Toad Data Modeler or a model loaded from **Model File**.
- **i** Note: The selected model has to be of the same database platform and version. You cannot compare DB2 10.5 and MySQL 8.0 models.

🔀 Models Compare	
- Model to Compare <u>- Comparison Settings</u> - Select Object Types - Items Selection - Review	Comparison Rules Ignore Text Case Ignore Trailing Whitespace Ignore Model Name Resolve Application Variables Ignore Empty Primary Keys Force Compare by Data Type Others Log Progress to File Isolect the Log Progress to File checkbox to store log messages to a file.
	< Previous Next > Finish Qose

- Check Resolve Application Variables to resolve variables during generation including variables in names
- The next dialog presents you with a couple of setting related to **Model Comparison**. When you're done editing the options, click on Next.

🔀 Models Compare		
 Model to Compare Comparison Settings Select Object Types Items Selection Review 	Sel	ect Object Types and Properties Compare All Compare All without Graphics (shapes, colors, fonts, etc.) Custom Settings Compare Entities and Relationships Compare Procedures and Functions Compare Users and User Groups Compare Graphics Compare Graphics Compare All Others
	0	Click Detailed Settings to display a list of all available object types and properties.
		< <u>Previous</u> <u>Next</u> > <u>Finish</u> <u>Qose</u>

• Now you have to choose what types of objects will be included in the comparison. If you wish to select objects in more detail, click on **Detailed Settings**.

😕 Models Compare						
🔁 🗄 🗮 🔸 🋧 Show Different Objects 🔹 Show Different Properties 🔹						
Diff Source Model: MvSQL 51 C:\LIsers\knanek\Documents\Toad Data Modeler\St						
B. MvSQL 5.1		E MySQL 5.1				
Model	MySQL 5.1	- Model	RE MySQL 5.1			
🔁 🖨 Entities		Entities				
Entity1		(not exists)				
(not exists)		employees.departments				
(not exists)		employees.dept_manager				
(not exists)						
Relations		Relations				
(not exists)						
☐ (not exists)		⊕ dept_manager_ibfk_1				
(not exists)		dept_manager_ibfk_2				
Image: Image						
Users		Users				
Databases		····· Databases				
		· · · · · · ·				
If you want to select checkbox for all entities, right-click the Entities item <u>Report</u> <u>Report</u> <u>Next</u> <u>Next</u> <u>Report</u>						

• You are now presented with Compare Tree dialog displaying all differences between the two given models. Now you have the option to generate a report by clicking on **Report** button.

🔀 Models Compare								- • ×
- Model to Compare	Information							
- Comparison Settings	Statistic:							
- Select Object Types		MySOL 5.1 - newly merged	MySOL 5.1	+	-	\diamond	=	
- Items Selection	Attribute:	14	14	0	0	0	14	
- Review	Database:	9	9	0	0	0	9	
	Entity:	5	5	0	0	0	5	
	Entity Shortcut:	5	5	0	0	0	5	
	Foreign Key:	2	2	ñ	0	0	2	
	Index:	3	3	ň	ő	0	3	
	Index Item:	3	3	0	ő		3	
	Vou.	3	3	0	0		3	
	Key.	5	5				5	
	Rey Item:	5	2	0			5	
	Relation:	2	2	0			2	
	Relation Shortcut:	2	2	0		0	4	
	User:	3	3	0	0	0	3	
	Workspace:	1	1	0	0	0	1	
	In the Information section	n, you can find statistic data.						
		Save Action < Previous	Next	>		Finisł	1	Qlose

- Check the Review screen which shows you the final statistics and close Model Compare by clicking the **Finish** button.
- **TIP:** If you plan to do this action again in the future, you might want to click the **Save Action** button to save this **Action Definition**. See **Model Actions** for more information.

🔁 Report Wizard		- • •
 Select Format Select Report Select Layout What to Report Options 	Select a suitable format of report: HTML RTF PDF 	
Hide Log Close after Execut	ion Show < Previous Next > Execute	

- Select Format of the generated report.
- There are two options available during the entire process of generating a report. **Hide Log** hides the bottom part of the dialogs which otherwise displays information related to the generation. Checking **Close after Execution** closes the dialog window after you're done creating your report.

Generating HTML Reports

🔁 Report Wizard		- • •
- Select Format <u>- Select Report</u> - Select File - Select Layout - What to Report - Options	Select a suitable type of report from the list. Report Caption Universal Model Compare Report Languages of Localized Report Version English (United States)	
Hide Log Close after Execution	on Show Previous Next > Execute Message	Qiose
	mussage	

- After you select HTML from previous dialog and click on Next, you have the option to change **Report** Caption and Language of the report.
- i nOTE: You can generate Reports in many languages provided that you have the appropriate Dictionaries installed. For more information see **Dictionaries**.

📜 Report Wizard		- • ×			
- Select Format - Select Report - <u>Select File</u> - Select Lavout	Select a file where you like to generate the report. C:\Users\knapek\Documents\Toad Data Modeler\Reports\HTML\defaul2t.html				
- What to Report - Options					
Hide Log 🔲 Close after Executi	on Show < Previous Execute Execute	Close			
ID 🔺 Date Time	Message				

• You are able to define your own path where the generated report will be saved, if you need to.

🔀 Report Wizard						- • •
 Select Format Select Report Select File Select Layout What to Report Options 	Report Layout Frames - Top menu CSS Style Default O Default O Others Modem Orange Green Tables Scotting_BORROWING Scotting_Customer_Antrop Scotting_relations Scottin	2 Columns Indexets Key SCOTT-1_BORROWIT Table properties Schama SCOTT Table properties Schama SCOTT Table properties Schama SCOTT Table properties Scott Schama SCOTT Table properties Scott Schama Scott Scott	Marketsenships Co Marketsenships Co NG NG NG Defa type Dreser Dreser Dreser Dreser P	Not rull User Date Y15 H0 N0 H0 T_CVSTORER T_EVERHAR	ve Check No No No No No No No No No No No No No	
Hide Log Close after Execution	on Show	< <u>P</u> revious	<u>N</u> ext >		Execute	Close
ID A Date Time	Message					

• In this dialog there are several options for customizing the look of the report.

Select Layout Page	Description
Report Layout	 Frameless (for Internet Explorer 7 and FireFox 2 users. Reports with Frameless layout is not displayed in older browsers correctly.)
	Frames - Top menu
	Frames - Left menu
	i Note: For large models, <i>Frames - top menu</i> or <i>Frames - left menu</i> options are recommended. (Frameless report layout is not recommended as it uses Java script that goes through all objects, which takes too much time if your model is large.)
CSS Style	Available styles for HTML report:

Default

Select Layout	Description
Page	

• Others (select the most convenient for you)

i TIP:You can also create your own report styles using **CSS**. To integrate a custom style into Toad Data Modeler, you have to create a **.txs** file referencing the style resources and save it to **Style folder**.

階 Report Wizard		х
- Select Format	Selection Custom selection	
- Select File - Select Layout		
- What to Report - Options	Property Name Extended Value Model After Script	Â
	Before Script Databases Defaults	
	Caption Wame	E
	Votes Votinal SQL	
	Domains Demains Demains Demains Demains Demains Demains	
	Check Constraint Rules	
	Notes Permissions to Objects	Ŧ
Hide Log Close after Executi	on Show < Previous Next > Execute Qose	
ID 🔺 Date Time	Message	

• Now is the time for you to decide what kind of information should the generated report contain. If you want to get a complete report, check all boxes. For easier management use buttons located on the top.

🔀 Report	Wizard		
- Select - Select - Select - Select - What to - Options	Format Report File Layout D Report		Resolve Application Variables Generate Unselected Objects in Parent
Hide I	Log Clos	e after Executior	n Show < <u>P</u> revious <u>N</u> ext > Execute <u>C</u> lose
ID	Date	Time	Message 🔺
1	8.8.2014	9:34:27	Generating alter report
3	8.8.2014	9:34:27	Saving report
2	8.8.2014	9:34:27	- Generating Model Info

- The final dialog where you can set a few last options.
- Click on **Execute** to generate the report. A dialog window will inform you when the process is done.

Generating RTF and PDF Reports

🔁 Report Wizard	
 Select Format Select File Select Layout What to Report Options 	Select a suitable type of report from the list. Report Caption Universal Model Compare RTF Report Languages of Localized Report Version English (United States)
Hide Log Close after Execut	on Show < Previous Next > Execute Qose
ID Date Time	Message

- On this dialog you are able to change the report caption and its language.
- **i** nOTE: You can generate Reports in many languages provided that you have the appropriate Dictionaries installed. For more information see **Dictionaries**.

🔁 Report Wizard		- • ×
- Select Format - Select Report <u>- Select File</u>	Select a file where you like to generate the report. C:\Users\knapek\Documents\Toad Data Modeler\Reports\RTF\report.rtf	
- Select Layout - What to Report - Options		
Hide Log 🔲 Close after Executi	ion Show < Previous Next > Execute	Close
ID 🔺 Date Time	Message	

• You are able to define your own path where the generated report will be saved, if you need to.

🔁 Report Wizard		×
 Select Format Select Report Select Layout What to Report Options 	 Frames Drawing Cells Background Watemark No Watemark Insert Image Watemark File: Insert Text Watemark Text: Dell Color: Black 	
Hide Log Close after Execution	on Show < Previous Next > Execute Glose	
ID 🔺 Date Time	Message	

· A few options regarding the report look are available here. Also note the option to insert text or image watermark.

🔁 Report Wizard		×
- Select Format - Select Report - Select File	Selection Custom selection	
- What to Report	Property Name Extended Value	
- Options	Image: Model Image: Model	
Hide Log Close after Execut	Check Constraint Rules Lines V Notes Permissions to Objects Show < Previous <u>Next</u> > Execute <u>Qlose</u> Message	•

• Now is the time for you to decide what kind of information should the generated report contain. If you want to get a complete report, check all boxes. For easier management use buttons located on the top.

🔁 Report Wizard		- • •
 Select Format Select Report Select Layout What to Report Options 	Image: Second Application Variables Image: Generate Title Page Generate Title Page Generated Sections Summary and Details Image: Details Section with Modified Objects Only Image: Generate Unselected Objects in Parent	
Hide Log 🔲 Close after Executi	on Show < Previous Next > Execute	
ID 🔺 Date Time	Message	

- A few final options are available here. For example, you can decide between generating Summary only, Details only, or both.
- Click on Execute to generate the report. A dialog window will inform you when the process is done.

Option	Description
Selection Menu	Allows you to save time by loading saved selection. For example, you may decide that you only want your report to cover Entities, some properties of Relationships and After Scripts. Selecting these items every time you generate a report would be frustrating. That's why you have the option to check these items once and then save the selection and load it every time you generate another report.
Save Selection	Saves the current selection. If a selection is chosen in the Selection Menu, it will be rewritten.
Load Selection	Load the selection chosen in the Selection Menu.

What to Report Dialog Buttons

Option	Description
Save as New	Saves the current selection as a new selection. You will be prompted to enter a name.
Delete	Deletes the selection chosen in the Selection Menu.
Set as Default	Sets the selection chosen in the Selection Menu as default. Such selection is marked by an asterisk in Selection Menu.
Select All	Selects all items.
Deselect All	Deselects all items.
Inverse Selection	Inverts the selection.
Auto Check	On: Checking/Unchecking an item will also check all its sub- items. Off: Checking/Unchecking an item will not check its sub-items.

Compare Tree Overview

Option	Description
	Generate a Change Report.
₽ F.	Expand All.
•	Collapse All.
\$	Go to next object in the tree.
^	Go to previous object in the tree.
Show Different Obje Show All Objects Show Equal Objects Show Different Objects	Display options for objects.
Show Different Properties Show All Properties Show Equal Propertie Show Different Prope	etties etties
Source Model	The source model to which the second model is compared to.
Model to Compare	The model which is compared to the source model.

Compare Tree Icons



Difference between Source model and Compared model.

Right-click an item to see the following options:

Option	Description
Expand All Children	Expands all sub-items of the selected item.
Collapse All Children	Collapses all sub-items of the selected item.

Model Update

Toad Data Modeler allows you to update models to synchronize changes between your database and your model. **Example:** You loaded the database structure of your database to Toad Data Modeler (Reverse Engineering). -Model A was created. Then you made some changes in your database and now you want to update the Model A. For this purpose, you can use the **Model Update** feature.

Model Update includes operations such as Connections, Model Comparison and Model Merge

To update your model

• Open the model that you want to update.



Click the button on the Menu Toolbar or Select Model | Update Model from Database to open the Model
 Update Wizard

🔀 Model Update Wizard			- • •
<u>- Stored Connections</u> - Select Data Source - Select Data Provider - Connecting	If you want to use previously save	ed connection, select it from the list.	
- What to Reverse - Options - Save Connection - Tables	Name ▲ - No Connection → Mysql 5.1	Description mysql://qa@10.11.40.49/	
	Load Connection	Delete Connection	ctions
Hide Log Close after Execut	ion < <u>Previous</u>	Next > Execute	Close
Id A Date Time	Message		

- Select Connection from the list of stored Connections. If you don't already have one, see How to Set Up A New Connection.
- i Note: You might be prompted to enter a password to connect to the database. This can be changed by checking **Save Password** checkbox in specific Connection settings.

🔀 Model Update Wizard			
 Stored Connections Select Data Source Select Data Provider Connecting What to Reverse Options Save Connection Tables 	Show Tables from: Database: employees Image:		
	employees.departments		
	employees.dept_emp employees.dept_mppser		
	employees.cept_manager		
	employees alaries		
	employees titles		
	Close Previous Next Auto Hide Selected 3 of 269 Tables / 3 of 294 All Objects		
Hide Log 🗸 Close after Executi	on < Previous Next > Execute Close		
Id 🔺 Date Time	Message		
80 7.8.2014 14:09:05	Connecting to database		
81 7.8.2014 14:09:15	Disconnected from database		

- Select the objects you want to update in your model. You can use the Filter and Select All/Deselect All/Invert Selection buttons for easier object management. Also note that you can Export or Import your selection to or from a file. After you're done selecting, click on **Execute** button.

📙 Model Update Wizard	
<u>- Comparison Settings</u> - Select Object Types - Items Selection - Review	Comparison Rules Ignore Text Case Remove Trailing Whitespace Ignore Model Name Resolve Application Variables Ignore Empty Primary Keys Force Compare by Data Type Settings Log Progress to File Select the Log Progress to File checkbox to store log messages to a file.
	< Previous Next > Finish Qose

• Before Toad Data Modeler compares your model with the database, you need to go through some settings related to comparison.



- Here you can select what types of objects should Toad Data Modeler compare between given model and the database. If shown settings aren't detailed enough for you, click on the **Detailed Settings** button. This will allow you to choose not only from all groups of objects, but from the objects themselves. To update everything in your model, check every checkbox or select **Compare All**.
- After you're done with selecting the objects, proceed to the next dialog.

🔁 Model Up	date Wizard		
i 🖻 + 🖥	🕄 🕄 🗊 🎜 🌮 🏅 🎨 🗄 🔸 🕯	Show Different Objects	Show Different Properties
Operation	Source Model: MySQL 5.1 Unsaved Model	Model to	Merge: MySQL 5.1 C:\Users\knapek\Documents
V 🗲	B → MySQL 5.1		L 5.1
. 🔁			tities
F	🛱 🖷 Relations		ations
Image: A state of the state	⊕ dept_emp_ibfk_1		(not exists)
I I I I I I I I I I I I I I I I I I I	iiles_ibfk_1	<u> </u>	(not exists)
	Foreign Keys		⊕
Image:	FK emp_no - emp_no		
	Users	Us	ers
i If you wa checkbo	nt to select x for all entities, the Entities	Next > Finish	Glose

• You are now able to see the Compare Tree. It displays all differences between your current model and the database. The Model Update changes the model on the right (your model) so it matches the model on the left (the database). Check the changes you would like to execute and proceed to the next dialog.

🔀 Model Update Wizard								
- Comparison Settings	Information							
- Select Object Types	Statistic:							
- Items Selection		MySQL 5.1	MySQL 5.1	+	-	\diamond	=	Commit
- Keview	Attribute:	14	4	11	1	0	3	12
	Database:	9	9	0	0	0	9	0
	Entity:	3	1	2	0	1	0	3
	Foreign Key:	2	0	2	0	0	0	2
	Index:	3	2	1	0	1	1	2
	Index Item:	3	2	2	1	0	1	3
	Key:	3	1	2	0	1	0	3
	Key Item:	6	2	5	1	0	1	6
	Relation:	2	0	2	0	0	0	2
	User:	3	3	0	0	0	3	0
	Output Settings	Model						
	Model Name							
	In the Informatic necessary action the domain will	on section, you ca ns? For example, have to be merge	n find statistic and if you don't select d too. Toad Data	l other ir Domain Modeler	nformati is for M will dis	ion abou odel Me play suo	ut nece erge but ch infor	essary actions. What are t a domain is used in entity, mation in this area.
		< <u>P</u> r	evious	<u>N</u> ext	>		Finis	h <u>C</u> lose

• The last dialog shows you the review of the **Model Comparison**. An option to **Merge Model** is available in case you don't want to only update your model. This option creates a new model which will appear in your **Application View** after finishing the update. Click on **Finish** and after a short while your Model will be updated.

Compare Tree Overview

Option	Description
2	Import selection from a saved file.
—	Save selection to a file.
	Runs the verification process. The verification might return a warning ¹ . Details are available in Verification Log.
2	Checks all items.
Option	Description
--	---
	Unchecks all items.
F	Checks all items that exist in the Source model, but not in the Target model (CREATE).
5	Checks all items that does not exist in the Source model, but exist in the Target model (DROP).
5	Checks all items that exist in both models, but are different (ALTER).
÷.	Opens the Wildcard Dialog where you can define settings for bulk selection/deselection of the Action box of the items listed on page Select Items .
	Refresh Necessitated Items Explanation: Some objects are related together (e.g. entity and domain, entity and relationship). Let's say you uncheck a Domain in Select Object Types dialog. However you keep an Attribute of the Domain type checked for conversion. In the next screen the Domain will be selected for conversion (and highlighted in gray), even if you don't want it to. This is because of its relationship with the Attribute, which cannot exist without the Domain. Now, if you uncheck the Attribute, the Domain will still be checked for conversion. This is where you use this button. It runs through all checked objects and removes the Domain highlighted in gray since the Attribute is no longer checked. That means the Domain is no longer necessary, since it has no relationships with currently checked objects and you unchecked it in Select Object Types dialog.
÷	Expand All.
♥	Collapse All.
₽	Go to next object in the tree.
✤	Go to previous object in the tree.
Show Diff Show All Show Equ Show Diff	Display options for objects Objects Jal Objects erent Objects

Option Description

Show Different Properties for properties. Source Show All Properties			
Show Equa Show Diffe	al Properties rent Properties		
Source Model	The source model (often the database).		
Model to Merge	The model which is going to be updated.		
Operation	Check this checkbox toupdate the item. Uncheck this checkbox to not update the item.		
Compare Tr	ee Icons		

7	Ē	- Entities				
Differenc	ce betwe	en Source model and the updated	model.			
B	Ŧ	SCOTT.T_MEDIUM			🗄 🛛 (not e	xists)
This obje	ect exists	in Source model but does not exis	t in the updated model			
	- I III (not exists)		- SCO1	TT.v_Customer_Has_	Film

This object is missing in Source model but exists in the updated model.

Right-click an item to see the following options:



Option	Description
Check All Children	Checks the Operation checkbox of all children items.
Uncheck All Children	Unchecks the Operation checkbox of all children items.
Check All Children to Add	Checks the Operation checkbox of children items that exist in Source model but not in the Target model (¹ items) to generate the CREATE statement.
Check All Children to Remove	Checks the Operation checkbox of children items that are missing Source model and exist in Target model (items) to generate the DROP statement.
Check All Modified Children	Checks the Operation checkbox of children items where properties differ (
Uncheck All Children to Add	Unchecks the Operation checkbox of children items that exist in Source model but not in the Target model (
Uncheck All Children to Remove	Unchecks the Operation checkbox of children items that are missing Source model and exist in Target model (items) to not generate the

Option	Description
	DROP statement.
Uncheck All Modified Children	Unchecks the Operation checkbox of children items where properties differ (items) to not generate Change Script for this change.
Wildcard Filter	Opens the Wildcard Dialog where you can define settings for bulk selection/deselection of the Operation box of the items listed on page Select Items .
Expand All Children	Expands all sub-items of the selected item.
Collapse All Children	Collapses all sub-items of the selected item.

Synchronization

Toad Data Modelerhelps you with synchronization tasks and allows you to:

- Generate SQL scripts representing changes made to your model
- Transfer changes made in your database to your existing physical models
- · Keep your model and your database synchronized and up-to-date during the development process

Database and Model Synchronization

Situation A - Generation of Change Scripts

You have made changes in your physical ER diagram in Toad Data Modeler and now you need to apply the changes to your database.

Solution: Compare the models and generate **Alter Script** in Toad Data Modeler. Then use a third party software to connect to your database and execute the generated script. All your changes are now reflected in database. (Note: Change Script generation is not supported for all databases, for further information see **Supported Databases**.)

Situation B - Model Update

You or someone else made changes to your existing database (development version of database) and you need to transfer the changes to your model.

Solution: Use the Model Update or Model Merge features to update your physical model.

Physical Model and Logical Model Synchronization

You have created a Logical model in Toad Data Modeler and need to convert the logical model to physical model for the selected database system.

Solution: Use the **Model Convert** or **Simple Model Conversion** feature for logical (LER) to physical (PER) model conversion.

i Note: If you make changes in your LER model and need to update the existing PER model, perform the LER to PER conversion again and then compare the two PER models.

Limitations

There are many factors that affect synchronization features in Toad Data Modeler. For example:

- Data types can be defined through logical types that do not exist in physically existing databases, such as Domains, Dictionary Types etc. Toad Data Modeler has to correctly resolve the data types when comparing attribute (table column) properties.
- Objects must be paired by specific rules, for example in your Oracle Database model, schema assignment is not required, but in your database, schema is always present.
- There can be application variables defined in your models, for example <%ParentTableName%> and the application variables must be resolved during the comparison as well.

In result, the synchronization of your model and your database is more complicated than comparison of two physically existing databases. From technical point of view, the comparison is based on more complicated algorithm that requires more resources.

Recommendations

- Use the synchronization features on models of small to average size. If you work with large models, try to split the model to smaller parts (separate models), if possible.
- Use specialized software for comparing and synchronizing two large physically existing databases. You could theoretically reverse engineer both databases, create two models, compare them and try to generate change scripts, but due to limitations mentioned above the process would require more resources and take more time. Other products, that do not work with models, but rather with databases (e.g. Toad for Oracle, Toad for SQL Server, etc.), can offer better performance and additional benefits like comparison of physical properties and data. Toad Data Modeler is a tool primarily used to create a visual representation of database structure and it should be used during database development. It is not an alternative or competitive tool for specialized schema comparison.

Model Size Limitations

- Toad Data Modeler doesn't have fixed limitations based on number of objects. You can work with models
 that contain hundreds, or thousands of tables. Please note that large number of objects in a model may
 hinder performance significantly, depending on your computer specifications. Number of other items in your
 model (stored procedures, functions, sequences etc.) affects the performance as well. Other factors include:
 - Type of task you can model large database structure, generate complex SQL scripts or detailed reports, but synchronization tasks might reach the application limits sooner than generation of SQL scripts, for example.
 - Number of running processes on your machine.
 - Limited access to Microsoft Scripting Engine (standard part of operating system, however in some situations access can be monitored by antiviral software etc.)

Print

Tips before You Print

- To set size of the pages, select File | Page Setup. To customize the page size, see the Page Setup dialog | Scale area | and from the Page box, select Custom. Define Height and Width on the right.
- To print your ER diagram on one page, select File | Page Setup | select the Fit to Page checkbox.
- Turn off the display of page boundaries select Settings | Options | Graphics | clear the Visible Page Boundaries checkbox.
- In Settings | Options | General, clear the Print Gradients checkbox for much faster print performance. (It is disabled by default.)
- Turn off page numbering and a frame around your ER diagram select File | Print | Settings tab | clear the Print Frame and Print Page Number checkboxes.

To print your model

- 1. Click 😑 on the toolbar (or select File | Print).
- 2. Select a printer and click Properties for more configuration options.
- 3. On tab Settings, select from the available options.
- Note:
 - You can also print to PDF and plotter, see **Printing to PDF and plotter** for more information.

Page Setup

- 1. Select File | Page Setup.
- 2. Select page size, margins, orientation etc.

To define the page size on your own, select **Custom** from the **Page** box. Define Height and Width on the right.

Note:

- The measure unit can be set in **Settings** | **Options** | **General** | **Select Unit of Length** inches or millimeters.
- Page Format settings are saved with a model.

Option	Description
Fit to Page	Select this option to print the entire model on one page. This option is
	model-dependent.

Option	Description
Enlarge	Select a scale of your model for print.
Portrait/Landscape	The option selected in the Page Format dialog will be automatically set in the Printer Properties dialog. You can set a different orientation for every model, the option is model-dependent.
Printer	Select your printer. Then in the Page box you can see formats that the selected printer supports (enabled items) and other formats (disabled items). (This feature should solve problem with printing on plotters.)

Preview

Option	Description
< >>	Switch between pages.
1/2	Displays current page number/total number of pages.
47 ▼ 300 200 100 90 80 50 50 47 25 5	Sets Scale percentage.
	Opens the Print Setup dialog.
	Displays/hides all pages on the left side of the dialog.
⇒	Exits the dialog.

Click on the toolbar (or select File | Preview).

PDF Printing

Toad Data Modeler allows you to print ER diagram of your model to a PDF file, which is especially useful step in order to print the diagram to a plotter.

Printing to PDF is similar to printing to printer:

1. Go to **File Menu** | **Page Setup** and configure printing properties such as your document size, orientation, margins...

🔀 Page S	etup - E			x
Scale				_
Page:	A4		✓ Height: 11.7	
			Width: 8.3	
- Print Opt	tions			
Fit to Pag	je:	V	Enlarge: 10	
- O <u>r</u> ientati	on	Margin	ı [inch]	
Portra	ait	Left:	0.5 Right: 0.5	
Lands	scape	Top:	0.5 Bottom: 0.5	
Printer				
Adobe F	PDF			
		<u>о</u> к	Cancel Apply	

2. Once you're done configuring, go to **File Menu** | **Print**. There are also several options available on **Settings** tab.

🔀 Print	
Main Settings	
Print Page Number	
Print Frame	
Print Only BlackWhite	
	<u>Q</u> K <u>C</u> ancel

- 3. Click **OK** to print the PDF document. Some PDF printers display an additional configuration dialog in order to print the PDF.
- i Note: Most PDF printers work with parameters set in the **Page Setup** dialog. However, some PDF printers allow you to customize page size and other settings right before actually printing the document (e.g. Adobe PDF Printer or PDF Factory).

Generally, you should not configure a property in the PDF printer itself if the property can be configured via Page Setup. The exception to this rule are settings that are not available in Page Setup, such as **Image Compression and Downsampling** in Adobe PDF Printer. These settings should not impact the configuration set in Page Setup.

PDF Printing Limitations

There are several situations, where you may not be able to print the PDF file at all, or the result may not look as intended. Usually, this is not limitation of TDM itself rather than a limitation of some component TDM uses.

Windows PDF size limitation

Toad Data Modeler uses Windows GDI (graphics device interface) to print PDF files. The GDI has **129 inches** (about 3200 millimeters) limitation, meaning neither height or width may exceed the limit. If any size of the PDF exceeds 129 inches, you will receive a warning message when you try to print the PDF.

Warning	
<u> </u>	The Margins are set outside of printable area of the page. Do you want to continue?
	Yes <u>N</u> o

If you print the document anyway, its page size will be reverted to A4 (which is default).

PDF printers size limitation

PDF printers which allow you to customize print properties right before printing the actual document (Adobe PDF Printer, PDF Factory) seem to have one limitation in common. If you configure the page size in the PDF printer properties (which is not recommended, see the note above), the height and width should not add up to more than 129 inches (about 3200 millimeters). If the width+height is more than 129 inches, one of the two things will happen:

- You confirm the Print dialog, but nothing happens afterwards (Adobe PDF Printer).
- You confirm the Print dialog and get "The Margins are set outside..." error (PDF Factory).

Printers using properties set in **Page Setup** seem to handle larger sizes well (e.g. PDF Creator, Bullzip PDF Printer, Nitro PDF).

Printing to Plotter

When printing to plotter, it is recommended to print PDF of your model ER diagram first. Toad Data Modeler supports variety of common plotter paper size formats, but you may find yourself in a situation where you need to print diagram larger than 129 inches, but you keep running into various limitations (mentioned in chapter above). To print such a diagram, follow these steps:

- 1. Know your plotter paper size. In our case, let's say the desired size is 150 to 75 inches.
- 2. Calculate the paper size height to width ratio (e.g. 150/75 = 2).
- Create a PDF file with the same ratio as your desired paper size. Make sure it does not exceed any limitation (e.g. 100x50, 50x25). Also make sure that the model looks good enough when printed (Does the model fit on the 50x25 paper size? Or should you rather print 100x50 PDF?).
- 4. Print the PDF file to your plotter. The PDF file should be upscaled (e.g. 100x50 should be multiplied by 1.5 -> 150x50). It may be necessary to configure the upscaling in your plotter settings. Since the diagram image has been vectorized when it was printed to PDF, it can be upscaled at no quality cost.
- 5. The result should come out as a sharp, clear, well readable diagram of your model.

Create New Project

Projects are used to group multiple models, files and other items.

To create a new project

• Select File | New | Project

12	New Project – 🗆 🗙
Project Settings Version Control System Subversion Remote Settings	New Project Project Name Name Project Description (Optional) Write description of your project Write description of your project Path to Project C:\Users\usemame\Documents\Toad Data Modeler\Standard Installation\Projec Project Settings Image: Create TDM Directory Structure Image: Use Version Control System (Subversion/Git) (Require VCS client installed on your system)
	< Previous Next > Create Close

• Check Create TDM Directory Structure to create a project with a predefined directory structure



Check Use Version Control to create a version controlled project. In the following steps you will need to configure it in order to create a new project. You can set up Version Control system for your projects anytime later

To select a version control system

- Select a type of version control system:
- Git Enter the path to the Git client executable (e.g git.exe)
- Subversion Enter the path to the svn client executable (e.g svn.exe)
 - Check Use Read Only Locking Mechanism to enable locking files (set read-ony attributes to them)
 - · Check Non Interactive to disable all interactive prompting
 - · Check No Authentication Cache to not save authentication tokens into cache
- Click Next to enter details of your repository

To setup your repository

- Subversion Enter the path (server address) to your subversion repository
 - Enter your User Name and Password
 - Check Checkout an existing repository into the working directory to checkout the files into your project folder

8	New Project	-		×
- Project Settings - Version Control System	Path to Subversion Repository http://10.12.45.16/SVN			
 Subversion Remote Settings 	User Name			
	Name			
	Password	🖌 Sar	ve Pas	sword
	•••••			
	Test Connection			
	Options			_
	Checkout an Existing Repository into the Working Directory			
	< Previous Next > Create		Close	

- Git Check Initialize Local Repository to initialize your local Git repository
 - · Check Configure Remote Repository to enter details of your remote Git repository, click Next
 - Enter the path to your local Git repository and check **Clone an Existing Repository to the Working Directory** if you want to pull the latest files from your remote repository

8	New Project		×
 Project Settings Version Control System Repository Options Git Remote Settings 	Path to Git Repository C:\Users\dbizon\Documents\GIT\TDM User Name		
	Password Test Connection Addional Option Clone an Existing Repository to the Working Directory	Save Pa	ssword
	< Previous Next > Create	Close	

i NOTE: The working directory for your SVN/git repository is the root folder of your new project.

Add Existing Models to Project

When you create a new project, you might want to add already existing models to it. This can be achieved in two ways:

 In Application View or Model Explorer right-click a model and select Add to Project | *Project Name*.



Project Add Model dialog displays and you can decide where to save the model.

🔀 Project Add Model 📃 🖃 💌
Models:
Videorental
Create in
Root New Folder
OK <u>Cancel</u>

or

411



• In Application View, right-click your project and select Add Opened Model

• **Project Add Model** dialog displays and you can choose from currently opened models and specify their location in the Project structure.

🔁 Project Add Model	- • X
Models:	
PostgreSQL 9.2	•
Create in	
Root	New Folder
ОК	Cancel

Project Reports

Now you can easily create a report for your Toad Data Modeler projects.

To create a project report

- Right-click a project in Application View and select Report
- Select the desired format for your report
- Select the destination:
 - Intelligence Central
 - A designated folder
- Choose your layout and style for the report and preview the look below
- In Options select what you want to include in your report
- In Models & Actions select which models you want to include and which Model Action you want to perform
- After clicking Execute the report will be created in Intelligence Central or your local destination folder

12	Project Report Wizard -	×
- Select Format - Select File <u>- Select Layout</u> - Options - Models & Actions	Report Layout Frameless CSS Style Default • Others Clean Blue Modelinfo BR Digram Entities Attributes Indexes Keys Relationships Domains User Data Types Orfaults Check Constraints Triggers Procedures Functions View Relationships Sequences Users Notes Scottr.t_Bollsmounds Scottr.t_Customarka Scottr.t_Costemarka Scottr.t_C	>
	SCOTT.T_VADUM FK re Normalia No No SCOTT.T_VADER_RECORD FK reading Normalia No No reading Integer NO NO NO NO NO	
	Relationships Reset Setup Cost Setup Cert Basicontrip Inne Setupship Type Peers Setup Cost Setup Cert Basicontrip Inne Setupship Type Setup Type Setup Type Cost Setup Cert Basicontrip Inne Setup Type Setup Type	
Show Log Close after Exe	secution Show < Previous Next > Execute C	lose

XSL Transformation

This feature allows you to create user outputs for your physical models very fast. The output can be in any format that supports XSL language - e.g. HTML, PDF, CSV, text or XML.

You select among various XSL templates. Each template generates a different output (HTML, CSV etc.) Advanced users can customize the templates and modify their content to generate an output that will fit their needs. You can generate the following reports or outputs:

- Comments (HTML)
- Complete XML (XML)
- Entities (CSV)
- Notes (HTML)
- Tablespaces (HTML)
- To Do Report (HTML)

To generate any of the outputs

Select Model | Generate Report | Reports / XSL Transformation.

Option	Description		
XSL Template Name	Shows types of various XSL templates that you can select.		
Output File	Path where the output file will be saved. It corresponds with the path defined in Settings Options Paths Reports .		
Template Description	Gives information on the selected template.		
More>>	Shows/hides options for advanced users interested in		

Option	Description
	customization of the templates.
XSL File Location	Path where appropriate system template is stored. System templates shouldn't be modified. Via the button on the right, you can add other templates you created and that are missing in the box XSL Template Name .
Input Values	In this area, templates with parameters are displayed. You can edit them directly here.
Save XSD File As	Allows you to save the XSD file without the necessity to open it in associated application.
Show XSD File	Shows the XSD file. The XSD file describes structure of source XML that is an input for XSL transformation.
Transform	Starts the process of transformation.
View	Shows the result.

Customize XSLT Templates

XSLT is an XML based language used for transformation of XML source documents into other documents. Output files can be XML, HTML, TXT, CSV, SVG, XSD and so on.

In general, for transformation of XML files it is necessary to specify:

- 1. Source (XML)
- 2. Template with instructions on how to convert a source to ouput (XSLT file)
- 3. Output file (where to store the output)

Toad Data Modeler allows you to transform simplified XML structure to the selected output. The simplified XML contains less XML data than standard TXP files (TXP is a standard file suffix for Toad Data Modeler models, however, its structure is also XML.)

Where to Find the Simplified XML File?

You will not find it. You have to generate it. Every database system contains different items (sequences...), that's why also simplified XML structures for MySQL and Oracle may differ.

To generate XML file

1. Click Model | Generate Report | XSL Transformation and from the XSL Template Name box select Complete XML (XML).

🔁 XSL Transformation	
XSL Template Name:	
Complete XML (XML)	•
Output File:	
C:\Users\vfrolik.PROD\Documents\Toad D	ata Modeler\Reports\XSLT\completeXml.xml
Template Description:	
Output contains complete copy of XML s	tructure.
	More <<
XSL File Location: C:\Program Files (x86)\Quest Software\Toa Input Values:	d Data Modeler 5.0\XSL\completecopy-xml.xslt
Parameter name	Parameter value
	Save XSD File <u>A</u> s <u>S</u> how XSD File
	Transform View

2. Click Transform and View to open the generated simplified XML file for your database model. You will see a structure of XML file and a content of your model, including entity names, attribute names, information about relationships, comments etc.



For creation of new XSL templates, it is useful to work with XSD files. XSD files describe structure of XML source file and helps you to understand the XML structure, what nodes may appear in XML and so on. You can click **Show XSD File** or **Save XSD File As** to display or save XSD file for your simplified XML structure.

Predefined XSL Templates

By default, the following reports or outputs can be generated:

- Comments (HTML)
- Complete XML (XML)
- Entities (CSV)
- Notes (HTML)
- Tablespaces (HTML)
- ToDo Report (HTML)

Using these predefined items you can generate report of all ToDo items, create CSV files with information about entity names, captions and descriptions etc.

Path to XSLT files

There are two folders where XSLT files are stored.

- 1. System folder: C:\Program Files\Quest Software\Toad Data Modeler 3\XSL
- 2. User-defined files: C:\Documents and Settings\<user name>\My Documents\Toad Data Modeler\<installation name>\XSL

Sample XSLT File

```
<msxsl:script language="JScript" implements-prefix="tdm">
    function closeInApostrophes( nodelist ) {
    var text = nodelist.nextNode().text;
    return( ''' + text.replace( \/"/g, '''' ) + ''' );
}
       </msxsl:script>
      <xsl:value-of select="tdm:closeInApostrophes(Name)" />
                    </xsl:i
<xsl:te
</xsl:for-each>
</xsl:template>
ylesheet>
                    </xsl:if
                        :text>
</xsl:text>
```

```
</xsl:stylesheet>
```

Special instructions, parameters

In all XSLT files there must be the following special instructions:

```
<tdm:description>Description</tdm:description>
<tdm:caption>Caption (CSV) - will appear in combo box</tdm:caption>
<tdm:default-filename>output-file-name</tdm:default-filename>
<tdm:default-suffix>html</tdm:default-suffix>
<tdm:db-platforms>
          <tdm:db-platform>all</tdm:db-platform>
</tdm:db-platforms>
```

If you want to create a template only for selected target databases, use the following:

```
<tdm:db-platforms>
        <tdm:db-platform>OR9</tdm:db-platform>
        <tdm:db-platform>OR10</tdm:db-platform>
        <tdm:db-platform>OR11</tdm:db-platform>
</tdm:db-platforms>
```

Parameters specified this way:

<xsl:param name="GenerateModelInfo" select="True" />

will display in the Input Values table of the XSL Transformation dialog.

Edit Existing XSLT Templates

1. Copy the system XSLT template to your user section. Default locations are:

System: C:\Program Files\Quest Software\Toad Data Modeler 5.0\XSL

User: C:\Documents and Settings\<user name>\My Documents\Toad Data Modeler\<installation name>\XSL

2. Edit the code then.

HTML Reports

HTML report is great for viewing information about your model objects in an interactive matter. HTML report can also contain images of workspaces, as opposed to RTF/PDF reports. It is also the only type of report you can generate for **Metamodels**.

To generate a HTML report:

1. Click 🕍 on Model Toolbar (or go to Model Menu | Generate Report | Run).



🔁 Report Wizard	
- Select Format - Select Report - Select File - Select Layout - What to Report - Select Workspaces - Options	Select a suitable format of report: PTF PDF
Hide Log Close after Executi	on Show < Previous Next > Execute Qose
ID 🔺 Date Time	Message

2. In Select Format section, choose HTML format.

3. In the next section, select the type of the $\ensuremath{\text{HTML}}$ report.

🔁 Report Wizard		- • •
- Select Format - Select Report - Select File - Select Layout - What to Report - Select Workspaces - Options	Select a suitable type of report from the list. Report Caption Basic HTML Report for PER Model	
Hide Log Close after Execution	on Show < <u>Previous</u> <u>Next</u> > Execute Message	Qlose

4. In **Select File** section, select the report location. You can either save the report to a folder, or you can publish it to a **Toad Intelligence Central** (TIC) server (see **Basic TIC Actions** for more information).

Report Wizard		- • -
- Select Format - Select Report - Select File - Select Layout - What to Report - Select Workspaces - Options	Select where you like to generate the report. Publish to Intelligence Central Save to folder C\Users\knapek\Documents\Toad Data Modeler\Reports\HTML\default.html	
	Languages of Localized Report Version	
	English (United States)	
Hide Log Close after Execution	m Show Execute	Close
ID + Date Time	Macsana	
	ncssage	

Tip: You can generate localized reports. Download the appropriate language package from the **community website** and import it to Toad Data Modeler. See **Dictionaries** for more information.

5. In the next section, you can choose the **Report Layout**. If you generate report for a large model, you should choose **Frames - Top/Left menu**. Generating **Frameless** reports consumes more RAM and viewing the report might feel sluggish on lower-spec PCs. Other than that, the layout choice is a purely cosmetic one.

🔁 Report Wizard	
- Select Format - Select Report - Select File - Select Layout - What to Report - Select Workspaces - Options	Report Layout Frameless CSS Style Default Others Dark Database Report Mediate Information Engineers and Attributes Loop Relationships Demines. Less Ref
	Check Constraints Triggers Procedure Functions View View New Relationships Sequences Liters Notes SCOTT.J., DOINBUWING SCOTT.J., CUSTOWING RELATIONS SCOTT.J., CUSTOWING RELATIONS SCOTT.J., CUSTOWING RELATIONS SCOTT.J., CUSTOWING RELATIONS Scott.J., CUSTOWING RELATIONS Scott.J., CUSTOWING RELATIONS SCOTT.J., CUSTOWING RELATIONS SCOTT.J., CUSTOWING RELATIONS Scott.J., CUSTOWING RELATIONS Scott.J., CUSTOWING RELATIONS SCOTT.J., CUSTOWING RELATIONS Scott.J., CUSTOWING RELATIONS Scott.J., CUSTOWING RELATIONS Scott.J., CUSTOWING RELATIONS SCOTT.J., CUSTOWING RELATIONS Scott.J., S
Hide Log Close after Execut	on Show < Previous Next > Execute Qlose
ID Date Time	Message

6. The What to Report section allows you to select specific object types that should be included in the report.

🔀 Report Wizard		- • •
 Select Format Select Report Select File Select Layout What to Report Select Workspaces Options 	Selection • Default [System] • Default [System] • Defaults • Defaults • Defaults • Directories • Domains • V Entities • V Relationships • V Relationships • V Relationships • Synonyms • • • • • • • • • • • • • • • • • • •	
Hide Log Close after Execution	Show Show Execut	e <u>C</u> lose
ID A Date Time	Message	

- 7. Select Workspaces section allows to you specify for which workspaces the report should be generated.
 - Note: The report will be generated for model objects based on the following rules:
 - When you check a specific workspace, all of its objects and an image of the workspace will be included in the report.
 - When you check **Generate All Model Objects**, all model objects will be included in the report.
 - Both rules respect the selection made in What to Report section.

🔀 Report Wizard	
- Select Format - Select Report - Select File - Select Layout - What to Report - Select Workspaces - Options	Generate All Model Objects Select Workspaces Other Select Workspace Other Select Se
Show Log Close after Execution	Show < Previous Next > Execute Qlose

8. The final section contains several options allowing you to further customize the generated report. Click on **Execute** to generate the report. Once the report is generated, you can view it by clicking on **Show**.

🔀 Report Wizard	
 Select Format Select Report Select File Select Layout What to Report Select Workspaces Options 	Prime Prime Select Display Mode: Prime Pull Names Prime Soft Objects Alphabetically Prime Resolve Application Variables Prime Add Column's Comments and Notes to Tables Prime Generate Model Info Preserve Preformatted Text Preserve Preformatted Text Generate ER Diagram Generate Comments Generate Comments Generate Before/ After Script of Objects Generate Unselected Objects in Parent Generate Only Used Domains Generate Only Used Domains Generate Only Used User Data Types Preserve Preformate Types
Show Log Close after Executi	on Save Action Show < Previous Next > Execute Glose

RTF Reports

To generate a RTF report:

1. Click 🤷 on Model Toolbar (or go to Model Menu | Generate Report | Run).



2. In Select Format section, choose RTF format.

🔁 Report Wizard		
 Select Format Select Report Select File Select Layout What to Report Select Workspaces Options 	Select a suitable format of report: HTML RTF PDF 	
Show Log Close after Executi	an Show Execute	se

3. In the next section, select the type of the $\ensuremath{\textbf{RTF}}$ report.

🔁 Report Wizard		- • -
 Select Format Select Report Select File Select Layout What to Report Select Workspaces Options 	Select a suitable type of report from the list. Report Caption Basic RTF Report for PER Model	
Show Log Close after Executi	on Show Show Execute	Close

 In Select File section, select the report location. You can either save the report to a folder, or you can publish it to a Toad Intelligence Central (TIC) server (see Basic TIC Actions for more information).

🔀 Report Wizard		
- Select Format - Select Report - Select File - Select Layout - What to Report - Select Workspaces - Options	Select where you like to generate the report. Publish to Intelligence Central Save to folder C\Users\lknapek\Documents\Toad Data Modeler Beta\Reports\RTF\report.rtf	
	Languages of Localized Report Version English (United States)	-
Show Log Close after Execution	on Show < Previous Next > Execute	Qlose

- **i** Tip: You can generate localized reports. Download the appropriate language package from the **community website** and import it to Toad Data Modeler. See **Dictionaries** for more information.
- 5. The next section allows you to customize the look of your report. You can change the report **Orientation**, **Font Settings** and add **Watermark**.

🔁 Report Wizard		- • •
- Select Format - Select Report - Select File - Select Layout - What to Report - Select Workspaces - Options	Paper Orientation Portrait Landscape Table Font Settings Font Family: Verdana Font Preview: RTF report 	
	Size: 12 🕞 Settings Pagebreaks Before Entities V Frames Drawing V Cells Background	
	Watermark No Watermark Image Watermark C:\Users\lknapek\Pictures\Toad_World_Logo_PIX.jpg	
Show Log Close after Execution	Show <u>Previous</u> <u>Next</u> > <u>Execute</u>	Close

6. The **What to Report** section allows you to select specific object types that should be included in the report.

Report Wizard		
- Select Format - Select Report - Select File - Select Layout - What to Report	Selection * Default [System] Ø::::	- I I I I I I I I I I I I I I I I I I I
- Select Workspaces	Property Name	Extended Value
- Options		A
	Check Constraint Rules	Summary and Details
	Defaults	Summary and Details
	Directories	Summary and Details
	Domains	Summary and Details
	Entities	Summary and Details
	- Functions	Summary and Details
	Java	Summary and Details
	Materialized Views	Summary and Details
	Notes	Summary and Details
	Packages	Summary and Details
	Permissions to Objects	
	Procedures	Summary and Details
	Relationships	Summary and Details
	Sequences	Summary and Details
	Cimonium	Cummon and Datails
Show Log Close after Execution	in Show	< Previous Next > Execute Glose

- 7. Select Workspaces section allows to you specify for which workspaces the report should be generated.
 - Note: The report will be generated for model objects based on the following rules:
 - When you check a specific workspace, all of its objects and an image of the workspace will be included in the report.
 - When you check **Generate All Model Objects**, all model objects will be included in the report.
 - Both rules respect the selection made in What to Report section.

🔀 Report Wizard		- • •
 Select Format Select Report Select Layout What to Report Select Workspaces Options 	Generate All Model Objects Select Workspaces All Items Borrowing Customer Rating Movie Offenting Views	
Show Log Olose after Execution	Show < <u>Previous</u> <u>Next</u> > Execute	Close

8. The final section contains several options allowing you to further customize the generated report. Click on **Execute** to generate the report. Once the report is generated, you can view it by clicking on **Show**.

🔀 Report Wizard	
 Select Format Select Report Select File Select Layout What to Report Select Workspaces Options 	Select Display Mode: Full Names Image: Select Display Mode: Full Names Image: Select Display Mode: Full Names Image: Select Display Mode: Image: Select Display Mode: Select Display Mode: Image: Select Display Mode: Select Display S
Show Log Close after Executi	ion Save Action Show < Previous Next > Execute Qose

PDF Reports

PDF report generation is similar to RTF report generation. To generate a RTF report:

1. Click 🚰 on Model Toolbar (or go to Model Menu | Generate Report | Run).



2. In Select Format section, choose PDF format.

Report Wizard		
 Select Format Select Report Select Layout What to Report Select Workspaces Options 	Select a suitable format of report: PTTL	
Show Log Close after Executi	on Show Show Execute	ose

3. In the next section, select the type of the $\ensuremath{\text{PDF}}$ report.

Report Wizard		- • -
 Select Format Select Report Select Layout What to Report Select Workspaces Options 	Select a suitable type of report from the list. Report Caption Basic PDF Report for PER Model	
Show Log Close after Executi	on Show Show Execute	Qlose
In Select File section, select the report location. You can either save the report to a folder, or you can publish it to a Toad Intelligence Central (TIC) server (see Basic TIC Actions for more information).

🔀 Report Wizard		- • •
- Select Format - Select Report - Select File - Select Layout - What to Report - Select Workspaces - Options	Select where you like to generate the report. Publish to Intelligence Central Save to folder C:\Users\knapek\Documents\Toad Data Modeler\Reports\PDF\report.pdf	
	Languages of Localized Report Version English (United States)	•
Show Log Close after Execut	ion Show < <u>Previous</u> Next> Execute	Qlose

- Tip: You can generate localized reports. Download the appropriate language package from the **community website** and import it to Toad Data Modeler. See **Dictionaries** for more information.
- 5. The next section allows you to customize the look of your report. You can change the report **Orientation**, **Font Settings** and add **Watermark**.

🔁 Report Wizard		- • •
- Select Format - Select Report - Select File - Select Layout - What to Report - Select Workspaces - Options	Paper Orientation	
	Settings	
	Watermark O No Watermark C:\Users\Iknapek\Pictures\Toad_World_Logo_PIX.jpg	
Show Log Close after Execution	Show <a>Previous <a>Next > <a>Execute	Close

6. The **What to Report** section allows you to select specific object types that should be included in the report.

Report Wizard		
- Select Format - Select Report - Select File - Select Layout	Selection * Default [System] Image: Image	
- Select Workspaces	Property Name	Extended Value
- Options		A
	Check Constraint Rules	Summary and Details
	Defaults	Summary and Details
	Directories	Summary and Details
	Domains	Summary and Details
	Entities	Summary and Details
	Functions	Summary and Details
	Java	Summary and Details
	Materialized Views	Summary and Details
	Notes	Summary and Details
	Packages	Summary and Details
	Permissions to Objects	
	Procedures	Summary and Details
	Relationships	Summary and Details
	Sequences	Summary and Details
	Cinonima	Cummon and Datails
Show Log Close after Execution	n Show	< Previous Next > Execute Gose

- 7. Select Workspaces section allows to you specify for which workspaces the report should be generated.
 - Note: The report will be generated for model objects based on the following rules:
 - When you check a specific workspace, all of its objects and an image of the workspace will be included in the report.
 - When you check **Generate All Model Objects**, all model objects will be included in the report.
 - Both rules respect the selection made in What to Report section.

🔁 Report Wizard		• 🗙
- Select Format - Select Report - Select File - Select Layout - What to Report - Select Workspaces - Options	Cenerate All Model Objects Select Workspaces Contemp Description Views	
Show Log Close after Execution	Show < Previous Next > Execute	Close

8. The final section contains several options allowing you to further customize the generated report. Click on **Execute** to generate the report. Once the report is generated, you can view it by clicking on **Show**.

🔀 Report Wizard	
 Select Format Select Report Select File Select Layout What to Report Select Workspaces Options 	Select Display Mode: Full Names Soft Objects Alphabetically Use References Inside Report Resolve Application Variables Generate Title Page Generate Title Page Generate Model Description Page Generate Statistic Information Page Generate Statistic Information Page Generate Columns under Tables Generate Summary/ Details with Used User Data Types Only Generate Summary/ Details with Used Domains Only Generate Comments Generate Notes Generate Before/ After Script of Objects Generate Unselected Objects in Parent Add Column's Comments and Notes to Details of Table
Show Log Close after Executi	on Save Action Show Solution Show Save Action Save

Connections

Connections displays all connections to databases and to DDL files. You can easily create and edit connections and also launch **Reverse Engineering** wizard or perform operations with models.

To manage connections

• Select File | Reverse Engineering | Connections.

Button	Description
New Connection	Create a new connection to a database or to a DDL script file.
Edit Connection	Edit existing database or DDL file connection.
Test Connection	Tests a connection.
Copy Connection	Clones a connection. Creates a connection based on an existing one.
Delete Connection	Deletes a connection.
Reload Connections	Refreshes the list of connections. If you manually add a connection to Connections file this list needs to be refreshed. The path to Connections file is defined in Settings Options Reverse

Button	Description
	Engineering Path to Connections.
Show Favorites Only	Only displays your favorite connections. Double-click into Favorite column to mark a connection as favorite.
Create New Model from Database	Launches Reverse Engineering wizard.
Open Object Explorer	Launches Object Explorer to drag and drop objects into your model from the connection.
Import Toad ERD	Creates a new model based on *.erx or *erd file from Toad.
Show Right Bar	Displays a right-hand bar with extra buttons.

18				Connections		- 🗆 🗙
****	🗸 📑 🖏 🔝					
Name ▲ DB2 10.5 DDL LUW DB2 10.5 b MySQL 5.7 Oracle 12c 2	Database Platform DB2 v.10.5 (LUW) DB2 v.10.5 (LUW) DB2 v.10.5 (LUW) MySQL 5.7 Oracle 12c Release 2	Description FrieName=C:\Users\ HostName=10.11.40 HostName=10.11 mysd://roce?10.11 HostName=10.11.40	Favorite	Connection Type DDL script file data provider Native Connection Native Connection Connection via TCP/IP Connection via TCP/IP	Last Connect On N/A 03/10/2017 15:18:50 03/10/2017 15:18 N/A N/A	Create New Model from Database Open Reverse Engineering Wizard, select objects from different schemas using advanced filters and create a new model. Copen Schema Browser and use drag and drop technique to add new objects from connected database to your model. Composed Total ERD Select "nex or "serd file created in Toad for Oracle and create new model.
Count of Connections: 5	Selected Connection:	LUW DB2 10.5 b				

To create a new database connection

- 1. Click **New Connection** and define a new connection name.
- Select data source. Select the desired type of database RE. See the Supported Databases for more info on Toad Data Modeler support for Reverse Engineering. Click Add/Remove Databases to enable or disable databases. Check Show Enabled Databases to only show your enabled database types.

12	Connections – 🗆	×
- Name - Select Data Source - Select Data Provider - Connecting - What to Reverse - Options	Database RE Aurora MySQL 5.6 B2 UDB v.8 (LUW) DB2 v.9.1 (LUW) DB2 v.9.5 (LUW) DB2 v.9.7 (LUW) <	
	Add/Remove Databases Show Enabled Databases Only	~
Hide Log Close after Execution	n < Previous Next > Finish Close	
Id 📥 Date Time	Message	

- 3. Select the data provider for your connection to a database. See more information on the connection methods available for specific databases in Types of Connections by Databases.
- 4. Enter your connection information or edit your connection string directly.
- 5. Select what you want to perform **Reverse Engineering** with. Use **Auto Check** button to automatically select parent objects when any of their dependent objects are selected.
- In Options configure settings used for Reverse Engineering. See Help | Databases | {specific database} | Reverse Engineering for more information on available options. The following options for Reverse Engineering are common for more database types:

Option	Description
Divide Objects to Workspaces by Schema	The resulting model will have a workspace for each schema.
Infer Relationships	Check to automatically generate relationships between entities in the resulting model. If unchecked you will be prompted during Reverse Engineering only when no relationships are found in the resulting model. <i>Default: Unchecked</i> .
Terminator	Select the desired terminator for SQL statements.

12	Connections – 🗆 🗙
 Name Select Data Source Select Data Provider Connecting What to Reverse Options 	Options for Reverse Engineering Divide Objects to Workspaces by Schema Infer Relationships Add Quotes to Defaults of Numeric Type Attributes Ignore Auto-Created Index for Foreign Keys Items to Load Comments for Tables and Columns Permissions Objects for All Databases Select in Views as Text
Show Log Cose after Execut	on < Previous Next > Finish Close

7. Click **Finish** to save the new connection.

To create a new DDL file connection

- 1. Click **New Connection** and define a new connection name.
- 2. Select data source. Select the desired type of DDL Script RE. See the Supported Databases for more info on Toad Data Modeler support for Import from SQL files. Click Add/Remove Databases to enable or disable databases. Check Show Enabled Databases to only show your enabled database types.

12	Connections -	. 🗆	×
 Name Select Data Source Select Data Provider Connecting What to Reverse Options 	Database RE DDL Script RE DDL Script RE DDL Script RE DDL 2019 v.8 (LUW) DB2 UDB v.8 (LUW) DB2 v.9 (LUW) DB2 v.9 (LUW) DB2 v.9 (LUW) DB2 v.9 (LUW) DB2 v.10.1 (LUW) DB2 v.10.1 (LUW) DB2 v.10.5 (LUW) DB2 v.10 (LUW)		~
Show Log Close after Executi	on < Previous Next > Finish	Close	

3. Select the data provider for your connection to a DDL script file.

12	Connections – 🗖	×			
- Name - Select Data Source <u>- Select Data Provider</u> - Connecting	Select a Data Provider. All available Data Providers for selected Data Source are listed below. DDL script file data provider				
- What to Reverse - Options	Description: This data provider enables you to reverse model from a DDL script file.				

4. Click **Open DDL Script File** and select the file that you want to use for connecting. Enter the desired terminator for SQL statements. The DDL script is displayed after opening the file.

2	Connections	-		×
- Name - Select Data Source - Select Data Provider <u>- Connecting</u> - What to Reverse	DDL Script C: DDL Script :	Check	DDL Sor	 pt
- Options	<pre> ccreate type "toad"."MGR_UNDER_EMP" cs AS ("BONUS" DECIMAL(10,2)) instantiable not final MODE DB2SQL ; ccreate type "toad"."US_ADDR_T" UNDER AS ("ZIP" VARCHAR(10)) cont final Not final MODE DB2SQL </pre>	"TOAD". "A	DDRESS	* *
. 🔾	Description	Row	Colum	, n
	column 57: Found 'OCTETS': Expecting:)	98	52	^
	column 60: Found 'OCTETS': Expecting:)	101	55	- 16
	<	110	04	× .
Show Log Close after Execut	on < Previous Next > Finish		Close	

- 5. Select what you want to perform **Reverse Engineering** with.
- In Options configure settings used for Reverse Engineering. See Help | Databases | {specific database} | Reverse Engineering for more information on available options. The following options for Reverse Engineering are common for more database types:

Option	Description
Divide Objects to Workspaces by Schema	The resulting model will have a workspace for each schema.
Infer Relationships	Check to automatically generate relationships between entities in the resulting model. If unchecked you will be prompted during Reverse Engineering only when no relationships are found in the resulting model. <i>Default: Unchecked</i> .

2	Connections – 🗆 🗙
- Name - Select Data Source - Select Data Provider - Connecting - What to Reverse <u>- Options</u>	Options for Reverse Engineering
Show Log Cose after Executi	tems to Load Comments for Tables and Columns Permissions Character Sets and Collation for Tables and Columns Objects for All Databases Select in Views as Text

7. Click Finish to save the new connection.

Reverse Engineering Wizard

Reverse Engineering Wizard guides you through the process of creating a model from an existing database or a DDL file.

To create a model by Reverse Engineering

1. Click **File | Reverse Engineering | Reverse Engineering Wizard**. Select one of your stored connections or select "No connection" to define a new source in the following steps of the wizard. You can also select one of the connections shared with Toad for Oracle or created during import of an ERD file from Toad for Oracle. Select a connection and click **Load** to proceed to the last step of the wizard or define a new connection. See Connections for more information on how to create a connection to a database or to a DDL file.

12	Reverse Engineer	ing Wizard 🛛 🗕 🗖 🗙
- Stored Connections - Select Data Source	If you want to use previously sav	red connection, select it from the list.
- Select Data Provider - Connecting	Connections Toad for Oracle O	Connections
- What to Reverse	Name 🔺	Description
- Save Connection - Tables	 No Connection DB2 10.5 DDL LUW DB2 10.5 LUW DB2 10.5 b MySQL 5.7 Oracle 12c 2 	FileName=C:\Users\dbizon\Desktop\LUW DB2 HostName=10.11.40.81; Port=50000; Database HostName=10.11.40.81; Port=50000; Database mysql://root@10.11.40.129:3306/ HostName=10.11.40.65; Port=1521; ServiceNa
Show Log Close after Executi	Load Connection	Delete Connection Reload Connections Next > Execute Close

2. Select the objects you want to include in your target model and click **Execute** to create a new model.

Feature	Description		
Schema	Select a specific schema you want to include in the target model, all tables or all selected tables.		
Select All on All Tabs	Selects all objects on all tabs.		
Deselect All on All Tabs	Deselects all objects on all tabs.		
Filter	Type to filter objects. I TIP: Use wildcards - example: "*user" or "?ser". * - replaces unlimited number of characters ? - replaces any single character		
Select All	Selects all object on the current tab.		
Deselect All	Deselects all object on the current tab.		
Invert Selection	Inverts selection on the current tab.		
Select Parent Tables	Selects all parent tables of the currently selected tables.		
Select Child Tables	Selects all child tables of the currently selected tables.		
Select Parent and Child Tables	Selects all child and all parent tables of the currently selected tables.		

Feature	Description	
Export Selection	Export selection as a *.wsxr file.	
Import Selection	Imports a selection from *.wsxr file.	

TIP: Select parent and child tables easily using the right-click menu. You can select child and/or parent tables up to 3 levels of depth or all levels (Infinity Depth).

neverse Engineering Wizard	- 0	×
 Stored Connections Select Data Source Select Data Provider Connecting What to Reverse Options Save Connection Tables 	Reg Rel Filter: Tables Views videorental.myTable5 videorental.myTestTable1 videorental.numetest videorental.numetest2 videorental.numetest videorental.numetest videorental.select videorental.sel	Ŷ
Show Log Close after Execut	image: state of the state o	~

Object Explorer

i

Use Object Explorer to easily drag and drop objects from your connections.

To use Drag and Drop method

1. Click File | Reverse Engineering | Connections, select a connection and click Open Object Explorer to launch it for the selected connection.

18			Connections – 🗆 💌			
****	ာ 🛩 💣 🛐 🗶 🗔					
Name ▲ DB2 10.5 DDL LUW DB2 10.5 LUW DB2 10.55 MySQL 5.7 Oracle 12c 2	Database Platform DB2 v.10.5 (LUW) DB2 v.10.5 (LUW) DB2 v.10.5 (LUW) MySQL 5.7 Oracle 12c Release 2	Description Favorit FileName=C:\Users\ HostName=10.11.40 mysql://nocd@10 HostName=10.11.40	Connection Type DDL script file data provider Native Connection Native Connection Connection via TCP/IP Connection via TCP/IP	Last Connect On 04/10/2017 13: 04/10/2017 12: 03/10/2017 15: 04/10/2017 1 N/A	Create New Model from Database Open Reverse Engineering Wizard, select objects from different schema using advanced filters and create a new model.	

 Drag and drop any objects to your model. The model needs to be of the same type as the database connection or the DDL script file. You may drag and drop objects directly to **Designer** or into **Physical Model Explorer** by dragging them onto the root or into the correct folder. Some objects such as synonyms may only be dragged to **Physical Model Explorer**.

		events_stages_history	
	THREAD_ID	Bigint	NN
	EVENT_ID	Bigint	NN
	END_EVENT_ID	Bigint	
	EVENT_NAME	Varchar(128)	NN
	SOURCE	Varchar(64)	
Object Explorer -	= 🗆 🗙	Bigint	
		Bigint	
Database performance_s	chema 🗸 🔀 LETED	Bigint	
the last in the second	ATED	Bigint	
ables Views Procedur	es Functions NT_D	Bigint	
accounte	NT_TYP	2E Enum('TRANSACTION', 'STATEM	IENT'
accounts	^		
cond_instances		0	
events_stages_current		Ĭ	events_stages_history
 events_stages_history 		THREAD_ID	Bigint
events_stages_history_	long	EVENT_D	Bigint
events_stages_summa	ry_by_acount_by_ev	EVENT NAME	Varchar(128)
events_stages_summar	ry_by_hos, by_event	SOURCE	Varchar(64)
events stages summa	ry by thread k eve	TIMER START	Bigint
events stages summa	why user by eact	TIMER_END	Bigint
- evente stages summa	v dobal by event	TIMER_WAIT	Bigint
events_stages_summa	y_gooal_by_event_	WORK_COMPLETED	Bigint
events_statements_cur	Tent	WORK_ESTIMATED	Bigint
events_statements_his	tory	NESTING_EVENT_D	Bigint
 events_statements_hist 	tory_long	NESTING_EVENT_TYPE	Enum(TRANSACTR
events_statements_sur	nmary_by_account_b		
events_statements_sur	nmary_by_digest		
events statements sur	nmary by host by en		
events statements sur	mary by program		
- evente statemente eur	many by thread by		
events_statements_sur	initialy_oy_triedo_oy_		
events_statements_sur	nmary_oy_user_oy_e		
 events_statements_sur 	nmary_global_by_eve	Drag and drog)
 events_transactions_ci 	urrent	objects into	r
avante transantione hi	eton. Y	vour Designer	
	> :	your Designer	

Import Toad ERD

i NOTE: For more info on Toad for Oracle integration see Toad for Oracle® Connections and other related help topics.

To create a model by importing a diagram created in Toad for Oracle

1. Click **File | Reverse Engineering | Connections**, click **Import Toad ERD** and select a file to import. You can use a selected connection or the connection saved in the imported file. Click "No" to use your own saved connection. If you click "Yes" an alias for a connection will be temporarily saved. The alias is removed after having refreshed **Connections** or restarting Toad Data Modeler.

18					Connections		
	* 🦻 🕫 🗟 🔹 🕈	🗸 💕 🐮 🔕 🗔					
•	Name MySQL 5.7 Oracle 12c 2 DB2 10.5 DDL LUW DB2 10.5 LUW DB2 10.5 LUW DB2 10.5	Database Platform MySQL 5.7 Oracle 12c Release 2 DB2 v.10.5 (LUW) DB2 v.10.5 (LUW) DB2 v.10.5 (LUW)	Connection Type Connection via TCP/IP Connection via TCP/IP DDL script file data provider Native Connection Native Connection	F ▲ ✓ ✓ ✓ ✓ ✓	Description mysql://toot@10.11.40.129-3306/ Host Name=10.11.40.65; Port=1521 FileName=C:\Usen'sdbizon'Desktop\U.U.W HostName=10.11.40.81; Port=50000; Data HostName=10.11.40.81; Port=50000; Data	Last Connect On 04/10/2017 14:04:45 04/10/2017 14:27 04/10/2017 13:47:49 04/10/2017 12:43:33 03/10/2017 15:18:50	Create New Model from Database Open Reverse Engineering Wizard, select objects from different schemas using advanced filters and create a new model.
	You can	use selected connection or con t show next time	Toad Data Model nection saved in ERD file. Wo Yes No	er uld you li	ke to use connection saved in ERD file?		Open Schema Browser and use drag and drap technique to add new objects from connected database to your model.

2. A new model is created from the imported Toad for Oracle file.

Universal DB/ANSI Model

Toad Data Modeler allows you to reverse engineer a database structure of unsupported database platforms. Tables, columns, primary keys, indexes, relationships, procedures and views are loaded (depends on the database). It is necessary to convert the reversed model to a model of any supported databases.

To reverse an ANSI model

• Follow the steps defined in Connections and select Universal DB in Select Data Source step.



About Scripting and Customization

Toad Data Modeler and its behavior can be easily customized in several ways to better fit your needs and requirements. You can also leverage the power of scripting and automation to improve your workflow. To start scripting/customizing, you need to enable **Expert Mode** first.

To enable Expert Mode

Check Expert Mode in Settings | Options | General

Expert Mode menu and Options section Expert Mode will appear.

Right-click a model name in **Model Explorer** or **Application View** and select **Test Model** to run an internal test of model consistency.

Right-click a model name in **Model Explorer** or **Application View** and select **Repair Model** to repair broken models.

The scripting and customization capabilities include:

- · Scripts and macros
- Packages

- Metamodel
- Form customization
- **i** Note: Useful information about available classes, methods, functions and properties accessible in Toad Data Modeler can be found in the **Reference Guide**.

This document is available in the Expert Mode | Reference Guide (with Expert Mode enabled).

Scripts/Macros

Code written in JScript, VBScript or Internal script may be used to access and modify various model objects or even perform model actions such as model renaming, merging, DDL script customization, etc.

Note: Macros are similar to scripts except they can be configured to appear in custom Macro menu or context menu of selected objects.

Scripts/Macros can be accessed via **Expert Mode Menu** | **Customization** | **Script Explorer**. To create and immediately execute scripts, take advantage of **Scripting Window** located in **Expert Mode Menu**.

Script Explorer ×			
Physical Model			
🖃 🕒 Toad Data Modeler			
🖶 🔚 Constants			
🖶 🔚 CSAO Class Definitions			
🖶 🔚 Form Events			
🖶 🕒 Generation			
PERCodeGenerator			
PERCodeGeneratorExt			
🖨 🗁 Macros			
🕀 🖷 Microsoft SQL Server			
Add Entities Macro			
AddSingleAttributeMacro			
R AlphabeticAutolayout			

Packages

A package contains various means of customization such as scripts, macros, customized form definitions, data type conversion rules, etc. Packages affect models of various database platforms and versions depending on their Visibility and relations with other packages (Extension, Dependency).

Packages can be accessed via Expert Mode Menu | Customization | Package Explorer.



Metamodel

Metamodel is a graphical representation of objects (classes, properties, methods, etc.) that belong to a selected package. In metamodels, you can create new classes, properties, methods, associations, generalizations, and others in a way similar to UML Class Diagram.



Form Customization

It is also possible to modify certain application forms (mostly **Properties** dialogs) and either change existing elements or add custom ones.

TaGanani TTab Shoet
Image: Second in the Secon

Other Notes

Toad Data Modeler Order of Priority

1. Scripts and definitions stored in My Package.txg file have the highest priority.

2. Scripts and definitions stored in other user defined packages (distributed as add-ons, add-on packages) have higher priority than scripts and definitions stored in system packages.

3. Scripts and definitions stored in system packages have the lowest priority.

Scripting Window

Scripting Window allows you to run simple scripts only. In **Scripting Window**, you cannot save scripts as they do not relate to any package.

To open Scripting Window

- 1. Enable Expert mode: select Settings | Options | General | select the Expert Mode checkbox.
- 2. Select Expert Mode | Scripting Window.

In the Application Window, see the new tab Scripting with the Scripting Window open.

🔀 Toad Data Modeler [Scripting Window]	\searrow	
<u>File Edit View Script Expert Mode Settings</u>	Window Help	
) 	- 1
Videorental × Employee × Scripts × Scripting	x	×
Scripting Window x		Ľ
Available Objects	Selected Objects Name in Script	
Employee	Videorental OrigModel	
<pre>function main(){ var i, e; var Ent; var Ent; var EntListConfirmed = var EntListNotConfirme // iterate through enti for (i=0; i<origmodel.e e<="" ent="OrigModel" entlistconfirm="" if(ent.confirme="" th="" {=""><td><pre>new Array(); i = new Array(); ites and check the value of ConfirmedByCustomer property ntities.Count; i++) Entities.GetObject(i); iByCustomer — true) ned[EntListConfirmed.length] = Ent.Name;</pre></td><td></td></origmodel.e></pre>	<pre>new Array(); i = new Array(); ites and check the value of ConfirmedByCustomer property ntities.Count; i++) Entities.GetObject(i); iByCustomer — true) ned[EntListConfirmed.length] = Ent.Name;</pre>	
Application View Message Explorer Verification Log Loupe	Dverview - Videorental - Orderino	
Application View ×	Message Explorer, Verification Log x Lour	pe, Overview - Videorental - Or 🗙
P	Message Explorer × Verification Log ×	pe 🗴 Overview - Videor 💶 🕨
 IVdeorental Imployee <li< th=""><td>Id Date Time Message 23 3.5.2013 12:10:48 I_HILM 24 3.5.2013 12:10:48 T_CUSTOMER_RATING 25 3.5.2013 12:10:48 T_GENRE 26 3.5.2013 12:10:48 # Number of NOT confirmed entities: 8</td><td></td></li<>	Id Date Time Message 23 3.5.2013 12:10:48 I_HILM 24 3.5.2013 12:10:48 T_CUSTOMER_RATING 25 3.5.2013 12:10:48 T_GENRE 26 3.5.2013 12:10:48 # Number of NOT confirmed entities: 8	

Scripting Window toolbar

🗄 🗎 🖓 👍 🕨 📄 🛛 JScript 🗸 🗸	🗗 🔂	
---------------------------	-----	--

Option	Description
Show Windows Automatically	Displays a corresponding side tab. When you are writing a script, Code Explorer is displayed. When a script is being executed, Log is displayed.
Show Log	Displays a log window that shows log messages and errors related to Scripting Window .
Show Code Explorer	Displays a side tab that lists code segments.
Execute Script	Executes a script in Scripting Window.
Stop Script	Stops a running script.
Туре	Switch between: • JScript • VBScript • Internal Script
Load Script from File	Load a script from a file.
Save Script	Saves a script.
Save Script as	Saves a script under a new name.

To display the Available Objects and the Selected Objects windows in Scripting Window Select View | Show Registered Objects.

Script Explorer

In Script Explorer, you can edit existing scripts, write your own scripts/macros and more.

To open Script Explorer

- 1. Enable Expert mode: select Settings Menu | Options | General | check the Expert Mode checkbox.
- 2. Click on the toolbar or select Expert Mode Menu | Customization | Script Explorer.

Script Explorer does not contain all data that you can find in **Package Explorer**, but only scripts stored in folders. Via the Script Explorer, you can:

- Make fine modifications in user scripts see option Edit Source Code (in New Window)
- View source code of read-only scripts (via the Edit Source Code option as well), and copy their parts to use them in new scripts

- Extend functionality of existing scripts and modify them significantly see option Add New Script
- Delete user scripts

See Scripting in Script Editor for more information.

The Script Explorer Tree



From the combo-box at the top, you can select a script for:

- All Models
- Physical Model
- Specific database
- Metamodel
- Logical Model

Example: See the screenshot above - **Microsoft SQL Server 2012** has been selected. The scripts with visibility enabled in Microsoft SQL Server 2012 are displayed.

Options for Folders

Folders (Script Categories):

- Constants scripts with constants
- CSAO Class Definitions scripts with class definitions, mostly organized to folders with specific database names
- Dictionaries contains dictionary scripts
- Form Events contains event scripts
- Reports contains scripts for HTML and RTF report generation
- Reverse engineering contains scripts for creating a model via reverse engineering
- Verification contains scripts for verification

Right-click a folder to see the following options:

Option	Description
Add New Script	Adds a new script under the selected folder.
Delete Folder	Deletes the selected folder, including its contents. Folders which contain system scripts cannot be deleted - they are locked (see the padlock icon).
Add New Folder	Creates a new folder in selected folder.
Properties	Opens the Properties dialog of the selected folder From here, you can also manage items of the folder - add, delete and edit them, provided the folder is not read-only.
General Tab	This tab contains some basic information on the folder.
Items Tab	All subfolders and scripts of a particular folder are listed on this tab. Here, you can also manage them - add, edit, delete. (Provided that they are not read-only.)

Options for Scripts

Right-click a script to see the following options:

Option	Description
Create New Script	Creates a new script under the selected script.
Delete Script	Deletes the selected script. If this script contains other script items, they will be deleted as well. System scripts cannot be deleted. They are locked (see the padlock

Option	Description	
	icon). It's not possible to delete other read-only scripts either.	
Edit Source Code	 Opens Script Editor in the Application Window. This option is available for all scripts - user, system and read-only scripts. Note that there is a significant difference though: User scripts that are not locked: You can edit the source code entirely. System scripts and read-only scripts: You can only view the script and copy its parts. You cannot edit source code of such scripts directly. 	
Edit Source Code in New Window	Same as above, however the source code of the selected script will open in a new instance of Script Editor . i Note: You can open source code of the same script multiple times, for example when viewing different parts of a script in two windows. If any of the Edit options is selected, the script will be locked automatically, and other modifications of this script won't be allowed. (In Script Explorer, such scripts are disabled.)	
Properties	Opens the Script Properties dialog. Properties of system and read- only scripts cannot be edited.	

Script Properties

General Tab	Description
Name	Physical Script name
Caption	Logical Script name
Category	Selects the script category (folder) in which it can be found.
Script Type	Select Script Type: JScript, VBScript and Internal script are available.
Package	Name of the package where the script is stored. User scripts are stored in " <i>My Package</i> " by default.
Script Folder	Name of the folder in Script Explorer in which the script was created. Cannot be changed.
Visibility Tab	On this tab, you can find information about the script visibility. It defines when the script is visible when you filter scripts in Script Explorer. Let's say your script visibility is set to " <i>Physical Model</i> ". When you filter scripts in Script Explorer by category, your script will be shown each time the filtered category falls under <i>Physical Model</i> . But if you filter script by the <i>Logical Model</i> category, your script won't be shown.

General Tab	Description
Others Tab	Contains mostly identifying info such as Author, Company, Version etc.
Notes Tab	A tab for writing notes about the script.

Script Editor

Script Editor is accessible from Script Explorer or Package Explorer.

To open Script Editor

• Right-click a script and choose Edit Source Code or Edit Source Code in New Window.

or

• Simply double click a script/macro in Script Explorer

When you open an instance of Script Editor, the **Scripts** tab is displayed at the top of the Application Window. When this tab is focused, a new tab row appears. All opened scripts are shown as tabs there.

i Note: Read-only scripts (system scripts and locked scripts) can be viewed only. You can still copy their code and use it in your own scripts.

Left section of Script Editor	List of functions in currently opened script.
Save	Saves changes you made in the script. (Shortcut: <i>CTRL</i> + <i>S</i>)
Rollback	Discards all changes made since the last save.

Note: Double-click a function in the left section of Script Editor to move to its source code in the editor itself.

TIP:

- You can insert bookmarks in your code:
 - 1. Press CTRL+SHIFT+number 0-9 to insert a bookmark on selected row.
 - 2. To move to a created bookmark, press CTRL + bookmark number.
- You can also quickly search through all of existing scripts by going to **Expert Mode Menu | Customization | Find in Scripts** or pressing *CTRL+ALT+F.*

Script Editor Right-Click Options

Cody	Ctrl+C
Cut	Ctrl+X
Paste	Shift+Ins
Select All	Ctrl+A
Undo	Ctrl+Z
Redo	Shift+Ctrl+Z
Find	Ctrl+F
Search Next	F3
Search All	
Go To Line	Ctrl+G
Convert Internal Script	
Script Properties	
Convert Internal Script 2	2

These are standard functions that can be used while working with scripts in Script Editor.

Convert Internal Script	Option for internal scripts that allows you to see your internal script in JScript.
Convert Internal Script 2	Option for internal scripts that allows you to see your internal script in JScript. Moreover, via this option, you can see numbers of lines that you can map in case of errors in the script.

i Note: If an error occurs and it is an error in script, the script will open in **Script Editor** and the particular problematic line in the script will be highlighted. (Expert mode must be enabled.)

How to Call Toad Data Modeler from Other Applications

Toad Data Modeler can be called from other applications, for example by running JavaScript code. This section showcases several possible scripts that may be used to perform various Toad Data Modeler tasks.

Note: By default, scripts from outside Toad Data Modeler will use the latest installed version of the application. If you want to use some other version, you will need to locate its executable file and execute the following command in its folder:

TDM.exe /regserver

Available tasks

By calling Toad Data Modeler from other applications, you can perform the following tasks silently:

- DDL script generation
- Report and change report generation

- Reverse engineering
- Model conversion

DDL script generation - Generate.js

```
function Generate (Model, Output)
{
      var Generator = Model.DefaultCodeGenerator;
      Generator.GenerateToFile(Output);
}
var App = new ActiveXObject("TDM.App");
//Wait until all TDM packages are loaded
while(!App.Application.IsPackagesLoaded)
{
      WScript.Sleep(1000);
}
//Model for which DDL script will be generated
var Model = App.OpenModelFromFile("C:\\My\ Models\\Videorental.txp");
//DDL script destination folder and name
Generate(Model, 'C:\\Scripts\\VideorentalGeneratedScript.sql');
// Model is deleted only from memory
```

HTML report generation - HtmlReport.js

while(!App.Application.IsPackagesLoaded)

Model.Delete();

```
function HTMLReport(Model, System, OutputPath)
{
      var ReportRegistrar = System.CreateObject('ReportRegistrar');
      ReportRegistrar.DataSource = Model;
      var Report = ReportRegistrar.CreateReport
('BasicHTMLPERReport'+Model.ModelDef.Abbrev, 1 , Model); //1 - HTML report
      ReportRegistrar.RegisterLayoutClasses(1);
      Report.Path = OutputPath;
      Report.FileName = 'Report';
                                   //Name of the HTML report file
      Report.Language = 'ENU'; //Abbreviation of language of dictionary used to translate
terms in report (default is english - ENU)
      Report.Kind = 'HTML';
      Report.Layout = ReportRegistrar.GetLayoutClass(0); //Report Layout (0 - Frameless,
1 - Top Menu, 2 - Left Menu)
      Report.CSS = Report.Layout.CSSList.GetObject(0); //CSS style (Frameless 0-10, Top
Menu 0-2, Left Menu 0-1)
      Report.GenerateInfo = false; //If true, adds information about model to the report
      Report.Generate();
}
var App = new ActiveXObject("TDM.App");
//Wait until all TDM packages are loaded
```

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Model Statistics

```
WScript.Sleep(1000);
}
//Model for which the report will be generated
var Model = App.OpenModelFromFile("C:\\Models\\Videorental.txp");
//Report destination folder
HTMLReport(Model, App.System, 'C:\\Reports\\' );
```

Change script generation - GenerateChangeScript.js

{

```
function ChangeFiles(App, FileName1, FileName2, Output)
{
      var Model1 = App.OpenModelFromFile(FileName1);
      var Model2 = App.OpenModelFromFile(FileName2);
      var Convertor = Model1.CreateNewObjectInternal(25000);
      Convertor.Model2ToAlter = true;
      Convertor.Converting = true; // Do not modify
      Convertor.Altering = false; // Do not modify
      Convertor.Model1Model = Model1;
      Convertor.Model2Model = Model2;
      Convertor.CreateDefaultAlterScriptSetting();
      Convertor.InitSelectedOTPs();
      Convertor.InitAvailableOTPs();
      Convertor.SelectPhysicalPropertiesOnlyInSelectedOTPs();
      Convertor.AlterFileName = Output;
      var Stream = App.System.CreateObject('TextStream');
      Convertor.SynchronizeModels();
      Convertor.LoadAllDifferences();
      Convertor.SelectAllModel1ToModel2(true, false);
      Convertor.RunAlter();
      Stream.Text = Convertor.AlterScript;
      Stream.FileName = Convertor.AlterFileName;
      Stream.SaveToFile();
      Convertor.Delete();
      Model1.Delete();
      Model2.Delete();
}
var App = new ActiveXObject("TDM.App");
//Wait until all TDM packages are loaded
while(!App.Application.IsPackagesLoaded)
{
      WScript.Sleep(1000);
}
//First and second model to be compared, change script destination folder and name
ChangeFiles(App, "C:\\Models\\Videorental.txp", "C:\\Models\\Videorental2.txp",
"C:\\Scripts\\VideorentalChangeScript.sql" );
```

Change report generation - GenerateChangeReport.js

```
function ChangeReport (App, FileName1, FileName2, OutputPath)
{
      var System = App.System;
      var Model1 = App.OpenModelFromFile(FileName1);
       var Model2 = App.OpenModelFromFile(FileName2);
      var Convertor = Model1.CreateNewObjectInternal(25000);
      Convertor.Model2ToAlter = false;
      Convertor.Converting = true; //Do not modify
      Convertor.Altering = false;
                                    //Do not modify
      Convertor.Model1Model = Model1;
      Convertor.Model2Model = Model2;
      Convertor.CreateDefaultAlterScriptSetting();
      Convertor.InitSelectedOTPs();
      Convertor.InitAvailableOTPs();
      Convertor.SynchronizeModels();
       Convertor.LoadAllDifferences();
      Convertor.SelectAllModel1ToModel2(true, false);
      var ReportRegistrar = System.CreateObject('ReportRegistrar');
      ReportRegistrar.DataSource = Convertor;
      var Report = ReportRegistrar.CreateReport('UniversalHTMLAlterReport', 6,
Convertor); // 6 - diff HTML
       ReportRegistrar.RegisterLayoutClasses(6);
       Report.Path = OutputPath;
      Report.FileName = 'Report'; //Name of the HTML report file
      Report.Language = 'ENU'; //Abbreviation of language of dictionary used to translate
terms in report (default is english - ENU)
      Report.Kind = 'HTML';
      Report.Layout = ReportRegistrar.GetLayoutClass(0); //Report Layout (0 - Frameless,
1 - Top Menu, 2 - Left Menu)
       Report.CSS = Report.Layout.CSSList.GetObject(0); //CSS style (Frameless 0-10, Top
Menu 0-2, Left Menu 0-1)
      Report.Generate();
      Convertor.Delete();
      Model1.Delete();
      Model2.Delete();
var App = new ActiveXObject("TDM.App");
//Wait until all TDM packages are loaded
while(!App.Application.IsPackagesLoaded)
{
      WScript.Sleep(1000);
}
```

ChangeReport (App,"C:\\Models\\Videorental.txp","C:\\Models\\Videorental2.txp","C:\\Reports\\")

Converting model to PostgreSQL - ConvertToPg.js

```
function Convert(Model, App)
      var Convertor = Model.CreateNewObjectInternal(25000);
      Convertor.Model2ToAlter = false;
      Convertor.Model2ToConvert = true;
      Convertor.Model2ModelTemp = true;
      Convertor.Converting = true; //Do not modify
      Convertor. Altering = false; //Do not modify
      Convertor.Model1Model = Model;
      var PM = App.System.GetInterface('PackageManager');
      var DestinationMDef = PM.ModelDefs.GetObjectByName('PostgreSQL 9.0'); //Target
database platform and version
      DestinationMDef.LoadPackages();
      Convertor.Model2ModelDef = DestinationMDef;
      Convertor.Model2Model = App.NewModel(2001, DestinationMDef, true, true); //2001 =
Physical ER Model (PERModel)
      Convertor.CreateDefaultAlterScriptSetting();
      Convertor.InitSelectedOTPs();
      Convertor.InitAvailableOTPs();
      Convertor.SynchronizeModels();
      Convertor.LoadAllDifferences();
      Convertor.SelectAllModel1ToModel2(true, false);
      Convertor.RunConvert();
      var Result = Convertor.Model2Model;
      Convertor.Delete();
      return Result;
}
function Generate(Model, Output)
{
      var Generator = Model.DefaultCodeGenerator;
      // Sample generator settings changes. For more available settigs, see class
PERCodeGenerator in Reference Guide
      Generator.UseQuotations = false;
      Generator.GenerateToFile(Output);
}
var App = new ActiveXObject("TDM.App");
//Wait until all TDM packages are loaded
while(!App.Application.IsPackagesLoaded)
```

```
{
    WScript.Sleep(1000);
}
//Source Model Path
var Model = App.OpenModelFromFile("C:\\Models\\Videorental.txp");
var ModelPG = Convert(Model, App);
// Save model
App.SaveModelToFile(Model, 'C:\\Models\\VideorentalPG.txp');
// Generate SQL
Generate(ModelPG, 'C:\\Models\\script.sql');
// Delete only from memory.
ModelPG.Delete();
Model.Delete();
```

Reverse engineering using existing Alias - REExistingAlias.js

```
function LoadPackagesByModelDefName(AName, System)
{
     var PM = System.GetInterface('PackageManager');
     var MDef = PM.ModelDefs.GetObjectByName(AName);
     MDef.LoadPackages();
}
function REByAlias (Alias)
{
     var REDataMigrator = Alias.REDataMigrator;
     REDataMigrator.InitiateREDataMigrator();
     REDataMigrator.InitObjects();
     var List = Alias.REStruct.Tables;
      var i;
      for (i=0;i<List.Count;i++)
      {
             List.GetObject(I).Selected = true;
      }
     Alias.REDataMigrator.REDataProvider.OpenConnection();//NEW
     Alias.REDataMigrator.LoadObjects();
     Alias.REDataMigrator.REDataProvider.CloseConnection();//NEW
      if (Alias.REStruct.Model!=null)
      {
            return Alias.REStruct.Model;
      }
      else
      {
            return null;
      }
}
function RE(AliasName, App, AModelDefName)
{
```

```
var REManager = App.REManager;
      //Load Packages
      LoadPackagesByModelDefName(AModelDefName, App.System);
      var Alias;
      Alias = REManager.REAliases.GetObjectByName(AliasName);
      if (Alias==null)
      {
             var AliasPath = App.ApplicationConfig.AliasesPath;
             Alias = REManager.LoadREAliasFromFile(AliasPath+AliasName+'.txa');
      }
      return REByAlias(Alias);
}
var App = new ActiveXObject("TDM.App");
//Wait until the application loads all packages
while(!App.Application.IsPackagesLoaded)
{
      WScript.Sleep(1000);
}
var Model = RE('PG9 unidac', App, 'PostgreSQL 9.0');
if (App.Application.SaveModelToFile(Model, 'C:\\test.txp'))
{
      WScript.Echo("OK");
}
else
{
      WScript.Echo("Error");
}
```

Reverse engineering and new alias - RENewAlias.js

```
function REByAlias(Alias)
{
      var REDataMigrator = Alias.REDataMigrator;
      REDataMigrator.InitiateREDataMigrator();
      REDataMigrator.InitObjects();
      var List = Alias.REStruct.Tables;
      var i;
       //Select some objects to RE, only example
       for (i=0;i<List.Count;i++)
       {
              List.GetObject(i).Selected = true;
       }
      Alias.REDataMigrator.LoadObjects();
      if (Alias.REStruct.Model!=null)
       {
              return Alias.REStruct.Model;
       }
```

```
}
function LoadPackagesByModelDefName(AName, System)
{
     var PM = System.GetInterface('PackageManager');
     var MDef = PM.ModelDefs.GetObjectByName(AName);
     MDef.LoadPackages();
function SetAliasParameters (REAlias)
{
      var REDataProvider = REAlias.REDataProvider;
     REDataProvider.SetConnectionParam('HostName', 'Localhost');
     REDataProvider.SetConnectionParam('DatabaseName', 'Videorental');
      REDataProvider.SetConnectionParamAsInt('Port', 0);
      REDataProvider.SetConnectionParam('UserName', 'Scott');
     REDataProvider.Password = 'Lion';
      return REAlias;
}
*******
var App = new ActiveXObject("TDM.App");
//Wait until the application loads all packages
while(!App.Application.IsPackagesLoaded)
{
      WScript.Sleep(1000);
}
LoadPackagesByModelDefName('PostgreSQL 9.0', App.System);
var REManager = App.System.GetInterface('REManager');
var REAlias = REManager.CreateAlias('REDataSourceDBPG90',
'REDataProviderUniDACClientPG');
REAlias = SetAliasParameters(REAlias);
var Model = REByAlias(REAlias);
REAlias.Delete();
if (App.SaveModelToFile(Model, 'C:\\Models\\Videorental.txp'))
{
     WScript.Echo("OK");
}
else
{
     WScript.Echo("Error");
}
```

Package Explorer

Package Explorer displays package structure in Toad Data Modeler and allows you to:

- Manage objects saved in the packages (rename, move, copy objects, open Object Properties dialog etc.)
- Access all package Metamodels

To open Package Explorer

- 1. Enable Expert mode: select Settings Menu | Options | General | select the Expert Mode checkbox.
- 2. Click voltaria on the toolbar or select Expert Mode Menu | Customization | Package Explorer.

Toad Data Modeler contains packages for:

- Specific supported databases (e.g. Oracle, Microsoft SQL Server 2019, MySQL 8.0 etc.)
- Physical ER models
- Logical models
- HTML and RTF reports
- and other functions, such as SQL/DDL generation, reverse engineering etc.

The Package Explorer Tree

Via the box at the top, you can filter the list of packages.



Read-only packages/scripts cannot be edited.

Root folders contain packages that have various lists of objects, e.g.:

- Forms Definitions contain partial definitions with a list of changed visual components of forms modified by user
- External Class Definitions- contain classes and their members designed by user (see the "Metamodel" topic)
- Package Dependencies show dependencies between the selected package and other packages

Right-click Package options

Option	Description
Load Package	Loads the package from disk to Toad Data Modeler. For faster work with packages and for faster loading of application, some information is loaded only on demand.
Delete Package	Deletes the selected Package and all items it contains.
Disallow Package	Selected package won't be loaded during next Toad Data Modeler launch.
Export Package	Exports the selected Package in .tbg format to the chosen folder
Open Metamodel	Opens the selected Package Metamodel. See Metamodels for more information.
Extend with New Package	Creates a new package that will extend the currently selected package.
Create Dependent Package	Creates a new package that will be dependent on the currently selected package (will inherit from it).
Properties	Contains information about the selected package and its items (General information, Visibility, Script folders, Scripts, Description). From here, you can also manage the scripts in the package - add, delete or edit them. (See the following example.) Package File box in the Package Properties dialog - Path to the location where the package is stored. Click the button on the right to open the location in file explorer.
Save BIN	The selected XML package (*.txg) will be saved in binary format (*.tbg).
Save All as BIN	All XML packages (*.txg) will be saved in binary format (*.tbg).

Package Explorer Toolbar

lcon	Command
.	Save Actual - saves changes to actually active Package

lcon	Command
围	Save All - saves all changes made in all modified Packages
	Creates a new user Package.
2	Adds an existing Package to the Package Explorer.
¥	Hides all system Packages, leaving only the user and add-on ones visible.

Icons of Packages in Package Explorer

Package	Unlocked			Locked				
Type of Package/St ate	Loade d	Loade d- Modifie d	Unloade d	Disallow ed	Loade d	Unloade d	Disallow ed	Error during Loadin g
System	۹	%	9	Ф,	2	2	2	9
Add-On	3	%	9	Э,	2	<u></u>	2	9
My Package	2	e h	9	-	2	<u> </u>	-	9

State	Description				
Locked	A package is locked when: a) it is marked as read-only on the disk b) it is a system package and user does not have Expert Mode enabled				
	Note: All system packages are read-only by default. However, in Expert mode it is possible to change the lock/unlock property of the package (right-click the package in Package Explorer Properties .) Generally, in Expert mode it is possible to lock/unlock system packages and add-on packages.				
Loaded	Complete package has been loaded to memory.				
Loaded - Modified	Package has been modified by user.				
Unloaded	Package has not been loaded to memory.				
Disallowed	Package has been disallowed by user (right-click the package in				

State	Description				
	Package Explorer Disallow Package).				
Error during Loading	Loading of the package failed. It is an error state. This situation can happen e.g. when a dependent package of this package is missing (for example it was not selected during installation of the application).				
	Note: It is not possible to edit a script when package is locked. Unlock a package to edit its scripts.				

Scripting in Script Editor

In Toad Data Modeler, you can create and edit scripts via Script Explorer and Package Explorer. For scripting purposes, Script Explorer should be used. (Script Explorer)

To create a new script

Select a script/folder in Script Explorer | right-click and select Create New Script.

To edit already existing script

Select a script/folder in Script Explorer | right-click and select Edit Source Code(in New Window). In both cases Script Editor opens.

When you modify a script source code or write a new script code:

- The particular script is locked and no other user can modify it.
- The script is disabled in Script and Package Explorers.
- Use Commit to save the changes and Rollback to cancel the changes in Script Editor. As soon as you
 press any of these buttons, the script becomes available for other users (will be unlocked automatically).
 - i Note: After you click **Commit**, the changes you've made for the script will be saved within the TDM application, however they will not be saved in particular package on your disk (My Package). You can either save the package in Package Explorer, or close the application the changes will be saved in appropriate package and on disk automatically.

Scripting Languages in Toad Data Modeler:

- JScript
- Visual Basic
- Internal Script -Internal Scripting

To make a petty script modification

(It doesn't work for read-only scripts.)

- 1. In Script Explorer, select a script that you want to modify.
- 2. Right-click the script and select Edit Source Code.
- 3. In the Script Editor, edit the source code directly.
- 4. Press Commit to confirm changes, or Rollback to cancel the changes.
- 5. Save the changes in appropriate package and on your disk Click 📙 🛅 in Package Explorer.

To modify functions of system scripts

System scripts are read-only and it's not possible to edit their source code directly. (See disabled **Commit** and **Rollback** icons in **Script Editor**.)

If you want to edit any functions of a system script, you have to create a new script and edit appropriate functions in it. For detailed example, please see User Guide, "Customization - Sample" chapter.

To write a new script from scratch

In Toad Data Modeler, you can create a new script or further extend functionality of already existing scripts - user and also system scripts.

- 1. Open Script Explorer.
- 2. Select a folder (category) where you want to add the new script.
- 3. Right-click the selected folder and select **Add New Script**. -> A new item will display in the **Script Explorer** under the selected folder.
- 4. Double-click the new script to open it in Script Editor.
- 5. Write or insert the scripting code to the right window. Use **Commit** or **Rollback** for saving and canceling the changes. Remember to save the changes in the package too.

Internal Scripting

In Toad Data Modeler, the following scripts are supported:

- JScript
- Visual Basic
- Internal Script

Use the internal script for writing more extensive texts where only few commands are contained. The internal script is similar to markup languages such as XML, HTML etc. Every sign that is not a text must be marked by this sign - "#".

Key Words

- import
- require
- if
- else
- endif
- script Script function is generated. It allows users to define script type (e.g. JScript or VBScript) where the
 content between script and endscript commands is written.
- endscript

- proc Creates a function in JScript. It is possible to define parameters here.
- endproc -
- call Calls a procedure (function). It is possible to define parameters here.
- <% Beginning of macro.
- %> End of macro.
- Forall Executes iteration over list.
- @ Shows that the following text is an expression.

"script" Command

Use this command to insert to the internal script another part of a scripting language. #script language="{Scripting language}" {Code of Scripting Language} #endscript

Example:

```
#script language="Jscript"
function something() {
  Log.Infomation(`My Message');
}
```

#endscript

"proc" and "endproc" Command

Use this command to create a procedure that is available in internal language. #proc Name([parameters]) Code of Procedure #endproc **Example:** #proc Greetings() Hello

Buy

#endproc

"Call" Command

Use this command to call procedures defined by command "proc". **Example:**

```
#call Greetings()
```

"forall" Command

Use this command if you want to execute iteration over a list. The result of the iteration should be a text. Command syntax is the following:

#forall LIST_NAME (PARAM1, PARAM2, PARAM3, PARAM4, PARAM5);

Example:

#forall Model.tables('Create Table'+IterateItem.Name+'(',",GenerateColumns(),',',')');

"<%", "%>" Command

Angled brackets with percentage insert part of internal script where JScript is used (or another scripting language). The expression is evaluated immediately.

Example:

```
<% if (Model.Count>0) Log.Information(`something'); %>
```

"@" Command

It is similar to "<% %>", however the difference is that after the @ sign, only one expression follows.

Creating Custom Properties

To further extend the functionality of Toad Data Modeler, you can create your own custom properties for most objects. To create a new custom property:

1. Right-click an object in Model Explorer and select Add Custom Property.

New Custom Property	
Caption EntityVersion	Name EntityVersion
Level PEREntity	•
Type widestring	
Readonly Script Implementation	
Package My Package	
INIT Fackage	\
	OK Cancel

2. **New Custom Property** dialog appears. Here you can configure your property. Once, you're done, restart Toad Data Modeler and your property will be created and accessible via scripting.

New Custom Property		
Caption	Name	
RevisionNeeded	RevisionNeeded	
Level		
PEREntity		-
Туре		
boolean	•	
Readonly		
Script Implementation		
Package		
My Package		-
	ОК	Cancel
	UK	Cancel

Option	Description
Caption/Name	Logical and physical name of the property. Name is used to refer to the property in scripting.
Level	Determines on which level the property should be created. For example, if you create a new custom property for an entity (in Oracle 10g model), you can choose from the following options:
	 PEREntityOR10 - The property can be used only in Entities in Oracle 10g models.
	 PEREntityOR - The property can be used only in Entities in any Oracle models.
	• PEREntity - The property can be used in all Entities.
Туре	Sets the custom property data type. The data type should be chosen depending on what would you like to store in the property:
	Widestring - Text strings in general, supports Unicode characters.
	String - Text strings in general, does not support Unicode characters.

Option	Description
	Integer - Positive/negative whole numbers.
	Boolean - True/False values.
	Real - Floating points numbers.
	Dispatch - Any Toad Data Modeler object (Entities, Attributes)
Readonly	Flags the property as Read Only , meaning its value cannot be changed.
Script Implementation	This option allows you to customize the way your property will behave using scripting. You should check it in two cases:
	 Your custom property value will be set according to other property values - In this case, use the automatically generated Get method to get other properties values and set your custom property value according to them.
	 Other properties values will be changed depending on your custom property value - This can be done using the automatically generated Set method. From there, you can change the value of any other property.
Package	Determines in which Package the custom property will be stored. Loading/Disallowing the selected Package will cause the property to be usable/unavailable .

Custom Property Example 1

Scenario

You would like to add an additional property to all entities which would indicate that modeling of a particular entity is not done yet and there are more things to be done before the entity is considered complete. The property could be named **InProgress**.

Solution:

Create a simple custom property and add a checkbox to **Entity Properties** linked to the property. Use the following steps as a guide:

1. Right-click any entity in Model Explorer and select Add Custom Property.



2. In the New Custom Property dialog, enter the following:

Caption/Name - enter **InProgress** as Name and anything you want as Caption **Level** - we assume the property should be available in all entities in all models, select **PEREntity**

Type - the **boolean** type is the most suitable for our type of property (true/false) **Readonly** - the property value should be editable, do not check this checkbox **Script Implementation** - the property value is not dependent on other property values and it doesn't change any other property value either, do not check this checkbox **Package** - feel free to choose any Package

New Custom Property		- • •
Caption InProgress	Name	
Level		•
Type boolean		
Readonly Script Implementation		
Package My Package		
ling i dokugo		
	ОК	Cancel

3. Confirm the changes, you will need to restart the application in order to access the newly created property.

	It is necessary to rest	art 1	foad D	ata Mod	eler. T	o Restart (Click here.	
•	Attributes	•		1	2			

4. The custom property is now available for use. You can verify that by accessing it via scripting.

			_					
2	<pre>var Entity;</pre>							
4	Model.Lock();							
5	5 Entity = Model.Entities.GetObject(0);							
7 8	Log.Informatic	ni('	"Cı	urre	nt statu	s of the InH	<pre>Progress property: " + Entity.InProgress.toString());</pre>	
9 10	Model.UnLock()	;						
•								
Application View, Mes	ssage Explorer, Verification	.og,	Lou	upe				
Application View, Mes Application View	ssage Explorer, Verification ×	Log, Me	Lou essa	upe age Ex	plorer, Verifica	ation Log		×
Application View, Mes Application View 	ssage Explorer, Verification ×	Log, Me Me	Lou essa less	upe age Ex sage E	plorer, Verifica xplorer x \	ation Log Verification Log ×	1	×
Application View, Mes Application View - 1 Videorental - 2 WorkSpace	ssage Explorer, Verification ×	Log, Me Me	Lou essa less	upe age Ex sage E Id 🔺	plorer, Verifica xplorer x v Date	ation Log Verification Log × Time) Message	×
Application View, Mes Application View 	esage Explorer, Verification × × ces ms	Log, Me	Lou essa less	upe age Ex sage E Id A 11	plorer, Verifica xplorer x v Date 9/ 18/ 2015	ation Log Verification Log × Time 5 3:00:24 PM	Message Current status of the InProgress property: true	x
Application View, Mes Application View 	ces wing	Log, Me	Lou essa less	upe age Ex sage E Id A 11 12	plorer, Verifica xplorer x v Date 9/ 18/ 2015 9/ 18/ 2015	Verification Log × Time 3 3:00:24 PM 3 3:00:24 PM	Message Ourrent status of the InProgress property: true Script has been finished	×
Application View, Mes Application View 	ssage Explorer, Verification × ces ms wing mer Rating Movie	Log, Me	Lou essa less	upe age Ex sage E Id A 11 12	plorer, Verifica xplorer × Date 9/ 18/ 2015 9/ 18/ 2015	Verification Log × Time 3 3:00:24 PM 3 3:00:24 PM	Message Current status of the InProgress property: true Script has been finished	×
Application View, Mes Application View Videorental WorkSpac 	ssage Explorer, Verification × ces ms wing mer Rating Movie ing	Log, Me	Lou essa less	upe age Ex sage E Id A 11 12	plorer, Verifica xplorer x Date 9/ 18/ 2015 9/ 18/ 2015	Ation Log Verification Log × Time 5 3:00:24 PM 5 3:00:24 PM	Message Current status of the InProgress property: true Script has been finished	×
Application View, Mess Application View Videorental Videorental All ter All ter Sorrow Custor Views	ssage Explorer, Verification × ces ms wing mer Rating Movie ing	Log, Me	Lou essa less	upe age Ex sage E Id A 11 12	plorer, Verifica ixplorer × Date 9/18/2015 9/18/2015	Verification Log × Time 5 3:00:24 PM 5 3:00:24 PM	Message Current status of the InProgress property: true Script has been finished	×

- 5. Now it's time to add a checkbox to the **Entity Properties** form. Right-click anywhere in the form and select **Customize Form**.
 - i Note: If you have chosen Package other than My Package, you need to select **Customize Form as** option and choose the Package you have selected previously (step 2). This option is disabled by default. To enable it, go to **Settings Menu | Options | Expert Mode** and uncheck the **Save the definitions the the 'My Package'** option.

	🔀 Package List 🛛	x
	Object RE DDL Parser for Oracle	
	RTF Reports for Oracle	
	Database Oracle	
	Custom Physical Entity Relationship Model	
	Templates	_
	Convert LER to PER	Ξ
	Convert PER to PER	
	Dictionary English (United States) Physical Entity Relationship Mo	bd
	Dictionary System KeyWords Physical Entity Relationship Model	
	Alter for PER to PER	
J	Generations for PER Model	
	OK Cance	1

Entity Properties			
Caption		Name	
Borrowing		≥ T_BORROWING	6
Before Script Afte	er Script Notes SQL Previe Ites Kevs Indexes	w Relationships Physical P Check Constraints Triagers	Properties Table Properties
Caption	Name	ltems	Unique Status
		<u>Customize Form</u> C <u>u</u> stomize Form as	S
		Load Form	
		S <u>a</u> ve Form to	
		Designer Mode Op	tions
Add	<u>E</u> dit Delete	D <u>e</u> fault Values for	Class
≫ ✓ <u>G</u> enerate		<u>O</u> K <u>C</u> ancel	Apply Help

- 6. The Entity Properties form is now editable and several other forms appear. The checkbox for our property should be placed somewhere where we can see it no matter what tab is currently selected. Let's place it next to the **Generate** option. First, click the bottom section of the form, where the option is placed along with several buttons.
 - Note: If you accidentally close some of the customization forms, go to Settings Menu | Options |Expert Mode | Editable Forms and check the appropriate option to show them again.

Entity Properties - E		
AttributeDownes	ActionListErroPanel	- €₽
Borrowing		
Before Script APmGerASyntReplaceDialog1;L Preview General Attributes Keys Indexes C	Relationships PmEdit heck Constraints PmEdit magers	Permissions To Do
User / Schema SCOTT Temporary Table Global Temporary Table On Commit Preserve Rows (for Temporary Table) Comment		
Borrowed items	[DWT
Category	Size D O AttributeOrderTimer	ata Warehouse Type
T		
🖚 : 🔽 Generate	OK Cancel	<u>A</u> pply <u>H</u> elp

7. Now find the **Component Palette**, go to **Data** section and double-click **DataCheckBox** to add it to the form.



8. Move the newly added checkbox next to the **Generate** option (you can use **Alignment** form). Make sure the checkbox is selected, then locate the **Component Inspector**.

🔁 Component Inspector					
DataCheckBox1{CSAO	DataCheckBox}				
Alignment	taRightJustify 🔺				
AllowGrayed	False				
Anchors	[left, top]				
AutoEnablePropert	y III				
Caption	DataCheckBox1				
DataField					
DataSource					
Height	17 🗉				
Hint					
Left	131				
Name	DataCheckBox1				
ShowHint	False				
StoreDirectly	True				
TabOrder	3				
TabStop	True				
Тор	13				
Visible	True				
Objects: 1	Properties: 36				

 In Component Inspector, change the following properties: Caption - enter a descriptive caption, e.g. In Progress DataSource - choose Entity DataField - find your custom property in the list and select it (InProgress in our case)

🔁 Component Inspe	ector 🗖 🗖 💌			
DataCheckBox1{CSAODataCheckBox}				
Alignment	taRightJustify 🔺			
AllowGrayed	False			
Anchors	[left, top]			
AutoEnableProper	rty			
Caption	In Progress			
DataField	InProgress			
DataSource	Entity			
Height	17 🗉			
Hint				
Left	131			
Name	DataCheckBox1			
ShowHint	False			
StoreDirectly	True			
TabOrder	3			
TabStop	True			
Тор	13			
Visible	True			
Objects: 1	Properties: 36			

10. Close the editable **Entity Properties** via cross button in the **upper-right corner**. This will cause you to exit the editable mode of the form.

11. Right-click anywhere in the form and select Save Form. The changed form definition will be saved to My Package.

Note: Sentity Properties	
Caption	Name
Borrowing	
Before Script After Script Notes SQL Preview General Attributes Keys Indexes Chu User / Schema SCOTT Temporary Table Global Temporary Table On Commit Preserve Rows (for Temporary Table)	Relationships Physical Properties Table Properties eck Constraints Triggers Permissions To Do Customize Form Customize Form as Customize Form as
Comment	
Borrowed items	Save Form Save Form to Designer Mode Options
Category	0 - Not Specified -
Generate In Progress	QK Qancel Apply Help

- 12. Your custom property is now available in all entities across all databases. The property and the modified form definition are stored in **My Package** (or in other package, depending on what you chose in step 2).
- **i** TIP: If you want to transfer your customizations to another installation of Toad Data Modeler, simply move the package file from the **Packages** folder to the same folder of the target installation (e.g. "C:\Program Files (x86)\Quest Software\Toad Data Modeler 5.5\Packages\User\My Package.txg")

Sample Scripts and Scripting Tips

In this topic, you can find sample scripts that can be executed via Scripting Window or used in user macros.

Reorder attributes/columns

Option 1:

Attributes.InitSort();

```
//set ordinal values as you need
var temp = Attr1.Ordinal;
Attr1.Ordinal = Attr2.Ordinal;
Attr2.Ordinal = temp;
Attributes.Sort(); //it will get ordered according to the ordinal values
set for individual items
```

Option 2:

Attributes.Move(2,0) // Moves the third attribute to the place of the first attribute (parameters are current_index,

The first parameter is the Current index in the list and the second is the index where an item should move.

Refresh of Model Explorer and Workspace

RefreshAllWorkspaces
- Refreshes all Workspaces of currently active model.
RefreshWorkspace
- Refreshes the selected Workspaces by ID.
RefreshModel
- Refreshes all Workspaces and also Model Explorer.

Add a Relationship and Key

//Create Relation with Shortcut on WS workspace
var Rel = Model.AddLink(2004,ParentEntShape.ID, ChildEntShape.ID, WS.ID);
OR
//Create Relation without Shortcut
Model.AddLinkObject(2004, ParentEnt, ChildEnt);

Add Columns to Keys

Key.AddAttribute(Attr) – Adds an attribute to key. Key.CommitChanges() – Propagates the changes.

Possibility to Set User Rights

//SelectedObject - Every object that can have permission (Entity, Function, Procedure etc.)
//User - User or User Group
Model.AddUserRight(SelectedObject, User, 'SELECT', 'Grant');

Accessing First Entity in First Model

function main()

```
{
  var app = System.GetInterface('Application');
  var Model = app.Models.GetObject(0); // first model in Application View
  var Entity = Model.Entities.GetObject(0); // first entity in a model
  ...
  ...
}
```

Using Lock and Unlock Methods

It is good to use the Lock and Unlock methods, otherwise you will not see changes on your Workspace directly. Use both methods to make safe modifications and refresh your WS automatically.

```
function main()
{
    ...
    Entity.Lock();
    Entity.Name = "new_name";
    Entity.UnLock();
    ...
```

Accessing Log (Message Explorer)

Use the following to make Log accessible.

```
function main()
{
    ...
    Log = System.CreateObject('Log');
    ...
}
```

Iterating Entities and Modifying Second Parameter of Attribute Data Type

This sample is for **Oracle** models only and changes the second parameter of Char(x) and Varchar2(x) data types to BYTE.

```
function main()
{
```

```
var app = System.GetInterface('Application');
  var Model = app.Models.GetObject(0);
  var e, a, Entity, Attribute;
  Model.Lock();
  for (e=0; e<Model.Entities.Count; e++) // iterate entities</pre>
  {
    Entity = Model.Entities.GetObject(e);
    Entity.Lock();
    for (a=0; a<Entity.Attributes.Count; a++) // iterate attributes</pre>
    {
     Attribute = Entity.Attributes.GetObject(a);
      if ((Attribute.DataType.Caption == "Char(x)") || (Attribute.DataType.Caption
== "Varchar2(x)"))
     {
       Attribute.DataTypeParam2 = "BYTE";
      }
    }
   Entity.UnLock();
  }
 Model.UnLock();
}
```

Creating New Entities

```
function main()
{
    var app = System.GetInterface('Application');
    var Model = app.Models.GetObject(0);
    Model.Lock();
    var Entity = Model.CreateNewObject( 2002 );
    Entity.Name = 'MyNewEntity';
    Model.UnLock(); // Refresh all windows associated with your model
}
```

Object type of PEREntity is 2002. More information can be found in the Reference document. Click **Help** | **Reference** to open the Reference.

Converting Entity and Attribute Names to Lower Case

```
function main()
{
 var app = System.GetInterface('Application');
 var Model = app.Models.GetObject(0);
 for (e=0; e<Model.Entities.Count; e++)</pre>
  {
   Entity = Model.Entities.GetObject(e);
   Entity.Lock();
   Entity.Name = Entity.Name.toLowerCase();
   Entity.UnLock();
   Log.Information("Name of entity "+Entity.Name+" was changed.");
    for (a=0; a<Entity.Attributes.Count; a++)</pre>
    {
     Attribute = Entity.Attributes.GetObject(a);
     Attribute.Lock();
     Attribute.Name = Attribute.Name.toLowerCase();
     Attribute.UnLock();
     Log.Information("Name of attribute "+Attribute.Name+" in entity
"+Attribute.Owner.Name+" was changed.");
    }
 }
}
```

Note: The toLowerCase function is a JavaScript function.

Adding a Prefix to Entity, Index and Trigger Names

```
function main()
{
    var prefix = "abc"; // defined prefix
```

```
var regular_expression_prefix = new RegExp(prefix+"_");
  var app = System.GetInterface('Application');
  var Model = app.Models.GetObject(0);
  // Entities
  for (e=0; e<Model.Entities.Count; e++)</pre>
  {
    Entity = Model.Entities.GetObject(e);
    if (Entity.Name.search(regular_expression_prefix) == -1) // if prefix is not
used in name
    {
      Entity.Lock();
      Entity.Name = prefix+" "+Entity.Name;
      Entity.UnLock();
     Log.Information("Name of entity "+Entity.Name+" was changed.");
    }
    // Indexes
    for (i=0; i<Entity.Indexes.Count; i++)</pre>
    {
      Index = Entity.Indexes.GetObject(i);
      if (Index.Name.search(regular_expression_prefix) == -1) //if prefix is not
used in name
      {
        Index.Lock();
        Index.Name = prefix+"_"+Index.Name;
        Index.UnLock();
        Log.Information("Name of index "+Index.Name+" in entity "+Index.Owner.Name+"
was changed.");
      }
```

}

```
// Triggers
    for (t=0; t<Entity.Triggers.Count; t++)</pre>
    {
      Trigger = Entity.Triggers.GetObject(t);
      if (Trigger.Name.search(regular expression prefix) == -1) //if prefix is not
used in name
      {
        Trigger.Lock();
        Trigger.Name = prefix+"_"+Trigger.Name;
        Trigger.UnLock();
        Log.Information("Name of trigger "+Trigger.Name+" in entity
"+Index.Owner.Name+" was changed.");
      }
    }
  }
}
```

Renaming NotNull Constraints

The script is for **Oracle** models only. It goes through all NotNull attributes and sets their notnull constraint name in format NN_nameoftable_number. For names exceeding 30 characters, it will truncate the NN_nameoftable part.

```
function main()
{
  var app = System.GetInterface('Application');
  var Model = app.Models.GetObject(0);
  for (e=0; e<Model.Entities.Count; e++)
  {
    Entity = Model.Entities.GetObject(e);
    count = 0;
    for (a=0; a<Entity.Attributes.Count; a++)
    {
    Attribute = Entity.Attributes.GetObject(a);
    count++;
  }
}</pre>
```

```
if (Attribute.NotNull)
{
    ConstraintNotNullName = "NN_" + Entity.Name;
    SumLength = ConstraintNotNullName.length + 1 + count.toString().length;
    if (SumLength > 30)
        ConstraintNotNullName = ConstraintNotNullName.substr(0,30-(count+1));
        ConstraintNotNullName = ConstraintNotNullName + "_" + count.toString();
        Attribute.ConstraintNotNullName = ConstraintNotNullName; // change name
of index
        Log.Information("NotNull Constraint Name of attribute "+Attribute.Name+" in
entity "+Attribute.Owner.Name+" was changed.");
    }
}
```

Selecting Override Identity Checkboxes at Once

This script is valid for Microsoft SQL Server 2000 and Microsoft SQL Server 2005 models only.

You can use the script provided that you set autoincrement in a domain, use the domain in PK attribute and create relationship to another entity. In this case, FK attribute with the domain (and identity) will be created in child entity. However, you need to override the identity. Not to do it for each FK attribute individually, you can run this script that goes through all FK attributes and automatically selects the checkbox **Override Identity**. After you execute the script, take a look at the Log window where all entities and attributes where the checkbox was selected is written out.

```
function main()
{
  var app = System.GetInterface('Application');
  var Model = app.Models.GetObject(0);
  for (e=0; e<Model.Entities.count; e++)
  {
    Entity = Model.Entities.GetObject(e);
    for (a=0; a<Entity.Attributes.count; a++)
    {
        Attr = Entity.Attributes.GetObject(a);
        for (i=0; i<Attr.PKForeignKeys.count; i++)</pre>
```

```
{
    PKAttr = Attr.PKForeignKeys.GetObject(i).AttrParent;
    FKAttr = Attr.PKForeignKeys.GetObject(i).AttrChild;
    if (PKAttr.Domain != null)
    {
        if (PKAttr.Domain.Identity)
        {
            Log.Information(FKAttr.Owner.Name+"."+FKAttr.Name);
            FKAttr.Identity_override = true;
        }
    }
}
```

Create Package

}

Why Do We Need a New Package?

Packages are containers for groups of scripts, customized Form definitions, metamodels etc. In Toad Data Modeler, the following three types of packages may exist.

- System packages have the lowest priority (distributed with Toad Data Modeler application).
- Add-on packages have higher priority than system packages (can be downloaded from web site, shared among users etc. No add-on package exists after installation.).
- My Package has the highest priority (created automatically upon installation of Toad Data Modeler).

User packages exist as separate XML files with extension .TXG. System packages are in binary format with extension .TBG.

You can make your modification without the necessity to create a new package, but all scripts and modifications you will ever make will be stored in the My Package.txg file. If you plan to share your modifications with others, it's a good idea to create a new package for this purpose. In this example, we will create a new package *CustomerFeedback*, and store all scripts used in this tutorial, metamodel and form modifications into this package. It will give us the possibility to share the CustomerFeedback.txg file with others.

Create a New Package

Click Expert Mode| Customization | New Package or activate Package Explorer and click the New Custom Package icon.

2	ad Da	ita Modele	er 5.0\Samples	\vid	eorei	ntal.txp]
	Expert Mode Settings Window Help					
]		Customi	zation	•		New Custom Package
Scripting Window			Import Custom Package 🗟 🚽			
		Referenc	e Guide		٩	Package Explorer
		Version I	Manager	►		Script <u>E</u> xplorer
1		Expert M	ode Settings	►		Find in Scripts Ctrl+Alt+F
		Generate	XSD File		_	

Define Name of the package.

leler 5.0\Samples\videorental.txp]	
e <u>S</u> ettings Window <u>H</u> elp	
- Attributes - 🕴 🔂 🗣 🕨 🔛 🔛 🥵 👶 🗍 🎄 🖷 🧱 🖓	3 256
▷ 🔏 🛱 🔁 100 🎅 ▾ 📗 🗅 🗢 T 📼 🕤 📗 🔂 🚟 🖷	
	Package Explorer 🔪 🛛 🗙
ving × Customer Rating Movie × Ordering ×	All Models
	My Package Atter for DB2 to DB2 Atter for DB2 UDB v.8 to DB2 UDB v.8
Rew Package	
General Package Dependency, Package Extension, Description	
Name	
K) Customerreedback	
Version	
1.0	
System Package	
of ienr Iam	
	<u>QK</u> <u>Cancel</u>
dering	×

Select packages on which the new package depends. In this example, the Customer Feedback will not be dependent package. It will just extend existing packages.

Example of dependent package: Package RE Microsoft SQL Server 2005 depends on RE Microsoft SQL Server package and extends Microsoft SQL Server 2005 package. (RE is abbreviation for Reverse Engineering.)

Select packages you want to extend. In our example, we will be extending Database Oracle 10g package and HTML Reports for Oracle 10g.

You can write description to the Description tab.

Newly created package will appear in the Package Explorer. You can also see package extensions there. Custom packages have blue icon.



Just to compare, see My Package (where all modifications are stored if you don't use add-on packages) - it has a green icon and is listed at the top.

Well, a new package exists, let's continue adding new properties.

For more information, see Add New Properties in Metamodel on page 493.

Add New Properties in Metamodel

Properties and methods can be added visually, via Metamodel. For our purpose, we will need two new properties.

- ConfirmedByCustomer (boolean)
- NotesFromCustomer (string) •

This is where our values will be stored. The properties will be assigned to items that will appear in Entity Properties form. The ConfirmedByCustomer property value will be assigned to a checkbox, and the NotesFromCustomer value will be assigned to a text box.

How To Add New Properties

Right-click the CustomerFeedback package and select Open Metamodel.

Package Explorer ×					
	🗄 🖶 📄 📸 🕅 All Models 🔹 🗸				
🕂 🕲 My	Package				
🖶 📎 🖸	stomerFeedback				
(Load Package				
[Delete Package				
	Disallow Package				
⊕ (Export Package				
÷.	Open Metamodel				
0	Extend with New Package				
	Create Dependent Package				
.	Properties				
	Save BIN				

Empty metamodel digram opens.

Right-click the workspace and select Add Class...

Videorental* × Employ	ee x CustomerFeedback* x
Workspace1 ×	
[2,1]	
	Workspace Format Add All Model Objects to Workspace Copy Workspace
	Add Class
	Straight All Lines
	Change Lines to Right Angled
	Select Objects
_	

Select class you want to extend. For our purpose, we need to extend **PEREntityOR10** class.

PER - Physical Entity Relationship model.

Entity - Items must be accessible in the Entity Properties form.

OR10 - Modification will be made for Oracle 10g only.

Select the newly added class and right-click it. Select Edit.

Videorental*	x Employee x CustomerFeedback* x		
Workspace	×		
[1,1]			
	PEREnti tyOR10		
	Format		
	Add into Workspace		
	Add into New Workspace		
	Remove from Workspace		
Delete Object			
	Arrange •		
	Add Object to Gallery		
	Recalculate Size		
	Align Self Relationship		
	Edit		

Add two new properties to the class.

ConfirmedByCustomer, data type Boolean.

On tab **Attributes** of the **Property Properties** dialog, you can define property Attributes. Select **Editable** (we need to be able to edit the values) and **Store Property** (we want to store the values with model).

Now define the second Property **NotesFromCustomer**, on tab **Attributes**, select the same attributes - **Editable** and **Store Property**.

R	💁 Toad Dat	a Modeler	[C:\Users\vfrolik.Pf	ROD\Documents	\Toad Data Mo	deler\	\50 noora\Packages\{DCB5CB9B-CF65-4350-86B5-285D246FC5AC}\Metamodels\\Custor
E	ile <u>E</u> dit	View Ob	jects <u>L</u> ayout <u>M</u>	odel Expert Mo	ode <u>S</u> ettings	Wine	dow Heln
		<u>- ~ r</u>	s 🖻 🗅 🐧	> 🛄 🎮 🔌	2		
	N CI		՝ Ը _ն լայ ու		- 😼 - 🗄	1	NotesFromCustomer
	Videorental*	🔀 Class	Properties				General Attributes Description Notes To Do
	Workspace	PEREnt	tityOR10				Estandad
	[1,1]						
		General	Properties Metho	ds Inherited Prop	perties Inherited	Met	Editable - Property value is editable in forms and can be accessed in Object Inspector to
	r Co		Name Confirmed PuCuston	ar.	Data Type Reclean		Event - Property contains an object event. Feature - If attribute Feature is selected for property, it is possible to permit or ban this property.
		→	NotesFromCustome	r	WideString		List - Property is a list. It supports the CSList interface.
							No Owned Always Visible In Convertor - Property bude vzdy viditelna v Convertoru, poku Not owned object - Property represents an object which is not owned by this object.
							Refactor by rename - Property will be used during refactor by rename. Resolve Application Variables - Application Variables in this property will be automatically
							Show in AV tree - Property will be visible in Application View form
							SQL dependent - Property contains SQL code. The SQL code will be commented in the
							Supports Templates - Property marked with this attribute supports templates.
		-	Add Edit	Delete			
	•	<%>			ОК	Cano	
	policotion Vis	Mass	- Euplorer Marific - Ver	Les Leure Our	uiou Vidoorata	1 0	Cancei Apply Help
A	pplication Vie	ew, message	e Explorer, vehication	Log, Loupe, Over	view - videorenta		-

Properties have been added to the metamodel. Now it's necessary to save the metamodel and restart the application. Then we can continue modifying Entity Properties form.

Note: Metamodels are XML documents stored as .TXM files.

For more information, see Modify Form on page 498.

Creating New Objects

In this topic you can find information about how to create new objects via scripting.

Creating a New Entity

```
function main()
{
var app = System.GetInterface('Application');
var Model = app.Models.GetObject(0);
Model.Lock();
```

```
var Entity = Model.CreateNewObject( 2002 ); // 2002 is object type
of PEREntity
Entity.Name = 'Customer';
Model.UnLock();
Model.RefreshModel();
}
```

More information about the Entity object can be found in the Reference Guide (in Expert Mode main menu, Expert Mode has to be enabled first). See PEREntity class or PEREntityOR (for Oracle) class etc.



Creating a New Index

```
function main()
{
  var app = System.GetInterface("Application");
  var Model = app.Models.GetObject(0); // gets first model in application
  Model.Lock();
  var Entity = Model.Entities.GetObject(0); // gets first entity in model
```

```
Attribute = Entity.Attributes.GetObject(0); // gets first attribute
in entity
var Index = Entity.CreateNewObject( 2012 ); // 2012 is object type
of PERIndex
Index.Name = "IXName";
var IndexItem = Index.CreateNewObject ( 2013 ); //2013 is object type of
PERIndexItem
IndexItem.Attribute = Attribute;
Model.UnLock();
Model.RefreshModel();
}
```

Creating a New Domain

```
function main()
{
var app = System.GetInterface('Application');
var Model = app.Models.GetObject(0);
var Domain;
var DataType_Number = Model.ModelDef.DataTypes.GetObjectById("{3A22E4F9-
EE24-4A39-835D-62C3EF76CAA4}"); // Number(x,y);
Model.Lock();
Domain = Model.CreateNewObject( 2006 ); // 2006 is object type of
PERDomain
Domain.Name = 'MyDomain';
Domain.SetLinkedObject("DataType", DataType_Number);
Domain.DataTypeParam1 = "10";
Domain.DataTypeParam2 = "2";
Model.UnLock();
}
```

Modify Form

Back to our Oracle 10 physical model. Edit an entity to open standard **Entity Properties** form. Right-click the form and select **Customize Form as**...

General Attributes Keys Indexes Check Constraint	ts Triggers Permissions To Do Before Script
User / Schema SCOTT Temporary Table Global Temporary Table On Commit Preserve Rows (for Temporary Table)	Customize Form Customize Form as Load Form Save Form Save Form to
Comment	Designer Mode Options Default Values for Class

Select a package you want to store modifications in.

🔀 Package List	×
CustomerFeedback	×
A HTML Reports for Oracle 10g	
Alter for Oracle 10g to Oracle 10g	
Generations for Oracle 10g	=
Object RE Database for Oracle 10	
Object RE DDL Parser for Oracle 10g	
A RTF Reports for Oracle 10g	
Database Oracle 10g	
HTML Reports for Oracle	
Convert Oracle to Greenplum	
Convert Oracle to Microsoft SQL Server	
Convert Oracle to MySQL	
Convert Oracle to Microsoft SQL Azure	
Convert Oracle to Oracle	
Convert Oracle to PostgreSQL	
Dictionary English (United States) Database Oracle	
🔊 Dictionary System KeyWords Database Oracle	· ·
ОК Са	ancel

The following forms and palettes will appear. Note that the **Entity Properties** form has dotted grid now. In the **Form Explorer**, see that the form name is **FmPEREntityEdit**. We will need this information later. To add a new tab to the Entity form, right-click any tab in the form and select **New Page**.

Define Caption for the new tab in **Component Inspector**.

Then select DataCheckBox item from the Component Palette.

And add a new checkbox to the CustomerFeedback tab.

Select the Entity item from DataSource field in the Component Inspector.

Then select ConfirmedByCustomer item from DataField.

Select **DataMemo** from **Component Palette** and add new text field (datamemo) item to the **Customer Feedback** tab.

Result:

Component Pale 🖾	FmPEREntityEditOR10	🛛 🔁 Form Explorer, Compo	nent I 👝 💿 💌
Data		Form Explorer × Compon	ent Inspector x
Pointer		Data Charals Paul / CEAOData	Chaels Rev \
E DataComboBoy	teUrder i men?'s	DataCheckBox I{CSAOData	CheckBox?
		Alignment	taRightJustify
ab DataEdit		AllowGrayed	False
	General Attributes Keys Indexes Check Constraints Triggers Permissions To Do Before Script	Anchors	[left, top]
DataCheckBox	After Script Notes SQL Preview Relationships Physical Properties Table Properties Customer Feedback	AutoEnableProperty	C-C-
▲ DataLabel		Data Field	Confirmed by customer
A Palazabor	Confirmed by customer	Data Source	Entity
📄 🔄 DataMemo		Height	17
		Hint	
DataVirtualLind		Left	11
🗒 📰 DataStaticCombo		Name	DataCheckBox1
		ShowHint	False
崖 DataRadioGroup		StoreDirectly	True
		TabOrder	0
		TabStop	True
		Тор	14
		Visible	True
		Width	160 E-l
		vvorovvrap	raise
Standard			
	l i	Alignment	Convert Aules
			Default Values Containers
		╒┙╦╛╝╜╦	External Class Definition As
	UK Cancel Apply Help	Ĺ╷╘┙ <u>╙</u> ┦╚╷╱	External Class Definitions
		▁▁▁▋▀▔▁▓▁▋▁▝▁▁▋ᡧ	Forms Definitions

Close the **Entity Properties** form by clicking the red X button at top of the form. Component Inspector, Component palette, Form Explorer will disappear.

Then right-click the form and select Save Form to CustomerFeedback.

👺 Entity Properties	
Caption Genre	Name T_GENRE
After Script Notes SQL Preview Relationships Physical General Attributes Keys Indexes Check Constraints User / Schema Image: Constraint of the second sec	Properties Table Properties Customer Feedback Triggers Permissions To Do Before Script Customize Form Customize Form as Load Form Save Form Save Form Save Form
Comment	Save Form to CustomerFeedback Designer Mode Options Default Values for Class
Category Size □ None ▼ 0	▼ Data Warehouse Type Not Specified ▼
Generate OK	Cancel Apply Help

New items are in the form.

For more information, see Set Default Values on page 501.

Set Default Values

How to Define Default Values

If you need to change the default value for new items, do the following: Right-click the form (**Entity Properties** form in our example) and select **Default Values for Class**.

Entity Properties	
Caption Customer After Script Notes SQL Preview Relationships Physica General Attributes Keys Indexes Check Constraints	Name T_CUSTOMER cal Properties Table Properties cal Properties Permissions s Triggers Permissions To Do Before Scr
User / Schema SCOTT Temporary Table Global Temporary Table On Commit Preserve Rows (for Temporary Table)	Customize Form Customize Form as Load Form
Comment	Save Form to Designer Mode Options Default Values for Class

We want the Confirmed by customer checkbox to be selected by default for new entities.

Select property name and click the Default Value column. Then press F2 to edit the value.

Select where the definition will be stored. In our example, we need to store it into the **CustomerFeedback** package. Click the dialog to confirm your selection in combo box and then confirm **OK**.

Done.

For more information, see Add Events on page 502.

Add Events

The following events are available in Toad Data Modeler scripting:

- OnCreate
- OnCheck
- OnChange
- OnClick
- OnClickSilent
- OnClose

Let's add **OnCheck** event to the checkbox on the **Customer Feedback** tab of the **Entity Properties** dialog. When the checkbox is selected, the text box with **Notes from Customer** will be visible. When the checkbox is unchecked, the text box will disappear.

In Package Explorer, select the Script folder under the CustomerFeedback package. Right-click it and select **AddScript**.

Set the script name to **FmPEREntityEdit**. - This is the name of the form we want to write the script for. See the "Modifying a Form" topic to find out where the form name is defined.

Script Progerties 'FmPEREntityEdit'
General Visibility Others Notes
Name
FmPEREntityEdit
Caption
FmPEREntityEdit
Category
Form Events
Language
Language Independent 🔹
Script Type
JScript
Package
CustomerFeedback 👻
Lock Package
Script Folder:
Form Events
OK Cancel Apply

Set visibility to Oracle 10g only.

🔁 Package Properties "Alter for MySQL 5.7 — 🛛	×
Conserved Visibility Seriet Foldern Serieta Description	
General Visibility Schpt Folders Schpts Description	
	^
EDB Advanced Server 10	
Microsoft SQL Server	
Microsoft SQL Server 2005	
Microsoft SQL Server 2008	
Microsoft SQL Server 2012	
Microsoft SQL Server 2014	
Microsoft SQL Server 2016	
Microsoft SQL Server 2017	
i MySQL	
MySQL 5.0	
MySQL 5.1	
B. D. MySQL 5.5	
B MySQL 5.6	
MySQL 5.7	
	~
Multiplatform package	
<u>O</u> K <u>C</u> ancel	<u>A</u> pply

Close the window, right-click the script again and select **Edit Source Code**. Add there the event function.
🔁 Toad Data Modeler []
<u>File Edit View Script Expert Mode Settings Window H</u> elp
Videorental* × Employee × CustomerFeedback* × Scripts ×
FmPEREntityEdit ×
Save Rollback
<pre>function DataCheckBox</pre> function DataCheckBox1OnCheck()
3 if (DataCheckBox1.Checked == true)
4 DataMemol.Visible = true;
5 else
6 DataMemo1.Visible = false;

Code:

```
function DataCheckBox1OnCheck()
```

{

```
if(DataCheckBox1.Checked == true)
DataMemo1.Visible = true;
else
DataMemo1.Visible = false;
```

}

Explanation of items in bold. **DataCheckBox1OnCheck()**

- DataCheckBox1 name of item that has been added to the Entity form.
- OnCheck name of event.

DatacheckBox1 and DataMemo1

• Both are names of items that were added to the Entity form. Modify Form

Press Commit to confirm the script.

Result:

When the checkbox is unchecked, the text area is hidden.

Entity Properties - E		
Caption Customer	Name T CUSTOMER	
General Attributes After Script Notes	Keys Indexes Check Constraints Triggers Permissions To Do B SQL Preview Relationships Physical Properties Table Properties Custome	efore Script r Feedback
Confirmed by custor	ner	

If you select the checkbox, the text area will display.

🔀 Entity Properties - E	
Capt <u>i</u> on <u>N</u> ame	
Customer > T_CUSTOMER	6
General Attributes Keys Indexes Check Constraints Triggers Permissions To After Script Notes SQL Preview Relationships Physical Properties Table Properties	Do Before Script Customer Feedback
For this table the customer requires form in his application.	
Generate OK Cancel Apply	Help

For more information, see Access Property Values via Scripting Window on page 509.

Dialogs

Samples for Message Dialogs:

ShowMessageDialog

System.ShowMessageDialog(1004,'WarningDialog','Please select shapes on your Workspace before running the macro.',2,4);

Dialog type index

- 0 warning
- 1 error
- 2 info
- 3 confirm

4 - no icon

Dialog buttons index

- 0 no button
- 1 yes
- 2 no
- 3 yes/no
- 4 ok
- 5-yes/ok
- 6 no/ok
- 7 yes/no/ok
- 8 cancel
- 9 yes/cancel
- 10 no/cancel
- 11 yes/no/cancel....

ShowMessageDialogScript

This way you can create dialog with hyperlinks at the bottom.

```
var DlgParams = System.CreateObject('DialogParams');
DlgParams.Caption = 'Add Entities Info';// Name appears in Settings |
Options in section Dialog Boxes.
DlgParams.DialogIndex = 202; // Unique number, must be above 200
DlgParams.Msg = 'This macro allows you to quickly add entities to your
model. Specify one entity caption per line. ';
DlgParams.Msg += 'Spaces in entity captions can be converted to entity
names as underscore characters. ';
DlgParams.Msg += 'For more infomation click the Help link at bottom. Do
you wish to continue?';
DlgParams.Buttons = 3;
DlgParams.DlgType = 2;
DlgParams.HyperLink =
'http://www.casestudio.com/help/ProductivityPack.aspx';
DlgParams.HyperLinkCaption = 'Help';
DlgParams.ScriptName = 'AddEntitiesMacro';
if(System.ShowMessageDialogScript(DlgParams) != 6)
{
return;
```

}

Information						x
This macro allows you to quickly add underscore characters. For more info	l entities to your model. Specify a mation click the Help link at both	one entity caption per line. Sp. om. Do you wish to continue?	aces in entity captions	can be con	verted to entity names a	IS
Do not show next time Help Show Code						
👔 Reference Guide						3
Hide Back Print Options						
Contents Index Search	Root	Appvantante, indesting	dispatch	Base	TDM3 Application	*
Type in the key <u>w</u> ord to find: CSAOSystem CSAOSystem	ShowMessageDialog	DialogIndex: integer DialogCaption: widestring Msg: widestring DIgType: integer Buttons: integer	integer		TDM3 Application	
CSAOTabSheet CSAOVirtualColumn	ShowMessageDialogScript	DlgParams: dispatch	integer		TDM3 Application	
CSAOVirtualColumns	SupportsProperty	APropertyName: widestring	boolean	CSAO	TDM3 Application	
CSAOVirtualGridOptions	UnLock		boolean	Base	TDM3 Application	
CSAU VirtualGirid TreeOptions CSAO VirtualHeader	Verification		boolean	Base	TDM3 Application	

Access Property Values via Scripting Window

You can write scripts inToad Data Modeler, save the scripts to packages, distribute the packages etc. - This will be explained later. Now you will see how to work with **Scripting Window** that allows you to run scripts at once, without the necessity to have them stored in packages.

Click Expert Mode | Scripting Window to open it. (Of course, Expert Mode has to be turned on.)

The following dialog appears. If you don't see the upper part of the **Scripting Window**, select **View | Show Registered Objects**.

On the left, you can see available models. Use the arrows to select model you want to work with. In our example, we will execute script for *Videorental model* (for Oracle 10g).

In the **Name in Script** column, you can define name that will be used in the script. Our OrigModel value will represent the selected Videorental model.

Videorental × Employee × Scripts × Sc	ripting x			
Scripting Window ×				
Available Objects		Selected Objects	Name in Script	
➡ Employee		➡ Videorental	OrigModel	
	<			

Write script to the main() function.

Toad Data Modeler [Scripting Window]	\triangleright	
<u>File Edit View Script Expert Mode Settings</u>	Window Help	
	🏷	• 📸 🖬
Videorental × Employee × Scripts × Scripting	x	×
Scripting Window ×		
Available Objects	Selected Objects Name in Script Videorental OrigModel	
<pre>function main(){ var i, e; var Ent; var EntListConfirmed = var EntListNotConfirme // iterate through enti for (i=0; i<origmodel.e e<="" ent="OrigModel" entlistconfirme="" if(ent.confirme="" td="" {=""><td><pre>new Array(); d = new Array(); ties and check the value of ConfirmedByCustomer property ntities.Count; i++) .Entities.GetObject(i); dByCustomer — true) med[EntListConfirmed.length] = Ent.Name;</pre></td><td></td></origmodel.e></pre>	<pre>new Array(); d = new Array(); ties and check the value of ConfirmedByCustomer property ntities.Count; i++) .Entities.GetObject(i); dByCustomer — true) med[EntListConfirmed.length] = Ent.Name;</pre>	
Application View, Massage Euplayer Verification Los Lours	- Ouenieu Mideaentel Ordeire	
Application View, Message Explorer, Verification Edg, Edup	Message Explorer, Verification Log x Loupe.	× Overview • Videorental • Or ×
 Đ	Message Explorer × Verification Log ×	× Overview - Videor • •
Videorental Employee Store Simple CMS Videorental Project	Id Date Time Message 23 3.5.2013 12:10:48 I_FLM 24 3.5.2013 12:10:48 T_CUSTOMER_RATING 25 3.5.2013 12:10:48 T_GENRE 26 3.5.2013 12:10:48 # Number of NOT confirmed entities: 8	

Code:

function main() {

```
var i, e;
var Ent;
var EntListConfirmed = new Array();
var EntListNotConfirmed = new Array();
// iterate through entities and check the value of ConfirmedByCustomer property
for (i=0; i<OrigModel.Entities.Count; i++)
{
Ent = OrigModel.Entities.GetObject(i);
if(Ent.ConfirmedByCustomer == true)
```

EntListConfirmed[EntListConfirmed.length] = Ent.Name; // add to list of confirmed entities

```
else
```

EntListNotConfirmed[EntListNotConfirmed.length] = Ent.Name; // add to list of not confirmed entities } $\ensuremath{{\prime}}\xspace$ // write list of confirmed entities to Log. Log.Information ("-----"); Log.Information ("List of entities confirmed by customer"); Log.Information ("-----"); for (e=0; e<EntListConfirmed.length; e++)</pre> { Log.Information(EntListConfirmed[e]); } Log.Information ("# Number of confirmed entities: "+EntListConfirmed.length.toString()); // write list of NOT confirmed entities to Log. Log.Information ("-----"); Log.Information ("List of entities NOT confirmed by customer"); Log.Information ("-----"); for (e=0; e<EntListNotConfirmed.length; e++)</pre> { Log.Information(EntListNotConfirmed[e]); } Log.Information ("# Number of NOT confirmed entities: "+EntListNotConfirmed.length.toString());

}

Where to find information about objects and their properties and methods?

Explanation of Items in Bold:

OrigModel.Entities.Count

• **OrigModel** - represents object assigned in the upper part of the Scripting Window (Videorental object renamed to OrigModel).



• Entities - we work with Physical Entity Relationship model, therefore we need to search for PER object. Model is for Oracle 10g, let's find the PERModelOR10 object in the Reference.

😵 Reference Guide	2		
Hide Back Print Options	<i>v</i> 3		
Contents Index Search	Ellipses Read only	<u>List</u> dispatch TEIlipseFactory	Store property Moc List Feature No Default Value
PERModelOR	Entities Read only Overrideable	List dispatch PEREntity TPEREntityFactory	Store property PEF List Generates code Show in Explorers Feature Naming Convention Support
PERModelPG82	FilePath Read only	widestring	Moc
Display	Functions Read only Overrideable	List dispatch PERFunction TPERFunctionFactory	Store property PEF List Generates code

• **Count** - represents a feature that is available for all List objects. On the screenshot above, you can see that the Entities datatype is a List. Let's click the List link and see details of the List class.

😵 Reference Guide	N					x
Hide Back Print Options	3					
Contents Index Search PERModelOR10 PERModelOR10 PERModelOR11 PERModelOR11 PERModelOR11R2 PERModelOR11R2 PERModelOR9 PERModelOR1	Toad Data Modeler Developer Class: List Properties Functions Process Properties	s Guide dures <u>Define</u>	d in Hierarchy			<
PERModelPG PERModelPG21	Name	Datatype	Attributes	Defined in	Src	
PERModelPG82	ClassDefinition Read only	dispatch	Dont compare	CSAO	TDM3 Application	
IPERModelPG83	ClassName Read only	string		<u>CSAO</u>	TDM3 Application	
Display	Count Read only	integer			TDM3 Application	-

OrigModel.Entities.GetObject(i)

• GetObject - belongs to the List class.

Ent.ConfirmedByCustomer

- Ent is a variable that holds assigned Entity objects (assigned earlier using the OrigModel.Entities.GetObject(i)function).
- ConfirmedByCustomer property of PEREntityOR10 object, added to Metamodel of the CustomerFeedback package.

Videorental Metamodel of package'CustomerFeedback' Package* Scripting	3
Workspace1	3
[1,1]	
PEREntityOR10	
ConfirmedByCustomer RNotesFromCustomer	
	~
Name: Workspace1	

Ent.Name

- Ent is a variable that holds assigned Entity objects (assigned earlier using the OrigModel.Entities.GetObject(i)function).
- **Name** property of PEREntityOR10 object. We still work with PER model and now we need to find property of Entity in Oracle 10g model. Let's see properties of the PEREntityOR10 object.

😵 Reference Guide	N				x
1 (고 🎒 🛍 - Hide Back Print Options	6				
Contents Index Search			Editable Feature		*
PEREntityOR10	Name	widestring	Store property Editable Store basic Feature	<u>Base</u>	
PEREntityOR10 PEREntityOR11 PEREntityOR11R2 PEREntityOR9 PEREntityOR9	NoteLines	<u>List</u> dispatch TNoteLineFactory	Store property List Not owned object Dont compare	<u>PEREntity</u>	(=)
PEREntityPG81 PEREntityPG82 PEREntityPG82 Display	Notes	widestring	Store property Feature Resolve Application Variables	PERBase	
	ObjectType Read only	integer		Base	Ŧ

.length and .toString()

• both are standard JavaScript items.

Executing the Script

Click Execute Script	ult will be displayed in the Message Explorer and Log a	area.
🔀 Toad Data Modeler [Scripting Window]	\searrow	
<u>File Edit View Script</u> Expert Mode Settings	Window <u>H</u> elp	
) < • • • • • • • • • • • • • • • • •	🗆 JScript 🔷 📄 🔛
Videorental × Employee × Scripts × Scripting	x	×
Scripting Window ×		le l
Available Objects	Selected Objects Name in Script Videorental OrigModel	
<pre>function main() { var i, e; var Ent; var Ent; var EntlistConfirmed = var EntListNotConfirmed for (i=0; i<crigmodel.en ent="OrigModel.In" entl<="" entlistconfirmed="" if(ent.confirmed="" td="" {=""><td><pre>new Array(); = new Array(); ies and check the value of ConfirmedByCustomer property tities.Count; i++) Entities.GetObject(i); ByCustomer == true ed[EntListConfirmed.length] = Ent.Name;</pre></td><td></td></crigmodel.en></pre>	<pre>new Array(); = new Array(); ies and check the value of ConfirmedByCustomer property tities.Count; i++) Entities.GetObject(i); ByCustomer == true ed[EntListConfirmed.length] = Ent.Name;</pre>	
	······	
Application view, Message Explorer, Verification Log, Loupe,	uverview - videorenkai - urdefing Aessane Explorer Verification Log	X Loune Overview Videorental - Or
	Message Explorer × Verification Log ×	Loupe x Overview - Videor + >
Imployee Imployee	Id Date Time Message 23 3.5.2013 12:10:48 I_HLM 24 3.5.2013 12:10:48 T_CUSTOMER_RATING 25 3.5.2013 12:10:48 T_GENRE 26 3.5.2013 12:10:48 # Number of NOT confirmed entities: 8	

For more information, see Create Script on page 515.

File System Scripts

You can create new files or folders using simple javascript code.

```
function CreateFolder(folder)
{
  var fso;
  fso = new ActiveXObject("Scripting.FileSystemObject");
  fso.CreateFolder (folder);
  }
  function CopyFolder(sourceFolder, destinationFolder, overwrite)
  {
   var fso;
```

```
fso = new ActiveXObject("Scripting.FileSystemObject");
fso.CopyFolder (sourceFolder, destinationFolder, overwrite);
}
function CopyFile(sourceFile, destinationFile)
{
var fso;
fso = new ActiveXObject("Scripting.FileSystemObject");
fso.CopyFile (sourceFile, destinationFile);
}
```

Create Script

You know how to execute scripts from the Scripting Window. If you want to store the script and call it from another form in the application, for example, do the following:

Create a new script WriteFeedbackToLog. See the "Adding Events" topic to find out how to create new scripts.



Write there function WriteFeedback.



Code

```
function WriteFeedback ()
{
  var Log = System.CreateObject('Log');
  var Application = System.GetInterface('Application');
  var OrigModel;
  OrigModel = Application.Models.GetObjectByID(Model.ID);
  ....
  ....
}
```

Explanation

The WriteFeedback function is almost identical to the Main function we were executing from the Scripting Window. The only difference is in the definition of OrigModel object. In the **Scripting Window**, we could select Videorental and define the OrigName name.

However, now we have no means to select the object visually (and we do not need it, the function will be executed for active model). Therefore we need to define the OrigModel object via Application.Models.GetObjectByID method, with parameter Model.ID.

This way we can get the currently active model.

We also need to register object Log. (It is not necessary to register Log in the Scripting Window. Log is registered in the Scripting Window automatically.)

The rest of the script is identical.

For more information, see Call Existing Script from Model Properties Form on page 519.

Getting Settings Information

In Toad Data Modeler you can access Application Settings via ApplicationConfig class:

```
function main() {
var App = System.GetInterface("Application");
var Log = System.CreateObject("Log");
var Model = App.Models.GetObject(0);
Log.Information(App.ApplicationConfig.PackagePath);
}
```

If you need to find out the path to the folder where your model is stored, use the property **FilePath** of the Model object (PERModel class):

```
function main() {
var App = System.GetInterface("Application");
var Log = System.CreateObject("Log");
var Model = App.Models.GetObject(0);
Log.Information(Model.FilePath);
}
```

More information can be found in Reference Guide (in Expert Mode main menu, Expert Mode has to be enabled first).



Iterate Entity And Attributes

This sample shows you how to iterate entities and attributes and how to recognize PK, PFK or FK attributes.

```
function main()
{
var app = System.GetInterface('Application');
var Model = app.Models.GetObject(0); // gets first model in application
var e, a, iterEntity, iterAttribute;
Model.Lock();
for (e=0; e<Model.Entities.Count; e++) // iterate entities</pre>
{
iterEntity = Model.Entities.GetObject(e);
iterEntity.Lock();
for (a=0; a<iterEntity.Attributes.Count; a++) // iterate attributes</pre>
{
iterAttribute = iterEntity.Attributes.GetObject(a);
if(iterAttribute.IsPrimaryKey == 1) // check if attribute is PK
{
if(iterAttribute.FKForeignKeys.Count !=0)
Log.Information(iterEntity.Name+'-'+iterAttribute.Name+'-PFK');
else
Log.Information(iterEntity.Name+'-'+iterAttribute.Name+'-PK');
}
else
{
if(iterAttribute.FKForeignKeys.Count !=0)
Log.Information(iterEntity.Name+'-'+iterAttribute.Name+'-FK');
}
}
iterEntity.UnLock();
}
Model.UnLock();
Model.RefreshModel();
```

}

Call Existing Script from Model Properties Form

Edit the Model Properties form. See the "Modify Form" topic to find out how to edit existing form.

Add there a new button and remember the name of the form - **FmPERModelEdit**. The name can be found in the **Form Explorer**.

Defined caption for the button - Write Customer Feedback To Log.

Set the name of the button to **FeedbackButton**.

Create a new script with the name of the Model Properties form - FmPERModelEdit.

Write event function to the script.

Code

```
function FeedbackButtonOnClick()
```

```
{
```

```
WriteFeedbackToLog.WriteFeedback()
```

```
}
```

Explanation

- FeedbackButton = name of the button.
- OnClick = event.
- WriteFeedbackToLog = name of script that contains called function.
- WriteFeedback = called function.

When you click the button, an output will be displayed in **Message Explorer** (Log). For more information, see Modify HTML Reports on page 519.

Modify HTML Reports

To modify HTML reports, we need to extend existing method. The first thing we need to do is to find out what script should be extended.

In **Script Explorer**, you can see **BasicHTMLPERReportOR** script with function **ReportTableUserProperties**. This is the script that generates Tables pages in HTML reports, specifically the section **Table Properties**.



You can also see script **BasicHTMLPERReportOR10** that extends the **BasicHTMLPERReportOR** script. Now we now need to write a script that will extend the **ReportTableUserProperties** function defined in the **BasicHTMLPERReportOR** script.

For that purpose, we need to open our CustomerFeedback metamodel and the method there.

Open the **CustomerFeedback** metamodel, add there a new class (see the **Class** icon in the toolbar), edit the class and set the name to **BasicHTMLPERReportOR10.** (One extension of that class already exists, in our metamodel we will create another extension of the class).

Define Object Type (the value can be currently found out in metamodel to HTML report for Oracle 10g package).

🔁 Class Properties - E
BasicHTMLPERReportOR10
Inherited Methods Description Notes To Do General Properties Methods Inherited Properties
Name
BasicHTMLPERReportOR10
Caption
Object Type
☑ External
Default Name
Category
□ None ▼
OK Cancel Apply Help

Add the ReportTableUserProperties method to the class.

Add two new parameters to the method. (The method name and number of parameters must be identical to the original method - see the first screenshot).

🖰 Metho	d Properties	2			
ReportTa	ableUserPrope	rties			
General	Parameters	Description	n Notes To	Do	
	Name		Data Ty	pe	State
	Documen	t	Dispato	h	
	Entity		Dispato	h	۲
Ac	łd	Edit	Delete]	•
<%>	Ĺ	<u>)</u> K	<u>C</u> ancel	Apply	Help

Return back to the **General** tab. Click **Reload**. Script name and method name will appear there. Add a prefix **My** to it (this will be changed in future, no manual modification will be required).

Nethod Properties
Report Table User Properties
General Parameters Description Notes To Do
Name
Report Table User Properties
Result Data Type
Dispatch 🗸
Implementation <u>M</u> ethod MyBasicHTMLPERReportOR10.ReportTableUserProperties
Edit <u>S</u> cript
CustomerFeedback 🗸
OK Cancel Apply Help

Click Edit Script.

Click **OK** and define code for the **ReportTableUserProperties** method that extends the existing method of the same name.

Videorental* × Employee × Scripts ×	Scripting × CustomerFeedback* ×
FmPEREntityEdit × WriteFeedbackToLog	x BasicHTMLPERReportOR x MyBasicHTMLPERReportOR10 x
Save Rollback	
·····Tunction Report Table OserProperties	Function ReportiableOserProperties(Document, Entity)
	3
	4
	5
	6 // Table definition
	7 Table = Document.Createrable(raise, true);
	G Table CreateColumn(20):
	11 var row = -1;
	12
	13 if (Entity.ConfirmedByCustomer — true)
	15 Table.CreateCell(++row,0,'Confirmed');
	16 Table.CreateCell(row,1,'Yes');
	<pre>18 else if (Entity.ConfirmedByCustomer == false)</pre>
	20 Table.Greatecell(++row,0, confirmed');
	• III •

Code:

```
function ReportTableUserProperties(Document, Entity)
{
 // Table definition
 Table = Document.CreateTable(false,true);
 Table.CreateColumn(20);
 Table.CreateColumn(80);
 var row = -1;
 if (Entity.ConfirmedByCustomer == true)
  {
  Table.CreateCell( ++row,0,'Confirmed' );
  Table.CreateCell( row,1,'Yes' );
  }
 else if (Entity.ConfirmedByCustomer == false)
  {
  Table.CreateCell( ++row,0,'Confirmed' );
  Table.CreateCell( row,1,'No' );
 }
 else
  {
  Table.CreateCell( ++row, 0, 'Confirmed' );
  Table.CreateCell( row,1,'Undefined' );
 }
 if (Entity.NotesFromCustomer.length > 0)
  {
  Table.CreateCell( ++row, 0, 'Notes from Customer' );
  Table.CreateCell( row,1, Entity.NotesFromCustomer );
```

}

```
if (row > -1)
{
    Document.WriteStyled( 'CAPTION2', 'Customer Feedback' );
    Table.Draw();
    Table.Close();
}
```

Instance.ReportTableUserProperties(Document, Entity);

};

Explanation

Table.**CreateColumn(20)** - the CreateColumn function belongs to the HTMLReportTable class. All functions related to the Table object can be found in the Toad Data Modeler Reference.

Entity.**ConfirmedByCustomer -** represents the variable we added earlier to the **CustomerFeedback** metamodel. Entity.NotesFromCustomer.length - standard JavaScript function that returns number of characters of the NotesFromCustomer string.

Document. WriteStyled - represents function that belongs to the HTMLDocument class.

Instance.ReportTableUserProperties(Document, Entity);

- **Instance** using the Instance keyword, we can call existing function we extended. We could copy and paste the content of the **ReportTableUserProperties** function defined in the **BasicHTMLPERReportOR** script. However, if a change was made to the script later, we would have to update our script too, which would be difficult to maintain. That's why it's better to write code that will extend the existing functionality only, and call the rest from existing script via the **Instance** keyword.
- ReportTableUserProperties represents existing function we call.

When you generate HTML reports now, you will see the following output. New section **Customer Feedback** is generated on top, followed by the **Table Properties** part, as originally defined in the ReportTableUserProperties function in script BasicHTMLPERReportOR.

Entities						SC	OTT.T_(CUSTON	IER 💊	
Model Info ER Diagram Entitie	es Attribut	tes Indexe	es Key	s Relationships	Domains	User Dat	a Types	Defau	lts	¢
SCOTT.T_BORROWING SCOTT.T_CUSTOMER SCOTT.T_CUSTOMER_RATING	S S	COTT.T_	сията	DMER						
SCOTT.T_EXEMPLAR SCOTT.T_FILM	Captio	on	Custom	ier						
SCOTT.T_GENRE SCOTT.T_MEDIUM	Custo	o <mark>mer Feed</mark> med	back Yes							
SCOTT.T_ORDER_RECORD	Notes Custo	from mer	For this	s table the customer r	equires form	in his appl	ication.			
	Attri	outes								
	Key	Attribute Name	Domain	Data Type	Not Nul	Unique	Check	Default	Comments	
	PK	customer_id		Integer	YES	NO	NO			
< >		name		Varchar?(?0 CHAD)	NO	NO	NO		Name column can contain First and Middle name.	

Editable Forms and Frames

Toad Data Modeler allows you to edit some forms and frames for more comfortable work.

What Is Editable Form?

It is a form of which appearance you can edit to meet your needs and requirements. You can add, change components and delete user components (those you created).

How Do I know the Form is Editable?

Right-click the form to see the pop-up menu. If there's the **Customize Form (as)** option, the form is editable. **Example:** The **Entity Properties** form



What Is Editable Frame?

Properties of editable frames are similar to properties of editable forms, however frame represents only a part of a form, not complete form. E.g. the **Options** form has editable frames **Application**, **Graphics** etc.

What Is Editable Form for?

To customize appearance and functionality of forms to suit your needs, e.g. you want to have different options for different database types.

If you model your own property in metamodel, you will probably want to visualize it somehow (write out its value to edit etc.) Therefore it's necessary to edit appropriate form and insert to it a new component to which you will assign appropriate property then. Also, to inserted components, you can add values by scripting.

To edit a form

Right-click the form and select Customize Form or CustomizeForm as.

Customize Form	The changes will be saved to your user package <i>My Package</i> .
Customize Form as	The changes will be saved to another package than <i>My Package</i> . This option is disabled by default. To enable it, select Settings Options Expert Mode and uncheck the Save the definitions to the My Package checkbox.

Forms can be edited via the following tools :

- · Component Inspector list of properties of selected component in the form. Here, you can edit properties
- · Component Palette list of components that you can add to a form
- Form Explorer tree structure of the edited form
- Alignment alignment options

Forms of these three tools can be docked in Toad Data Modeler environment at your convenience. If you want to hide/show any of these tools permanently, you can clear/select appropriate option in:

- Right-click the form and select **Designer Mode Options**.
- From the Settings menu, select Options | Editable Forms.

Example: The Entity Properties form that is being edited now.

Co	mponent Pale 🖾	FmPEREntityEditOR10	😤 Form Explorer, Compo	nent I 👝 💷 🗾
	Data		Form Explorer × Compone	ent Inspector ×
3	Pointer			
	B Data Camba Barr	teOrderTime#**s	DataCheckBox I{CSAOData	_heckBox} 🔻
			Alignment	taRightJustify
a	👖 DataEdit		AllowGrayed	False
		General Attributes Keys Indexes Check Constraints Triggers Permissions To Do Before Script	 Anchors 	[left, top]
Þ	DataCheckBox	After Script Notes SQL Preview Relationships Physical Properties Table Properties Customer Feedback	AutoEnableProperty	
			Caption	Confirmed by customer
∏ F	DataLabel	Confirmed by customer	DataField	ConfirmedByCustomer
	DataMamo		DataSource	Entity
			Height	17
15	DataVirtualGrid		Hint	
	_		Left	11
	DataStaticCombo		Name	DataCheckBox1
			ShowHint	False
	DataRadioGroup		StoreDirectly	True
			TabOrder	0
			TabStop	True
			Тор	14
		~	Visible	True
			Width	160
			WordWrap	False
	Standard		P	
			Alignment 🛛	Default Values Containers
		·	┙╘┛╘╝╻┙	External Class Definition Ass
		OK Cancel Anniv Hein		External Class Definitions
			┐╹╹╹ <u>╹</u> ┓╹┓	Forms Definitions

To finish editing a form

Close the form that you have just edited (click **x** in the right-hand corner, e.g. in the **Entity Properties** form). After you close the edited form, you need to save the changes to package.

Note: You will not finish editing the form by closing any of the tool forms (Inspector, Explorer or Palette Component). If you close any of them, the Show option for the tool (Show Inspector, Show Explorer...) will be automatically cleared. If you edit a form next time, the form of this tool will not display. To display it again, you need to enable the Show option either in the Designer Mode Options or in the Settings menu |
 Options | Editable Forms.

To save the changes

1. Right-click the form and select **Save Form** or **Save Form to**.

The changes will be saved to appropriate packages, however to preserve them even after you close the application, you have to save also the packages.

2. Save the packages in Package Explorer.

Changes will be saved either to actual package, or user package (according to the settings in the **Settings** menu | **Options** | **Paths**).

If you want to save the changes to another package, you have to start the edit process with option **Edit Form as**, then select the package and finally click **Save Form to** to save the changes.

Editable Forms Right-Click Options

Option	Description
Customize Form	Edits a form. All changes will be stored to <i>My Package</i> user package (file <i>My Package.txg</i>).
Customize Form as	Edits a form in a state according to the selected package. (Only the components that are saved in the selected package and its child packages will be available.)
	This option is available only if checkbox Save the Definitions to the 'My Package' is clear See the checkbox in the Settings menu Options Expert Mode .
Load Form	Reloads a form.
Save Form	Saves changes in the default package (see the Settings menu).
Save Form to	Saves changes to previously selected package (see Edit Form as).
Designer Mode Options	Here, you can hide/show the tools for next form edit.
Default Values of Object	Opens the dialog where you can define or edit default values of appropriate form/dialog/frame.

Right-click the form to see the following options:

Component Inspector

Component Inspector is a list of properties of the selected component in the form. Here, you can edit properties.

<mark>е</mark> н Form	orm Explorer, Compor n Explorer × Compone	ent I				
Data	aCheckBox1{CSAODataC	heckBox} 🗸				
	Alignment taRightJustify					
	AllowGrayed	False				
+	Anchors	[left, top]				
	Auto Enable Property					
	Caption	Confirmed by customer				
	DataField	ConfirmedByCustomer				
	DataSource	Entity				
	Height	17				
	Hint					
	Left	11				
	Name	DataCheckBox1				
	ShowHint	False				
	StoreDirectly	True				
	TabOrder	0				
	TabStop	True				
	Тор	14				
	Visible	True				
	Width	160				
	WordWrap	False				

Option	Description
Top combo-box	Select a component to display in this dialog.
Left Column	Displays property names.
Right Column	Displays values. Most of the values can be changed in inplace editors.
Note: If yo componen in Compon	u select components directly in the form you edit, you can select more ts using the SHIFT key. Then, only common properties will be displayed ent Inspector.

Right-click the **Component Inspector** form and select **Properties.** Here you can edit colors of specific parts of the dialog, and select other options.

Component Palette

Component Palette is a list of components that you can add to a form. It is divided into two parts:

- Data here you can find components that can follow up with already existing properties
- Standard other components that can be used for change of appearance or better classification of components

To insert a component to a form

- 1. Select a component from the Component Palette.
- 2. Click to a place where you want to insert it.



To display components with small buttons

Right-click the Component Palette form and select Properties | Small Buttons.

Form Explorer

Form Explorer displays tree structure of components in a form.

In **Form Explorer**, you can move components, select them for edit in **Component Inspector** (via mouse), and delete them (Delete key).



Right-click the Explorer form and select Properties.

Macros

Toad Data Modeler supports macros. You can use sample macros available in the **Macros** menu or create your own macros. You can create a macro in Package Explorer or Script Explorer and modify its properties to display the macro either in the main menu or pop-up menu (of specific object or on the Workspace etc.). Visual components for creation of macros are also available (User Forms).

Macros menu contains:

- All The selected macro will be applied either on all objects on all Workspaces or all objects of the active Workspace.
- Selected Objects The selected macro will be applied only on the selected objects on the currently active Workspace.
- Productivity Pack
- Rename Objects Pack

Scenario

You want to create a macro Add Attribute to PK and add this macro to pop-up menu of attributes in Model Explorer.

To create your own macro

- 1. Open Script Explorer (Tools menu, Expert mode must be enabled).
- 2. Right-click the Macros item and select Add New Macro.



3. Right-click the newly created macro and select Properties.

4. Define properties of the new macro. Remember to define its caption (macro name that will be displayed), visibility on tab **Visibility** (if for all databases etc.).

🔀 Macro Properties 'AddAttributetoPK' 📃 💻 🗙
General Visibility Others Notes Menu Object Types
Name
AddAttributetoPK
Caption
Add Attribute to PK
Category
None
Language
Language Independent
Script Type
JScript 👻
Package
My Package 🔹 🗸
Lock Package
Script Eolder:
Macros
<u>OK</u> <u>Cancel</u> Apply

5. On tab Others, you can define Undo options. It is recommended to keep the default settings.

🐕 Macro Properties 'AddAttributetoPK'
General Visibility Others Notes Menu Object Types Author
Company
Version
History
Undo
We recommend to keep the default settings for correct run of Undo.
Clear Undo before Macro Execution
Stop Recording Undo Steps during Macro Execution
<u>QK</u> <u>C</u> ancel <u>Apply</u>

6. On tab **Menu**, you can define where you want to display the macro - in Main menu, pop-up menu or both.

🔁 Macro Properties 'AddAttributetoPK'
General Visibility Others Notes Menu Object Types
📝 Add To Main Menu Main Menu
Path: Macros
Register Order: 15 🍧
Always Add to Main Menu
📝 Add ToPopup Menu
Popup Menu Path:
Examples
<u>OK</u> <u>C</u> ancel <u>Apply</u>

Select Add to Popup Menuand write the path name.

7. On tab **Object Types**, select object types for which the macro will be available in their pop-up menu.

Select Attribute and confirm OK.

階 Macro Properties 'AddAttributetoPK'
General Visibility Others Notes Menu Object Types
 All Object Types Physical Object Types Logical ObjectTypes Custom
Physical Model Logical Model
Model Category Default
Dictionary Type
Entity ⊕ ☑ Entity ⊕ ☑ Attribute □ Check Constraint Entity
 Entity Trigger Index
I ahel Flinse
<u>OK</u> <u>Cancel</u> Apply

8. Double-click the new macro to open the **Script Editor**. Modify the default code at your convenience.

```
function IsAttrInKey(Attr, Key){
  var i, item;
  for(i=0; i<Key.KeyItems.Count;i++){</pre>
    item = Key.KeyItems.GetObject(i);
    if (item.Attribute.Id=Attr.Id)
    £
      return true;
    }
  }
  return false;
}
function Main(){
  var App = System.GetInterface("Application");
  var Model = App.ActiveModel;
  var WS = App.ActiveWorkSpace;
  var Log = System.CreateObject("Log");
  var i, SelectObject;
var PK;
  for(i=0; i<This.Count;i++)</pre>
  ſ
    SelectObject = This.GetObject(i);
    if (SelectObject.ObjectType = 2003)
    £
      PK = SelectObject.Owner.PK;
      if (!IsAttrInkey(SelectObject, PK))
      £
        PK.Lock();
        SelectObject.Owner.Lock();
        PK.AddAttribute(SelectObject);
        PK.CommitChanges();
        SelectObject.Owner.UnLock();//Refreh Entity
        PK.UnLock();//Refresh Key
      }
    }
  }
ł
```

9. Confirm Commit and Save.

10. The Macros will be available accordingly.

🚊 🗠 🙋 Attributes		_	
🕀 💼 Keys	Edit		
- 💼 Indexes	Macros 🕨	Add Prefix	
Check Lonsi	Rename	Examples 🕨	Add Attribute to PK
 Relationships 	Delete Item		

Productivity Pack

Productivity pack contains three macros.

- Add Entities
- Add Attribute to Selected or All Entities
- Copy Attribute to All Entities

Add Entities

Select Macros | Productivity | Add Entities to run the macro.

	Macros	Expert Mode	<u>S</u> e	ttings Window	<u>H</u> elp
	All		۲	Attributes	🖵 🛛 🖶 🕨 🗛 🗍 🚨 🛛
	Sele	ected Objects	۲		
	Pro	ductivity	•	Add Entities	
2	Ren	iame	۲	Add Attribu	te to Selected or All Entities

The same macro can be executed from Workspace.

Object Viewer × P	hysical Model Explorer ×	
🖃 🗊 Videorental	<u> </u>	
🖃 🙋 WorkSpa	ces de client_id NN (F	*
🕀 🛗 All Ite	ms name (IX1)	
🕀 📑 Bon	Activate Designer	Cust
🕀 🔂 Cus	Open Designer	
🕀 🔂 Ord		e6
🕀 🔂 Viev	Edit	
Entities	Model Properties	(PFK) (PFK) K) (PFK)
	Workspace Format	rating
± •	Add All Madel Objects to Wadenson	Is_rated
	Add All Model Objects to Workspace	
	Copy Workspace	
	Add Object to Gallery	T_FILM
	Macros •	Add Entities
	Rename	p genre_ld NN (FK)
Videesetal	Dalata Washing as	hard and the National Action of the National Actional
videorental	Delete workspace	1148

New dialog opens. Specify entity captions, one per line.

Add Entities Define table names, one per line: Product Product				
Product Picture Product Category Vendor				
Customer Address				
Order Order Item Delivery Method Payment Method				
Replace space to underscore char in Names				
Execute	Close			

Click **Execute** to create the new tables.


The tables will be added to your model.

In case your workspace option Autocomplete is activated the entities will appear also on our workspace.

Add Attribute to Selected or All Entities

Select Macros | Productivity | Add Attribute to Selected or All Entities to run the macro.

New dialog opens. Specify caption, name, data type and other options.

Tip: If you want to use table caption/name as prefix, type a "space" as the first character in Attribute Caption field and an underscore as the first character to Attribute Name field.

Attribute Caption:	Attribute Name:
ID	_ID
Data type: Integer	added to first found kev)
Add to Key Attribute will be a	
Use Table Name as Prefix	·····

Note that if you select the Add to Key checkbox, the Not Null checkbox disappears.

🔁 Add Attribute	
Attribute Caption:	Attribute Name:
ID	_id
Data type:	
Integer	•
Add to Key (Attribute will be adde	d to first found key)
Use I able Name as Prerix	
	Europute Class
	Execute

In case you selected an entity, the attribute will be added to the selected entity. Otherwise the following dialog opens.

Click **Yes** to add attribute to all entities.

Confirm	×
?	No entity was selected. Do you wish to add this attribute to all entities?
	Yes No
🔲 Do no	ot show next time

Result:

Product Category	Payment Method	
o Product_Category_Id Integer (PK)	e ⊷ Payment_Method_Id Integer (P	K)
Product_Picture g= Product_Picture_ld Integer (PK)	Order_item g=> Order_item_id integer (PK)	
Customer de Customer_ld Integer (PK)	Address & Address_id integer (PK)	Delivery_Method g _{to} Delivery_Method_id Integer (PK)
Product dre Product_id Integer (PK)	Vendor dre Vendor_ld Integer (PK)	Order dre Order_Id Integer (PK)

Verification: There is some basic verification of the required items.

🔁 Add Attri	bute			23
Attribute Cap	tion:	Attribute Name:		
ID	Warning	1.00	— X	
Data type: Char(%p1 %	<u>^</u>	Param 1 is required for this dat	atype.	
🗖 Add to Ki		ОК		
🔲 Not Null	Do no	ot show next time		
	-			e

Notes:

- If you run the macro on entities with identically named attributes, the attribute will not be added to the entity more than once.
- If you specify Varchar(%p1 %p2) as the data type, you need to know whether the second parameter is BYTE or CHAR. There is no verification for parameter values.

Copy Attribute to All Entities

Select an attribute in physical Model Explorer, right-click and select Macros | Copy Attribute to All Entities.



It is possible to run the macro also from **Object Viewer**.

Videorental Scripts Oracle 11g Ro	elease 2×	
Physical Model Explorer, Object View	er ×	All Items
Physical Model Explorer Object Vie	ewer	
*created	۶ ک	
Name	Caption	
➡ I Crosted Edit	i Created	
Delete from Mo Delete from Sel	odel ection	
Find on Actual Find all Shortcu	WorkSpace its on Actual Workspace	
Macros		Copy Attribute to All Entities

Result:

Product_Category	Payment_Method	
erection of the second sec	d⊷ Payment_Method_id integer (PK) Created Timestamp(6)	
Product_Picture g= Product_Picture (PK)	Order_item g=> Order item Id integer (PK)	
Created T Imestamp (6)	Created Timestamp(6)	
Customer	Address D	elivery_Method
Customer_id Integer (PK) Created Timestamp(6)	Created Timestamp(6) Created Timestamp(6)	Timestamp(6)
Constant la C		

	Product] [Vendor		Order				
⊕ Product_ld Created	integer Timestamp(6)	(F K)		Vendor_id Created	Integer Timestamp(6)	(PK)		dro Order_Id Created	Integer Timestamp(6)	(PK)

Note: The attribute will be added only to the entities which don't have an identically named attribute.

Sources

You can find them in **Package Explorer** in section Productivity Pack | Macros. Right-click any macro and select **Edit Source Code** to see JavaScript code.

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Package Explorer	×
🗗 🛱 🗋 📑 🏈 All Models 🔹	•
ProductivityPack	*
💼 AvailableOTPs	
💼 Convert Rules	
💼 Default Values Containers	
- 💼 External Class Definition Associations	
- 💼 External Class Definitions	
- 💼 Forms Definitions	
- 💼 HTML Layouts	
🖶 🙋 Macros	
AddEntitiesMacro	
AddSingleAttributeMacro	
CopyAttributeToAllMacro	

Rename Objects Pack

Rename Objects Pack contains the following macros:

- Rename Primary Keys
- Rename Relationships
- Rename Check Constraint Names
- Rename View Relationships



Rename Primary Keys

This macro renames primary keys to **PK_<tablename>**. When you create a new entity, its primary key is named Key1.

階 Entity Properties			
Product			-
After Script Notes SQL Pr General Attributes Keys I	eview Relationships ndexes Check Constrair	Physical Properties Table Propert nts Triggers Permissions To Do	ties Comment
PK Caption	Name	Items	Status
宁 Key1	Key1	Product_ID	۲

When you execute the macro, the key name and caption changes.

🔀 Entity Properties			
Product			-
After Script Notes SQL Prev General Attributes Keys In	view Relationships P dexes Check Constraints	hysical Properties Table Prop	perties Comment Do Before Script
PK Caption	Name DK Brackush	Items	Status

Notes:

- If you select an entity, the macro will modify the primary key name and caption of the selected entity only.
- If you need to change the prefix or if you want to use suffix, create a new macro and modify its JavaScript • code accordingly.

Rename Relationships

This macro renames relationship captions and names and modifies them to:

New caption: <parenttablecaption> - <childtablecaption>

New name: <parenttablename>_<childtablename>

By default, relationships are named as Relationship1, Relationship2 etc. When you execute the macro, the following result is achieved:



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Notes:

- If you select a relationship, the macro will modify only the selected relationship, otherwise you will be asked if you want to run the macro on all relationships.
- If multiple relationships exist between two entities, a random number will be added at the end of the relationship name.

Rename Check Constraint Names

This macro renames Table and Column check constraint names and captions.

By default, Toad Data Modeler names check constraints as CheckConstraint1,2,3 etc.

Entity Properties		
Order_Item		-
After Script Notes SQL Preview General Attributes Keys Indexes	Relationships Physical Properties Table Prop Check Constraints Triggers Permissions To	erties Comment Do Before Script
Caption	Name	Status
CheckConstraint1	CheckConstraint1	۲
CheckConstraint2	CheckConstraint2	۲
CheckConstraint3	CheckConstraint3	۲

After you execute the macro, check constraints will be renamed to CHK_<tablename>_<index> and CHK_<columnname>_<index>.

🔀 Entity Properties		
Order_Item		-
After Script Notes SQL Preview General Attributes Keys Indexes	Relationships Physical Properties Table Properties Check Constraints Triggers Permissions To Do	Comment Before Script
Caption	Name	Status
CHK Order Item 0	CHK_Order_Item_0	•
CHK Order Item 1	CHK_Order_Item_1	•
CHK Order Item 2	CHK_Order_Item_2	•

Notes:

- If you select an entity, the macro will modify check constraint names and captions of the entity and its attributes.
- If you need to change the prefix or if you want to use suffix, create a new macro and modify its JavaScript code accordingly.

Rename View Relationships

This macro works similarly to the Rename Relationships macro. New caption: <object1caption> - <object2caption> New name: <object1name>_<object2name> The macro renames existing View relationships.



Note:

• If you select a View relationship, the macro will modify only the selected View relationship, otherwise you will be asked if you want to run the macro on all View relationships.

Macros and User Forms

Toad Data Modeler allows you to create a macro in Package Explorer or Script Explorer and modify its properties to display the macro either in main menu or pop-up menu (of specific object or on the Workspace etc.).

Older versions allowed you to define such macros via a script written in Script Editor. To execute the script directly, you simply selected the macro in the appropriate menu.

Toad Data Modeler version 3.5 is bringing some improvements for using macros - visual components for macros (User Forms). So, now when you select a macro, a user form can display.

User Forms - Brief Information:

- You can create and use user forms to interact with Toad Data Modeler during script and macro execution. You can enter input parameters or see some output information.
- Function Main only creates and displays the user form. Other functionalities must be implemented/added via form events or its controls. So, a form is not a dialog.

Create a Form

To create a form, use the object System that is registered in every script.

The method you need is called *CreateForm* and has four optional parameters:

Example:

var form = System.CreateForm('FormName', 'Form Caption', 200, 150);

- 1. First Parameter Name of form (it mustn't contain spaces and other invalid/not permitted characters).
- 2. Second Parameter Caption that will be displayed in the heading of the form.

- 3. Third Parameter Width of the form.
- 4. Fourth Parameter Height of the form.

Functions of Form

AddControl(ControlName: widestring, ControlType: Integer): IDispatch;

- ControlName Name under which the control is accessible.
- ControlType Number of control type that should be created.

See the following table:

- 1	- Edit Box
-2	- Check Box
- 3	- Memo
- 4	- Panel
- 5	- Label
- 6	- Group Box
- 7	- Radio Button
- 8	- Combo Box
- 9	- List Box
- 10	- Button

This function adds control on the form.

ShowModal()

This function displays the form.

Procedures of Form

AddUserVariable(AName: widestring, DefaultValue)

- AName Name under which a variable is accessible in events of forms.
- DefaultValue Default value. It can be of types integer, widestring or boolean.

This procedure adds a variable on the form. The variable is then accessible in events via calling the Instance. VariableName. The variable is accessible across events. If you change a content of the variable in one event, the changed status will be accessible in another event.

RegisterObject(AName: widestring, AObject: IDispatch)

- AName Name of object via which it will be accessible in events.
- Aobject Object that is registered.

Use this procedure to register objects in events.

Properties of Form

Caption – Heading of the form.

CloseAfterExecute – *True* – When you click **Execute**, the code will be executed and the form closes. *False* – The form will not close after execution. Default: False.

ExecuteMethodName – Name of method that should be executed when you press the **Execute** button. **ExecuteScriptName** – Name of script for calling out the method when you click the **Execute** button.

Note: If you don't want to use the button **Execute**, do not set up the properties *ExecuteMethodName* and *ExecuteScriptName*. The button will not be visible on the form then.

EVENTS

To assign events, assign the component of particular event to properties of names NameEventScriptName, NameEventMethodName with reference to particular service method.

Example:

Button.OnClickScriptName = 'MyScript'; Button.OnClickMethodName = 'DoOnClick';

CONTROL

Control is an ancestor from which all controls, including the form, inherit.

Properties of Control

Align – Alignment of control. Possible values to use:

- 0 No alignment
- 1 Alignment Top
- 2 Alignment Bottom
- 3 Alignment Left
- 4 Alignment Right
- 5 Alignment All client

AnchorTop, AnchorBottom, AnchorLeft, AnchorRight – Determines the position of control. Default place – top left-hand corner.

Parent – Control on which a control is placed. Default position of all controls is on the form and this property is not set up.

Note: Description of value Align 0..5:

alNone - The control remains where it was placed. This is the default value.

alTop - The control moves to the top of its parent and resizes to fill the width of its parent. The height of the control is not affected.

alBottom - The control moves to the bottom of its parent and resizes to fill the width of its parent. The height of the control is not affected.

alLeft - The control moves to the left side of its parent and resizes to fill the height of its parent. The width of the control is not affected.

alRight - The control moves to the right side of its parent and resizes to fill the height of its parent. The width of the control is not affected.

alClient - The control resizes to fill the client area of its parent. If another control already occupies part of the client area, the control resizes to fit within the remaining client area.

Button

Event

OnClick – Occurs when you click the button.

Checkbox

Event

OnClick - Occurs when the check in checkbox is changed.

Combobox

Event

OnSelect - Occurs when combo box is selected.

Edit

Event OnChangeText – Occurs when text in edit box is changed.

Memo

Event

OnChangeText - Occurs when text in memo is changed.

Radio Button

Event

OnClick - Occurs when the button is selected.

For more properties, please read the Reference Guide (Expert Mode main menu, Expert Mode has to be enabled.). See objects: UserButton, IUserCheckBox, IUserComboBox, UserControl, UserEdit, UserFormBasic, UserForm, UserGroupBox, IUserLabel, UserListBox, UserMemo, IUserPanel, UserRadioButton, UserStrings.

Macros and User Forms - Use Case

Scenario

You want to create a macro that will add a prefix to all attributes in your model. Solution: You will create a macro *Add Prefix*. The macro will be available via right-click menu on the Workspace. You want to create a user form where you will define the prefix

and decide if you want to apply the change in Caption of attributes too.

- 1. Open Script Explorer.
- 2. Right-click the Macros item and select Add New Macro.
- 3. Right-click the new item and select Properties.
- 4. On tab General, define properties of the macro.
 - i Important: Name of macro mustn't contain spaces and other forbidden characters. The name must start with a character (not number). Then you can use characters, numbers or possibly '_'. The rules don't refer to caption. Caption can be any title you want.

🛓 Macro	Properties '/	AddPrefix'			
General	Visibility Ot	hers Note	s Menu	Object Type	es
Name					
AddPref	x				
Caption					
Add Pre	fix				
Category	r				
None					-
Languag	e				
Langua	ge Independe	ent			
Script Ty	ре				
JScript					
Packa	ge				
Examp	ole Macro Use	er Form		•	
Loc	k Package				
Script Fo	lder:				
Macros					
		<u>о</u> к	Cance		pply

- 5. On tab Visibility, select where you want to apply the macro Physical Model.
- 6. On tab Menu, define whether you want to display the macro in:
 - Macro menu,
 - pop-up menu,
 - both places.

Parameter **Path** specifies position in main menu (or pop-up menu). Example: '*Test\My Items*'. In this example, you decide to display it only in pop-up menu.

Path box is empty as '*Macros*' item is set as default.

🔀 Macro Properties 'AddPrefix'	
General Visibility Others Notes Menu	Object Types
🔲 Add To Main Menu	
Main Menu	
Path:	
Macros	
Register Order:	
13 🗭	
Always Add to Main Menu	
Add To Popup Menu	
Popup Menu	
Path:	
<u> </u>	el <u>A</u> pply

7. On tab **Object Types**, select in which object pop-up menu you want to display it. Select *Workspace*. Confirm **OK**.

Macro Properties 'AddPrefix'
General Visibility Others Notes Menu Object Types
 All Object Types Physical Object Types Logical Object Types Custom
Physical Model Logical Model
Procedure
Rectangle
Relation
- Rule
Schema
Simple Text
Synonym
🔲 To Do
User
User Data Type
User Group
time I View ■
···· 🔲 View Relationship
Working Set
🗄 🐨 🔽 Workspace 🔍 👻
OK Cancel Apply

8. Double-click the macro in Script Explorer to open Script Editor. Modify the default code.

AddPrefix Commit and Save Bollback function Main function RenameAttribute function Execute function Execute	Videorental Scripts			6
<pre>Commit and Save Bollback function Main function RenameAlthibute function RenameAlthibute function Execute function Execu</pre>	AddPrefix			8
<pre>function Main function RenameAttribute function Execute function Execute function Execute function Execute function Execute function Execute function Execute function Execute function Execute function Execute form = System.CreateForm('Form','Add Prefix to Attributes',200, 170); form = System.CreateForm('Form','Add Prefix to Attributes',200, 170); form.ExecuteScriptName = 'AddPrefix'; form.ExecuteMethodName = 'Execute'; form.CloseAfterExecute = true; form.CloseAfterExecute = true; form.AddControl('Label', 5); lb.Caption = 'Prefix'; form.ExecuteMethodName', 2);</pre>	<u>Commit</u> Commit and <u>Sav</u>	ve <u>R</u> ollba	ick .	
<pre>function RenameAltribute 2 var App = System.GetInterface("Application"); function Execute 3 var Model = App.ActiveModel; var WS = App.ActiveMorkSpace; var Ucg = System.CreateObject("Log"); 6 7 8 var form, lb, ed, chb; 9 10 form = System.CreateForm('Form','Add Prefix to Attributes',200, 170); 11 form.ExecuteScriptName = 'AddPrefix'; 12 form.ExecuteMethodName = 'Execute'; 13 form.CloseAfterExecute = true; 14 lb = form.AddControl('Label', 5); 16 lb.Caption = 'Prefix'; 17 18 ed = form.AddControl('EdPrefix', 1); 19 ed.Width = 160; 20 21 chb = form.AddControl('ChbOnlyName', 2);</pre>	function Main	Ē	function Main(){	^
<pre>function Execute 3</pre>	- function RenameAttribute	2	<pre>var App = System.GetInterface("Application");</pre>	
<pre>4 var WS = App.ActiveWorkSpace; 5 var Log = System.CreateObject("Log"); 6 7 8 var form, lb, ed, chb; 9 10 form = System.CreateForm('Form','Add Prefix to Attributes',200, 170); 11 form.ExecuteScriptName = 'AddPrefix'; 12 form.ExecuteScriptName = 'Execute'; 13 form.CloseAfterExecute = true; 14 15 lb = form.AddControl('Label', 5); 16 lb.Caption = 'Prefix:'; 17 18 ed = form.AddControl('EdPrefix', 1); 19 ed.Width = 160; 20 21 chb = form.AddControl('ChbOnlyName', 2);</pre>	function Execute	3	<pre>war Model = App.ActiveModel;</pre>	
<pre>5 var Log = System.CreateObject("Log"); 6 7 8 var form, lb, ed, chb; 9 10 form = System.CreateForm('Form','Add Prefix to Attributes',200, 170); 11 form.ExecuteScriptName = 'AddPrefix'; 12 form.ExecuteMethodName = 'Execute'; 13 form.CloseAfterExecute = true; 14 15 lb = form.AddControl('Label', 5); 16 lb.Caption = 'Prefix:'; 17 18 ed = form.AddControl('EdPrefix', 1); 19 ed.Width = 160; 20 21 chb = form.AddControl('ChbOnlyName', 2); </pre>		4	<pre>var WS = App.ActiveWorkSpace;</pre>	
<pre>6 7 8 9 10 10 10 10 10 10 10 10 10 10 10 10 10</pre>		5	<pre>var Log = System.CreateObject("Log");</pre>	
<pre>7 8 9 10 10 10 10 10 10 10 10 10 10 10 10 10</pre>		6		
<pre>8 var form, lb, ed, chb; 9 10 form = System.CreateForm('Form','Add Prefix to Attributes',200, 170); 11 form.ExecuteScriptName = 'AddPrefix'; 12 form.ExecuteMethodName = 'Execute'; 13 form.CloseAfterExecute = true; 14 15 lb = form.AddControl('Label', 5); 16 lb.Caption = 'Prefix:'; 17 18 ed = form.AddControl('EdPrefix', 1); 19 ed.Width = 160; 20 21 chb = form.AddControl('ChbOnlyName', 2); </pre>		7		
<pre>9 10 10 10 10 10 10 10 10 10 10 10 11 10 10</pre>		8	var form, lb, ed, chb;	
<pre>10 form = System.CreateForm('Form','Add Prefix to Attributes',200, 170); 11 form.ExecuteScriptName = 'AddPrefix'; 12 form.ExecuteMethodName = 'Execute'; 13 form.CloseAfterExecute = true; 14 15 lb = form.AddControl('Label', 5); 16 lb.Caption = 'Prefix:'; 17 18 ed = form.AddControl('EdPrefix', 1); 19 ed.Width = 160; 20 21 chb = form.AddControl('ChbOnlyName', 2);</pre>		9		
<pre>11 form.ExecuteScriptName = 'AddPrefix'; 12 form.ExecuteMethodName = 'Execute'; 13 form.CloseAfterExecute = true; 14 15 lb = form.AddControl('Label', 5); 16 lb.Caption = 'Prefix'; 17 18 ed = form.AddControl('EdPrefix', 1); 19 ed.Width = 160; 20 21 chb = form.AddControl('ChbOnlyName', 2); </pre>		10	<pre>form = System.CreateForm('Form','Add Prefix to Attributes',200, 170);</pre>	
<pre>12 form.ExecuteMethodName = 'Execute'; 13 form.CloseAfterExecute = true; 14 15 lb = form.AddControl('Label', 5); 16 lb.Caption = 'Prefix:'; 17 18 ed = form.AddControl('EdPrefix', 1); 19 ed.Width = 160; 20 21 chb = form.AddControl('ChbOnlyName', 2); </pre>		11	form.ExecuteScriptName = 'AddPrefix';	
<pre>13 form.CloseAfterExecute = true; 14 15 lb = form.AddControl('Label', 5); 16 lb.Caption = 'Prefix:'; 17 18 ed = form.AddControl('EdPrefix', 1); 19 ed.Width = 160; 20 21 chb = form.AddControl('ChbOnlyName', 2);</pre>		12	form.ExecuteMethodName = 'Execute';	
<pre>14 15 1b = form.AddControl('Label', 5); 16 1b.Caption = 'Prefix:'; 17 18 ed = form.AddControl('EdPrefix', 1); 19 ed.Width = 160; 20 21 chb = form.AddControl('ChbOnlyName', 2); </pre>		13	form.CloseAfterExecute = true;	
<pre>15 lb = form.AddControl('Label', 5); 16 lb.Caption = 'Prefix:'; 17 18 ed = form.AddControl('EdPrefix', 1); 19 ed.Width = 160; 20 21 chb = form.AddControl('ChbOnlyName', 2);</pre>		14		
<pre>16 lb.Caption = 'Prefix:'; 17 18 ed = form.AddControl('EdPrefix', 1); 19 ed.Width = 160; 20 21 chb = form.AddControl('ChbOnlyName', 2);</pre>		15	<pre>lb = form.AddControl('Label', 5);</pre>	
<pre>17 18 ed = form.AddControl('EdPrefix', 1); 19 ed.Width = 160; 20 21 chb = form.AddControl('ChbOnlyName', 2); </pre>		16	<pre>lb.Caption = 'Prefix:';</pre>	
<pre>18 ed = form.AddControl('EdPrefix', 1); 19 ed.Width = 160; 20 21 chb = form.AddControl('ChbOnlyName', 2);</pre>		17		
<pre>20 21 chb = form.AddControl('ChbOnlyName', 2); </pre>		18	<pre>ed = form.AddControl('EdPrefix', 1);</pre>	
21 chb = form.AddControl('ChbOnlyName', 2);		19	ed.Width = 160;	
21 Chb = Iorm.AddControl('ChbOnlyName', 2);		20		~
		<	<pre>cnb = form.kddcontrol('cnbontywame', 2);</pre>	2

```
function Main(){
    var App = System.GetInterface("Application");
    var Model = App.ActiveModel;
    var WS = App.ActiveWorkSpace;
    var Log = System.CreateObject("Log");
   var form, 1b, ed, chb;
    //Create form
form = System.CreateForm('Form','Add Prefix to Attributes',200, 170);
//Add script that should be executed after you click the Execute button
form.ExecuteScriptName = 'AddPrefix';
form.ExecuteMethodName = 'Execute';
form.CloseAfterExecute = true;
    //Add component Label on the form
lb = form.AddControl('Label', 5);
lb.Caption = 'Prefix:';
    //Add component Edit on the form
ed = form.AddControl('EdPrefix', 1);
ed.width = 160;
    //Add component Checkbox on the form
chb = form.AddControl('ChbOnlyName', 2);
chb.Caption = 'Modify Caption';
chb.Checked = true;
    //Macro can be executed for Attributes, Model or Workspace
//If macro is executed only for attributes, it relates only to selected attributes.
var onlyAttributes = true;
var i, Select0bject;
for(i=0; i<This.Count;i++) {</pre>
        SelectObject = This.GetObject(i);
if (SelectObject.ObjectType!=2003) //2003 = Attribute
         È
            OnlyAttributes = false;
   }
    //Variable will be accessible also in event via calling Instance.VariableName (Instance.OnlyAttributes)
form.AddUserVariable('OnlyAttributes',OnlyAttributes);
//Registerdo bjects will be accessible in events.
form.RegisterObject(This, 'SelectedObjects');
form.RegisterObject(Model,'Model');
form.RegisterObject(Log,'Log');
    form.ShowModal();
P
 function RenameAttribute(Attribute)
    Log.Information('Attribute has been renamed from "'+Attribute.Name+'" to "'+EdPrefix.Text+Attribute.Name+'"'); if (ChbOnlyName.Checked)
    f
        Attribute.Caption = EdPrefix.Text+Attribute.Caption;
    }
else
        Attribute.Name = EdPrefix.Text+Attribute.Name;
   }
}
 function Execute()
    var i, j, SelectObject, Ent;
if (Instance.OnlyAttributes)
        for(i=0; i<SelectedObjects.Count;i++)
{</pre>
           SelectObject = SelectedObjects.GetObject(i);
RenameAttribute(SelectObject);
        ł
    élse
{
        for(i=0; i<Model.Entities.Count; i++)
{</pre>
            Ent = Model.Entities.GetObject(i);
for(j=0; j<Ent.Attributes.Count; j++)</pre>
               selectObject = Ent.Attributes.GetObject(j);
RenameAttribute(SelectObject);
            }
       3
   Ъ
Model.RefreshModel();
}
```

9. Click Commit and Save.

10. Right-click the Workspace |Macros |Add Prefix to open the user form.

Edit Model Properties	
Workspace Format Add All Model Objects to Workspace Fill Relationships to Workspace Copy Workspace	
Select Objects	
Macros 🕨	Add Entities
	Add Prefix

About Metamodel in Toad Data Modeler

Toad Data Modeler implements the concept of metamodels. Metamodels are accessible only in **Expert Mode** (via **Package Explorer**).

Metamodel is a graphical representation of objects, classes, methods and relationships between them in a specific **Package**.

Using metamodels, you can create your own classes, methods and properties and define relationships between those items and items that are created in the application by default.

i Important: It is recommended to only use lower and uppercase letters for naming your objects in metamodels (no numbers and special characters).

Example: The metamodel of Oracle package



Open Metamodels

- 1. Open (or select Expert Mode Menu | Customization | Package Explorer).
- 2. Select a package.
- 3. Right-click the package and select Open Metamodel.

Gallery Explorer x	Script Explorer × Package Explorer ×
F F 🔓 🗋	All Models
🖶 🥸 My Packa	age
🗄 🕀 🔇 Customer	Feedback
🗄 🥸 Tem	Load Package
🗄 🔇 🏠 Toa	Delete Package
	Disallow Package
	Export Package
	Open Metamodel
	Extend with New Package
	Create Dependent Package
	Properties
	Save BIN

Add Existing Classes to Metamodel

- 1. Right-click the work area and select Add Class.
- 2. In the Class Selection dialog, select a class and define settings on tab Settings.

Result: The selected class will be added to your metamodel and you will be able to modify it.

Create Classes

Click **Class** on the toolbar and then anywhere in the work area.

To add multiple classes on the Workspace

- 1. Press SHIFT and click the Class icon. A blue frame displays in the icon.
- 2. Click the work area as many times as many classes you want to add.
- 3. Right-click the work area (or click the Class icon again) to turn this function off.

To see all classes of your model

Select **Model | Model Items |Classes**. In the **Classes** dialog, you can add, edit classes, edit their names (F2) and delete them.

🔁 Classes			
Name Basich PERE	HTMLPERReportOR10 ntityOR10	Object Type 0 0	● ●
Add	<u>E</u> dit Delete	<u>O</u> K	Cancel Apply

Edit Classes

Double-click the class graphics on the Workspace

or

Edit the class in the Classes dialog (Model menu | Model Items | Classes | Edit).

7	🛓 Toad Dat	a Modeler	[C:\Users\vfrolik.PROD\Do	cuments\Toad Data Mod	eler	\50 noora\Packages\{DCB5CB9B-CF65-4350-86B5-285D246FC5AC}\Metamodels\\Custo
E	ile <u>E</u> dit	View Ob	jects <u>L</u> ayout <u>M</u> odel E	xpert Mode <u>S</u> ettings	Win	
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		Class	Properties			
ŀ	videorental					General Attributes Description Notes To Do
	vvorkspace	PEREN	tityOR10			Extended
	[1,1]	General	Properties Methode Inh	arited Properties	Mot	Compare object - Attribute has to be set in case the property represents a not owned obj
	q	Genera	Name	Data Tupe	MCL	Editable - Property value is editable in forms and can be accessed in Object Inspector to Event - Property contains an object event.
			ConfirmedByCustomer	Boolean		Feature - If attribute Feature is selected for property, it is possible to permit or ban this pro
Ĺ			NotesFromCustomer	WideString		Naming Convention Support - Property supports naming conventions
						No Owned Always Visible In Convertor - Property bude vzdy viditelna v Convertoru, poku Not owned object - Property represents an object which is not owned by this object.
						Refactor by rename - Property will be used during refactor by rename.
						Show in AV tree - Property will be visible in Application View form
						Snow in Explorers - Property will be visible in explorers.
						Store property - Property value will be stored when saving the object.
					_	
			Add Edit	Delete 🔺	-	
		3			and	
	•					(%) OK Cancel Apply Help
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	ррісаций мі	ew, messayt	e Explorer, veniloation Log, Lo	upe, overview - videoreniar	-01	

General Tab	Description
Name	Defined object class. Its value consists of CSAOClassName + Abbreviation. Example: PERSequenceOR PER = Physical Entity Relationship model Sequence = Sequence OR = Oracle (all Oracle databases. OR10 stands for Oracle 10g, OR9 is for Oracle 9i etc.)
Object Type	Numeric representation of object class without dependence on database system. A list of Object types is available in the TDM Reference document.
External	This checkbox has just an informative value. External class represents a class created in metamodel.
Default Name	Default name that will be assigned to the object after its creation. If you add "%d" to the default name, a numeric value will be added to the end of the default name.

Category	Category selection box. To see a list of Categories of your model, click the small button on the right.
Properties Tab	List of class properties.
Methods Tab	List of methods that belong to the class.
Inherited Properties Tab	Properties defined in predecessors.
Inherited Methods Tab	Methods defined in predecessors.
Description Tab	You can enter the class description here.
Notes Tab	Write notes on this tab.
To Do Tab	You can enter To Do tasks related to the class here.

Create Properties

- 1. In the Class Properties form, click the Properties tab.
- 2. Click Add.
- 3. Confirm Apply.
- 4. Edit the new item and define properties of the new property.

Edit Properties

Double-click a property or press Edit in the Class Properties dialog | Properties tab.

General Tab	Description
Name	Name of property
Data Type	Property data type
Default value	Property default value
External	Only properties that are marked as External are taken to particular class. Every new property defined by users must be set as External, otherwise the property will not be accessible in the class. If you need to add a property for just an informative purpose to your metamodel, uncheck the checkbox External .
Implementation Area	Description
Get Script Method and Set Script Method	Access methods for property. Name consists of ScriptName.MethodName - without brackets.

	fields to assign default values there. Example: PERSequenceOR.GetIncrementBy
Package	Name of package where the access methods are stored
Overridable	Select to set the property as Overrideable.
Dynamic	Select to set the property as Dynamic.
Read Only	Select to set the property as Read Only.
Write Only	Select to set the property as Write Only.
Attributes Tab	On tab Attributes , you can assign attributes to properties. Every attribute may change class behaviour. Example: You create a new property MyDescription. This property will be used for storing data entered into a new Text Field in the Entity Properties form. For this purpose, the following property attributes must be enabled: Editable and Store. Tip: A list of attributes is accessible via Model Attributes menu.

Create Methods

In the Class Properties dialog | Methods tab | Add.

Edit Methods

Double-click a method or press Edit in the Class Properties dialog | Methods tab.

General Tab	Description
Name	Name of method
Result Data Type	Data type that the method returns
External	Only methods that are marked as External will be taken to particular class. Every new method defined by users must be set as External, otherwise the method will not be accessible in the class. If you need to add a method for just an informative purpose to your metamodel, uncheck the checkbox External .
Implementation Area	Description
Method	Location of the access methods of property in the form: ScriptName.MethodName. After you click , default value will be inserted to this box.

Package Name of package where the access methods are stored.

Parameters TabAdd parameters to methods on this tab.Click Add to create a new method parameter.

🔁 Metho	d Properties				- • •
ReportTa	ableUserPrope	rties			•
General	Parameters	Description	Notes To Do	þ	
	Name		Data Type		State
	Documen	t	Dispatch		•
	Entity		Dispatch		•
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<%>	<u> </u>	<u>)</u> K	<u>C</u> ancel	<u>A</u> pply	Help

Generalization

Generalization is a link that defines a relation between two classes. Using generalizations, you can model inheritance.

Child class has all properties and methods of parent class, plus it may add new behaviors. If you create a new class (class name doesn't exist), then it will be necessary to define an inheritance to more general classes from the core or its successors.

To create Generalization

- 1. Click on the toolbar.
- 2. Move your mouse cursor over the work area.
- 3. Click parent class and then the child class.

Edit Generalizations

• Double-click the generalization line on the Workspace.

or

• Edit the generalization in the Generalizations dialog (Model menu | Model Items |Generalizations).

Associations / Aggregations

Associations and aggregations represent a relationship between two classes. If one class owns another class, then it's an aggregation. (Attribute has a Domain, Entity is owned by Model and Model has a list or collection of Entities etc.)

To create Associations / Aggregations

- 1. Click on the toolbar.
- 2. Move your mouse cursor over the work area.
- 3. Click the first class and then the target class.

Edit Associations

Double-click the association line on the Workspace.

or

Edit the association in the Associations dialog (Model menu | Model Items |Associations).

General Tab	Description
Name	Name of the association/aggregation
Advanced Tab	Description
Role	Name of property that will be added to class
Aggregation	Represents an owner of the second class.
Many	Property created in the second class will not be of the Dispatch type but the List type, and will work as a collection.
External	External associations create new properties in the selected class. Uncheck the External checkbox not to create the properties. In both cases, a relationship with information about linkages is created.
Attributes1, Attributes2 Tab	Represent attributes that can be assigned to classes on both sides of the association or aggregation. Names of properties are defined on tab Advanced in the Role box. Every attribute may change class behavior. A list of attributes is accessible via Model menu Attributes .

About Templates

Toad Data Modeler allows you to:

- Use pre-defined templates for properties that contain SQL code in your model (SQL, Before Script, After Script etc.).
- Create your own user templates for these properties.
- Set a default template for each property.
- Import Toad for Oracle templates.

Example: You have created an entity trigger. Edit it and see the **SQL** tab in the **Trigger Properties** dialog. The SQL code has been pre-defined = particular default template has been used (according to the database). You don't have to write the code manually for every new created trigger.

🔀 Trig	gger Properties - E	:					- • •
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SCOT	T.tri_BORROWING	à					
Gene	ral SQL Notes	;					
Temp	lates: Complete						B, 😢
2	Body Complete					-0	^
3	FURFUSE.						
5	REVISION	IS:					
6	Ver	Date	Author		Description		
7							=
8	1.0	6.5.2013	vfrolik	1.	Created this	trigger.	
10	NOTES:						
11							
12	*******	*****	*******	*****	*******	******	*******
13	CDEATE OD D	FDLACE TRICCE	D -SFullName	s. <			
15	AFTER /*BEF	ORE*/	N Coruliname	~			
16	INSERT /*UP	DATE DELETE	*/				
17	ON <%Ta	bleFullName%>					
18	BEGIN	body*/					
20	END	_body /					
•							*
~%>			ОК	Ok+	+Add Cancel	Apply	Help

To select another than default template in object Properties dialog

Press CTRL+A to highlight all text in the text box and select another template from the Templates box.

i Note: To replace one template with another, all text should be selected. Otherwise, the new template selected from the **Templates** box will be inserted to the position of cursor in the box. This behavior allows you to put together partial templates.

Option	Description
Templates	Shows all active templates for this object.
E .	Inserts the selected template.
2	Opens the Template Editor.

All templates are available in Template Editor.

Note: Templates for Properties with SQL Code - To find out for which properties you can create the templates, see the Reference Guide and search the *Supports Templates* attribute.

Template Editor

To open Template Editor

Select Settings | Templates.

To display templates for particular database or database version

- 1. From the Model Type box, select the database or particular database version.
- 2. Click Load Templates.

i Note: This option is available only if packages with the templates for selected database haven't been loaded so far.

deorental*	× Employee × Templates	×						
emplate Edit	tor ×							
<u>C</u> ommit	Commit and <u>S</u> ave <u>R</u> ollbac	ok 😼 Imj	port Toad for Oracle Templates	Model <u>T</u> ype:	Oracle 10)		•
	Object Category	Parent	Template Name		Default	Active	Status	Template
\bigcirc	Entities							
	Attributes							
0	Check Constraints							E
0	Check Constraints							
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•	III							4

Option	Description
Commit	Confirms changes made in the Template Editor and saves them to particular packages. Note: Packages are not saved to your hard disk.
Commit and Save	Confirms changes made in the Template Editor and saves them to particular packages (.txg files). The packages are saved to your hard disk.
Rollback	Cancels changes made in Template Editor.
Import Toad for Oracle Templates	Imports templates from Toad for Oracle to the Toad Data Modeler Template Editor. I Note: This option is available only if you have Toad for Oracle installed on your computer.
Model Type	Select a database or particular database version for which you want to display the templates. I TIP: Feel free to open Templates Editor for different database platforms or versions, dock the windows, compare the templates.

Option	Description
O	Creates a new template.
•	Deletes the selected template. Click Commit to confirm the deletion.
2	Opens the Template Properties dialog.
Object Category	List of objects (entities, attributes, triggers, check constraints, views, procedures etc.) with list of available SQL properties (SQL, Before Script , After Script etc.).
Parent	Information on parent object
Template Name	Specify any name for your template to distinguish it from others.
Default	Select this checkbox to set the template as default. The template will be pre-defined in the object Properties dialog.
Active	Select this checkbox to display the template in the Templates box in the object Properties dialog.
Template	Provides a quick view on the body of the SQL code.
Template body for template	Write the SQL code to this window. I Note: Remember to save the changes Commit or

Commit and Save.

Available Pre-defined Templates

There are two pre-defined templates – *Body* and *Complete*. Both relate to the **Generate SQL Only** checkbox on tab **General** of object **Properties** dialog.

• Body - The Generate SQL Only checkbox is deselected.

Example of default code for trigger:

BEGIN /*trigger body*/

END

• Complete – The Generate SQL Only checkbox is selected. (It means that settings on tab General are ignored in final SQL code.)

Example of default code for trigger:

CREATE OR REPLACE TRIGGER <%<%FullName%>%>

```
AFTER /*BEFORE*/
INSERT /*UPDATE | DELETE*/
ON <%<%TableFullName%>%>
BEGIN
/*trigger_body*/
END
```

To set this property for your user templates, see the **Template Properties** dialog, **General** tab and select or clear the **Generate SQL Only** checkbox.

Where Templates Are Stored

All pre-defined templates are saved in the *Templates.txg* file that is copied among user packages during first startup of Toad Data Modeler.

All user templates are by default saved to My Package.txg.

Both files are stored among user packages at (default location):

C:\Documents and Settings\user name\My Documents\Toad Data Modeler\Installation name\Packages\{GUI}

Why are pre-defined templates stored in another package? - Once our team brings new pre-defined templates, you will be able to replace the old pre-defined templates with the new ones (*Templates.txg*). Your user templates will stay preserved in your *My Package.txg*.

We do NOT recommend to modify the pre-defined templates. If you do so, please remember to save the template to My Package.txg (see the **Template Properties** dialog, **General** tab, **Package** area.)

Manage Templates

To create a user template

- 1. In Template Editor, select Object Category (e.g. Triggers).
- 2. Click 👽 and write the code in the **Template body for template** window.
- 3. Confirm the changes Commit or Commit and Save.

To change properties of a user template (e.g. location, visibility etc.)

- 1. Select a template.
- 2. Click *L* to open the **Template Properties** dialog.
- 3. Check properties of the template.

Option

Description

General Tab

Option	Description
Name	Write a name of your template.
Property Selection	Select for which database, object type and property the template should be used.
Active Template	Select this checkbox to display the template in the Templates box in the object Properties dialog.
Default Template	Select this checkbox to set this template as default in particular object Properties dialog.
Generate SQL Only	Select this checkbox to set the property Generate SQL Only enabled in the object Properties dialog. Available Pre-defined Templates
Package	Select a package where you want to save the template. By default, user packages are saved to <i>My Package.txg</i> . Where Templates Are Stored
Lock Package	Sets the ReadOnly property of the .txg file on the disk.
Visibility Tab	Select databases and database versions for which the template should be valid and available.

- 4. Confirm OK.
- 5. Confirm Commit and Save.

To set a template as Default

- 1. Select a template in Template Editor.
- 2. Select the Default checkbox for the template.
- 3. Confirm Commit and Save.

To disable a template

(not to display it in the combo-box in the object Properties dialog)

- 1. In Template Editor, find the template that you want to disable and uncheck the Active checkbox.
- 2. Confirm Commit and Save.

To delete a template

- 1. In Template Editor, select the template that you want to delete.
- 2. Click 😑 .
- 3. Confirm Commit and Save. Now it is not possible to edit the template.
 - Note: After you reopen the Template Editor, the deleted item will be removed. The template has been deleted from the .txg package.

Toad for Oracle Templates

Toad Data Modeler allows you to import the templates you created in Toad for Oracle and refresh them at any time you need.

We do NOT recommend to modify these templates in Toad Data Modeler as export of the templates to Toad for Oracle is not possible.

Toad Data Modeler imports Toad for Oracle templates of the following objects:

- Stored Procedures
- Functions
- Entity Triggers
- Packages (object in Oracle)

To import Toad for Oracle template to Toad Data Modeler

1. Open Template Editor - Select Settings | Template Editor.

2. Click Import Toad for Oracle Templates

i Note: This option is available only if you have Toad for Oracle installed on your computer.

3. Confirm OK and take notice of new templates in Template Editor (e.g. "Default" templates).

nit Commit and <u>S</u> ave <u>E</u>	Bolback 🥙 Synch	ronize Toad for Oracle Templates				Model Type: Oracle 10g	
Object Category	Parent	Template Name	Default	Active	Status	Template	
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Triggers							
🧷 - SQL	ModelWiew	Template4		~	۲		
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i Note: The Toad for Oracle templates are stored in TOAD.txg file at: C:\Documents and Settings\user name\My Documents\Toad Data Modeler\Installation name\Packages\{GUI}

To refresh your existing Toad for Oracle templates in Toad Data Modeler

Click 🚰 Synchronize Toad for Oracle Templates

Toad for Oracle Auto Replacement Words

Toad Data Modeler allows you to use Application Variables in your templates.

Toad for Oracle templates can have Auto Replacement Words.

During import of Toad for Oracle templates, the Toad for Oracle Auto Replacement Words are replaced by Toad Data Modeler Application Variables. See how:

Toad for Oracle Auto Replacement Word	Toad Data Modeler Application Variable
%YourObjectName%	<%FullName%>
%Date%	<%Date%>
%SysDate%	<%Date%>
%DateTime%	<%DateTime%>
%Time%	<%Time%>
%TableName%	<%TableFullName%>
%UserName%'	<%Author%>

Note: Not all Toad for Oracle Auto Replacement Words are supported.

Rename

To rename your model

Right-click the model name in Model Explorer (or Application View) and select Rename.

To rename objects on Workspace

- 1. Select the object (entity, view etc.) and press F2.
- 2. Enter new name.
- 3. Click anywhere else on Workspace to apply changes.

To rename object in Model Explorer

Select an object and press F2 or right-click an object and select Rename.

Tips and Hints for Large Models

- How to divide your large model?
- How to work concurrently in two or more places of the same Workspace?
- How to avoid creating the same or similar objects?
- How to display related entities, which are far from each other, close to each other?
- How to transparently display an entity that has a lot of relationships in your ER diagram?
- How to colorfully distinguish entities in your model?
- How to select objects in ERD by schema or category?
- Print large model
- Generating HTML reports

How to divide your large model?

Create new Workspaces!

Workspaces (WS) are similar to submodels. A model can have as many WS as you need. Each WS can display different (or same) parts (objects) of your large model. Each WS can have a different format or display view. On the Workspaces, you can manage your model objects quickly, easily and comfortably.

To create a new WS, simply click ¹ on the toolbar.

For more information, see Designer and Workspace on page 36.

How to avoid creating the same or similar objects?

Use the Gallery feature. There, you can store frequently used parts of your models - entities, single attributes, stored procedures and other objects. Then simply use the drag-and-drop technique to insert gallery items into your models. For more information, see Gallery on page 614.

How to work concurrently in two or more places on the same Workspace?

Open another Designer for your Workspace (WS)!

Designer displays a Workspace (WS). You can open as many Designers (tabs) for the selected WS as you need. This allows you to display different parts of the same WS and also the same objects of the WS in a different zoom. For more information, see Designer and Workspace on page 36.

Scenario

Your model has one Workspace WS1. WS 1 represents main model and is large. You need to work with two parts of the model concurrently.

 Right-click Workspace1 item in the Application View or Model Explorer and select Open Designer. -> Another tab of the same name - Workspace1 will open in the Application Window. It displays the same objects.

Scenario: You're working in the second Designer and need to move fast to find the required part/objects that you need to edit.

2. Click ¹ on the toolbar.

In the **Overview** dialog, use drag&drop techniques to move the small frame in the **Overview** dialog. -> You will move on the WS at the same time. Change size of the frame at your convenience to zoom in or out the objects on the WS.

- 3. Find the required objects. (You can close the Overview dialog then.)
- 4. Now you can comfortably work in two places of the same WS at the same time.
 - You can switch between the two Designers (tabs Workspace1).
 - You can undock one of the Designers and see them in one screen, or move it to your second monitor if you have any.

How to display related entities, which are far from each other, close to each other?

Create an entity shortcut!

Entity shortcut is another graphical representative of an entity. It's not a copy but the same object with the same properties. You can create as many shortcuts of an entity as you need (and of course, not only entities...). For more information, see About Shortcuts of Objects on page 274.

Scenario

Entity1 and *Entity42* are related, however each is on a different page. You want to see them closer to each other.

Scenario: Create a shortcut of the *Entity 1* and place it next to the *Entity 42*. (You can also create a shortcut of the *Entity 42* and place it to the *Entity 1*.):

- 1. Find *Entity 1* on the Workspace.
- 2. Find *Entity 42* in **Model Explorer**.
- 3. Click the Entity 42 item and drag it to the WS where you want to add the shortcut, next to the Entity1.

How to transparently display entity that has a lot of relationships?

Create an entity shortcut and move shortcuts of some relationships to it!

Scenario

Entity *Film* has five relationships leading from or to it. You want to create a shortcut of this entity, place it next to it, and move two relationships to it.

Scenario:Create an entity shortcut on the Workspace.

- 1. Click the *Film* entity on the WS and hold the mouse key down.
- 2. Press CTRL+SHIFT keys and hold them down.
- 3. Drag the Film entity on the WS.
- 4. Release the mouse button and then the keys.
Result: There are two shortcuts of the Film entity on the WS - Film : 1 and Film : 2.

Scenario: Create shortcuts of the two relationships of the Film entity.

- 5. Right-click the WS and select Add Selected Objects to Workspace.
- 6. From the dialog, select the relationships that you want to 'redirect' to the *Film : 2* shortcut. (See the object details next to the relationship name in the dialog).
- 7. Confirm your selection.

Result: There are two shortcuts of the two selected relationships connected to the Film : 2 entity shortcut. **Scenario:** Remove redundant relationship shortcuts of the *Film : 1* shortcut.

- 8. Select the two needless relationship shortcuts on the WS (use SHIFT for multiple selection).
- 9. Press Delete.

Result: The selected shortcuts will be removed from the WS.

How to colorfully distinguish entities in your model?

Assign selected entities to a Category!

Categories allow you to colorfully distinguish entities that logically go together. Each entity can be assigned only to one category.

For more information, see Categories on page 315.

Scenario

You want to distinguish all entities that contain information on your customers on the Workspace.

- 1. Right-click the Categories item in Model Explorer and click Add Category.
- 2. Double-click the new category.
- 3. Define properties of the category its name (Customer Info) and select a color (Money Green).
- 4. On tab **Objects**, select entities that you want to assign to the category.
- 5. Confirm OK.

Result: All the selected entities will have Money Green background color on all Workspaces of the model. **Scenario:** As you have many categories in your model, you want to display a caption of categories on the Workspace.

- 6. Click on the toolbar.
- 7. Click the work area where you want to place the caption.

Scenario: You want to display the entities of the category in Model Explorer (they will be Money Green in Model Explorer).

- 8. Right-click the Model Explorer and select Settings.
- 9. Select the Use Colors of Category to Draw checkbox.

For more information, see Caption of Categories on page 281.

How to select objects in ERD by schema or category?

Right-click the Workspace and select Select Objects

Print Large Model

Is Print to PDF Possible?

Yes, you can print your ER diagram to PDF using "PDF printer" (Note: not all PDF printers are supported.) If you print your model on plotter, we recommend to print your ER diagram to PDF format first.

- 1. Install PDF Printer.
- 2. In Toad Data Modeler select File | Page Setup.
- 3. Select the PDF printer in the **Printer** box a the bottom of the dialog.
- 4. Define the following options:
 - Page: Ledger
 - Print Options: Fit to Page
 - Orientation: Portrait

🔁 Page Setup	
Scale Page: Ledger	➡ Height: 279
	Width: 431
Print Options Fit to Page:	Enlarge: 100
Orientation	Margin [mm]
Portrait	Left: 10 Right: 10
Landscape	Top: 15 Bottom: 15
Printer	
PDFCreator	▼
	OK Cancel Apply

- 5. Confirm OK.
- 6. Select File | Print.
- 7. On page Settings | uncheck checkboxes Print Page Number and Print Frame.
- 8. Print the output.

Can I print whole ER diagram on one page?

Yes. In the Page Format dialog, select the Fit to Page checkbox.

Is there a way to speed up the printing process?

Yes. Disable graphical options. Either select **Settings** | **Options** | **General**, uncheck the **Print Gradients** checkbox (it is disabled by default) or disable the graphical options **Gradient Effect**, **Graphical Display of Keys** etc. in the **Workspace Format** dialog.

Generating HTML reports

With especially large models, it is possible to run out of memory while generating HTML report. In such situation, try the following suggestions:

Change Report Layout

In **Select Layout** section of **Report Wizard**, try choosing **Frames - top/left menu** instead of **Frameless** layout. Frameless layout is not recommended for large models as it uses Javascript, which means more RAM is used. Additionally, navigating a Frameless HTML report for a large model might feel sluggish on lower-spec machines.

Close other models and restart Toad Data Modeler

This will free some more RAM that can be used for report generation, so you're less likely to run into an Out of Memory error.

Generate report one workspace at a time

In **Select Workspaces** section of **Report Wizard**, you can choose to generate report for specific workspaces only. The fewer workspaces, the less RAM will be needed for the generation process.

Command Line Parameters

You can start Toad Data Modeler from command line and add additional parameters to make it perform various tasks on startup:

- Open files
- Create a new model
- Script execution
- Start logging
- Import Toad for Oracle Diagram or Model

Open files

Definition:

Open-File -File:"Name=*Path to file*"[,Name=<string>]* Open-File -File:Name="***Path to file***"

TIP: You can include more than one parameters. Use comma (,) to separate multiple parameters. See examples for more information.

Example:

The following command opens a model called Videorental.txp:

TDM.exe Open-File -File:Name="C:\Models\Videorental.txp"

The following command opens two models at once:

TDM.exe Open-File -File:Name="C:\Models\Videorental.txp", Name="C:\Program Files (x86)\Quest Software \Toad Data Modeler - Beta\Samples\Employee.txl"

Create a new model

Definition:

New-Model -ModelType:"*model type*"[-ModelName:"*model name*"]

Examples:

Creates a new logical model with default name: TDM.exe New-Model -ModelType:"Logical Model" Creates Oracle 10g model with the specified name: TDM.exe New-Model -ModelType:"Oracle 10g" -ModelName:"My Physical Model"

Script execution

Executes script stored in the application. First parameter is **ScriptName** (name of the script), second is **MethodName**(name of the method in script) and the following parameters (**Par1Name**, **Par2Name**...) will be passed as parameters to the script method.

Definition:

Execute-Script -Parameter:ScriptName="***script name***",MethodName="***method name in script***" [,Par1Name=**Par1Value**, Par2Name=**Par2Value**...] -TDM [-Silent]

Examples:

TDM.exe Execute-Script -Parameter:ScriptName=MyScript,MethodName=MyMethod,Par1Name="ABC",Par2Name="DEF" -TDM -Silent

Switches:

-TDM: The executed script is stored in Toad Data Modeler.

-Silent: Script will be executed in Silent mode and you will be able to work with the application regardless the state of the executed script.

Start logging

Writes messages to log. May be useful for sending reports to TDM developers.

Definition:

Start-Log

Import Toad for Oracle ER Diagram or Toad for Oracle Project

TDM.exe Import-ToadForOracleERD -file:"NopathMovERD.erd"

TDM.exe Import-ToadForOracleERD -file:NopatMovERD.erd -Connection:"SERVER=OstDbServer:1521/ORCL, USER=movies,PROTOCOL=TNS,CONNECTAS=NORMAL,SAVEPASSWORD=1,ORACLEHOME=c:\oracle\pro duct\10.2.0\db_1,HOST=OstDbServer,SErVICENAME=ORCL, PORT=1521,LDAP=,METHOD=1"

Other Quick Tips

Objects on the Workspace and Keyboard Arrows

• Move entities on the Workspace via keyboard arrows.

Note: To set the size of a step to move, select Settings | Options | Graphics | Move

Objects by (mm/10) (in tenths of millimeters).

• Select an entity, press SHIFT, hold it down and use the keyboard arrows to change size of the entity box.

Navigation on Workspace

- · CTRL + scroll mouse to zoom in/zoom out
- CTRL +, CTRL + Page Up to zoom in
- CTRL-, CTRL+ Page Down to zoom out
- · Scroll mouse to move up/down on the Workspace
- · SHIFT + scroll mouse to move to the right/left on the Workspace
- Holding down the middle button to move on entire page/Workspace •
- · Page Down, CTRL + down to move to next page
- · Page Up, CTRL + up to move to previous page
- CTRL + left to move to the left page
- · CTRL + right to move to the right page
- Click to fit your entire ERD to screen.
- Press F11 to display the application in full screen mode.

Make a Copy of Multiple Objects on the Workspace (CTRL+A, CTRL+C, CTRL+V)

• Before you press CTRL + V to paste the objects, close the Model Explorer dialog to accomplish the operation much faster.

(The larger your model is, the more significant difference in speed you will notice.)

Print Models

• In Settings | Options | General, clear the Print Gradients checkbox for much faster print performance. (It is disabled by default.)

HTML Report Layout

· For large models, Frames - top menu or Frames - left menu options are recommended.

(Frameless report layout is not recommended as it uses Java script that goes through all objects, which takes too much time if your model is large.)

About Integration Options

Toad Data Modeler and Toad for Oracle products have started the integration process.

Toad for Oracle - Basic Information on Product

Toad for Oracle® is a powerful application development tool built around an advanced SQL - PL/SQL editor. Using Toad, you can build and test scripts, PL/SQL packages, procedures, triggers, and functions. You can create and edit database tables, views, indexes, constraints, and users. The Schema Browser and Project Manager provide quick access to database objects.

Toad's Editor provides an easy and efficient way to write and test scripts and queries, and its powerful data grids provide an easy way to view and edit Oracle data. With the optional DB Admin module you can manage space, compare schemas, monitor database performance, create new databases, maintain redo logs, perform health checks, and much more.

Toad for Oracle Integration in Toad Data Modeler

- Loading of Toad for Oracle® aliases
- Opening Toad for Oracle® projects
- Importing Toad for Oracle® ER diagrams
- · Possibility to define Toad for Oracle® as a default editor for generated SQL scripts
- · Possibility to use Toad for Oracle® icons in Toad Data Modeler
- · Import of Toad for Oracle® templates. Toad for Oracle Templates

Default Settings for Toad for Oracle Integration

Select Settings | Options | Toad for Oracle Integration.



Note:

 Since Toad for Oracle® 10.0, the list of installed programs is not saved to registry but to a special file SettingsLocations.ini. What it means in reality: During start-up Toad Data Modeler searches for all Toad for Oracle® versions that you have on your computer. By default Toad Data Modeler pairs with the last installed Toad for Oracle® version. Once the Toad for Oracle® version is found, it is written in Config file of Toad Data Modeler.

If you want Toad Data Modeler to pair with another Toad for Oracle® version, you have to define it manually in Toad Data Modeler: **Settings | Options | Toad for Oracle Integration**.

2. Toad for Oracle® cannot auto-detect Toad Data Modeler. To detect Toad Data Modeler via Toad for Oracle®, check the **Detect this Toad Data Modeler...** checkbox at the bottom in this window.

Toad for Oracle® Connections

Toad Data Modeler recognizes Toad for Oracle connections and displays them in the:

Connections dialog - click on Main Toolbar.
Reverse Engineering Wizard - click on Main Toolbar.

Note:

- Both options are available from the File Menu | Reverse Engineering.
- Toad Data Modeler allows you to use Toad for Oracle aliases but it doesn't allow you to save changes to these aliases.

🔁 Connections		Þ		
124 🥠 🐗 🖓 🤹) 🗸 💣 🛅 🏟 🗖	VI		
Name	Database Platform	Description	Favorite	
⇒ XE	Oracle 10g	HostName=EU9910.prod.quest.corp; Po	×	Create New Model from Database
Toad Project Alias 1	N/A	Home=XE; NetServiceName=XE; UserId=SCOT	×,	
Toad Project Alias2	N/A	Home=XE; NetServiceName=XE; UserId=SYS1	×,	Open Reverse Engineering Wizard, select
Toad Project Alias3	N/A	Home=XE; NetServiceName=XE; UserId=STST	×.	objects from different schemas using advanced filters and create a new model
Toad Project Alias4	N/A	HostName=ora3codepro; Port=1521; ServiceNa	~	
				Dpen Object Explorer
				Open Schema Browser and use drag and drop technique to add new objects from connected database to your model.
				🖄 Import Toad ERD
				Select *.erx or *.erd file created in Toad for Oracle and create new model.
1	111			
Count of Connections 5	Selected Connection	ANY VE		
Count of Connections: 5	Selected Connectio	JII: AE		

Import Toad for Oracle® ER Diagrams

1. Select File | Import |Toad for Oracle ERD *or* File | Reverse Engineering | Connections | Import Toad ERD. 2. In the Open dialog, select a *.erd or *.erx file and click Open.

🔁 Open Toad for	Oracle ERD				×
Look in:	🔰 User Files	•	G 🤌 📂 🛄 -		
An	Name	*		Date modified	Туре
	AppBackups			6.1.2015 12:02	File f
Recent Places	FormatterExa	amples		12.12.2014 9:48	File fe
	퉬 GUISettings			5.2.2015 10:40	File f
	鷆 Reports			12.12.2014 9:48	File f
Desktop	퉬 RMAN Temp	plates		12.12.2014 9:48	File f
	OracleDiagra	am.erx		5.2.2015 12:16	ERX F
67					
Libraries					
Computer					
Network	•				
	File name:	OracleDiagram.erx		- Ot	ben
	Files of type:	All Diagram Files (*.ERD;*.ERX)		▼ Ca	ncel

3. If you want to use connection string stored in ERD file, click Yes in the following dialog window:

Toad Data Modeler
You can use selected connection or connection saved in ERD file. Would you like to use connection saved in ERD file?
Yes No
Do not show next time

4. Toad Data Modeler needs to reverse engineer database which contains the objects in your diagram. You will be asked for the database password.

Enter Passwo	ord	—
User Name:	SCOTT	
Password:	•••••	
	ОК	Cancel

5. The import starts and ERD is created.

Import Toad ERD		
Loading in progress		
Cancel		

Open Toad for Oracle® Projects

- 1. Select File Menu | Import | Open Toad for Oracle Project.
- 2. In the Open dialog, select a *.tpr file. Toad Project Manager opens.
- 3. Select a connection type, right-click it and select Connect.



- 4. After you are connected, you can select items from the Toad Project Manager and drag them to a Workspace or Model Explorer of your model in Toad Data Modeler.
- 5. Right-click the connection and select **Disconnect** or simply close **Toad Project Manager**.
- Note: Tables that already exist in the model cannot be added to the model. i

Toad for Oracle® as Default Editor

Select Toad for Oracle® as a default editor to open every generated SQL script in Toad for Oracle® (Oracle models only).

You can define any other third party application as default editor.



Toad® for Oracle® Icons

If you are used to Toad for Oracle icons, Toad Data Modeler gives you the option to change the icon theme. Go to **View Menu** | **Icons Theme** and select **Toad for Oracle Icons**. Notice the changed icons on toolbars and in Model Explorer.



Basic Actions

With Toad Intelligence Central, you can store and access all of your important files created in various Toad tools in one place. Learn how to:

- Connect to your TIC server
- Save files from TIC server
- Publish your models/projects to TIC server

Connecting to TIC server

- 1. Open Intelligence Central using one of the two ways:
 - a. Go to Window Menu and choose Intelligence Central.

	Win	ndow <u>H</u> elp	
t		Toolbars •	
		Application View	
	2	Intelligence Central	
_	de	Model <u>E</u> xplorer	

b. Click the Intelligence Central button on Intelligence Central Toolbar.



2. Click the Connect button in Intelligence Central.



3. In the opened TIC Connections dialog, click the New Connection button and fill in connection details. Then, click the Save Connection button (or you can Connect right away, changes will be saved).

TIC Connections		
↓ 🏂 🛗 🌿		
* Connection 1	Server	
	Host:	10.11.40.236
	Port:	8066
	Display Name:	My TIC Server
	Lloor	
	User	
	Connect Using:	Intelligence Central credentials
	User:	root
	Password:	
		Save Password
		Connect Cancel

i Note: If your TIC server is located in the same domain as your computer, you can server discovery to detect its connection details (the ... button next to Host).

8066
-

4. Now simply choose your saved Connection from the list in the Intelligence Central.



Saving files (artifacts) from TIC server

In Intelligence Central, you can save any file you see to your computer. To do so, **right-click** a file, select **Save** and then choose a location on your drive.



Publishing files to TIC server

Intelligence Central displays all items that are shared with you. You can publish all types of models and reports to your TIC server:

Models

Click the Publish to Intelligence Central button on Intelligence Central Toolbar. See Publishing
 Models/Reports for more information.



Reports

• Reports can be published to TIC by checking the appropriate option in the **Select File** section of **Report Wizard**. See **Publishing Models/Reports** for more information.

🔁 Report Wizard		×
- Select Format - Select Report - Select File - Select Layout - What to Report - Select Workspaces - Options	Select where you like to generate the report. Publish to Intelligence Central Save to folder C:\Users\knapek\Documents\Toad Data Modeler Beta\Reports\HTML\default.html	
	Languages of Localized Report Version English (United States)	•

Naming Conventions

 You can also publish your customized Naming Conventions to a TIC server. Go to Tools Menu | Naming Convention | Manage, select your Naming Conventions and choose Export | Intelligence Central.

12	Naming Cor	iventions		- • •
	Name		File Name	Status
Naming Conventions 1		onventions 1	Naming Conventions 1.txn	۲
	Add 🚽	Export V Edit	Delete Ok	Cancel Apply
		File		h.
		Intelligence Central		

Publishing Models/Reports

When you choose to publish model/report to your TIC server, you can also describe your file, customize its sharing and link it to existing artifacts.

🔀 Publish Toad Data Modeler model (.txp)		X
🛹 • 🎭 造 🖫 • 🛷	General Sha	ring Links
□··· → TIC Server □···	Name:	Videorental
Models Stores - Universal Model Videorental - Physical Mo	Type: Server:	Toad Data Modeler model (.txp) 10.11.40.236:8066
	Location:	/ Shared Models
I 🔂 Model Mockup	Description:	Model name: Videorental Target database: Oracle 10g Model path: C:\ Program Files (x86)\ Dell\ Toad Data Modeler - Beta\ Samples\ videorental.txp Model created: 3/ 15/ 2007
TIC Server	Tags:	physical model, videorental
		Save Cancel

- 1. Choose the destination folder in the section on the left. There, you can also see all files of the same type as the file you are going to publish.
- 2. Look into the General, Sharing and Links tabs and customize the options.

General tab

Option	Description
Name	The name under which the file will be stored on TIC server.
Туре	The file type.
Server	Server host name/IP address.
Location	Folder on the server in which the published file will be stored.
Description	An editable file description
Tags	You can enter several comma separated, searchable tags.

Sharing tab

You can choose to share your file in several ways:

Note: 'Artifact' refers to a file stored on a TIC server.

- Do not share this artifact with any other user Only you will be able to see and manage the file on TIC server.
- Share this artifact with any other user All users will be able to see the file on TIC server. Additionally, when you check Allow any user to manage this artifact, all users will be able to manage the file.
- Share this artifact with selected user or group You can share the file with a specific user/group by moving them to the Shared with field. You can also allow users/groups to manage the file by checking the appropriate checkbox.

Links tab

Links represent logical relationships between artifacts. You can create one between your published file and one or more existing artifacts. In **Link Description**, describe the nature of the relationship.

Notifications

Toad Data Modeler notifies you about actions of other users done on your TIC server. These actions can be found in **Notifications** window.

To open the Notifications window, click the Notifications button either in Intelligence Central window or on Intelligence Central toolbar.



Note: The Notifications icon will have a blue exclamation mark decorator whenever there is a notification that hasn't been reviewed and cleared yet.

Notifications windows displays the timestamp of recent actions, the object on which the action was applied and type of the action (event).

😕 Notification	s (4)		
Recent Notifica	ations		
	Timestamp 💌	Object Name	Event
	19/7/2016 13:11:36 11/7/2016 6:05:49 30/6/2016 13:51:10 30/6/2016 13:51:07	SQL Server 2016 - HTML report alterHTMLeportikt Videorental Sample Report Videorental - HTML report	qa shared SQL Server 2016 - HTML report with power admin shared alterHTMLeportikt with power root deleted Videorental Sample Report root deleted Videorental - HTML report
Clear All	Clear Selected		

To acknowledge the changes, you can select any or all of the notifications and click **Clear Selected** or **Clear All** to remove them from the list.

About Naming Conventions

Naming conventions can be defined for physical models and used to:

- Define custom rules for physical names of objects (e.g. adding prefix, suffix, use particular letter case...).
- Synchronize logical names (captions) and physical names (names) of your objects.
- Verify your model to see if it matches the naming convention rules. If not, there are quick fixes available to solve any issues.
- i Note: Naming conventions can be only used to alter physical names (**names**) of model objects, NOT logical names (**captions**).

Basic Information About Naming Conventions

- Naming conventions rules can be set for most physical model objects that have a defines name and a caption.
- Naming conventions are stored as .txn files in the Documents folder on local drive (Documents | Toad Data Modeler | Installation Name | Naming Conventions).
- Multiple sets of naming conventions can be created, but one model may use only one set at a time.

Naming conventions allow you to:

- Automatically create physical names based on captions and set naming conventions rules, e.g. Customer ID (caption) => T_CUSTOMER_ID (name).
- Define a set of valid/invalid characters used in physical names (and define now invalid characters should be replaced).
- · Verify and automatically update names of multiple objects at once.
- Use glossaries to automatically replace language-specific characters or abbreviations. Glossaries can be exported/imported as CSV files.
- i TIP:Toad Data Modeler comes with several CSV files to help you replace language-specific characters with English characters. The files are located in **Documents** | **Toad Data Modeler** | *Installation Name* | **Naming Conventions** | **CSV**.

Managing Naming Conventions

To start using naming conventions, you can go to **Tools Menu | Naming Conventions | Settings** or click 💹 on **Naming Conventions Toolbar**.

• If no naming conventions are found by Toad Data Modeler, you will be asked to create a new set of naming conventions which will become linked to the currently active model.



• You can link your model to another set of naming conventions in Model Menu | Properties (or Model Properties in context menu) | Naming Convention tab.

🚪 Model Properti	es				- • ×
General	Before \$	Script	After S	Script	Description
Naming Conve	ention	Stati	stics	Datab	ase Parameters
<u>N</u> ame:					
Naming Conver	ntions 1				-
Naming Conver	ntions 1				
Naming Conver	ntions 2				

• Additional naming conventions can be created and managed in a dialog opened by clicking Manage Naming Convention in Model Properties.

ا 😤	Naming Conventions		- • ×
	Name	File Name	Status
	Naming Conventions 1	Naming Conventions 1.bm	۲
⇒	Naming Conventions 2	Naming Conventions 2.txn	
	A <u>d</u> d <u>E</u> dit Delete	Ok <u>C</u> ancel	Apply
			H.

Verification and Synchronization

Naming Convention Verification and Synchronization can be accessed from:

- Naming Convention Properties | General tab | Verify and Synchronize button
- * Naming Convention toolbar | Naming Convention Verification and Synchronization

The verification and synchronization process allows you to do two things to multiple objects at once:

- Verification verifies object Names to see if they satisfy Naming Convention Rules.
- Synchronization synchronizes object Name with its Caption.

Names that do not pass verification or synchronization check can be automatically updated by applying the suggested Name modification. To update such Names, simply check the listed violations/suggestions and click on **Update**.

i Note: The behavior of verification and synchronization process is heavily influenced by Naming Convention Properties.

Naming Convention Verification &	k Synchronization					- • •
Model Objects						
🖲 🗉 🗄 🕈 🛧 🔸 😽						
Logical Name	Physical Name	NC	Sync	Expected Physical Name		
Entities						
Customer	CUSTOMER		B	Customer		
Borrowing	borrowing_entity	B	3	Borrowing		
Exemplar	Exemplar	B		EXEMPLAR		
Medium	Medium	B		MEDIUM		
····· V Order Record	Order Record	B		ORDER RECORD		
- Film	movie	B	B	Film		
····· 🔽 Customer Rating	Customer Rating	B		CUSTOMER RATING		
🔤 📝 Genre	Genre	ß		GENRE		
Relationships						
Makes	rel_makes		R	Makes		
🖾 📝 Is Rated	rel_is_rated		R	Is Rated		
		· · ·				
L						
					Update	Close

To show/hide Naming Convention Violations () or Synchronization violations (), use the buttons on the toolbar.

i	Note: Yo	ou can disable Verification	/Synchronization checking	for particul	ar items by	clicking the violation (
	🚯 j 🕻) icon. This will influence	e the suggested Name mod	lification.		
		Film	movie	ß		Film
		Film	movie	ß	0	MOVIE
		Film	movie	Po	0	movie

On Form Synchronization

Toad Data Modeler offers you the possibility of synchronizing and verifying objects **Name/Caption** in various **Properties dialogs** as you type. This behavior is controlled by two options located in **Naming Convention Properties | General tab**.

- Automatic Synchronization
- Apply Naming Convention Rules during Synchronization



Example 1:

- Automatic Synchronization disabled
- Apply Naming Convention Rules during Synchronization disabled

When neither option is enabled, you can change an object Caption but its Name won't change automatically. To

synchronize Name/Caption manually, click the 之 button.

<u>N</u> ame	
> Entity	N
Name	
Entity_modified	Й
	Name Entity (Name Entity_modified

Example 2:

- Automatic Synchronization enabled
- Apply Naming Convention Rules during Synchronization disabled

The object Name will be changed to match the Caption as you type.

Caption		Name	
NewEnti	=	NewEnti	

Example 3:

- Automatic Synchronization disabled
- Apply Naming Convention Rules during Synchronization enabled
- Naming convention rule enforces upper case and replaces non-alphanumeric characters with ? character.
- Glossary contains a defined entry which replaces 'Customer' with 'CSTMR'

Similar to Example 1, **Name** won't be automatically updated. Additionally, **naming convention rules** and **glossary replacements** will be applied when performing manual synchronization.

Caption	Name	
Customer_Entity	> Entity1	м
Capt <u>i</u> on	Name	
Customer_Entity	CUSTOMER?ENTITY	м

Example 4:

- Automatic Synchronization enabled
- Apply Naming Convention Rules during Synchronization enabled
- Naming convention rule enforces upper case and replaces non-alphanumeric characters with ? character.
- Glossary contains a defined entry which replaces 'Customer' with 'CSTMR'

The object **Name** will be changed to match the **Caption** as you type, **naming convention rules** and **glossary replacements** will be applied to the **Name** as you type as well.

Capt <u>ion</u>		Name	
Customer_Ent	=	CUSTOMER?ENT	

Naming Convention Properties

In the Naming Convention Properties dialog | General tab, you can see options for:

- Synchronization of Captions and Names
- Verification of Names

This topic describes how various options affect the Naming Convention Verification and Synchronization process.

Note: Options mentioned in this topic also affect On Form Synchronization behavior.

Automatic Synchronization

Description: When enabled, Name/Caption synchronization will be checked during process.

Example: An entity Caption is "Example Entity" and its Name is "ex_entity".

A suggestion will be offered to rename the entity Name so it matches its current Caption - "Example Entity".

Apply Naming Convention Rules During Synchronization

Description: When enabled, **Naming Convention Rules** will be applied and characters/words will be replaced according to **Glossary** during **Name/Caption** synchronization.

Example: An attribute Caption is "Customer main ID" and its Name is "Customer ID".

- A Naming Convention Rule defined for attributes enforces upper case.
- A word replacement in Glossary replaces "Customer" with "CSTMR".

Automatic Synchronization enabled: The suggested Name will be synchronized with the object Caption and then have the NC Rule and Glossary word replacement applied to it - CSTMR MAIN ID.

Automatic Synchronization disabled: The option only affects manual synchronization (see On Form Synchronization for more information).

Automatic Verification

Description: When enabled, model objects will be automatically verified to see if they don't violate Naming Convention Rules. The verification will occur during Naming Convention Verification and Synchronization process and also when you open Properties dialog of any object.

Confirm	
?	Current object name 'Customer ID' violates the defined naming convention rules. Do you want to change the name to 'CUSTOMER ID' according the naming convention rules?
	Customer ID -> CUSTOMER ID
	Yes No
🔲 Do no	t show next time

Example: A relationship Name is "ASSIGNS_orders".

- A Naming Convention Rule defined for relationships considers underscore characters invalid and replaces them with space characters.
- A Naming Convention Rule defined for relationships enforces lower case.

A suggestion will be offered to modify the Name so it matches the rules - "assigns orders".

To Use Glossary for Naming Convention Verification

Description: When enabled, Glossary character and word replacements will be applied during both Automatic Verification and manual verification.

Example: An entity Name is "Entrée kinds"

- A Naming Convention Rule defined for entities enforces upper case.
- A word replacement defined in Glossary replaces "kinds" with "types"
- A character replacement defined in Glossary replaces "é" with "e".

A suggestion will be offered to modify the Name so it matches the rule and has the defined characters/words replaced - "ENTREE TYPES".

To Turn Case-Sensitivity On

Allow Case Sensitivity in Tools | Naming Convention | Settings | Glossary | Word Replacement

Naming Convention Rules

Naming convention rules can be defines in Naming Convention Properties (Tools Menu | Naming Conventions

| Settingsor click in on Naming Conventions Toolbar.)

i Note: Click the particular column and use F2 to turn on the edit mode. Press Enter to confirm every rule you define in the form.

Enabled	Object Type	Prefix	Suffix	Case	Valid Chars	Replacer	Status	
V	Entities	T_		Upper Case	0-127	x	۲	
	Attributes			Preserve Case	0-31,33-\$7FFFFFFF	-	۲	
	Check Constraints			Preserve Case				
V	Keys			Lower Case			۲	
V	Indexes			Lower Case			۲	
	Check Constraints			Preserve Case				
	Triggers			Preserve Case				
1	Domains		-DOM	Preserve Case			۲	
	Dictionary Types			Preserve Case				
	User Data Types			Preserve Case				
	Relationships			Preserve Case				
	Defaults			Preserve Case				
	Check Constraint Rules			Preserve Case				
	User Groups			Preserve Case				
	Users			Preserve Case				
	Procedures			Preserve Case				
	Views			Preserve Case				
d Unaracters	S							
All Characte	ers				Selected Charac	ters		
✓ Excep	t Space Character				All standard /	ASCII characte	rs (0-127)	
Excep	it:				Space (3	2)	Underscore (95)	
					Numbers	'0'-'9'		
User Define	ed Character Set				Lower Ch	aracters	Upper Characters	
					Language Sp	ecific Chars		

Option	Description
Enabled	Enables set rule for particular Object Type.
Prefix	Defines a prefix for selected Object Type.
Suffix	Defines a suffix for selected Object Type.
Case	You can define Upper/Lower Case as a rule for object names.
Valid Chars	Lists characters that can be used in object name. The list can be configured in Valid Characters section.
Replacer	If set, replaces all invalid characters during verification and update.

Valid Characters

You can define a set of characters that can be used in object names. Characters outside the defined set will be considered invalid and will be replaced during verification and update process (either by **Replacer**, if defined, otherwise by a blank space).

To define valid characters, choose one of the three options.

All characters

All possible characters will be considered valid. You can choose to except space or any other characters. See **Character Set Syntax** for more information on how to specify a set of characters.

User Defined Character Set

Only characters defined in this set will be considered valid. See **Character Set Syntax** for more information on how to specify a set of characters.

Selected Characters

You can choose categories of characters that will be considered valid. Language Specific Characters can be also included, simply select one of the option from the menu. If you language is not present, you can create your own CSV file with characters specific to your language, see files in C:\Program Files (x86)\Quest Software\Toad Data Modeler\Naming Conventions\CSV as an example.

Character Set Syntax

Example: Character set for letters a,b,c and numbers 0,1,2:

- Single character in single quote, divided by comma: 'a', 'b', 'c', '0', '1', '2'
- Single character's ordinal value divided by comma: 97,98,99,48,49,50
- Single character's ordinal value divided by comma, in hexadecimal format: \$61, \$62, \$63, \$30, \$31, \$32
- Set of characters in single quote: 'a'-'c', '0'-'2'
- Set of characters as ordinal value: 97-99, 48-50
- Set of characters as ordinal value in hexadecimal format: \$61-\$63, \$30-\$32
- Any combination: 'a'-\$63, \$30-49, '2'

Naming Convention Valid Characters

Naming Conventions also allow you to define valid and invalid characters.

On **Naming Convention Rules** tab you can define valid characters for physical names and also set how invalid characters should be replaced.

Example: Let's say you have set a space as invalid character for entity names in your naming convention. See how Toad Data Modeler will behave in the following situation:

Customer Data logical name in the **Caption** box, will automatically change to *CustomerData* physical name in the **Name** box. -> The space will be ignored.

You edit the naming convention and define that every space should be replaced with '_'.

Customer Data logical name in the **Caption** box, will change to *Customer_Data* physical name in the **Name** box. Once you manually edit the physical name, the automatic synchronization will turn off.

Valid Characters and Character/Word Replacement

Character Replacement

Use Character Replacement to replace diacritical characters. Do not use Character Replacement to replace a space with another character.

Word Replacement

Use Word Replacement to replace **one** word with another word or more words. Word Replacement launches after characters are replaced.

Valid Characters + Replacement

Use this combination to define valid characters. Also, it is possible to replace invalid characters with an alternative character. Check of valid characters launches as last. See the example below.

Example: Character Replacement: ñ -> n Word Replacement: espanoles -> esp residentes -> res Valid Characters: Space -> _ Toad Data Modeler proceeds in the following order: 1) "residentes españoles" -> "residentes espanoles" 2) "residentes españoles" -> "res esp"

Valid Characters Definition

🔀 Na	ming Con	vention Properties - MyN	lamingConventi	ions				- • ×
Gener	ral Namir	ng Convention <u>R</u> ules Gloss	sary					
	Enabled	Object Type	Prefix	Suffix	Case	Valid Chars	Repla	Status
⇒	1	Entities	T_		Upper Case	'A'-'Z','a'-'z','Å','Å'	.'0'	e 🖉 🔺
	1	Attributes			Lower Case			÷
		Check Constraints			Preserve Case			
		Keys			Preserve Case			
		Indexes			Preserve Case			
		Check Constraints			Preserve Case			
		Triggers			Preserve Case			
		Domains			Preserve Case			
		Dictionary Types			Preserve Case			
		User Data Types			Preserve Case			
	1	Relationships			Lower Case			⊕ ≡
		Defaults			Preserve Case			
		Check Constraint Rules			Preserve Case			
		User Groups			Preserve Case			
		Users			Preserve Case			
		Procedures			Preserve Case			
		Views			Preserve Case			
		Triggers			Preserve Case			
		Schemas			Preserve Case			
		Functions			Preserve Case			
		Synonyms			Preserve Case			
		Materialized Views			Preserve Case			-
Valid	Characters	3						
0	All Characte	ers			() <u>S</u> ele	cted Characters		
	Excep	t Space Character			- A	NI standard ASCII charact	ters (0-127)	
	Excep	t:			[Space (32)	Underscore (9	5)
						Numbers '0'-'9'		
0	<u>U</u> ser Define	ed Character Set				Lower Characters	🔽 Upper Charac	ters
					V La	anguage Specific Chars:	Finnish	•
						<u>O</u> K <u>C</u> ance	I <u>A</u> pply	Help

Option	Description
All Characters	
Except Space Character	If it is selected, all characters are valid except for a space.
Except	Click this checkbox and manually write out character set that you want to forbid. For more information, see Character Set Syntax on page 607.
User Defined Character Set	Select this option to manually define character set. Incorrect definition will be highlighted in red. Note: Valid character set is automatically written out in the Valid Chars column.
Selected Characters	Select any of the following options to set:
All Standard ASCII	- all standard ASCII characters valid, others are forbidden.

Option	Description				
Characters (0-127)					
Space (32)	- only Space (32) character as valid.				
	character.				
Number '0'-'9'	- number 0 – 9 as valid.				
Lower Characters	- only lower characters as valid.				
Underscore (95)	- Underscore 95 as valid. (Number 95 is an ordinal value of the Underscore character.)				
Upper Characters	- only upper characters as valid.				
Language Specific Chars	- a diacritical character set of the particular language as valid. Click the box on the right to select the language.				
	TIP: You can create your own table with diacritical character set for your language. See: C:\Program Files\Quest Software\Toad Data Modeler 3\Naming Conventions\CSV. Create your CSV file in this location.				
Valid Chars Column	In this column, a complete character set is written out – according to your settings in the Valid Characters area. i Note: You can also define the character set manually to this column – via F2 key. However, to make sure your character set is correct, please use the User Defined Character Set option.				
Replacer Column	Define a character that will be used as a replacer. Example: underscore character.				

Character Set Syntax

Example: Character set for letters a,b,c and numbers 0,1,2:

- Single character in single quote, divided by comma: 'a', 'b', 'c', '0', '1', '2'
- Single character's ordinal value divided by comma: 97,98,99,48,49,50
- Single character's ordinal value divided by comma, in hexadecimal format: \$61, \$62, \$63, \$30, \$31, \$32
- Set of characters in single quote: 'a'-'c', '0'-'2'
- Set of characters as ordinal value: 97-99, 48-50
- Set of characters as ordinal value in hexadecimal format: \$61-\$63, \$30-\$32
- Any combination: 'a'-\$63, \$30-49, '2'

Glossary

Glossary has two main functions:

- Character replacement
 - Note: This function serves primarily to replace various language-specific characters with standard English ones. A replacement is invalid (red) if:
 - The left or the right side contains more than one character
 - The left side is equal to the right side
 - The left side character is an ASCII character (has ASCII value <= 128, except for space character)
- Word replacement

In order to replace characters using glossary, you have to define one first. Simply **Add** a new glossary in **Naming Convention Properties** | **Glossary tab** and start defining your custom replacements. Another option is to **Import** glossary from a CSV file.

i Note: Toad Data Modeler includes several existing glossaries used for character replacement. They can be found in:

C:\Users*username*\Documents\Toad Data Modeler\Standard Installation\Namin	g
Conventions\CSV	

🔀 Naming Convention Properties - Nami	ng Conver	itions 1 📃 🗖 🖉
General Naming Convention Rules Gloss	ary	
Character Replacement		
Glossaries:		Characters:
 ✓ Czech ✓ Finnish ✓ Estonia ✓ Latvia ✓ Slovene 	* *	A=A ▲ C=C E=E G=G E I=I K K=L E
Add Delete		N=N S=S D=U Ž=Z ā=a Define each character replacement setting on a new line and use the following
<u>W</u> ord Replacement		Words
Replacements		Customer=CSTMR Production=PROD
	â	
Add Delete	8	
Import Export		Define each word replacement setting on a new line and use the following form
		<u>QK</u> <u>Cancel</u> <u>Apply</u> <u>H</u> elp

To use glossary during name verification, make sure to enable the options **Automatic Verification** and **Use Glossary for Naming Convention Verification** are enabled.

To Turn Case-Sensitivity On

Allow Case Sensitivity in Tools | Naming Convention | Settings | Glossary | Word Replacement

To Set Delimiters

· Select from space, underscore, dot, colon or define your own delimiter

To Do List

To-Do List allows you to keep records of tasks and make notes on unfinished actions. You can assign tasks to:

- Particular object of your model in its Properties dialog (see the Entity Properties form | To Do tab)
- Main To Do dialog see the Model menu | To Do (A complete list of all To Do items can be found here.)

18 т	o Do								- • ×
Filter					♣	∱ ≍			
	Completed	Name	Text	Added		Completed	Priority	Object Name	Categ Status
-	[] [Add indexes t	Add indexes to newly crated attributes.	10/10/2	2008	10/28/2	2	T_CUSTOMER	Datab 🖲
-	[] [Analyze requi	Analyze requirements for T_Customer table. Discuss what end-user wishes t	10/16/2	2008	11/ 16/ 2	1	T_CUSTOMER	Requi 🖲
	1	ToDo3	Add index to Name attribute.	10/ 1/ 20	800	10/ 16/ 2	1	T_CUSTOMER	Datab 💿
	V	Ask for appro	Discuss cardinality settings with end-user. Current settings: one customer ca	9/5/200	8	10/ 17/ 2	1	makes	Requi 🖲
			A <u>d</u> d <u>E</u> dit		De	lete	<u>0</u>	K <u>C</u> ance	Apply
									.4

- Hides/shows To Do items that were entered out of the **To Do** dialog.

In Toad Data Modeler, you can assign tasks to the following objects:

Model, Entity, Relationship, Attributes, Keys, Indexes, Check constraints, Triggers, Users, User groups, Dictionary Types, User Data Types, Domains, Defaults, Rules, Views, Procedures, Schemas, Categories, Metamodels.

Note: Toad Data Modeler allows you to generate a To Do report. XSL Transformation

To add a new To Do item

Select Model | To Do | Add.

To edit a To Do item

Select Model | To Do | double-click the selected item.

🔀 To Do Properties	
General	•
Name	
Category Requirements	Priority
Date of Creation	Deadline
2. 5.2013	5. 6.2013
Completed	
Discuss cardinality settings with end-us can borrow up to five movies. Is it suffi accordigly to end-user requirements.	er. Current settings: one customer cient? Modify cardinality settings
	T
	Cancel Apply Help

General Tab	Description
Name	Task name
Priority	Task priority
Category	To logically divide your To Do items, you can define categories for them. Simply write a category name to the Category box. The existing categories will be available here via a drop-down menu for other To Do items as well.
Date of Creation	Date when the task has been entered to To Do.
Deadline	Date when the task should be accomplished.
Completed	If selected, the task has already been accomplished.
Text	On this tab, you can write a text description on particular task.

Quick Search

To quickly find an object in your model or on your workspace:

- 1. Press CTRL + F.
- 2. Type an object name or caption, or part of object name or caption.
- 3. Click the object or use the arrow down key on your keyboard to select it.
- 4. Press Enter to perform suggested action. Select the suggested action via the Arrow button at the bottom of the dialog. Possible actions (depend on the selected item): Edit, Find on Workspace, Format.

stomer				-
Name	Caption	Parent Object	Object Type	
Model				
SCOTT.T_CUSTC	MER Customer		Entity	
Customer info			Category	
Customer Rating V	/S - infor		Note	=
customer_id	Customer ID	Entity: SCOTT.T_CUSTOMER	Attribute	
customer_id	Customer ID	Entity: SCOTT.T_BORROWING	Attribute	
customer_id	Customer ID	Entity: SCOTT.T_ORDER_RECORI) Attribute	
SCOTT.T_CUSTO	MER_R Customer Rating		Entity	
SCOTT.v_Custom	er_Has Customer has film		View	
Customer rel	Customer rel		View Relationship	
Workspace - All Item	3			
SCOTT.T_CUSTO	MER Customer		Entity Shortcut	
SCOTT.T_CUSTO	MER_R Customer Rating		Entity Shortcut	-
			Edit 🔻	Close
				Edit
				Find on Worksna
				ind on monopu

Standard Search

When you search for an object, write part of the name or caption to the first field.

🔁 Quic	k Search				x		
cust					•		
	Name	Caption	Parent Object	Object Type			
Model							
	Customer info			Category			
	Customer Rating WS - infor			Note			
-	customer_id	Customer ID	Entity: SCOTT.T_CUSTOMER	Attribute			
⇒ 🖯	SCOTT.T_CUSTOMER	Customer		Entity			
	customer_id	Customer ID	Entity: SCOTT.T_BORROWING	Attribute			
	customer_id	Customer ID	Entity: SCOTT.T_ORDER_RECORD	Attribute			
	SCOTT.T_CUSTOMER_R	Customer Rating		Entity			
	SCOTT.Cust_Address_Type	Cust_Address_Type		User Data Type	Ξ		
2000	SCOTT.v_Customer_Has	Customer has film		View			
- T.	Customer rel	Customer rel		View Relationship			
Work	cspace - All Items						
	SCOTT.T_CUSTOMER	Customer		Entity Shortcut			
	SCOTT.T_CUSTOMER_R	Customer Rating		Entity Shortcut			
	SCOTT.v_Customer_Has	Customer has film		View Shortcut			
	Customer rel	Customer rel		Workspace Line PERRelat			
Work	cspace - Borrowing						
	SCOTT.T_CUSTOMER	Customer		Entity Shortcut			
Work	Workspace - Customer Rating Movie						
	SCOTT.T_CUSTOMER_R	Customer Rating		Entity Shortcut			
Work	cspace - Ordering				Ŧ		
			Ē	Edit 💌 Close			

Wildcards

Available wildcards are * and ? characters. (The star wildcard at the end of search term is not required).

🔁 Quick Search			
*after			▼
Name	Caption	Parent Object	Object Type
Model			
→	check_end_after_start	Entity: SCOTT.T_BORROWING	Check Constraint Entity

Word Recognition

If you use underscores in names, you can type just first characters of the words to refine search. The following example shows search results of string **tcr**. Results include **T_C**USTOMER_**R**ATING. Underscore characters were used as word delimiter.
🗏 Qui	ck Search			
tcr				•
	Name	Caption	Parent Object	Object Type
Mo	del			
⇒ 🚞	SCOTT.T_CUSTOMER_RATING	Customer Rating		Entity
Wor	kspace - All Items			
	SCOTT.T_CUSTOMER_RATING	Customer Rating		Entity Shortcut
Wor	kspace - Customer Rating Movie			
	SCOTT.T_CUSTOMER_RATING	Customer Rating		Entity Shortcut
			<u>E</u> dit	▼ Close

Similar functionality is available for search in captions where **space** is used as word delimiter.

You can partially combine the standard search with the word recognition based search.

🔀 Quid	🔁 Quick Search				
c has f				-	
	Name	Caption	Parent Object	Object Type	
Mo	del				
➡	SCOTT.v_Customer_Has_Film	Customer has film		View	
Wor	kspace - All Items				
	SCOTT.v_Customer_Has_Film	Customer has film		View Shortcut	
Wor	kspace - Views				
	SCOTT.v_Customer_Has_Film	Customer has film		View Shortcut	
				Edit Close	

Camel Case

In case your objects are defined using CamelCase, type just the characters you expect to be in uppercase. Example: To find **EventLogConfig**, search for **elc**.

🔁 Quio	ck Search			
elc				•
	Name	Caption	Parent Object	Object Type
Mo	del			
🔿 🛅	dbo.EventLogConfig	EventLogConfig		Entity
Wor	kspace - All Items			
	dbo.EventLogConfig	EventLogConfig		Entity Shortcut
				Edit Close

Dot Notation

Define object name and type . character to display child items of the object. The dot notation works for schemas as well.

18	Quio	k Search			- • •	
t	t_customer.					
		Name	Caption	Parent Object	Object Type	
	Мос	iel				
⇒		customer_id	Customer ID	Entity: SCOTT.T_C	Attribute	
		name	Name	Entity: SCOTT.T_C	Attribute	
		address	Address	Entity: SCOTT.T_C	Attribute	
	P	pk_T_CUSTOMER	pk_T_CUSTOMER	Entity: SCOTT.T_C	Key	
	122	i_name	i_name	Entity: SCOTT.T_C	Index	
		title	Title	Entity: SCOTT.T_C	Attribute	
		director	Director	Entity: SCOTT.T_C	Attribute	
		rating	Rating	Entity: SCOTT.T_C	Attribute	
	P	check_rating	check_rating	Attribute: rating	Check Constraint Attribute	
	P	PK_T_CUSTOMER_RATING_TITLE_DIRECTOR	PK_T_CUSTOMER_RATI	Entity: SCOTT.T_C	Key	
				<u> </u>	Close	
-						

Gallery

Toad Data Modeler allows you to reuse frequently used parts of your model, no matter if they are entities, single attributes, stored procedures or other objects. This can be done using Gallery where you can simply drag and drop items from your models and use them in your other models.

Some basic Gallery actions include:

- Creating a new Gallery
- Adding objects to a Gallery
- Inserting objects to a Model

Creating a new Gallery

1. Go to File Menu and select New | Gallery.



2. Choose the **Gallery Name**, enter its **Description** and choose whether you want to comment out code of database specific objects (this option is explained in the **Inserting objects...** section).

Gallery Properties	23
General	
Name	
New Gallery	
Description	
Comment out code from database exercitic objects when adding callery item to a model	
Comment out code nom database specific objects when adding gallery item to a model	
Path	
Path New Gallery is not saved yet.	
Path New Gallery is not saved yet.	

3. Your Gallery will be opened in the Gallery Explorer.



Adding new objects to a Gallery

1. To add a new object to a Gallery, simply drag it from **Workspace** or **Model Explorer** to and drop it on the Gallery name in **Gallery Explorer**.



2. Your object is now part of the Gallery and you can view its properties by expanding it.



Inserting objects to a Model

1. If you have one or more objects stored in Gallery, you can insert them into a model by simply dragging them to workspace.



- i Note: If the model database of the object is different from the target model database (e.g. Entity created in Oracle 10g model dragged to SQL Server 2010 model), it will be converted. Note that database-specific properties (mainly SQL code) may be syntactically invalid in the target database. If you have enabled the **Comment out code from database specific objects...** option, the properties will be commented out and you can fix their syntax later.
- Note: You have to drag and drop the main node of the object in the Gallery to actually move the object, not any of its child nodes.

Modifying Items

Items in Gallery can be easily modified in a temporary model and the changes can be saved immediately.

1. In Gallery Explorer, open your Gallery, right-click the item(s) you wish to modify and select Modify....

Gallery Explorer ×					
🗄 🙋 🍺 📄 🛃 🥒 🛛 📼 🗶 🛛 🔯					
⊡ Common objects					
🖮 🗁 Entities					
🖃 🛅 Item Properties					
Delete Item					
Add to Active Model					
Modify					
📰 genre_id					
min_age					
production_company					
title					
🖨 🦻 Keys					
🕀 🌮 ak_title_director					
🖮 🌮 pk_T_FILM					
🖮 🧶 Users					
SCOTT Linked Item					

- 2. The item(s) will be placed into a temporary model and you will be able to modify them. The exact way to modify the items varies depending on the number of objects and whether they are shortcuts or not:
 - One object (not shortcut) the Properties dialog of the objects will be opened right away. Example Entity added to a Gallery by dragging it from Model Explorer.
 - One object (a shortcut) the object will be shown on workspace, you can view and change its Properties.

Example - Entity added to a Gallery by dragging it from Workspace.

Multiple objects (not shortcuts) - no Properties dialog or Workspace will be shown, you will have to open Properties by locating the object in Model Explorer.
 Example - Two entities added to a Gallery at once by dragging them from Model Explorer.

• Multiple objects (shortcuts) - the objects will be shown on Workspace, you can view and change their **Properties**.

Example - Two entities added to a Gallery at once by dragging them from Model Explorer.

3. One way or another, you should be able to modify the item(s) as you need. Once you're done, click the **Save to Gallery** button on **File Toolbar**.



4. In the opened dialog, you can choose if you want to save the changes made to the modified item and its related items.

🔁 Save to Gallery	
Select Objects to be Saved in Gallery	
Unselected objects will be saved only if required by the selected objects. For example, when you select attribute, which has assigned domain and this doma unselected, so domain will be saved to gallery as linked item.	in will be
🕀 🛅 WorkSpaces	
All Items	
T_FILM_MODIFIED	
🖮 🗹 🛅 T_FILM_MODIFIED	
ОК	Cancel

Gallery Explorer

This windows is capable of displaying all of your Galleries and their objects and it also allows you to change their structure.



The Explorer toolbar contains several options:

Option	Description
New Gallery	Creates a new Gallery as described in Basic Actions.
Open Gallery	Opens an existing Gallery file (.txgall file format)
Save Gallery	Saves recent changes made to Gallery.
Properties	Displays Gallery Properties - Name, Decription, Path.
New Folder	Creates a new folder in the Gallery.
Delete Selected Item	Deleted the selected object.
Close Gallery	Closes (not deletes) the selected Gallery.

Items in the Explorer also have the following unique right-click options:

Option	Description
Save as (Gallery)	Allows you to save Gallery as a .txgall file to the selected location.
Item properties (Item)	Allows you to modify item properties (Name, Author, Descriptio) and view its objects.
Modify (Item)	Allows you to modify the stored item in a separate model and synchronize the changes with the item in the Gallery. See Modifying Items for more information.

Model Verification

Toad Data Modeler allows you to verify your models. You can choose the items you want to verify, find out what errors and flaws your model contains and use quick fixes to resolve any issues.

To verify your model

- 1. Select Model Menu | Verify Model... (also CTRL+F9).
- 2. On the **Model Objects** tab you can mark items for verification. Select either entire object group types or single objects.
- 3. On the **Verification Settings** tab select the rules that should be part of the verification. To save the settings, click **Save & Verify**.
- 4. The result of the Model Verification is shown in **Verification Log**, which is displayed automatically. To display the log manually, select **Windows Menu | Verification Log**. Objects that did not pass the verification are also marked by error/warning icons in **Model Explorer**.

Model Verification Form

Model Objects tab - lists all objects and object group types in your model. Checked object are those that will be verified.



Verification Settings tab - Here you can enable/disable rules that should be considered during verification. Use the buttons on the top of the form to check/uncheck all errors/warnings/hints at once.

Rules are database dependent, the following screenshot shows rules for Microsoft SQL Server 2012.

18	2 Model Verification					
Mo	Model Objects Verification Settings					
1)				
	Enabled		Caption			
	V		Name Uniqueness	Verification Rules Information		
	1		Spatial Index and Primary Key Check			
	1		Empty Name			
	V		Max Name Length			
	V		Clustered Indexes Check			
	1		Text Filegroup Settings Check			
	V		Partition Scheme Settings Check			
	V		FilestreamOn in Objects Check			
	1		Multiple Columnstore Index Check			
	V		Filestream in Right Adjusted Table Check			
	1		Sparse Column Check			
	1		Duplicity Views Attributes			
	1		Index Options Unique and Ignore Duplicate Key Check			
	V		Spatial Index - Tessalation Scheme and Data Type Check			
	1		Spatial Index - Geometry Grid Tessalation Scheme and Bou			
	V		Columnstore Index Allowed Options Check			
	V		Partition Scheme and Partition Function Unity Check			
	V	!	Empty Object			
	1	!	Missing Key or Unique Index			
	V	!	Unique Index Items			
	1	!	Reserved Word or Keyword			
	1	!	Description Generation Check			
	1	!	Extended Property Generation Check			
	V	!	Parameter Size of Data Type			
	1	!	Default Rule Is Default Object Check			
	1	!	Assembly Settings Check			
	1	!	User SQL Empty Check			
	\checkmark	2	Filegroup Assignment Check			
	Export Settin	gs	Import Settings	Save Settings Save & Verify Close		

Verification Log

Verify Model results are displayed in Verification Log.

Verific	/erification Log ×				
•	Object	Caption			
	Entity - T_EXEMPLAR	Name Uniqueness			
	Entity - T_EXEMPLAR	Name Uniqueness			
•	Entity - Entity1	Empty Object			
	Entity - Entity1	Missing Key or Unique Index			
	Key - ak_title_director	Tablespace Assignment Check			
	Entity - Entity1	Tablespace Assignment Check			
Video	rental	Errors: 1 Warnings: 2 Hints: 2	9:41:58 AM: Verification completed.		

Toad Data Modeleroffers **Quick Fixes** - recommended solutions for problems and issues found by Model Verification. Quick Fixes are accessible for problematic objects both in **Verification Log** and **Physical Model Explorer**, in right-click menu.

	[1,4]		[4.4]
		III	Edit
			Quick Fixes
: Veri	fication Log		Add Number as Postfix. First Object Will Not Be Renamed.
	: III 🔁 🍽	To 💽 🗣 🍫 🔒	Save Messages
	Object	Caption	Save Selected Messages
	Entity - T_EXEMPLAR	Name Uniqueness	 Show Ignored Messages
	Entity - T_EXEMPLAR	Name Uniqueness	
	Key - ak_title_director	Tablespace Assignment Check	
	Entity - Entity1	Empty Object	
	Entity - Entity1	Missing Key or Unique Index	
	Entity - Entity1	Tablespace Assignment Check	
Vide	eorental	Errors: 1 Warnings: 2 Hints: 2	9:41:58 AM: Verification completed.

The Verification Log toolbar contains several buttons:

Button	Option	Description
0	Tree View	Switches Verification Log to tree view where the problem description, affected objects and quick fix suggestion can be all seen. Note that you cannot ignore messages or remove them from ignored in this view.
. ?	Show Errors/Warnings/Hints	When enabled, Errors/Warnings/Hints are shown in Verification Log.
۱	Ignore Message	Marks the selected message as ignored.
0	Remove Message from Ignored	Removes the selected message from ignored list.
٢	Show Ignored Messages	Shows/hides ignored messages.
	Verify Form	Displays Model Verification dialog.
🍫	Verify	Verifies model using the last saved settings.
8	Save Verification Log	Saves all verification messages (including the ignored ones) to a CSV file.

On Form Verification

Errors, warning and hints can be displayed directly in the Object Properties form, at the bottom. Every time you make changes to the object and confirm, the object is verified and all issues are displayed at the bottom, similar to the screenshot below. Quick Fixes are not available in this mode.

🔀 Ent	tity Prop	oerties							[x
SCO	TT.T_CU	ISTOMER_RATI	NG							-	
Aft Gei	ter Script neral	Notes Attributes	SQL Preview Keys Indexes	Relationships Check Constrain	Physi s Tr	ical Proper riggers	ties Permissio	Table Prop	erties o Do	Comment Before Scrip	t xt
	Key	Caption	Name	Data Type	p1	p2	Not Null	Comments	s	Status	
	2	Title	title	Varchar2(5	50	CH	1			•	
	J	Bating	airector	Varcharz(3)	30	UH				•	
	A <u>d</u> d	Ēdī	Add Delete	* *							
<u><%></u>					Ōł	K	<u>C</u> ancel	A	pply	<u>H</u> elp	
									lar	ore & Close	×
_	Object			Ca	otion						_
U.S.	Key - Pł	CT_CUSTOME	K_RATING_TITLE_DIRE	CTOR Ma	Name Le	ength					
Videor	ental		Erors: 1 Warnings: 0	Hints: 0	14:29:45:	Verificat	ion comp	leted.			

On Form Verification can be enabled/disabled in **Settings Menu | Options | Model**. You can also decide what kind of verification messages should be shown - errors/warning/hints.

🔁 Options					x
General	*	Model			
···· Graphics		model			
···· Dialog Boxes		New Model			
- Paths		Default Model Type		_	
···· Reverse Engineering					
Reports		Last Model Type as Default		V	
- Scripting					
TOAD for Oracle Integration		Model Verification			
···· Version Control System					
Print		Verification on Forms	Show Errors, Warnings and Hints	•	
B B. Model	=	Max number of messages	30	۲	Ξ
Logical Model					
Physical Model					
Universal					
⊡ DB2					
DB2 v.10.5 (LUW)					
Microsoft SQL Server					
Microsoft SQL Server 2005					
Microsoft SQL Server 2008					
Microsoft SQL Server 2012					
Microsoft SQL Server 2014					
MySQL 5.0					
MySQL 5.1					
MySQL 5.5	-				
< III >					-
Enter Search Term Here V X Default S	Settin	ngs Import Export	<u>Q</u> K <u>C</u> ancel	Apply	

Syntax Validity

SQL Preview tab now highlights errors in SQL script syntax.

- Check Syntax Validity to perform syntax checks in SQL Preview for the following objects:
 - Procedure, Function, View, Materialized View
 - User Data Type, Package (Oracle only)
- Options are available in Options | Model | Physical Model | Verification | SQL Syntax Options
- Syntax Validity check is supported for the following databases:
 - IBM DB2 LUW, IBM DB2 z/OS, Microsoft Azure SQL Database, Microsoft SQL Server, MySQL, Oracle, PostgreSQL, SAP Anywhere, SAP ASE, SAP IQ, Teradata

Settings

Model Verification can be configured for each specific database. Go to **Settings Menu | Options | Model | Physical Model | *Target Database***. In the Verificator frame you can enable/disable verification rules or change their category, e.g. Empty Object can be shown as an error instead of warning.

Options		-					
Model Physical Model	Microsoft SQL Server 2012						
	Code Editor Type Use the Setting from Microsoft SQL Server						
DB2 v.9.5 (LUW) DB2 v.9.7 (LUW) DB2 z/OS	External Editor for Generated Code						
DB2 z/OS v.9 DB2 z/OS v.10 Ingres	Default DataType	Parameter 1 Parameter 2					
Ingres 9.3 Ingres 10.0	Verificator						
Microsoft Access Microsoft Access 2000-2003 Microsoft Access 2007-2010	Ena Caption	Category Error					
Microsoft SQL Azure Microsoft SQL Azure Microsoft SQL Azure	Spatial Index and Primary Key Check Empty Object	Error Warning					
Microsoft SQL Server Microsoft SQL Server 2000	Missing Key or Unique Index Image: Max Name Length	Error					
Microsoft SQL Server 2005 Microsoft SQL Server 2008 Microsoft SQL Server 2012	Description Generatation Check Oustered Indexes Check	Warning Error -					
	R	leset Update					

Syntax validity check may be disabled in Settings | Options | Model | Physical Model | <database> | Syntax Validity checkbox

Data Generation for SQL Server

Use Toad Data Modeler random data generation to quickly and easily create data for your databases. Data generation is supported for SQL Server 2005 and onwards

To generate data

- 1. Double click any of your entities to open Entity Properties
- 2. Setup your Attributes and switch to Data tab to generate your data
- 3. Click Add to add one record, click Generate to add a specified number of new records

To work with records

- Click **Delete** to remove the selected record and **Clear** to clear out all your generated data. Cleared data
 appears grayed out
- Click **Settings** to disable/enable attributes and adjust minimum and maximum values for generation of data for each column (attribute) for the current model

- Click Settings | Options | Model | Physical Model | Microsoft SQL Server | Generating Data to adjust default data generation settings for all MS SQL Server models. When you change any of these default values it will be carried on to all your SQL Server models
- **TIP:** Click <%> to add application variables in **Attributes** in order to use them in your generated data

12			Entity P	roperties - E		-	×
Capt <u>i</u> on Entity1				Name Entity1	1		E
General After Sc	Attributes ript Notes	Keys Index SQL Previo	es Check Co w Relation	onstraints Trigo nships Data	gers Permissions Fulltext Inde	s To Do I x Extended	Before Script Properties
	Attribute 1	Attribute2	Attribute3	Attribute4	<%FullNam	<%Date%>	Status
	0	0.0	0				-
	32	1013.06	4	L	2	G	÷
	10	8145.19	5	6	R	3	÷
	25	4314.84	12	М	6	r	+P
	11	9658.46	2	V	1	z	•
	7	7227.49	16	е	L	w	₽
	28	2292	5	0	Q	р	₽
	1	8349.08	10	9	Р	Q	+P
	16	1742.4	5	0	8	s	₽
⇒	1	1363.55	1	9	Z	d	
	3	2734.01	8	Y	R	6	₽
	15	5141.77	11	m	U	0	₽
	5	9407.5	17	В	G	Q	⊕
	17	628.89	14	0	2	4	+P
	32	7703.54	3	4	0	ь	+P
	n	0000.04	E	-	147	0	<u>~</u> ×
Ado	d De	ete Cle	ear Gene	rate			Settings
<∞> ✓	Generate			ОК	Cancel	Apply	Help

Refactoring Utility

Toad Data Modeler provides you with a tool that is able to refactor all references to an object when you change its name. For example, let's say you've changed name of an entity. Usually, you would have to go through the rest of the model and change the name in all the places where it is referenced. Refactoring Utility is able to do this automatically, saving your time.

i Note: The utility refactors text properties only (e.g. AfterScript, BeforeScript, SQL tab, text Views...)

To open Refactoring Utility

• Click Tools | Refactoring Utility

🔁 Refactoring Utility (Videorental)					
Objects to Modify (Refactoring Target Objects) (2) (2)	เ ดิ (Previously Renamed Objects (Refa	ictoring Sources) ted Items		
 Model Videorental Procedure □ Customer_Has_Num_Film □ View □ V_Customer_Has_Film □ WhereText 		Origin Name V C Customer_id V customer_id V customer_id V EntityA	Current Name v_Customer_Has_Film client_id client_id client_id T_Medium_Category	Object Type View Attribute Attribute Attribute Entity	Forget
p_Customer_Has_Num_Film (p_Customer_Has_Num_Film)			Object T	ype: Procedure	Property: SQL 😮
LumentLode AS BEGIN SELECT count(*) INTO num FROW T_CUSTOMER c, T_BORROWING b, T_EXEMPLAR e, T_FILM f MHERE c.customer_id=b.customer_id and b.exemplar_id=e.exemplar_id and b.exemplar_id=c.exemplar_id and e.film_id=f.film_id; END;		Preview of Modified Lode AS BEGIN SELECT count(INTO num FROM T_CUSTON MHERE c.clien and c.cli and b.cli END; C	*) HER c, T_BORROWING b, tt_id=cid .ent_id=b.client_id mplar_id=e.exemplar_i m_id=f.film_id;	T_EXEMPLAR e d	, T_FILM f
Next Term			<u>R</u> efact	or <u>C</u> lose	<u>H</u> elp

Fast Parser checkbox - When checked, the Refactoring Utility uses Fast Parser to find broken references. In some cases it might be able to find more inconsistencies than the default Advanced Parser.

Renamed Objects

In section Previously Renamed Objectst (top-right), you can find objects that were renamed.

Previously Renamed Objects (Refactoring Sources)							
Origin Name	Current Name	Object Type	Forget				
C C	v_Customer_Has_Film	View	T				
🗹 customer_id	client_id	Attribute	Ö				
🗹 customer_id	client_id	Attribute	Ū				
🗹 customer_id	client_id	Attribute	Ü				
🗹 EntityA	T_Medium_Category	Entity	to				

Use checkboxes to select what items you wish to use for current refactoring action.

Renamed objects will stay in section Previously Renamed Objects until you change names in other objects or until you enable icon in column **Forget** and click the **Forget Selected Items** button. (In this sample it should be used for EntityA).

Objects to Modify

In section Objects to Modify, you can find objects and properties that contain old names.

Objects to Modify (Refactoring Target Objects)	୶
⊒~ Model	
🖮 Videorental	
j⊒_ p_Customer_Has_Num_Film	
🔤 🔽 SQL	
🖮 View	
ia⊸ v_Customer_Has_Film	
- VhereText	

Current and Modified Code Previews

In section **Current Code**, the body of SQL code is shown. Use buttons **Previous Term** and **Next Term** to navigate among names in the same code.

Section **Preview of Modified Code** displays a preview of refactored code. Click any of the highlighted names and select old or new name or use the icons in middle column to reject suggested changes.



Note: Renaming from the default name (Entity1, Entity2...) is ignored deliberately.

Schema/Owner Assignment

This tool allows you to assign or remove schema/owner/database to/from multiple object groups in your model at once.

To assign a schema/owner to your model

i

Select Tools | Schema/Owner Assignment.

Schema/Owner/Database Assignment	3
Select Schema/Owner/Database	
- None	
Assign to objects where value is not defined	
Confirm before assignment	
Select types of objects	
 Entities Views Materialized Views Procedures Functions Indexes TriggersEntity Synonyms UserDataTypes TriggersView Sequences Packages Javas 	
<u>Execute</u> <u>Close</u>	

Option	Description
Select Schema/Owner/Database	Contains existing Schemas/Owners/Users in your model. SelectNone from the list to remove the existing schema from objects you mark in the Select types of objects section.
Assign to objects where value is not defined	Assigns schema/owner to objects, which have none assigned yet.
Confirm before assignment checkbox	Confirmation dialog for each object where schema is being assigned/removed will be displayed.
Select types of objects area	Mark objects which should be assigned a Schema/Owner.

Infer Relationships

This feature tries to map **Primary Keys** or **Alternate Keys** to identically named attributes in other entities. Conditions:

- Mapping is performed between key and non-key attributes. In other words, if identically named attributes are part of primary key in various tables, e.g. ID column in table Customer and ID column in table Order, the two ID columns will not be mapped and no relationship will be created.
- Names must be identical and data type must be the same, including parameters.
- Non-identifying relationships are created by default. In case you need an identifying relationship, edit the automatically added relationship and change its type to identifying manually.

To run the Infer Relationship function

Select Tools | Infer Relationship.

I	<u>T</u> ools		Macros	s <u>S</u> ettings Window		low <u>I</u>	<u>H</u> elp		
		R	efactoring	U	tility			utes	
		Schema/Owner Assignment							
	Naming Convention							0:	
1	Infer Relationships								
	X		All Items	×	Borrowin	ng-vix	Custo	mer R	

i Note: Relationships created this way will be marked with a **To-Do task** prompting you to check whether the relationship has been created correctly.

Caption	Name					
Relationship1	= Relationship1	= Relationship1				
General To Do Notes SQL P	review			1		
Compl Name	Text	Added	Completed	Pr		
New relationship	Relationship was created with Infer Relationspis tool.	4/25/2016	4/25/2016			

Example:

Model with no relationships. See the Customer ID column in tables Customer and Order Record.

In table **Film** there is an alternate key with two columns **Title** and **Director**. Identically named columns are in table **Customer Rating**.



Run the Infer Relationship function and see the result:



Infer Relationships and Reverse Engineering

The same tool can be used automatically during reverse engineering.

Create a new connection or edit an existing stored connection and check the **Infer Relationships** checkbox to activate this feature.



Git Version Control

To configure git

Configure Toad Data Modeler to work with Git in **Options | Application | Version Control System**. The values set here will be your default values for setting up new repositories in Toad Data Modeler.

- 1. Select Git in Type
- 2. Set paths to your Git client and working directory for your repository
- 3. Click Apply and Initialize Local Repository. The folder will be created (if it does not exist) and initialized
- 4. Enter a path to the remote repository, user name, and password
- 5. Click Apply and Clone Repository

NOTE: If users select the **Override the default branch name for new repositories** option during Git installation, the branch name (Master/Non-Master) specified for the Toad Data Modeler product must match the branch name in the GitHub or Bitbucket repository.

🚸 Git 2.47.1 Setup	_		×			
Adjusting the name of the initial branch in new repositorie What would you like Git to name the initial branch after "git init	: s ."?		>			
◯ Let Git decide						
Let Git use its default branch name (currently: "master") for the initial branch in newly created repositories. The Git project <u>intends</u> to change this default to a more inclusive name in the near future.						
Override the default branch name for new repositories						
NEW! Many teams already renamed their default branche are "main", "trunk" and "development". Specify the name for the initial branch: main	es; commo e "git init" e	on choices should use	9			
This setting does not affect existing repositories.						
https://gitforwindows.org/						
Only show new options	<u>N</u> ext	Ca	incel			

Git application view

• The following Git commands are displayed in **Application View** toolbar when you work with a model that is tracked:



Add Existing Models to Project to display the Git commands in Application View

Application View Button	Description
Version Control System Settings	Opens Options page where you can set the Version Control System preferences
Refresh	Refreshes file status in Toad Data Modeler
Add to Index	Adds the file to the list of tracked files
Remove from Index	Removes the file from the list of tracked files
Commit	Commits changes
Push	Pushes the committed changes into the remote repository
Pull	Pulls the current state from the remote repository
Fetch	Fetches information about the current state of the remote repository
Information	Displays information about the commit and its author
History Browser	Allows you to browse different versions of the file, merge and compare them and create change script

Getting Started - Subversion

Toad Data Modeler offers you integration with a third party version control system - Apache™ Subversion®.

i Note: If you are familiar with Apache Subversion, you can skip this topic and navigate to the Application Settings topic.

To configure Apache Subversion on your machine

1. Download your preferred installation package. Here, the VisualSVN is the preferred package because it contains Server, Management Console and svn.exe.

😸 VisualSVN Server 2.5.9 Setup	
VISUALSVNSERVER Right thing. Done right.	The Setup Wizard will install VisualSVN Server 2.5.9 on your computer. Click Next to continue or Cancel to exit the Setup Wizard. This product includes the following components: Apache HTTP Server 2.2.22 Apache Subversion 1.7.9
	Back Next Cancel

2. Install both VisualSVN Server and Management Console.

😸 VisualSVN Server 2.5.9 Setup	- • •
VisualSVN Server and Management Console can be installed together of Please select components you want to be installed on this machine.	r separately.
VisualSVN Server and Management Console Install VisualSVN Server and management console to administer it.	
Management Console Only Install only Microsoft management console snap-in to administer Vision installed on another computer.	sualSVN Server
<u>B</u> ack Next	Cancel

3. Define a path to your SVN Server location, specify folder for your repository and select an authentication method.

😸 VisualSVN Serve	er 2.5.9 Setup	- • •
Change if nece	ssary installation path and initial VisualSVN Server settings.	
Location:	D:\Program Files (x86)\VisualSVN Server\	Browse
Repositories:	D:\Repositories\	Browse
Server Port:	8443 Vuse secure connection (https://)	
Authenticatio	n	
Use Suby	resion authentication	
VisualSV	N Server will maintain own users and groups.	
🔘 Use <u>W</u> ind	lows authentication	
VisualSV	N Server will use Windows users and groups.	
	Back Next	Cancel

4. After the installation, run the Visual Server SVN Manager and create a new user.

G VisualSVN Server								
File Action	File Action View Help							
🗢 🔿 🚺	🗐 🖬 🛃 🖬							
🚺 VisualSVN Se	erver (Local)							
Bepositor	ries							
Gr Gr	Create User							
	New +							
	View •							
	Refresh							
	Export List							
	Help							
Create New User								
<u>U</u> ser name:	vadav							
Password:								
Confirm password:								
() User name a	User name and password are case sensitive.							
	OK Cancel							

5. Create a new repository.

G VisualSVI	Server		
♥ VisualSV ► Prove □ U □ G	N Server (Local) citorios Create New Repository Browse Properties New All Tasks View	···· 23	
	Refresh Export List Help		
Create New I	Repository		
MyRepository I			
Repository	Pl + https://EU9910.prod.au	lest corp:8443/svp/h	NPenosity
You can and Created	efault structure (trunk, branc create desired repository str ate Project Structure commar cy layout.	thes, tags) ucture later using Cre uds. Learn about <u>recc</u>	ate Folde

6. Edit properties of your repositories and add the setup permissions for your newly created user.



7. Next step: configure the Toad Data Modeler Application Settings.

Application Settings - Version Control System

To configure settings for Version Control System in Toad Data Modeler

- 1. Select Settings | Options | Version Control System.
- 2. On the General tab, specify user name, password and Working Directory.

🔁 Options			×
General	^	Version Control System	
···· Dialog Boxes		General Subversion	
Paths Reverse Engineering		Туре:	
Reports		Subversion 🔹	
Version Manager Editable Forms		User Name:	
Scripting	F	Password:	
···· Version Control System		*****	
···· Print	=	Working Directory:	
Model		D:\TDM-Projects	
DB2		Use Read Only Locking Mechanism	

3. On tab Subversion, define a path to folder with svn.exe file.

🔁 Options	
General	Version Control System
With the second se	General Subversion SVN Client Path:
Version Manager Editable Forms Scripting	Server Path (http://):
···· TOAD for Oracle Integration ···· Version Control System ···· Print ==	 ✓ Non Interactive ✓ No Authentication Cache

То	save	e son	ne tin	ne,	make	your	Visual	Server	SVN	Manager	active,	select	your	repository,	right-
clic	k it :	and	select	Сс	opy U	RL to	o Clipb	oard.							

🌀 VisualSVN Server	
File Action View	Help
🗢 🔿 🖄 📰 🕽	🕻 🗟 🗟 🔢 📷 🖬
VisualSVN Server (Provide the server of th	Local)
Users	Copy URL to Clipboard
🚞 Groups	Browse

Then paste the content of your clipboard to the Server Path field.

Coptions Options		
General Graphics	*	Version Control System
Dialog Boxes Paths		General Subversion SVN Client Path:
Reverse Engineering Reports Version Manager		D:\Program Files (x86)\VisualSVN Server\bin
Editable Forms Scripting		https://EU9910.prod.quest.corp:8443/svn/MyRepository/
TOAD for Oracle Integration Version Control System		Non Interactive
Print	-	V No Authentication Cache

4. If you want to use Working folder for all your projects, select section Paths and define **Path to Projects** to the same folder as you specified in field **Working Directory**.



Project Settings

1. Before you create a new project (with Version Control System) in Toad Data Modeler, run Visual Server SVN Manager and add a new folder to your repository.



In this example, the new folder E-commerce will be created.



2. In Toad Data Modeler select File | New | Project.

 If you want to define folders manually, select Empty Project with Version Control System. (Toad Data Modeler project has a predefined structure. See Create new project for more information.)

🔁 New Project		- • ×
<u>- Project Type</u> - Project Name - Version Control System - Subversion Setting	 Toad Data Modeler Project with Version Control System Empty Project with Version Control System Toad Data Modeler Project Empty Project 	
	< Previous Create Create	Glose

4. Define the project settings and to keep the configuration simple, use the recommended option - **Project and Repository Structures are Identical**.

📜 New Project	
- Project Type <u>- Project Name</u> - Version Control System - Subversion Setting	Project Name: New Project Path to Project: C:\TDM-Projects\E-commerce
New Project	< Previous Next > Create Qose
 Project Type Project Name <u>Version Control System</u> Subversion Setting 	Type Subversion User Name vaclav Password Over the second
	< Previous Next > Create Close

5. Finally, specify a path to the folder with svn.exe file and **Server Path**. To save time, select your folder in **Visual SVN Server Manager**, right-click it and select **Copy URL to Clipboard**.

🌀 VisualSVN Server						
File Action View Help						
🗢 🔿 🗾 💢 Q 🗟 🔢 🖬 🖀						
🜔 VisualSVN Server (Local)						
Repositories						
🔺 🍯 MyRepository						
E-commerce						
📄 Users	Copy URL to Clipboard					
📄 Groups	Browse					

6. Paste the path to Server Path field in Toad Data Modeler Project Wizard.

🔀 New Project	
- Project Type - Project Name - Version Control System <u>- Subversion Setting</u>	SVN Client Path D:\Program Files (x86)\VisualSVN Server\bin Server Path (http://) https://EU9910.prod.quest.corp:8443/svn/MyRepository/E-commerce IN Non Interactive IN No Authentication Cache Load Default Settings
	<u>Previous</u> <u>N</u> ext > Create <u>Q</u> lose

7. Important: Now you have to **right-click** your created project in the **Application View** and select **Subversion** | **Check Out**. This step is required!

Application View ×		Message Explorer, Verification Log			
Q			Message E	cplorer x	Verification Lo
🗄 <u>[</u>] Videorental*			ld 🔺	Date	Time
Employee*					
🗄 👩 eStore					
🕀 🗊 Simple CMS					
🗄 ਗ਼ Videorental Proje	ect				
E-commerce	Edit				
	New Folder				
	New Model				
	Add Folders				
	Add File				
	Add Opened Model				
	Save				
	Save All Models				
	Subversion 🔹	- L	Jpdate		
	Rename	(Commit		
	Close Project	F	Revert		
		(Check Out		
		I	nformation		15
		F	Refresh All Sta	ates	
		(Custom SVN	Comman	d
		_		_	

Subversion Actions

You can run Subversion actions from the Application View.

To add a new folder

- 1. Right-click your project name and select **New Folder**. Create a new folder.
- 2. Right-click the folder and select **Subversion** | Add.
- 3. To commit changes right-click the folder again and select Subversion | Commit.
To add a new model to project

1. Right-click the project name or folder name and select New Model.

Application View ×			
Q			
🖽 🗊 Videorent	al*		
🗄 🔊 Employee*			
🗄 🗑 Simple CMS	🗄 🕤 Simple CMS		
🗄 🗊 Videorental Project			
🗄 🗑 E-commerc	E-commerce project*		
	Edit		
New Folder			
	New Model		
	Add Folders		

2. Right-click the model name and select Subversion | Add. Confirm it by Subversion | Commit.

Other Files in Project

You can add also *.doc, *.xls and other file formats to your projects (check them out from subversion etc.) Toad Data Modeler allows you to open them from the **Application View**.

To open an existing file

Right-click the file name in the Application View and select Open File.

Sample User Defined Structure of Custom Project with Version Control System



Legend

- Added item was added to subversion, COMMIT is expected.
- Conflict something is wrong
- Current items in TDM project and subversion are identical
- Deleted item was deleted, COMMIT is expected.
- Misssing item is in subversion and not in TDM project
- Modified item was modified in TDM project, COMMIT is expected.
- No version control
- Out of date item was modified in subversion. UPDATE is expected.
- Unknown status is unknown, ADD action is expected.

Direct Comparison

To compare any two revisions of the same model:

1. In **Application View**, locate your Model tracked by SVN and open **History Browser** either from toolbar, or context menu (**Subversion** | **History**).



2. In **History Browser**, select two of the available revisions and click either on **Compare Revisions** or **Generate Change Script** button on the toolbar.

階 Subversion History - PostgreSQL 9.4			
1 🚯 🗇	40 40 40 80 80	🔁 🚯	
Revision 🔻	User	Date/Time	Comment
169	tdm	27.6.2016 6:16:37	Reduced the model complexity
168	tdm	27.6.2016 6:15:47	Divided into workspaces
167	tdm	27.6.2016 6:15:22	Layout modifications
129	tdm	22.2.2014 4:24:25	none
Modified		Unlock	łł.

3. In the opened dialog, you can see the differences between the models.

🔁 м	🔀 Models Compare			
1	🗱 📴 🗄 🕂 🕂 Show Different Objects 🔹 Show Different Properties 🔹			
Diff.	Diff Source Model: PostoreSQL 9.4 (166) (168) (169) Chilleers Witnanek Ann Diata Vioc Model to Compare: PostoreSQL 9.4 (166) (167) Chilleers Witnanek Ann Diata Vioca Vienne V78			
	PostgreSQL 9.4 (166) (168)		Postgre SQL 9.4 (166)	
	Model	PostgreSQL 9.4 (166) (Model	PostgreSQL 9.4 (166)
1	···· Version	169	···· Version	167
	UserGroups		UserGroups	
1	⊨ Entities			
1				
1	···· Attributes Order	COUNTRY_ID,COUNT	Attributes Order	COUNTRY_ID,COUNTRY_NAMI
1	Attributes		🛱 ·· Attributes	
	(not exists)		REGION_ID	
	····· Keys		····· Keys	
1	DEPARTMENTS		DEPARTMENTS	E
1	···· Attributes Order	DEPARTMENT_ID,DE	···· Attributes Order	DEPARTMENT_ID,DEPARTMEN
1	⊕ Attributes		Attributes	
	Keys		Keys	
	Indexes		····· Indexes	
	⊕ (not exists)		EMPLOYEES	
	⊕ (not exists)		■ JOB_HISTORY	
	⊕ (not exists)			
1	⊕ Relations		Relations	
1	⊕ ·· Views		⊕ ··· Views	
1	InstanceUserGroupRelations		⊕ Instance UserGroup Relations	
1			ViewRelations	
<u>.</u>			L	
	Report Next > Finish Close			

- 4. You can now choose an action depending on the button you have clicked on before:
 - Compare Revisions a comparison report can be generated by clicking the Report button.
 - · Generate Change Script finish the comparison to generate a change script.

About Version Manager

Version Manager allows you to create projects, add models (logical models, physical models) and other files (e.g. text files, images etc.) to your projects, create versions and revisions etc.

Toad Data Modeler allows you to create unlimited number of projects.

i Note: The version manager is meant to be used by single user only, multiple user collaboration is not supported. Please see Subversion section to learn how to set up multiple user collaboration environment.

To open Version Manager

- 1. Enable Expert Mode: select Settings | Options | General | select the Expert Mode checkbox.
- 2. Click don the toolbar (or select **Expert Mode** | **Version Manager**).

Version Manager window is a place from where you can access all files stored in Version Manager.

TIP: You can open several instances of Version Manager, e.g. for each project. i

What Is a Project?

Project is a group of models and other files that logically match together although they are not of the same origin (physical data model, document file, image etc.).

Example: You have created a project for Company "X". This project contains various models (LER, PER models) and some other files (text files, images etc). The models are models of different databases and have a different number of versions/revisions. Nevertheless, all these models and files logically match together - all of them relate to Company "X".

As stated above, projects can contain models as well as other files of any type (e.g. any documentation to models, text files, images, other programs...) Nevertheless, Toad Data Modeler is not able to work directly with such files. It can only call appropriate programs or allows you to view them only (see the **Show Version (only to read)** option).

Projects and Files in Version Manager

There are several ways how to create a project and add files to it:

- A. Create a new project from scratch (plus possibility to add several files to the project at one jump. It is recommended when you store all files that you want to add to the new project in one directory.)
- B. Create a new project while adding an ER Diagram to the project. It is recommended when you want to add a single Toad Data Modeler model to a new or already existing project.
- C. Add a single file to already existing project additionally (no matter if it is a model, text document, screenshot etc.).
- D. Summary Add a model and file to already existing project.

A. Create a New Project from Scratch

- 1. Click not the toolbar.
- 2. Right-click the Local Server item and select Add Project.
- 3. Define properties of the project (see the following details).

General Tab	Description
Name	Define a project name.
	The project name has to carry out conditions for file names set in Windows, e.g. question mark "?" cannot be contained.
	The project name will become a directory name on a disk. See the path where it will be created in the Settings menu Options Version Manager . The default path can be:
	C:\Documents and Settings\user\Application Data\Quest Software\Toad Data Modeler\Installation Name\VersionManager\Server\Project\Project_Name.
	All files created in Version Manager will be saved here until you change the path.

	i N ot ar S S N A m	ote: Information on versions (and their relations to her versions and revisions) are saved by default to nother file. Possible path is: C:\Documents and ettings\userName\Application Data\Quest oftware\Toad Data Modeler\Installation ame\VersionManager\Server\projects.xml gain, you can change the path in the Settings enu.	
Load Files in Directory	Uncheck and let it	ncheck (or not to select) this option to create a new project nd let it be empty.	
	Select th on the ri want to a be adde ignored.	lect this option to enable the Directory box. Click the icon the right to define a path to a directory with files that you nt to add to the project. All files stored in the directory will added to the project automatically. Sub-directories will be ored.	
Description Tab	You can	ou can enter the project description here.	

4. If you want to add a group of files to this project, follow the next steps 5 and 6.

You already need to have all the files stored in one directory.

- 5. Select **Load Files in Directory** and click the small icon on the right. Find a directory where files that you want to add to the project are stored.
- 6. Confirm OK to load all files stored in the directory to the project.

B. Create a New Project + Add an ER Diagram to the Project

- 1. Create a new model or open an existing one.
- 2. Click ion the toolbar (or Expert Mode | Version Manager | Add to Version Manager) to open the New Version Location dialog.
- 3. If no project exists on your local server, click **Add Project** (And follow step 4.)

If the project where you want to add the model exists on your local server, simply select it and click **OK** to add the model to the project.

- 4. The New Project dialog opens. Define a name and description of your project.
- 5. Press **OK** to confirm and turn back to the **New Version Location** dialog.
- 6. Select the new project and confirm **OK** to add the model to the project.
- 7. The **Check Out**message displays and you are prompted to define a path where your file should be checked out
- 8. Confirm OK. The file doesn't exist and therefore will be created.
- 9. Click Yes. See the Version Manager now.

C. Add a Single File to Existing Project

- 1. Click don the toolbar to open Version Manager.
- 2. Right-click the selected project and click Add File to display a File browser.
- 3. From the Files of Type box, select the appropriate type, find the file and confirm Open.

D. Summary - Add a Model and File to Existing Project

Model: Open the model and simply click in the toolbar. Select a project and confirm **OK**. (See B.) Model or any other file: In Version Manager, right-click the selected project and click **Add File**, find the file and confirm **Open**. (See C.)

Version Manager Toolbar and Options

In Version Manager, the items are sorted this way:

- Projects are listed alphabetically.
- Under projects, files are listed in the alphabetical order too. Under files, their versions and revisions are displayed.
- Versions and revisions of files are sorted in the order they were created. This sorting allows you to see what version precedes which one, what version has been derived from which etc. No other sorting is available in Version Manager itself, however you can sort the items also in the List of Versions and dock the **List** on Version Manager.

Version Manager Toolbar

lcon	Command
-	Check Out
1	Check In
	Lock
	Unlock
=	Save Version as

These options are active for versions/revisions and also file (if you click a file in Version Manager, the options will relate to its latest version).

Project Right-Click Options

Right-click a project to see the following options:

Option	Description	
Lock Project	Locks project not to be overwritten.	
	i Note: Lock option: Generally, there are two colors of padlock in Version Manager. Blue padlock means that you are the person who locked the project/file/version, so only you can modify it. Yellow padlock means that another person locked the project/file/version, so you are not allowed to make any changes in it unless the project/file/version is unlocked by the particular person again.	
Unlock Project	Unlocks project.	
Add File	Opens a dialog where you select a file that you want to add to the project. Via this option, you can add any file to the project - Toad Data Modeler model(s) as well as any other files.	
Remove Project	Removes the selected project including all its files, versions and revisions. If any version/revision is locked, this option is disabled.	
Synchronize Project	Synchronizes latest versions of files of selected project with files saved on your local computer. (On the server, the latest versions of files will be found and copied to your local disk.)	
Properties	Opens the Project Properties dialog where you can edit a project name, add a description on the project etc.	
List of Files	Opens a list of all files of the project. Here, you can sort the files by name, date of creation, owner etc.	

File Right-Click Options

Right-click a file to see the following options:

Option	Description	
Lock File	To preserve the selected file from overwriting, select this option.	
Unlock File	Unlocks previously locked file.	
Last Version Check-Out	Opens the latest version for edit.	
Last Version Check-In	Saves changes made in the latest version.	
Add Version	You have modified a file, saved it and now you want to add it as a new	

Option	Description	
(2.0)	version. For this purpose, select this option, and find the appropriate file in the Open dialog.	
	i Note: This option is available even though a project is locked, nevertheless, only provided that a user who's locked it and user who is logged in Version Manager is the same person. (If it was Administrator who locked the file and a User was logged in, the Add Version option would be disabled.)	
Remove from Project	Removes a file from project. This option is not available if any version or revision of this file is locked.	
Save Version as	Saves the latest version as a standard file Toad Data Modeler models with extension .txp or .txl).	
Properties	Opens the File Properties dialog where information on the file name, location, date and time of creation and last modifications can be found. Tab Lock is read-only and provides information on the lock hierarchy: Ancestor Locked - It's selected if ancestor (Project in this case) has been locked. Descendent Locked - It's selected if any descendent of this file has been locked.	
List of Versions	Displays list of versions and revisions of the selected file.	

Version/Revision Right-Click Options

Option	Description
Lock Version	To prevent the selected version from overwriting, select this option. (If the version is checked out, the version is locked automatically.)
Unlock Version Unlocks previously locked version. (If you check in the version, it unlocked automatically.) How does it work?	
	Version lock properties show information on who locked the project and when.
	Note: For now, all users in Version Manager are Admins.
Check Out	Opens the selected version/revision for edit.
	i Note: Multiple Version Check Out is possible Use SHIFT key to select versions and click Check Out then.

Right-click a version/revision to see the following options:

Option	Description
Check In	Saves changes and closes the version/revision. This option is available from the pop-up menu of the selected version in Version Manager and also in the Application View.
	Description - here, you can write description on the version/revision.
	Finish Work on Model - select it to close your model during the Check In. Otherwise it remains open.
	After you confirm OK , the version will be saved to your local disk and possible changes will be applied on a server. Version will be automatically unlocked and will become accessible for other team members. (Projects.xml file is saved after every change made in the project. The file is being updated continuously - changes made and saved by user A will be visible to user B.) i Note: Multiple Version Check In is possible Use SHIFT key to select versions and click Check In then.
Show Version (only to read)	Opens the selected version in appropriate associated program, e.g. Word, Notepad, Windows Viewer, Acrobat Reader etc. Toad Data Modeler models will open in the Application Window. If your file has an extension that does not associate with any program, it
	will open in the Version Viewer dialog. On tab Content of Local File , you can see the text.
Add Version (2.0)	Adds another version.
Add Revision	Adds another revision.
(1.1)	(If you checked out a version and saved the changes to new a version or revision, the result would be the same as if you used these options.)
Remove Version	Removes the selected version and all its revisions.
Exclude Version	Excludes only the selected version, its revisions will remain.
Save Version as	Saves the selected version as a standard file (Toad Data Modeler models with extension .txp or .txl).
Properties	Opens the Version Properties dialog. On tab Notes , you can define notes on the version/revision.

List of Projects, Files, Versions

The **List** displays information on items in Version Manager - projects, files and versions. Here, you can sort the items by different conditions (by name, version number, date of creation etc.), however you are not able to edit them.

The **List** opens together with Version Manager. You can dock it wherever you want. If you close it, you can find it later in appropriate pop-up menus of items in Version Manager. E.g. Right-click the server and select **List of Projects**

i Note: You don't have to close the List of Projects to open List of Files. To see all files of the selected project, simply click the project in the Version Manager tree and the List of Projects will change to List of Files automatically. To see all versions/revisions of a file, simply click a file in Version Manager tree to display the List of Versions.

Click a column to sort the data by:

- Name in alphabetical order
- Owner
- Created chronologically by date of creation
- Changed chronologically by date of a change
- Locked locked items will be moved at the beginning or at the end of the list
- Lock Time chronologically by time of locking an item
- Description items with description will be moved at the beginning or at the end of the list

Options

The **Options** contain most of the settings available in Toad Data Modeler. This topic divides all settings into categories and describes what each individual option controls.

TIP: To find a specific setting quickly, use Search Inbox

not	Import Export OK Cancel Apply
Config Item	Parent Config Item
Synchronize NotNull with Mandatory Parent	Physical Model: 'General'
Show Not Enabled Databases	Physical Model: 'General'
Display Not Null Mark	Physical Model: 'Default'

There are two kinds of Options:

- **Default Options** (most of the Model related settings) these apply to newly created Models only, they do not influence existing Models
- Other Options (most of the general settings) these are changeable at any time, the changes are applied immediately

The main Options Categories are:

- Application Options affect the application behavior and user interface
- Model Options affect every existing or created Model

The Options categories are:

- General
- Graphics
- Dialog Boxes
- Paths
- Reverse Engineering
- Reports
- Scripting
- TOAD for Oracle Integration
- Version Control System
- Print
- Expert Mode
- Physical Model
- Specific Databases
- Logical Model

The Import and Export of Settings is discussed at the end of the topic.

Application

General

Option	Description
Open Only One Instance of Forms	With this option unchecked it is possible to have multiple identical forms opened at the same time (such as various object properties, model actions wizards, etc). When checked, TDM only opens one instance of a form and instead of opening another form, the one already opened is focused.
Expert Mode	Turns Expert Mode on/off. When on, several new options become available. Recommended for power users and developers.
Show Hints in Designers	When checked, shows objects notes and description on mouseover on Workspace.
Run Only One Instance of Application	Checked means you can open only one instance of Toad Data Modeler. When unchecked, you can open multiple instances of the application.
Open Workspace Properties Dialog after Add Workspace	Determines if Workspace Properties dialog will be shown every time you add a new workspace.
Save Models and Projects as Formatted XML Files	Models saved in XML format are by default not very readable when opened in editor. Checking this option will cause the models to be saved in more comprehensible format.
Always Use CTRL to Select Attribute	When holding CTRL key, you can click on attributes in entities to select them. Unchecking this option allows you to do this without holding CTRL. The downside is that you need to drag entities by their headers or whitespace to move them.
Use Shift to Dock Forms	While moving forms, Toad Data Modeler automatically suggests you docking positions. If you dislike this behavior, you can uncheck this option. In this case docking positions will be suggested only when you hold SHIFT during moving a form.
General Font	Sets the font application uses in most of the user interface. Doesn't include menus.
Select Unit of Length	You can choose between using millimeters or inches. This choice is reflected in many dialogs which contain any kind of size.
Icons Theme	You can switch between Toad Data Modeler and Toad for Oracle icon themes.
Number of "Undo/Redo" Steps	Sets the number of Undo/Redo steps available. Higher amounts require slightly more system memory.
Toolbars and Menu Style	There are several graphical styles available for Menu and Toolbars in TDM.
Toolbar Rows	Sets the number of rows dedicated to Toolbars.

Option Description **Recent Files Count**

Sets the number of recent files TDM remembers (these are files opened in the past, accessible in **File Menu | Recent Files**)

Graphics

General tab

Option	Description
Default	
Mouse Scroll Speed	Sets the scroll speed for scrolling in Workspace.
 Minimal Size of Displayed Grid 	Determines how large/small the grid must be to be displayed at various zoom levels.
Grid Size	Sets the grid size.
Grid On	Enables/disables Grid.
Grid Visible	Shows/hides Grid. The Grid may be enabled (and objects will still snap to it), but it will be invisible.
Move Objects by	Sets the distance the objects are moved by when using arrow keys.
Join Line Distance	Sets the distance needed for a part of a line to be snapped to another part of a line with the same orientation (horizontal, vertical).
Snap to Objects	When checked, TDM automatically aligns moved objects to other objects on the workspace using guidelines.
Snap to Objects Distance	Sets the distance from an object to the nearest guideline needed to activate Snap to Objects.
Visible Page Boundaries	Shows/hides page boundaries.
Visible Page Numbers	Shows/hides page numbers.
Max. Number of Characters for Displayed Data Type	Some enumeration or user data types might be very long and if the Recalculate Size option is turned on, the entity containing them can become wide. This option sets the maximal number of characters shown in the entity and therefore limits the entity maximum width.
Hints in Designer	Controls what is displayed in a popup hint in both physical and logical models. Notes are displayed for physical models and descriptions for logical models. • Disable - no popup hints are displayed • Notes - notes/descriptions are displayed • Technical Notes - technical notes/technical descriptions are displayed

Colors tab

• Colors used in Toad Data Modeler can be set here.

Autolayout tab

Option	Description
Shapes	
Horizontal Distance Coefficient	Sets the horizontal distance coefficient for left-to-right and top-to- down autolayout.
 Vertical Distance Coefficient 	Sets the vertical distance coefficient for left-to-right and top-to- down autolayout.
 Alphabetic Autolayout - Sort By 	When using Alphabetic Autolayout, this option determines if the objects are sorted by their Name or Caption.
Lines Autolayout	
 Max. Calculated Variants on Shape 	Sets the number of variants Toad Data Modeler generates. Generally, the higher the number, the better the final result and also the more resources used.
 Minimum Distance Between Lines 	Sets the offset distance between lines, both horizontal and vertical.
Cross Lines	When checked, Toad Data Modeler prefers crossed lines variants.
 Straight Lines 	When checked, Toad Data Modeler prefers straight lines variants.
Lines Optimal Styl On Move	
 Max. Calculated Variants on Shape 	Sets the number of variants Toad Data Modeler generates every time an object is moved. Generally, the higher the number, the better the final result and also the more "choppier" moving objects is.
 Minimum Distance Between Lines 	Sets the offset distance between lines, both horizontal and vertical.
Cross Lines	When checked, Toad Data Modeler prefers crossed lines variants.
 Straight Lines 	When checked, Toad Data Modeler prefers straight lines variants.

Page Setup tab

• This tab contains options for default page setup configuration for printing.

Option	Description
Size	Allows you to select among common page sizes or even define your own.
Orientation	Choose between Portrait and Landscape paper orientation.
Margin	Allows you to define page margin.

Dialog Boxes

Hidden Dialog Boxes tab

Most dialog prompts have a **Do Not Show Next Time** checkbox. When you check it, the specific dialog
won't be shown anymore. It will also appear in this tab, so if you change your mind, you can allow it again by
unchecking it.

Other tab

• You can configure **Delete in Designer** dialog here. It determines what action will be performed by default when you delete an object on workspace.

Option	Description
Display Dialog	A dialog will be shown where you can choose to delete an object entirely, or only delete its graphical representation.
Remove Graphical Representative of Object	Removes the selected object from workspace, but not from model itself.
Delete Object	Deletes the selected object entirely.

Paths

• This section contains default paths where Toad Data Modeler looks for objects and where objects are saved.

Reverse Engineering

Option	Description
Path to Connections	The path where Toad Data Modeler saves all configured Connections.
Save Passwords with Connections	Sets the default behavior when creating Connections. If unchecked, you will be prompted to enter the password every time you work with a Connection.
Load Orphaned FK Constraints to Child Table After Script	If you Live Reverse Engineer a child entity without its parent entity, this function will create a SQL code for generating the foreign key constraint and save it into the entity After Script.

Option	Description
Check After Script	If you Live Reverse Engineer a parent entity and you already reversed the child entity, Toad Data Modeler will use the SQL code mentioned in the previous example and regenerate the foreign key constraint. Unchecking this option means the child entity after script won't be checked.
Search	
Auto Hide Items	Automatically hides all objects that do not match the search criteria.
 Search Delay 	Sets the delay between entering a term into Filter and actually filtering the objects.
Load Selection	Determines the behavior of your custom saved selection, if there are new items found and not included in it. They may be either added to the selection, excluded from it, or you may be alerted when such situation happens and decide for yourself.

Reports

• You can set default file name and preferred language of generated reports here.

Scripting

Option	Description
Show Windows Automatically	Shows Scripting Window parts when needed (e.g. Log when executing a script).
Show Log	Shows/hides log in Scripting Window.

Toad for Oracle Integration

Option	Description
Toad for Oracle Version	Navigate to the folder, where you have installed Toad for Oracle. Toad Data Modeler will automatically detect its version and default paths.
 Load Toad for Oracle Connections as Connection in Toad Data Modeler 	If checked, all Connections stored in Toad for Oracle will be made available in Toad Data Modeler.
Use Toad for Oracle Icons in Toad Data Modeler	Check to use Toad for Oracle icons in Toad Data Modeler. This option is also available in the General section of Options.
Detect this Toad Data Modeler version via Toad for Oracle	When enabled, Toad Data Modeler creates a registry entry, which allows Toad for Oracle to identify it easily.

Version Control System

Option	Description
General	
• Туре	Decide if you want to use Subversion, or no Version Control System.
User Name	User name of Version Control System user.
Password	Password of Version Control System user.
Working Directory	Enter path to the Working Directory.
 Use Read Only Locking Mechanism 	Flags all unlocked files as "Read Only".
Subversion	
SVN Client Path	Enter path to the SVN client of your choice.
Server Path	Enter address of your SVN server.
Non Interactive	When checked, disables interactive prompts in SVN (e.g. authentication credentials, conflict decisions).

No Doesn't store passwords in authentication cache (asks for user password every time).
 Cache

Print

Option	Description
Default	
 Print Page Numbers 	Include/exclude page numbers in printed document.
Print Frame	Prints/doesn't print a frame around the printed ER diagram.
 Print Only Black and White 	If checked, prints the diagram in black and white only.
Print Gradients	If checked, gradients in model objects (mostly in entities) will be printed. Uncheck to save some ink during printing.

Expert Mode

Option	Description
Save the definitions to the 'My Package'	By default you can choose the package where you save

Option	Description
	customized forms definitions. With this option checked, all of these definitions will be saved to 'My Package'.
Allow to Modify System Selected OTPs	Checking this option allows you to edit default System selection of OTPs which is used in many dialogs such as generation of DDL scripts, reports, change scripts
Check Dictionaries When Generating Reports	This function checks if there are not any missing terms in Dictionary which is used for report generation before generating the report itself.
Old Look of IE Notation	When checked, Toad Data Modeler uses the old look of the objects, assuming IE notation is currently used.
Work with System Dictionary	Checking this option allows you to edit the default English System dictionary.
Support for Import Old Dictionaries	Check to support importing dictionaries from older versions of Toad Data Modeler (older than 5.0).
Eureka Log	A log created whenever the application crashes. Contains information useful to the product developers.
Freeze Activate	When checked, an Eureka log is created after the application freezes for longer than the Freeze Exception Timeout is set.
Send Email	When checked, an email to developer team with Eureka log attached is created in case the application crashes or freezes.
Installation Information	Contains settings that are configured during the first launch of the program. You can change the path where Toad Data Modeler stores its configuration files or change the Installation Name and Installation Number .
Benchmark	When checked, measures the duration of some of the application actions and logs results to the Message Explorer.

Expert Mode | Version Manager

• Paths to Version Control server and client files and projects can be set here.

Expert Mode | Editable Forms

Design Mode tab

• You can choose which windows should be visible when in Design Mode.

Component Palette tab

• Shows small/large buttons in Component Palette when in Design Mode.

Object Inspector tab

• Contains options to configure Object Inspector when in Design Mode.

Form Explorer tab

• Has several options to configure Form Explorer when in Design Mode.

Expert Mode | Eclipse

Option	Description
Eclipse Support On	With Eclipse support enabled, a new "Open in Eclipse" button appears when writing scripts. It allows you to write your scripts in Eclipse and them import the result back to Toad Data Modeler.
Path to Eclipse	Enter the path to your Eclipse folder which contains eclipse.exe file.
Path to Working Directory	Enter the path to your Javascript Project directory (created in Eclipse).
Delete Working File After Close Script in Toad Data Modeler	If checked, deletes script which has been closed in Toad Data Modeler from Working Directory.
Associate Eclipse as Default SQL Editor	Click a specific button to associate Eclipse as the default editor for Oracle/MySQL/PostgreSQL files.

Model

Option	Description
New Model	
Default Model Type	The model type selected here will be highlighted every time you create a new model, which means you only need to click OK to create it.
 Last Model Type as Default 	Uses last model type as the default model type.
Model Verification	
 Verification on Forms 	Allows you to choose what should be shown in Form Verification or disable it entirely (See Projects and Models Models Physical Data Models Model Verification for more information).
 Max number of messages 	Limits the maximum number of messages shown in Form Verification .
Other Settings	
Restore Last Open Models	If enabled, open models from last session will be restored at startup.

at Startup

Logical Model

General Tab

Option	Description
Auto Complete Workspaces	When checked, applies to all newly created workspaces. If you create an object on any workspace, this action will be executed on the other workspaces in the modelwith this function enabled as well.
Display Line Names	Shows/hides relationship captions.
Brush Color	Defines the main color of the newly created objects.
Pen Color	Defines the border color of the newly created objects
Background Color	Defines the background color of the newly created objects.
Pen Width	Sets the width of the newly created objects border.
Font	Sets the default font for all text in newly created objects.
Display Mode	Sets the default display mode for newly created workspaces.

Shape tab

Option	Description
Recalculate Size	This function automatically resizes an object so it fits the length of the text contained inside. Checking/unchecking this option will activate/deactivate the function in newly created workspaces.
Shadow Effect	A shadow effect is applied to all objects. Checking/unchecking this option will activate/deactivate the shadow effect in newly created workspaces.
Use Brush Color for Full Shape	Uses brush color instead of background color in objects. Checking/unchecking this option will activate/deactivate this function in newly created workspaces.

Note Line tab

Option	Description
End Type 1, 2	Sets the default note line end types in newly created workspaces.

Entity tab

Option	Description
Display Level	Sets the default display level in newly created workspaces.
Align	When checked, entities in newly created workspaces will have their attributes aligned.
Display Data Types	Shows/hides the data types of attributes in newly created workspaces.
Display Keys Graphically	Shows/hides the key icons in entities in newly created workspaces.

Option	Description
Display Unique Identifier Mark	Shows/hides the unique identifier mark indicator in entities in newly created workspaces.
Display Mandatory Mark	Shows/hides the mandatory mark in entities in newly created workspaces
Gradient Effect	Uses/doesn't use gradient effect in objects in newly created workspaces.
Display Domains	Shows/hides the domains in entities in newly created workspaces
Description width (px)	Enter maximum width of descriptions in pixels. Descriptions exceeding this limit are broken into more lines
Attribute Colors	This section allows you to define your own colors for all kinds of attributes

Verification tab

• This tab contains Model Verification criteria. You can enable/disable them and Model Verification will/won't use them.

Physical Model

General Tab

Option	Description
Show Enabled Databases Only	Shows only enabled databases in several dialogs.
Word Wrap for SQL Preview	Enables/disables Word Wrap in SQL Preview. Useful when TDM generates long SQL statements.
Word Wrap for SQL, Before Script and After Script	Enables/disables Word Wrap in Before and After script.
Synchronize NotNull with Mandatory Parent	When checked, Mandatory Parent in Relationship Properties is synchronized with Not Null property in child entity Foreign Key.
Allow Null Attributes in Keys	When checked, you can create a Key without the Not Null property. This setting applies to Universal Model as well.
Alphabetic Order in Attribute Navigator List	Defines if the Attributes in Object Navigator Dropdown Menu in Entity properties should be alphabetically sorted, or not.
Inverse Relation Name	Allows you to set Inverse Relationship Name and Caption in Relationship Properties.
Show Non-printable Characters in SQL Editors	Shows/hides non-printable characters marking end of a line in SQL Editors.

Index to Foreign Key Binds indexes to Foreign keys located in Child Entities.

Option	Description
in Child Entity	
Index to Foreign Key Name	Sets the default name of an index bound to a Foreign Key in Child Entity.
Attribute Properties Propagation	Defines what Attribute properties should migrate when an Attribute migrates to a child entity.
Self Relation Attribute Name	Sets the default name of the foreign key attribute in self- relationship. Application variables can be used.
Self Relation Attribute Caption	Sets the default caption of the foreign key attribute in self- relationship. Application variables can be used.
Relation Attribute Name	Sets the default name of the foreign key attribute in relationship. Application variables can be used.
Relation Attribute Caption	Sets the default name of the foreign key attribute in relationship. Application variables can be used.
Automatic FK Mapping	TDM can automatically map appropriate Foreign Key or create a new Foreign Key or prompt you to decide whenever both choices are available.
Primary Key Default Name	Sets the default name for primary keys. Application variables can be used.
Primary Key Default Caption	Sets the default caption for primary keys. Application variables can be used.

Generation SQL Script tab

Encoding Used for SQL Scripts	You can select which encoding should be used in all generated SQL scripts.
Code Editor Type	Defines what Editor Type should be used to open generated DDL and Change Scripts.
	 Internal - scripts are opened in TDM itself
	 Associated Application - scripts are opened in application which is associated to the scripts format
	Custom editor - scripts are opened in an user defined editor
External Editor for Generated Code	Enter the path to your custom editor for opening SQL scripts if you checked "Use Custom Editor" in previous option.
Verification	You can enable/disable Model Verification before SQL Script generation and choose in which cases should the Verification alert you.
Verification	
Option	Description
Error Row	Defines the color used to highlight background of error text.

Option	Description
Background	
Error Item Text	Defines the color used to highlight the error text.

Workspace Tab

Option	Description
Auto Complete	When checked, applies to all newly created workspaces. If you create an object on any workspace, this action will be executed on the other workspaces in the model with this function enabled as well.
Display Line Names	Shows/hides relationship captions.
Brush Color	Defines the main color of the newly created objects.
Pen Color	Defines the border color of the newly created objects
Background Color	Defines the background color of the newly created objects.
Pen Width	Sets the width of the newly created objects border.
Font	Sets the default font for all text in newly created objects.
Display Mode	Sets the default display mode for newly created workspaces.

Shape tab

Option	Description
Recalculate Size	This function automatically resizes an object so it fits the length of the text contained inside. Checking/unchecking this option will activate/deactivate the function in newly created workspaces.
Shadow Effect	A shadow effect is applied to all objects. Checking/unchecking this option will activate/deactivate the shadow effect in newly created workspaces.
Use Brush Color for Full Shape	Uses brush color instead of background color in objects. Checking/unchecking this option will activate/deactivate this function in newly created workspaces.

Note Line tab

Option	Description
End Type 1, 2	Sets the default note line end types in newly created workspaces.

Entity tab

Option	Description
Display Level	Sets the default display level in newly created workspaces.
Align	When checked, entities in newly created workspaces will have their attributes aligned.
Display Data Types	Shows/hides the data types of attributes in newly created workspaces.
Display Dictionary Types as Data Types	Switches between displaying Dictionary Types or Data Types on which Dictionary Types are based in the entities.
Display Keys Graphically	Shows/hides the key icons in entities in newly created workspaces.
Display Key and Index Marks	Shows/hides the index and key marks in entities in newly created workspaces.
Display Indexes	Shows/hides indexes in entities in newly created workspaces.
Display Not Null Mark	Shows/hides not null (NN) marks in entities in newly created workspaces.
Gradient Effect	Uses/doesn't use gradient effect in objects in newly created workspaces.
Attribute Colors	This section allows you to define your own colors for all kinds of attributes.
Display Data Warehouse Type and Size	Checking this option will make several new options in Entity Properties available. These are all logical and used to organizing your model if you plan to use it for Data Warehouse.

Specific Databases

• Specific databases have their own settings, for more information see chapter Databases.

Import and Export of Settings

Export

You can export your customized settings at any time by clicking the Export button.



Choose a destination folder and Toad Data Modeler exports several *.txc* files to it. These are configuration files, one file matches one category in **Options**. The more categories settings you change, the more files will be exported.

Name	Date modified	Туре	Size
Application.txc	3/16/2015 10:41 AM	Toad Data Modele	9 KB
ApplicationServer.txc	3/16/2015 10:41 AM	Toad Data Modele	1 KB
Debug.txc	3/16/2015 10:41 AM	Toad Data Modele	1 KB
🖬 LER.txc	3/16/2015 10:41 AM	Toad Data Modele	4 KB
MD.txc	3/16/2015 10:41 AM	Toad Data Modele	1 KB
Model.txc	3/16/2015 10:41 AM	Toad Data Modele	1 KB

Import

To load your exported customized settings, click the **Import** button.

٠ III	•				-
Enter Search Term Here 🔻 🗱	Default Settings	Import	Export	QK Qancel	pply

You can either import settings from a folder or from an existing Toad Data Modeler installation.

Import Settings	×
Import from Folder	
Import from Other Installation	
OK Cancel	

Import from Folder

Select the **Import from Folder** option and in the following dialog navigate to your folder where your *.txc* files are stored. Toad Data Modeler will then import the configuration.

Import from Other Installation

Import Settings dialog is displayed. You can choose from which Toad Data Modeler installation should the settings be imported. If your installation directory is not shown, you can add it manually by clicking **Add Location**.

🔁 Import Settings	
Installation 24 - Used Installation 32 - Used Installation 36 - Used Installation 19	Installation 33 Path:
Installation 32 Installation 33	Name:
Installation 36 Installation 37	Standard Installation 7 Version:
Installation 38 Installation 39	5.4
Installation 40 Installation 41 Installation 42	
Installation 43 - Current Beta - Used Beta - Used	
Deta - Useu	
Add Location	Cancel Import

Default Values

Toad Data Modeler allows you to define and change default values of objects in your models.

Examples:

- You want to define default values for referential integrity type in your model.
- You want to define Not Null property for all new attributes that you create in your model.
- You want to define a name for your relationships in the following format: 'parent table child table'.

TIP: You can use application variables in default values. Application Variables and Default Values

To open the Default Values dialog

Select Settings | Default Values...

or

Open the **Properties** dialog of specific object (e.g. **Relationship Properties** form) | right-click the form and select **Default Values for Class**.

i Note: The second option is available only in Expert Mode.



To define a default value e.g. for relationships in your Oracle 10g model

- 1. Open your Oracle 10g model.
- 2. Select Settings | Default Values.
- 3. Select the Relationships item in the list.
- 4. Select the default value you want to modify.
- 5. Press F2 in the Default Value column.
- 6. Define the value and click anywhere else in the dialog.
- 7. Confirm OK.
- 8. Restart Toad Data Modeler.

Note: When you change the default values, you make modifications in package (by default in *My Package.txg* file). So, to apply the changes, you need to save the package.

9. Create a new relationship. - All newly created relationships will have the new default value.

To restore the original default values

- 1. Open the Default Values dialog.
- Select the default value that you want to change back to original. (For multiple selection use CTRL or SHIFT.)
- 3. Click Delete to restore the original default values.
- 4. Confirm OK.
- 5. Restart Toad Data Modeler.

Default Values Dialog

See the dialog for the Entities item and after the Show Details button has been clicked.

🔁 Default Values							×
Model Class context PERRelationOR10							
Categories	Name	Default Value	Source	Status	Ancestor Source	Ancestor V	Available Application Variable
Defaults	Caption	<%Parent Table Name %> - <%C	My Package	Citatue Citatue	11100001000100	Empty	Author
Directories	Cardinality Child	N	My Package			N	Caption
Domains	Create Index To Foreig	Not Defined	My Package		Metamodel	True	Date
Entities	Deferrable	Not Defined	My Package		Metamodel	False	DateTime
Functions	Deferred	Not Defined	My Package		Metamodel	False	FkIndexName
Check Constraint Rules	Disable	Not Defined	My Package		Metamodel	False	ChildTableName
Java	Foreign Key Index Name	Empty	My Package			Empty	InverseCaption
Materialized Views	Generate Code	True	My Package			True	Name
Model Title	Inverse Caption	Empty	My Package			Empty	Notes
Notes	Inverse Name	Empty	My Package			Empty	OwnerCaption
Packages	Mandatory Child	False	My Package			False	Parent Table Name
Permissions to Objects	Mandatory Parent	Relation Dependent	My Package			Relation D	Line UniqueNumber
Procedures	➡ Name	<%ParentTableName%>_<%Chi	My Package	3		Empty	Year
Relationships	No Validate	Not Defined	My Package		Metamodel	False	
Sequences	Notes	Empty	My Package			Empty	
Tablassa	Ref. Integrity Child Upd	None	My Package			None	
Tablespaces	Ref. Integrity Parent De	None	My Package			None	
Liese Date Trace	Ref. Integrity Parent Up	None	My Package			None	•
User Groups	Ref. Integrity. Child Insert	None	My Package			None	1
User Groups	Rely	Not Defined	My Package		Metamodel	False	
View Polationship							
View Relationship							
EL. Mews							
							Application Variables can be used in all text properties as
							<%AppVarName%>. If Application
							Variables dialog is blue, also
							be used and the variable will be
							resolved when report is generated.
	•					Þ.	
	Hide Details </td <td>Eda</td> <td>Delete</td> <td>OF</td> <td>Cancel</td> <td>Apply</td> <td></td>	Eda	Delete	OF	Cancel	Apply	
	HUC Details XX	Edit	Delete	<u>o</u> k		Орру	

Option	Description
Model Objects	List of objects for which you can define or modify default values.
Class Context	Level on which you want to apply the default values. Example: PEREntityOR10 (entities in Oracle 10g models only), PEREntityOR (entities in all Oracle models), PEREntity (entities in physical model of any database.)
Name	Name of default value
Default Value	Values of specific default values. Press F2 to change the selected default value.
Source	A place where changed or newly modified default values are saved. By default they are saved to <i>My Package.txg</i> file.
Status	 Default values stored in Metamodel. Default values defined or modified by user, saved in <i>My</i> <i>Package</i>. Default values defined or modified by user, saved in add-on

Option	Description
	package.
Ancestor Source	Add-on Package - A place where some default values are stored. Such default values can be modified, however the changes can be saved only to <i>My Package</i> .
	Metamodel - A place where some default values are stored. Such default values can be modified, however the changes can be saved only to Metamodel.

Dictionaries

Dictionary allows you to add and translate new terms in your current dictionary from other dictionaries, import webbased dictionaries and export dictionaries to the web (in CSV file format).

To open Dictionaries

Select Settings | Dictionaries.

Videorental Dictionaries				6
Dictionaries				a
Dictionary Items Keywords				
Reywords				
🕂 💢 🗐 🏹 🖍 🔊				2 🖌 🖉
Source Word 🔺	Result Word	Visibility	Status	English (United States)
AGGREGATES	Aggregates	Database PostgreSQL	•	Czech (Czech Republic)
AGGREGATION_BETWE	Aggregation Between	Metamodel	•	
AGGREGATION_NAME	Aggregation Name	Metamodel	•	
AGGREGATIONS	Aggregations	Metamodel	•	
AK	AK	Physical Entity Relationship Model	۲	
➡ ALGORITHM	Algorithm	Database MySQL	۲	
ALIAS	Alias	Physical Entity Relationship Model	•	
ALIASES	Aliases	Database DB2 zOS	۲	
ALIASES	Aliases	Database Sybase SQL Anywhere	•	
ALIASES	Aliases	Database Sybase IQ	•	
ALIASES	Aliases	Database Sybase ASE	•	
ALIASES	Aliases	Database Oracle	•	•
ALIASES	Aliases	Database MySQL	•	
ALIASES	Aliases	Database Microsoft SQL Server	•	
ALIASES	Aliases	Database Microsoft SQL Server 2000	•	
ALIASES	Aliases	Database Microsoft SQL Azure (com	•	
ALIASES	Aliases	Database Ingres	•	
ALIASES	Aliases	Database DB2	•	
ALIGNMENT	Alignment	Database PostgreSQL	•	
ALL	All	Database DB2 zOS	• •	
Czech (Czech Republic) W	ords Count: 1564/1564			
• • •				· /

TIP: To modify system dictionaries (such as the default English one), you need to enable Work with System Dictionary option in Settings.

Localized HTML, RTF and PDF Reports

To generate localized HTML, RTF or PDF reports

- 1. Download dictionaries from community website.
- 2. In Toad Data Modeler select Settings | Dictionaries. New Dictionaries tab opens.
- 3. On tab Dictionaries click the Dictionary Items sub-tab.

ictionary Items Keywords				
+∝∎Ÿñ₽				12 📘 🖉 🛃 🖻
Source Word	Result Word	Visibility		English (United States)
COMPARISON_REPORT	Comparison Report	Toad Data Modeler		
FLAG	Flag	Toad Data Modeler		
LIST	List	Toad Data Modeler		
NOTE_NAME	Note Name	Toad Data Modeler		
NOTE_SUMMARY	Note Report	Toad Data Modeler		
FOR_PROJECT	For Project	Toad Data Modeler		
FOR_PROJECTS	For Projects	Toad Data Modeler		
PROJECT	Project	Toad Data Modeler	:	
WORKSPACE	Workspace	Toad Data Modeler		
SUBMODEL	Submodel	Toad Data Modeler		
VERSION	Version	Toad Data Modeler	L	
COMPANY	Company	Toad Data Modeler		
AUTHOR	Author	Toad Data Modeler		
CREATED	Created	Toad Data Modeler		
LAST_MODIFIED	Last Modified	Toad Data Modeler		
MODEL_INFO	Model Info	Toad Data Modeler	-	
_			P.	
alish (United States) V	Vords Count: 1745/1745			

4. Click Import Dictionary

5. Select the downloaded .csv file and click Import. All the imported words will be displayed. Dictionaries v

Dictionaries ×					
Dictionary Items Keywords					
Source Word	Result Word	Visibility	_	English (United States)	
MODEL	Madalla	Taad Data Madalar	*	Italian (Italy)	
MODEL	Modello Madalla Infa	Toad Data Modeler			
MODEL_INFO		Toad Data Modeler			
MODELS	Modelli	Toad Data Modeler			
MODIFIED_OBJECT	"Object %1%"" is unequal in models ""%2%	Toad Data Modeler			
MT_DIAGRAM	MT Diagramma	Metamodel			
N_TABLES	n Tabelle	Logical Model	·		
N-1_TABLES	n-1 Tabelle	Logical Model	:		
NAME	nome	Toad Data Modeler			
NAME_COMPONENTS	Nome componente	Database DB2	<u> </u>		
NAME_OF_INDEX_GENE	Nome dell'indice generato per la chiave est	Database Oracle	L		
NATURE_OF_DATA_USE	Nature of Data Use By the Routine	Database MySQL			
NESTED_TABLE_COLUMN	Colonna della tabella innestata	Database Oracle			
NESTED_TABLE_TYPE	Tipo della tabella innestata	Database Oracle			
NESTED_TABLE_TYPES	Tipi della tabella innestata	Database Oracle			
NEVER_REFRESH	Never Refresh	Database Oracle	-		
•		Þ			
Italian (Italy) Words Count: 1043/1043					

- 6. Make changes if necessary. Otherwise close the Dictionaries tab and generate .
- 7. In the Report Wizard, page Select Report, select a report type and the newly added language.

階 Report Wizard	
 Select Format Select Report Select File Select Layout What to Report Options 	Select a suitable type of report from the list. Report Caption Basic HTML Report for PER Model Languages of Localized Report Version English (United States) English (United States) talian (Italy)
Hide Log Close after Executi	on Show < Previous Next > Execute Close
ID Date Time	Message

8. Go through other steps in the $\ensuremath{\textbf{Report Wizard}}.$

File Extensions

Toad Data Modeler works with the following files:

File	Description					
*.TXF	D	Physical data models in XML format				
*.TXL	-	Logical data models in XML format				
*.TXN	Л	Metamodels in XML format				
*.TXG		User packages in XML format				
*. TBG		System packages in binary format				
*.TXD		Default Config files				
*.TXC		Config files				
*.TXE		File with saved environment configuration				
*.TXS		Style definition files for HTML reports				
*.XSLT		File for XSL transformation				
*.XSD		File describing structure of XML file				
*.TXA		File with Aliases				
*.TXV		File with versions and revisions of the Version Manager				
*.TXN		Exceptions				
*.TXI		Export/Import of Dictionary				
*.TXO		OTPs settings				
*.CSV		File for import/export of glossaries to naming conventions				
*.TXN		File with defined naming convention rules				
i Note: Meanir "T" - Toad Da "X" - XML for		Meaning of the extensions: oad Data Modeler (ML format				
	for Ve	tter is intuitive, e.g. ۳۲ for Physical model, "V" rsion Manager etc.				

*.TXP Files

Physical models created in Toad Data Modeler have *.TXP extension. These files are in XML format.

*.TXL Files

Logical models created in Toad Data Modeler have *.TXL extension. These files are in XML format. By default, the .TXP and .TXL files are saved to a path defined in the **Settings** menu | **Options** | **Application** | **Paths** | **Advanced** tab | **Paths to Models**.

*.TXM Files

Metamodels in XML format.

System metamodels are saved together with the application installation package. Possible path is: C:\Program Files\Quest Software\Toad Data Modeler 3\Packages\System\MetaModels.

Path to user's metamodels can be set in the **Settings** menu | **Options** | **Application** | **Paths** | **Paths to Metamodels**.

*.TXG and * TBG Files

Packages where definition of database or its part, scripts, forms, data types etc. are saved. System packages are in binary format, user packages in XML format.

System packages are saved together with the application installation package. Possible path is:

C:\Program Files\Quest Software\Toad Data Modeler 3\Packages\System.

User packages are saved in user's Documents and Settings directory, e.g.:

C:\Documents and Settings\user name\My Documents\Toad Data Modeler\Installation Name\Packages\{SOME GUID Number}.

*.TXD Files

Default config files that are saved together with the application installation package, e.g.: C:\Program Files\Quest Software\Toad Data Modeler 3\Configs.

*.TXC Files

Config files that contain settings of Toad Data Modeler. The settings are accessible in the **Settings** menu | **Options**. .TXC files are modified .TXD files. If .TCX file doesn't exist, it will be created in user's Documents and Settings directory automatically after running the application. Settings of .TXD file will be copied to the new .TXC file then.

*.TXE File

Changed environment of Toad Data Modeler will be saved to this file after the application is closed. This file is saved in user's Documents and Settings directory.

*.TXS Files

Files with Style definitions for HTML reports. CSS styles are saved in user's Documents and Settings directory.

*.XSLT Files

Templates for XSL transformation. Default path: C:\Program Files\Quest Software\Toad Data Modeler 3\XSL

*.XSD Files

XSD file describes structure of XML file - of your physical model created in Toad Data Modeler (TXP file). XSD shows how the TXP file looks like, how it is structured etc.

By default, the XSD file is generated to:

C:\Documents and Settings\user\My Documents\Toad Data Modeler\Reports

*.TXA Files

Files where aliases created during reverse engineering are saved. They are saved in user's Documents and Settings directory.

The path to aliases can be set in the Settings menu | Options | Application | Reverse Engineering | Paths to Aliases.

*.TXV Files

Local files created after the **Check Out** operation in Version Manager. These files are contained in projects saved in Version Manager. They are saved in user's Documents and Settings directory.

The paths can be set in the Settings menu | Options | Application | Version Manager.

*.TXN Files

Files that contain exceptions for data type conversion between databases.

*.TXI Files

Files where dictionary items (User Data Types, Dictionary Types and Domains) are saved during export/import between models. You can save the .TXI file where you want, no default path is defined.

*. TXO Files

Files where selected OTPs settings are saved.

- 1. Default (System) Selected OTPs are stored by default at:
- C:\Program Files\Quest Software\Toad Data Modeler\Selected OTPs
- 2. User Selected OTPs are stored by default at:
- C:\Documents and Settings\user\My Documents\Toad Data Modeler\Installation Name\Selected OTPs

*.CSV Files

Import/export of glossaries (*.CSV files) also from/to other tools is possible. See the **Naming Convention Properties** dialog | **Glossary** tab | **Import** button. You can find some CSV files with diacritical marks at: C:\Program Files\Quest Software\Toad Data Modeler 3\Naming Conventions\CSV.

*.TXN Files

Every defined naming convention is stored in external .TXN file stored by default in user Documents folder, directory Toad Data Modeler\ Installation name\Naming Conventions.

Note:

1. Generally, it stands that system files are saved together with the application installation package. (E.g.: C:\Program Files\Quest Software\Toad Data Modeler 3).

Files modified by a user are saved in the user's Documents and Settings directory. (E.g.: C:\Documents and Settings\user name\My Documents\Toad Data Modeler, or C:\Documents and Settings\user name\Application Data\Quest Software\Toad Data Modeler.

2. The Documents and Settings directory is empty until you run Toad Data Modeler. Then, all appropriate files will be copied to this directory from the application installation package.

All changes you make for the files (e.g. changes in the application layout, new aliases, modified styles in reports, new default path to generated SQL/DDL code, modified *My Package.txg* file etc.) will be saved here and will be preserved when you update the application.

If you need to restore the original default settings, you can simply delete appropriate file in the Documents and Settings directory. When you run Toad Data Modeler then, appropriate original default file from C:\Program Files\Quest Software\Toad Data Modeler 3 will be copied to the Documents and Settings directory again.

Enabled/Disabled Databases

Starting with version 5.4, Toad Data Modeler implements a new system of managing databases.

Toad Data Modeler 5.3 and older:

· During application installation you were able to choose which databases should/should not be installed. This could not be changed in the application, you had to launch installation program again. By not installing unused databases, you were able to save space on drive.

Toad Data Modeler 5.4 and newer:

• All databases are now installed with the application. A default set of databases is enabled and you can enable/disable databases at any time. By disabling unused databases you can decrease the application startup time.

How to enable/disable databases

You can configure enabled/disabled databases by going to Settings Menu | Add/Remove Databases.


Disabled databases cannot be used in certain application actions (create new model, open existing model, reverse engineering...). However, most of the time you are able to enable a specific database at the time you want to work with it (see screenshot below).

licrosoft SQL Server 2014				
Physical Data Model Un	iversal Data	Model Logical Data Me	odel	
Microsoft Access 2000-	2003 🛓 O	racle 11g Release 1	Sybase ASE 12.5	
Microsoft Access 2007-	2010 🔠 O	racle 11g Release 2	Sybase ASE 15	
Microsoft SQL Azure	ad o	racle 12c	Sybase ASE 15.5	
Microsoft SQL Server 2	000 🗟 P	ostgreSQL 8.1	Sybase ASE 15.7	
Microsoft SQL Server 2	005 🗟 P	ostgreSQL 8.2	SAP ASE 16.0	
Microsoft SQL Server 2	008 🗟 P	ostgreSQL 8.3	Sybase IQ 15.2	
Microsoft SQL Server 2	012 🗟 P	ostgreSQL 8.4	Sybase SQL Anywhere 11	
Microsoft SQL Server 2	014 👸 P	ostgreSQL 9.0	Teradata 13.0	
A MySQL 5.0	A D	ostgreSQL 9.1		
A MySQL 5.1				<u> </u>
A MySQL 5.5	Confirm			l
AC Oracle 9i				
a Oracle 10g	?	New models can be	Aicrosoft SQL Server 2014' is not e created only for enabled database	nabi s.
•	L.	Do you want to enab	le it now?	
		Ver	No	

Supported Databases

Toad Data Modeler provides full support to the databases listed below:

- Amazon® Aurora MySQL 5.6
- Amazon® Aurora PostgreSQL 9.5
- Amazon® Redshift 1.0
- IBM® DB2® z/OS® 11
- IBM® DB2® LUW 9.7, 10.1, 10.5, 11.1, 11.5
- Greenplum Database® 4.2
- Ingres 9.3, 10.0
- EDB Postgres Advanced Server 10
- Microsoft® Access® 2010-2019, incl. Office 365
- Microsoft® Azure® SQL Database V12
- Microsoft® SQL Server® 2012, 2014, 2016, 2017, 2019, 2022
- MySQL 5.6, 5.7, 8.0
- Oracle $\ensuremath{\mathbb{R}}$ 11g R1, 11g R2, 12c R1, 12c R2, 18c, 19c, 21c
- PostgreSQL 9.5, 10, 11, 12
- SQLite 3.7, 3.32
- SAP® SQL Anywhere 17
- SAP® ASE 16.0
- Sybase® ASE 15.7
- Sybase® IQ 15.2
- Teradata 13, 16.2
- Vertica Database 8.0
- Other (Universal Model)
- **i IMPORTANT:** You can also create and work with models from other versions of databases that have been deprecated by their production companies. Toad Data Modeler cannot provide fixes and provide support for more features of these databases. Uncheck **Show Supported Databases Only** to display all databases that you can create and open models for.

Details of Database Support

Reverse Engineering

Supported Database System	From a Database	From a SQL File	Change Script Generation	SQL/DDL Code Generation
Amazon Aurora MySQL	•	٠	٠	٠
Amazon Aurora PostgreSQL	•	•	٠	٠
Amazon Redshift	•	•		٠
IBM DB2 z/OS	•	•		٠
IBM DB2 LUW	•	•	٠	٠
Greenplum	•	•	٠	٠
Ingres	•	•		٠
EDB Postgres Advanced Server	•	•	٠	٠
Microsoft Access	•	•		٠
Microsoft Azure SQL Database	•	•	٠	٠
Microsoft SQL Server	•	•	٠	٠
MySQL	•	•	٠	٠
Oracle	•	•	٠	٠
PostgreSQL 9.5 and newer	•	•	٠	٠
SQLite	•	•		٠
SAP ASE	•	•		٠
Sybase ASE	•	•		٠
Sybase IQ	•	•		٠
SAP SQL Anywhere	•	•		٠
Teradata	•	•	•	٠
Vertica Database	•	•	•	٠
Other databases (Universal Model)	•	•		

Note: Toad Data Modeler includes also support of Universal DB/ANSI Models. See Universal DB/ANSI Model for more information.

Specifics - Amazon Redshift 1.0

Toad Data Modeler offers support for Amazon Redshift 1.0, including support for Reverse Engineering and DDL Script Generation. There are however the following limitations to Redshift support:

- Databases and Libraries (and grants for them) are not supported
- CREATE TABLE: IF NOT EXISTS clause is not supported

Reverse Engineering - Amazon Redshift 1.0

Available Data Providers are:

Connection via ODBC

In order to connect using ODBC, install an appropriate ODBC driver for your database first.

12	Connections		- 0	×
- Name - Select Data Source	Data Source Name Amazon Redshift ODBC DSN			~
- Select Data Provider - Connecting - What to Reverse	Liner Name	Reload	Property Data Link	
- Options	Test			
	Password			_
	✓ Save Password			-1
			Cut Cur	_
Hide Log Close after Executi	on < Previous Ne	ext >	Finish	

To create Amazon Redshift connections

- 1. Select Amazon Redshift ODBC driver in Data Source Name
- 2. Click **Property Data Link** to configure connection properties
- 3. Enter the address to your Redshift server into Server
- 4. Enter your port number (default: 5439) and database name
- 5. Enter your user name and password
- 6. Change any other necessary settings and Test or click OK

- **i** NOTE: In case of access violation during **Reverse Engineering** of Amazon Redshift when using ODBC driver perform the following steps:
 - 1. Select your ODBC driver in ODBC Data Source Administration
 - 2. Click Configure
 - 3. Click Additional Options
 - 4. In Additional Configuration, check Use Multiple Statements

Script Generation - Amazon Redshift 1.0

📜 DDL Script Generation of Amaz	on Redshift 1.0				×
What to Generate Detail Settings F	Referential Integrity	Select List			
Location of SQL File					
C:\Users\dimeriiCinnameriniiCinnal C	hale Mashele Clever	aled Toripic Committee SQL			
Schema		Split Output File	Append To	File 🗌]
Not Specified	~				
		~			
Property Name		Extended Value			
⊡… Model					
After Script					
Before Script					
Entities		Create			
Keys		Create All Keys			
External Schemas		Create			
Permissions					
External Tables		Create			
Partition List		Create			
Functions		Create			
Permissions to Objects					
Relationships		Create			
Schemas		Create			
User Groups					
Users		Create			
Views		Create			
Show Preview					
			ОК	Car	ncel

🔁 DDL Script Generation of Am	azon Redshift 1.0			-		×
What to Generate Detail Settings	Referential Integrity	Select List				
 ✓ Use Quotation Marks ✓ Generate Schema-Qualified Natest Case Selection: Preserve Case ✓ Generate Empty Comments as Generate IF EXISTS in DROP ✓ Create Comments ✓ Grant Roles to User/Role ✓ Generate Permissions Only to C Terminator Dollar Quoting Typ SS Order of Generated Objects You can change order of generate generated. 	ames NULL statements Dbject Types Selected e in Function Definition ted objects. Click Edit	I on Tab What to Generate				
Show Preview						
			0	К	Can	cel

Specifics - DB2 9.5 (LUW)

692

Attribute

Attribute Properties - Entity1 - E		
Capt <u>i</u> on	Name	
Attribute1	Attribute1	L
General Check Constraints Foreign Key	s Permissions Notes Generated	
Data <u>T</u> ype	Domains	
🔤 Char(x)		▼
👜 Bigint		
📾 Blob		
😑 Blob(x)	Default Pula	
i Clob		
Clob(x)	None	▼
DD2Cesuitul start	(New AK)	
DPCIable)		
		*
Decimal(x)		
Double		
Float(x)		
Graphic(x)		
👜 Char(x)		
🥯 Integer		~
👝 Long Vargraphic		
Cong Varchar	User Data Type Attribute	
	Reference Type	
Smallint		
Timetamo		
Varchar(x)		
w XML		
36> [OK Ok±Add Cancel	<u>A</u> pply <u>H</u> elp
		,,

Data type *DecFloat(x)*.

Caption		Name	
Attribute 1		= Attribute 1	0
General Check Constraints	Foreign Keys Permissions	Notes Generated	
Identity		Column Based on Expression	
Identity		Is Based on Expression	
Generated Type		Expression	
ALWAYS	v		*
Start With			-
1			
Increment By			
1			
MAXVALUE			
	NO MAXVALUE		
MINVALUE			
	✓ NO MINVALUE		
CACHE			
20	NO CACHE		
V NO ORDER			
Row Change Timestamp			
Row Change Times	stamp		
Generated Type			
ALWAYS	•		
Implicitly Hidden Co	lumn		

For data type *Timestamp*, the **Row Change Timestamp** area is available on tab **Generated**. To enable the **Implicitly Hidden Column** checkbox, select the **Row Change Timestamp** checkbox.

Index

🔀 Index Properties	
Entity: Entity1	v 💽
index1	
General Items Notes Comment Index Proper	rties
PctFree Reverse Scans	Tablespace for Index
DISALLOW	Not Specified 💌 🛄
XML Index Specification	
Use XML Specification	Data Type Length
	Not Specified 🔻
	Invalid Values
Pattern Expression	
	<u>^</u>
	·
	*
	-
	Cancel Apply Help

Dictionary Type

🔀 Dictionary Type Properties	
DictionaryType1	•
General To Do Used in Notes Comment	
Capt <u>i</u> on <u>N</u> ame	
DictionaryType1 = DictionaryType1	6
Schema Not Specified 🔻 🛄	
Data Type Char(x)	
Length 1 For Bit Data	
Array Type ✓ Is Array Integer Constant 2147483647	
Generate	Hab

New Array Type.

Extra Objects - DB2 9.5 (LUW)

See other objects in Model Explorer:

- Security Labels
- Security Policies
- Sequences
- Tablespaces

Reverse Engineering - IBM DB2 LUW

Available Data Providers are:

- Native Connection
- Connection via ADO
- Connection via ODBC

Native Connection:

🔁 Connections		
- Name - Select Data Source - Select Data Provider - <u>Conceting</u> - What to Revence	Host <u>H</u> ost Name 10.11.40.26	P <u>o</u> rt 50000
- Options	User User Name	Password
	Save Password	
	Database <u>D</u> atabase Name SAMPLE	
	<u>C</u> onnection String HostName=10.11.40.26; Port=50000; Database=SAMPLE; UID=db2	2admin;
Show Log Close after Executi	on < <u>P</u> revious <u>N</u> ext >	Finish Qose

Connection via ADO:

🔀 Reverse Engineering Wizard		- • •
 Stored Connections Select Data Source Select Data Provider <u>Connecting</u> What to Reverse Options Save Connection Tables 	Connection String Provider=DB2OLEDB.1;Password=root;Persist Secur Data Link Prope	rity Info=True;User ID=db2admin;Net enties
	User Identification <u>U</u> ser Name db2admin IV Save Password	Pass <u>w</u> ord
Show Log Cose after Execution	on < <u>P</u> revious <u>N</u> ext >	Execute Qose

Connection via ODBC:

🔀 Reverse Engineering Wizard	
 Stored Connections Select Data Source Select Data Provider Connecting What to Reverse Options Save Connection Tables 	Data Source Name DB2_UDB_LUW Reload Property Data Link User Name db2admin Password •••• If Save Password
Show Log Close after Executi	on < <u>Previous N</u> ext > <u>Execute Qlose</u>

Specifics - DB2 9.7 (LUW)

Dictionary Type

階 Dictionary Type Properties	2	- • •
Dictionary Type 1	-0	~
General To Do Used in Notes	Comment	
Caption	Name	
Dictionary Type 1	Dictionary Type 1	16
Schema		
- Not Specified	•	
Data Type		
i i i i i i i i i i i i i i i i i i i		
Length 1	🔲 For Bit Data	
Алтау Туре		
🔲 Is Array		
Integer Constant		
2147483647		
Associative Array Type Is Associative Array Data Type2 INTEGER Anchored Non Row Data Type	Length	
Anchored Data Type		
✓ Generate		
CK Ok±Add	Cancel Apply	/ <u>H</u> elp

User Data Type

🔀 User Data Type Properties - E	- • •
UserData Type 1	*
General To Do Used in Notes SQL Preview Comment SQL Struct	ured Type
Capt <u>i</u> on <u>N</u> ame	
UserDataType1 = UserDataType1	6
Schema	
Not Specified 🔹 🛄	
Туре	
Structured Type	
Cursor Type Row Type	
Structured Type	
Cenerate	
OK Ok±Add Cancel Apply	<u>H</u> elp

Stored Procedure

B Stored Procedure Properties	- • ×
StoredProcedure1	•
General SQL Permissions To Do Before Script Notes SQL Preview Comment Procest	t After Script dure Parameters
SQL Data Access	
Not Specified 🔻	
Deterministic	
Not Specified 🔻	
Called on Null	
Not Specified 🔻	
Inherit Special Registers	
Not Specified 🔻	
Save point level	
Not Specified 🔻	
External Action	
Not Specified 🔻	
Commit On Return	
Not Specified	
Autonomous	
- Not Specified	
AUTONOMOUS	
OK Ok+Add Cancel Apply	Help

Synonym

🔀 Synonym - E	
Synonym1	~
General Before Script After Script Notes Comment	
Name	
Synonym1	
Public	
Schema	
Not Specified	-
Object	
Sequence1	-
Base Object is not in List	
Generate	
OK Ok+Add Cancel	Apply

Aliases (Synonyms) are supported, including Public Synonym:

Public Synonym specifies that the alias is an object in the system schema SYSPUBLIC.

To select a sequence in the list of objects, open the **Synonym Properties** dialog | **General** tab | **Object** box.

If the sequence is not defined in the model, select the **Base Object is not in List** checkbox and write the sequence to box **Base Object Name** (start with text SEQUENCE).

Other objects in Model Explorer:

- Security Labels
- Security Policies
- Sequences
- Tablespaces

Reverse Engineering - IBM DB2 LUW

Available Data Providers are:

- Native Connection
- Connection via ADO
- Connection via ODBC

Native Connection:

🔀 Connections		
- Name - Select Data Source - Select Data Provider <u>- Connecting</u> - What to Reverse - Options	Host Host Name 10.11.40.26	P <u>o</u> t 50000
optoria	User User Name	Password
	db2admin	••••
	☑ Save Password	
	Database	
	Database Name	
	SAMPLE	
	Connection String	
	HostName=10.11.40.26; Port=50000; Database=SAMPLE; UID=db2	admin;
Show Log Close after Execution	on < <u>Previous</u>	Finish <u>C</u> lose

Connection via ADO:

😕 Reverse Engineering Wizard		
- Stored Connections - Select Data Source - Select Data Provider <u>- Connecting</u> - What to Reverse - Options	Connection String Provider=DB2OLEDB.1;Password=root;Persist Se	ecurity Info=True;User ID=db2admin;Net roperties
- Save Connection - Tables	User Identification	Password
	db2admin	••••
	☑ Save Password	
Show Log Close after Execution	on < <u>P</u> revious <u>N</u> ext >	Execute Qose

Connection via ODBC:

🔀 Reverse Engineering Wizard	
 Stored Connections Select Data Source Select Data Provider Connecting What to Reverse Options Save Connection Tables 	Data Source Name DB2_UDB_LUW Reload Property Data Link User Name db2admin Password •••• If Save Password
Show Log Close after Executi	on < <u>Previous N</u> ext > <u>Execute Qose</u>

Specifics - DB2 10.1 (LUW)

Entity

🔁 Entity Properties	
Capt <u>ion</u> Entity1	Name Entity1
Before Script After Script Notes General Attributes Keys Indexes	SQL Preview Relationships Table Properties Check Constraints Triggers Permissions To Do
Schema Not Specified 🔻	·
Settings	
Organize By TIME Organize by Dimensions (List of Columns)	
Compression Value	Security Policy Name
Not applicable	▼ - Not Specified ▼
Compression Mode STATIC	PctFree Append
Period Definition	
Period Type	
SYSTEM_TIME	•
Begin Column Name	End Column Name
Comments	
	· · · · · · · · · · · · · · · · · · ·
Category	▼
Generate	OK Cancel Apply Help

Organize by Insert Time option added.

Compression Mode option added with values ADAPTIVE/STATIC.

Period Definition (BUSINESS_TIME/SYSTEM_TIME values) option added.

Attribute

Attribute 1 Attribute 1 Increment By Implicitly Hidden Column 	Caption		Name	
Beneral Check Constraints Foreign Keys Permissions Notes Generated I Image: Column Based on Expression ALWAYS Image: Column Based on Expression Start With Image: Column Based on Expression I Image: Column Based on Expression Start With Image: Column Based on Expression Image: Column Based on Expression ALWAYS Image: Column Based on Expression Image: Column Ba	Attribute 1		= Attribute1	
Identity Generated Type ALWAYS Stat With 1 Increment By 1 MAXVALUE I MAXVALUE I NO MAXVALUE MINVALUE I NO MINVALUE I NO CYCLE Implicitly Hidden Column	General Check Constrain	nts Foreign Keys Permissions	Notes Generated	
Widentity Generated Type ALWAYS Start Wth 1 Increment By 1 MAXVALUE Image: Implexity Provided and Provided	Identity		Column Based on Expression	
Generated Type ALWAYS Start Wth 1 Increment By 1 MAXVALUE Implexity Pinon MAXVALUE MINVALUE Implexity No MAXVALUE MINVALUE Implexity No MAXVALUE No CACHE 20 No CACHE 20 No CACHE 20 No CACHE V No ORDER Row Change Timestamp Generated Type ALWAYS Implexity Hidden Column	🔽 Identity		Is Based on Evoraceion	
ALWAYS Start Wth 1 Increment By 1 MAXVALUE Implexity Provided Type Row Change Timestamp Generated Type ALWAYS Implicitly Hidden Column	Generated Type		Expression	
Start With 1 Increment By 1 MAXVALUE Implicitly Hidden Column	ALWAYS	▼		
Start with 1 Increment By 1 MAXVALUE Implicitly Hidden Column	Ctort M/th			~
Increment By 1 MAXVALUE MAXVALUE MINVALUE Implicitly Hidden Column Row Transaction Timestamp Row Transaction Start Id Row Transaction Start Id Row Change Timestamp Generated Type ALWAYS				
Increment By I I I I I I I I I I I I I I I I I I			Row Transaction Timestamp	
MAXVALUE MINVALUE MINVALUE MINVALUE NO MINVALUE CACHE 20 NO CACHE 20 NO CYCLE NO ORDER Row Change Timestamp Generated Type ALWAYS Implicitly Hidden Column	Increment By		Is Row Transaction Timestamp	
MAXVALUE MINVALUE MINVALUE CACHE 20 NO CACHE NO ORDER Row Change Timestamp Generated Type ALWAYS Implicitly Hidden Column			Row Type	
MINVALUE MINVALUE NO MINVALUE CACHE 20 NO CYCLE NO ORDER Row Change Timestamp Generated Type ALWAYS Implicitly Hidden Column	MAXVALUE		BEGIN -	
MINVALUE CACHE 20 NO CACHE 20 NO CYCLE NO ORDER Row Change Timestamp Generated Type ALWAYS Implicitly Hidden Column		NO MAXVALUE		
Image: Cache 20 Image: No CACHE Image: No CYCLE Image: No ORDER Row Change Timestamp Generated Type ALWAYS Implicitly Hidden Column	MINVALUE		Row Transaction Start Id	
CACHE 20 NO CACHE NO CYCLE NO ORDER Row Change Timestamp Generated Type ALWAYS Implicitly Hidden Column		NO MINVALUE	Row Transaction Start Id	
20 NO CACHE V NO CYCLE NO ORDER Row Change Timestamp Generated Type ALWAYS V Implicitly Hidden Column	CACHE			
 NO CYCLE NO ORDER Row Change Timestamp Generated Type ALWAYS ▼ Implicitly Hidden Column 	20	NO CACHE		
NO ORDER Row Change Timestamp Generated Type ALWAYS Implicitly Hidden Column	NO CYCLE			
Row Change Timestamp Row Change Timestamp Generated Type ALWAYS Implicitly Hidden Column	NO ORDER			
Row Change Timestamp Generated Type ALWAYS Implicitly Hidden Column				
Row Change Timestamp Generated Type ALWAYS T Implicitly Hidden Column	Row Change Timesta	mp		
Generated Type ALWAYS Implicitly Hidden Column	Row Change Tim	nestamp		
ALWATS Implicitly Hidden Column	Generated Type			
Implicitly Hidden Column	ALWAYS	× .		
	Implicitly Hidden	Column		

New data types - nchar, nvarchar, nclob.

New tab $\ensuremath{\textbf{Generated}}$ in the $\ensuremath{\textbf{Attribute Properties}}$ dialog.

Function

Punction Properties	
Function 1	•
General SQL Permissions Notes SQL Preview	To Do Before Script After Script Comment Function Parameters
Deterministic	Parameter Style
Not Specified 🔻	Not Specified 🔻
External Action	DBInfo
Not Specified 🔻	Not Specified 🔻
Called on Null	Parallel
Not Specified 🔻	- Not Specified 🔻
SQL Data Access	Scratchpad Length
Not Specified 🔻	Not Specified 🔻
Inherited Special Registers	Final Call
Not Specified 🔻	Not Specified 🔻
Fenced and Threadsafe	
Not Specified 🔻	
Transform Group	Cardinality
Predicates	
External Name	
Secured	
CK Ok±Add	Cancel Apply Help

For function types *External Scalar, External Table, OLE DB, SQL* defined on tab **General**, the **Secured** checkbox is available on tab **Function Parameters**.

Index

🔀 Index Properties	
Entity: Entity1	
Index1	•
General Items Notes Comment Index Properties	
Capt <u>i</u> on <u>N</u> ame	
Index1 = Index1	
Schema Not Specified 🔻 📖	
Unique Clustered Business Time Without Overlaps	
Generate	
OK Cancel Apply	y Help

Business Time Without Overlaps option added on tab General.

Trigger

Trigger event allows OR option, set for generating SQL script in Extended Value, option Create or Replace.

See other objects in Model Explorer:

- Security Labels
- Security Policies
- Sequences
- Tablespaces

Reverse Engineering - IBM DB2 LUW

Available Data Providers are:

- Native Connection
- Connection via ADO
- Connection via ODBC

Native Connection:

🔁 Connections		
- Name - Select Data Source - Select Data Provider <u>- Connecting</u> - What to Reverse - Options	Host <u>Host Name</u> 10.11.40.26 User <u>User Name</u> db2admin ☑ Save Password Database <u>Database Name</u> SAMPLE	Port 50000
Show Log Close after Execution	Connection String HostName=10.11.40.26; Port=50000; Database=SAMPLE; UID=db2; on < <u>Previous</u> <u>Next</u> >	admin; Finish <u>O</u> lose

Connection via ADO:

😕 Reverse Engineering Wizard			
 Stored Connections Select Data Source Select Data Provider Connecting What to Reverse Options Save Connection Tables 	Connection String Provider=DB2OLEDB.1;Password=root;Persist Security Info=True;User ID=db2admin;Net Data Link Properties		
	User Identification	Password	
	db2admin	••••	
	☑ Save Password		
Show Log Close after Execution	on < <u>P</u> revious <u>N</u> ext >	Execute Qose	

Connection via ODBC:

🔀 Reverse Engineering Wizard	
 Stored Connections Select Data Source Select Data Provider Connecting What to Reverse Options Save Connection Tables 	Data Source Name DB2_UDB_LUW Reload Property Data Link User Name db2admin Password •••• If Save Password
Show Log Close after Executi	on < <u>Previous N</u> ext > <u>Execute Qose</u>

Script Generation - DB2 v.10.1 (LUW)

🔁 DDL Script Generation of DB2 v.10.1 (LUW)	
What to Generate Detail Settings Referential Integrity Select List	
 Use Quotation Marks Generate Schema to Objects Text Case Selection: Preserve Case Generate Constraint Names (Foreign Keys) Generate Check Constraint Names Used in Domains Create Indexes to Foreign Keys ("Generate Constraint Names" must be checked) Create Comments Generate Permissions Only to Object Types Selected on Tab What to Generate Terminator 	
/ Order of Generated Objects You can change order of generated objects. Click Edit and define how objects will be generated. Edit	
Show Preview	
Verify Show Log Save Settings Generate Show Code	Help

Specifics - DB2 10.5 (LUW)

Entity

Entity Properties - E
Caption Name
Entity = Entity
Before Script After Script Notes SQL Preview Relationships Table Properties
Ceneral Attributes Keys Indexes Check Constraints Indgers Permissions 10 Do
Schema
- Not Specified 🔹 🐨
Settings
Organize By
DIMENSIONS
Organize by Dimensions (List of Columns)
Compression Value Security Policy Name
Not applicable Not Specified
Compression Mode PctFree
Not Enabled Append
Period Derinition Period Type Not Specified Begin Column Name End Column Name
Comments
Category
□ None
Image: Wage of the second

Organize by Row Using Insert Time, Organize by Row Using Dimensions and Organize by Column options added.

Example:

CREATE TABLE p_tab4 (a varchar(20), b char(10), c integer) organize by dimensions (b,c)

CREATE TABLE p_tabl1 (a varchar(20), b char(10), c integer) organize by insert time

CREATE TABLE p_tab5 (a varchar(20), b char(10), c integer) organize by row CREATE TABLE p_tab6 (a varchar(20), b char(10), c integer) organize by row using DIMENSIONS (b)

CREATE TABLE p_{tab7} (a varchar(20), b char(10), c integer) organize by row using insert time

CREATE TABLE STAFF (ID SMALLINT NOT NULL, NAME VARCHAR(9), DEPT SMALLINT) ORGANIZE BY COLUMN;

🗏 Attribute Properties - Entity - E	
Capt <u>i</u> on Attribute 1	Name Attribute1
General Check Constraints Foreign Keys Permissions	lotes Generated
Data <u>T</u> ype └── Varchar(x)	Domains ↓
20 Default Value	Default Rule None ▼
Comments:	
Character Data Type Attribute	User Data Type Attribute
Secured With Security Label Name - Not Specified	String Unit In Unicode Database Unit Char Data Type Not Specified OCTETS CODEUNITS32
New option to set parameters OCTETS/CODEUNITS16/CODEUNITS32 for the following Data Types:

- CHAR, VARCHAR, CLOB **allow** OCTETS/CODEUNITS32
- GRAPHIC, VARGRAPHIC, DBCLOB **allow** CODEUNITS16/CODEUNITS32

```
Note: The attribute length must be always set!
```

```
Example:
```

```
CREATE TABLE A_TEST
(
a integer,
b char,
c char(21),
d graphic,
e graphic(12),
```

```
f graphic (12 CODEUNITS16),
```

```
g char(1 BYTE),
```

```
h char (20 OCTETS)
```

)

Index

🔀 Index Properties - E	
Entity: Entity	
Index1	
General Items Notes Comment Index Properties	
PctFree Reverse Scans Tablespace for Index	
DISALLOW Not Specified	▼
Compression VII Keys	
XML Index Specification	
✓ Use XML Specification	
Data Type Length String Unit In Unicode Database	
- Not Specified	
Invalid Values OCTETS	
	*
	Ŧ
	~
	-
(%) OK Cancel Apply	Help

• INDEX INCLUDE NULL KEYS / EXCLUDE NULL KEYS

Example:

CREATE TABLE P_TAB20 (A char, B char, C char)

CREATE INDEX ix0 ON P_TAB20 (C) EXCLUDE NULL KEYS CREATE INDEX ix11 ON P_TAB20 (C) INCLUDE NULL KEYS $\circ~$ XML Index Specifications allows parameter <code>OCTETS/CODEUNITS32</code>

Example: CREATE TABLE TEST_C (A INTEGER, B XML)

CREATE UNIQUE INDEX MYIDX2 ON TEST_C(B) GENERATE KEY USING XMLPATTERN '/book/title' AS SQL VARCHAR(20 OCTETS)

Туре

Kattribute Properties - Entity - E	
Capt <u>ion</u> Attribute 1	Name Attribute 1
General Check Constraints Foreign Keys Permissions	lotes Generated
Data <u>Type</u> Varchar(x) Length 20	Domains
De <u>f</u> ault Value	Default Rule
	None 🔹 🗔
Primary Key Not Null Unique (New AK) Comments:	
	*
	_
Character Data Type Attribute	User Data Type Attribute
For Bit Data	Reference Type
Secured With	String Unit In Unicode Database
Security Label Name	Unit Char Data Type
- Not Specified 💌 🗔	CODEUNITS32
	Unit Graphic Data Type - Not Specified
	Ok <u>+</u> Add <u>C</u> ancel <u>Apply</u> <u>H</u> elp

• New option to set parameters of data types

- CHAR, VARCHAR, CLOB **allow** OCTETS/CODEUNITS32
- $\circ\,$ graphic, vargraphic, dbclob allow codeunits16/codeunits32 $\,$

Example:

CREATE TYPE dict3 AS Char(20 OCTETS) WITH COMPARISONS

CREATE TYPE dict5 AS GRAPHIC(20 CODEUNITS16)

CREATE TYPE arr7 AS GRAPHIC(1 CODEUNITS16) ARRAY[VARCHAR(8 OCTETS)]

Reverse Engineering - IBM DB2 LUW

Available Data Providers are:

- Native Connection
- Connection via ADO
- Connection via ODBC

Native Connection:

🔁 Connections				
- Name - Select Data Source - Select Data Provider <u>- Connecting</u> - What to Reverse	Host <u>H</u> ost Name 10.11.40.26			P <u>o</u> rt 50000
- Options	User <u>U</u> ser Name db2admin ☑ Save Password]	Password	
	Database <u>D</u> atabase Name SAMPLE			
	<u>C</u> onnection String HostName=10.11.40.26; Port=50000); Database=SAMPLE; UID=db2	admin;	
Show Log Close after Executi	on <u>Previo</u>	bus <u>N</u> ext >	Finish	

Connection via ADO:

🔀 Reverse Engineering Wizard		
- Stored Connections - Select Data Source - Select Data Provider <u>- Connecting</u> - What to Reverse - Options	Connection String Provider=DB2OLEDB.1;Password=root;Persist Sec Data Link Pro	urity Info=True;User ID=db2admin;Net [,] perties <u>T</u> est Connection
- Save Connection - Tables	User Identification User Name	Password
	db2admin Save Password	••••
Show Log Close after Execution	on < <u>P</u> revious <u>N</u> ext >	Execute <u>C</u> lose

Connection via ODBC:

🔀 Reverse Engineering Wizard	
 Stored Connections Select Data Source Select Data Provider Connecting What to Reverse Options Save Connection Tables 	Data Source Name DB2_UDB_LUW Reload Property Data Link User Name db2admin Password Save Password
Show Log Cose after Execution	on < <u>Previous N</u> ext > <u>Execute Qlose</u>

Script Generation - DB2 v.10.5 (LUW)

🔀 DDL Script Generation of DB2 v.10.5 (LUW)	- • ×
What to Generate Detail Settings Referential Integrity Select List	
 Use Quotation Marks Generate Schema to Objects Text Case Selection: Preserve Case Generate Constraint Names (Foreign Keys) Generate Check Constraint Names Used in Domains Create Comments Generate Permissions Only to Object Types Selected on Tab What to Generate Terminator : 	
Order of Generated Objects You can change order of generated objects. Click Edit and define how objects will be generated. Edit	
Show Preview	
Verify Show Log Save Settings Generate Show Code	<u>H</u> elp

Specifics - DB2 11.1 (LUW)

Functions and Procedures

- New option STAY RESIDENT NO on the Function/Procedure Parameters tab in Properties
- Available for external scalar and external table functions and for external procedures
- Set the type of Function/Procedure in Properties | General

Datatypes

• New datatypes (BINARY, VARBINARY, BINARY VARYING, BOOLEAN) have been implemented

Reverse Engineering - IBM DB2 LUW

Available Data Providers are:

- Native Connection
- Connection via ADO
- Connection via ODBC

Native Connection:

🔀 Connections		
- Name - Select Data Source - Select Data Provider <u>- Connecting</u> - What to Reverse - Options	Host Host Name 10.11.40.26 User User Name db.2admin	Pgrt 50000
	Database Database Name SAMPLE	
	<u>C</u> onnection String HostName=10.11.40.26; Port=50000; Database=SAMPLE; UID=db2a	admin;
Show Log Close after Execution	on < <u>Previous</u> <u>Next ></u>	Finish <u>C</u> lose

Connection via ADO:

🔀 Reverse Engineering Wizard		- • •
 Stored Connections Select Data Source Select Data Provider <u>Connecting</u> What to Reverse Options Save Connection 	Connection String Provider=DB2OLEDB.1;Password=root;Persist Security In Data Link Properties	nfo=True;User ID=db2admin;Net <u>T</u> est Connection
- Tables	User Identification	
	db2admin Pas	s <u>w</u> ord
	Save Password	
Show Log 🔲 Close after Executio	n < <u>P</u> revious <u>N</u> ext >	Execute <u>Close</u>

Connection via ODBC:

🔀 Reverse Engineering Wizard	
 Stored Connections Select Data Source Select Data Provider Connecting What to Reverse Options Save Connection Tables 	Data Source Name DB2_UDB_LUW Reload Property Data Link User Name db2admin Password Save Password
Show Log Cose after Execution	on < <u>Previous N</u> ext > <u>Execute Qlose</u>

Script Generation - DB2 v.11.1 (LUW)

18	DI	L Script Generation of DB2 v.11.1 (LU	JW)	- 🗆	×
What to Generate	Detail Settings	Referential Integrity Select List			
 ✓ Use Quotation ✓ Generate Schuter ✓ Text Case Selection ✓ Preserve Case ✓ Generate Construction ✓ Generate Chert ✓ Generate Permitter ✓ Generate Permitter ✓ Generate Permitter ✓ Order of Generate You can change generated. 	a Marks ema to Objects ion: straint Names (For ck Constraint Nar nissions Only to C ated Objects e order of general	eign Keys) es Used in Domains ject Types Selected on Tab What to Generate d objects. Click Edit and define how objects will be	3		
		Edit			
Show Preview					
			ОК	Car	ncel

Specifics - DB2 z/OS v. 11

Index

Exclude Null Keys

🔀 Index Properties - E		
Entity: Entity1		
Index1		
General Items Notes Com	ment Index Properties	
Cluster	Buffer Pool	
Compress	Piece Size	
No Close Copy		
		^
		v
(%)	OK <u>C</u> ancel	<u>A</u> pply <u>H</u> elp

New option to Include/Exclude Null Keys

Business Time Period

Business Time Period added in Entity Properties dialog, tab General.

Dictionary Type

Array Type

階 Dictionary Type Properties - E	- • •
11	~
General To Do Used in Notes Comment	
Caption Name DictionaryType1 ≥	6
Schema Not Specified 🔻	
Data Type	
Encoding Not Specified	~
Inline Length Subtype Not Specified	~
Аптау Туре Туре	
- Not Specified	
Data Type 2 Length Encoding	
Subtype	
Generate	
OK Ok±Add Cancel Apply	Help

New Type available for Dictionary Types - Array Type.

Inline Length parameter

Inline Length parameter for BLOB, CLOB and DBCLOB user data types/dictionary types.

🔀 Dictionary Type Properties - E	- • •
DictionaryType1	•
General To Do Used in Notes Comment	
Caption <u>N</u> ame	
DictionaryType1 = DictionaryType1	6
Schema	
Not Specified 🔻	
Data Tune	
Inline Length	
OK Ok±Add Cancel Apply	<u>H</u> elp

Attribute

🛎 Attribute Properties - Entity1 - E	
Caption	Name
Attribute 1	Attribute 1
General Check Constraints Foreign Keys Permissions	Notes Identity and Row Change Timestamp
Data <u>T</u> ype	Domains
📩 Timestamp with time zone 🗾 🔽 📖 🏠)
Default Value Primary Key Not Null Unique (New AK Comments:	Default Rule
Settings	v
Subtype	
Not Specified Vot	
Inline Length	
Implicitly Hidden	
≪> ⊡	Ok±Add Cancel Apply Help

New data types Timestamp(x), Timestamp with time zone, Timestamp(x) with time zone.

Key

Column Names Business Time Without Overlaps box added in Key Properties dialog, tab Attributes, and Index Properties dialog, tab Items.

🔀 Key Properties				8
Entity: Entity1				
Key1				•
General Attributes Notes				
Available Status		Selected	Status	
	> <			
Column Names Business Time Without Ove	erlaps			
<%>	ОК	Cancel	Apply	lelp

Trigger

🔀 Trigger Properties			
Entity: Entity1			
Trigger1			
General SQL Notes Comment			
Capt <u>ion N</u> ame Trigger1 = Trigger1			
Schema Not Specified 💌			
Trigger Time BEFORE			
Trigger Event			
Correlation and Table Names (REFERENCING)			
Old New			
Old Table New Table			
For Each			
ROW			
When Condition			
Secured			
Generate Generate SQL Only			
Cancel Appl	y Help		

Function

Checkbox **SECURED** in **Trigger Properties** dialog and **Function Properties** dialog for function types *External Scalar and Table* and *SQL*.

🔀 Function Properties	
Function 1	•
General SQL Permissions Notes SQL Preview	To Do Before Script After Script Function Parameters Comment
Deterministic	Parameter Style
Not Specified 🗸	Not Specified 🗸
External Action Not Specified	DBInfo Not Specified
Called on Null	Parallel
SQL Data Access	Scratchpad Length
Inherited Special Registers	Final Call
Not Specified 🗸	Not Specified 🗸
External Name	
Secured	
(SP) OK Ok+Add	Cancel Apply Help

Reverse Engineering - DB2 z/OS v. 11

Available Data Providers are:

- Native Connection
- Connection via ODBC

Native Connection:

🗏 Reverse Engineering Wizard		
- Stored Connections - Select Data Source - Select Data Provider <u>- Connecting</u> - What to Reverse	Host <u>H</u> ost Name 10.10.180.221	P <u>o</u> rt 905
- Options - Save Connection	User User Name	Password
- Tables	TOADTDM	•••••
	Save Password	
	Database <u>D</u> atabase Name	
	RU9A	
	Connection String	
	HostName=10.10.180.221; Port=905; Database=RU9	A; UID=TOADTDM;
Show Log Close after Execut	on < <u>Previous</u> <u>N</u> ext >	Execute <u>Close</u>

Connection via ODBC:

🔀 Reverse Engineering Wizard	
- Stored Connections - Select Data Source	Data Source Name DB2_ZOS
- Select Data Provider - Connecting - What to Reverse	Reload Property Data Link
- Options - Save Connection	TOADTDM
- Tables	Password
	•••••
	Save Password
Show Log Close after Executi	on < <u>Previous</u> <u>N</u> ext > <u>Execute</u> <u>Close</u>

Script Generation - DB2 z/OS v. 11

🔁 DDL Script Generation of DB2 z/OS v.11				
What to Generate Detail Settings Referential Integrity Select List				
I Les Quetation Marks				
Generate Schema to Objects				
Text Case Selection:				
Preserve Case				
Generate Constraint Names (Foreign Keys)				
Generate Check Constraint Names Used in Domains				
Create Comments				
Generate Permissions Only to Object Types Selected on Tab What to Generate				
Terminator				
Order of Generated Objects				
You can change order of generated objects. Click Edit and define how objects will be				
generated.				
Edit				
Show Preview				
Verify Show Log Save Settings Generate Show Code	Help			

Specifics - Greenplum 4.1

Greenplum database is based on PosgtreSQL 8.2, which defines basic features and structure.

Supported features - SQL/DDL script generation, reverse engineering, HTML/RTF/PDF reports, change scripting, verification.

Permissions can be set for entities, views and functions.

Entity

General tab

Entity Properties		
Caption	Name	
customer	- Customer	
Before Script After Script Notes SQL Preview	Relationships Storage Parameters Table Partit	ions
General Attributes Keys Indexes Ch	neck Constraints Triggers Permissions To	Do
Schema schema1		
Settings	Distribution Policy	
Temporary Table	Туре	
With OIDs	Hash Distribution 🔹	
Tablespace	Distributed Column List	
Not Specified 🔻 📖	"customer_id"	
Inherited Tables	-	
Comment		
		*
		_
Catagory		
	OK Cancel Apply Help	

Storage Parameters tab

Fillfactor
20
Append-Only Table
Orientation
- Not Specified
Compress Type
NONE
Compress Level
8 🗸
Block Size (in bytes)
32768

Table Partitions tab

Define partitions/subpartitions textually.

Before Script	After Script	Notes	SQL Preview	Relationships	Storage Parameters	Table Partitions
PARTITION BY I (PARTITION p VALUES(4,5), DEFAULT PAI	LIST(col1) part1 VALUES(1, RTITION defpart	2,3) WITH ()	fillfactor=11) TABL	.ESPACE tablespa	ce1,	*

During reverse engineering, sub-tables of partitioned tables are filtered (the tables created because of partitioned tables). The behavior can be influenced in reverse engineering options, in checkbox **Load Sub-Tables of Partitioned Tables**.

Attribute

Attribute Properties - Entity1 - E	
Caption Attribute 1	Name Attribute1
Data Type	Domains
Default Value Primary Key Not Null Unique (New AK)	Default Rule
Comment	*
Алтау Туре Is Array Type Алтау Dimensions	
ОК	Ok+Add Cancel Apply Help

Array Type - Select the Is Array Type checkbox to enable the Array Dimension box.

Dictionary Type/Domain

🔀 Dictionary Type Properties	- • •
schema1.us_zip_code	•
General To Do Used in Notes Comment After Script	1
Capt <u>i</u> on <u>N</u> ame	
us_zip_code = us_zip_code	6
Schema schema1	
Data Type Text 🗸 💭	
Not Null	
Default	
Check Constraint Expression Check Constraint I	Name
(VALUE ~ '^\\d{5}\$':text) OR (VALUE us_zip_code_che	ck
☑ Generate	
Cancel Appl	y Help

Array Type - Select the Is Array Type checkbox to enable the Array Dimension box.

Function

😕 Function Properties	
Function1	•
After Script Notes SQL General SQL Perm	Preview Internal Language Parameters issions To Do Before Script
Caption Function1 =	Name Function1
Schema Not Specified 🔻 📖	Language internal
Function Arguments	SQL C internal
	PL/pgSQL 😞 user-defined
	~
Return Data Type	Volatility VOLATILE
 Security Definer Generate Generate SQL O 	Returns Null on Null Input
OK Ok+Add	Cancel Apply Help

If C is selected in Language combo box, C Language Parameters tab appears.

After Script	Notes	SQL Preview	C Language Parameters
File Name			
\$libdir/gpextprotoc	ol.so		
Link Symbol			
demoprot_import			

If internal is selected in Language combo box, Internal Language Parameters tab appears.

After Script	Notes	SQL Preview	Internal Language Parameters
Internal Function	Name		
\$libdir/gpextprote	ocol.so		

Foreign Key (Referential Integrity)

NO FUNCTIONALITY - Foreign key constraints are not supported in Greenplum database. They can be created but are not enforced.

Trigger

Triggers can be created but the functionality is considerably limited. Other supported objects:

- Aggregate
- Sequences
- Rewrite Rules
- External Tables

Objects not supported in Toad Data Modeler:

- Resource Queue
- (Trusted) Protocol
- Filespace

Aggregate

🧏 agg4	- • •
public.agg4	-
General SQL Preview	
Name	
agg4	
Schema	
public 🗾	
Ordered Aggregate	
Input Data Type List	
"int4"	
State Transition Function	
mysfunc3 🔹	
Data Type For State Value	
int4	
Preliminary Aggregation Function	
mypretunc4	
Initial Setting For State Value	
{0.0}	
Sort Operator	
+	
Generate Generate SQL Univ	
(%) OK Canc	Apply
	, 450

Sequence

🐸 tab_seq_a_ser_seq			
public.tab_seq_a_ser_seq			
General SQL Preview Before Script After Script Comment			
Name			
tab_seq_a_ser_seq			
Schema			
public 🗸 🗐			
Increment By			
Start With			
Maxvalue Minvalue			
NOMAXVALUE NOMINVALUE Cache			
1			
Table Column			
tab_seq 🔹 a_ser			
Generate Generate SQL Only			
	Apply		
Cand	лариу		

Rewrite Rules

🔀 prot_gc_upd		- • ×
b2001.prot_gc_upd	I	•
General SQL Prev	view	
Name		
prot_gc_upd		
Event	Entity	
UPDATE +	View	
	Not Specified	
Condition	<u> </u>	
(old.id < 4)		* *
Execute Method		
INSTEAD	•	
Do Nothing		
🔽 Generate	Generate Commands Only	
**>	OK Cance	Apply

External Tables

Object specifics for Greenplum db not present in PosgtreSQL 8.2.

🔁 ext_customer
schema1.ext_customer
General Distribution Policy SQL Preview
Name
Schema
Readable Writable Regular Web
List of Columns
URI Location
Execute OS Command
Segment Instances (for OS Command) Parameter of Segment Instances
Not Specified V
Format Type Client Encoding
-
Error Table Name
Segment Reject Limit for Rows with Errors Reject Limit Threshold Type ROWS (default)
Generate Generate SQL Only
OK Cancel Apply

• Set External Table to be Readable/Writable

Writable External Table - enables the Distribution Policy tab

General	Distribution Policy SQL Preview	
Туре		
Roun	d-Robin Distribution (Randomly)	•
Distribu	ited Column List	
		*
		~

• Set External Table to be Web or Regular type External Table

Web External Table - set Execute OS Command, Segment Instances, Parameter of Segment Instances

• Error Table Name - allows full table name, e.g. "schema1"."tablename"

Reverse Engineering - Greenplum 4.1

Available Data Providers are:

Native Connection

Native Connection:

🔁 Connections		
- Name - Select Data Source - Select Data Provider <u>- Connecting</u> - What to Reverse - Options	Host Host Name 10.11.40.67 User	P <u>ort</u> 5432
	gpadmin I Save Password	
	Database Database Name	
	SSL	
	SSL Mode Disable SSL CA File	
	SSL Cert File SSL Key File	
	<u>C</u> onnection String HostName=10.11.40.67; Port=5432; Database=gpdemo; UID=gpadm	in;
Show Log Close after Executi	on < <u>P</u> revious <u>N</u> ext >	Finish <u>C</u> lose

Specifics - Greenplum 4.2

Supported features - SQL/DDL script generation, reverse engineering, HTML/RTF/PDF reports, change scripting, verification.

Permissions can be set for entities, views and functions.

Entity

Caption Name Entity1 = Entity1 (General Attributes Keys Indexes Check Constraints Triggers Permissions To Do Before Script After Script Notes SQL Preview Relationships Storage Parameters Table Partitions Filfactor © Append-Only Table Orientation - Not Specified - • Compress Level - Not Specified - • Block Size (in bytes)	Entity Properties - E		
Entity1 = Entity1 General Attributes Keys Indexes Check Constraints Triggers Permissions To Do Before Script After Script Notes SQL Preview Relationships Storage Parameters Table Paritions Filfactor M Append-Only Table Orientation - Not Specified - Compress Type - Not Specified - Compress Level - Not Specified - Block Size (in bytes)	Capt <u>i</u> on	<u>N</u> ame	
General Attributes Keys Indexes Check Constraints Triggers Permissions To Do Before Script After Script Notes SQL Preview Relationships Storage Parameters Table Partitions Filfactor Indexes Append-Only Table Indexes Concentration Indexes Compress Type - Not Specified - Indexes Indexes Indexes Indexes Storage Parameters Table Partitions Block Size (in bytes) Indexes Indexes Indexes Indexes Indexes Storage Parameters Table Partitions rev If Specified - Indexes Index Indexes Indexes<	Entity1	= Entity1	
Filfactor	General Attributes Before Script After Script	Keys Indexes Check Constraints Notes SQL Preview Relationships	Triggers Permissions To Do Storage Parameters Table Partitions
Append-Only Table Orientation - Not Specified - Compress Type - Not Specified - Block Size (in bytes)	Fillfactor		
so Generate OK Cancel Apply Help	Append-Only Table Orientation Not Specified Compress Type Not Specified Compress Level Not Specified Block Size (in bytes)	▼	
x) V Generate	Block Size (in bytes)		
rsa)			
%)			
%)			
So Generate OK Cancel Anoly Halo			
	Seperate		

Storage Parameters tab- Select the Append-Only Table checkbox to enable the Block Size (in bytes) box. Compress Type combo box - new options added:

- ZLIB (default)
- QUICKLY
- RLE_TYPE
- NONE

Attribute

Name Attribute 1
<u>D</u> omains ▼
Default Rule None
Column Encoding
Compress Type e window from list Compress Level Not Specified

Column Encoding - only in Column Oriented tables, cannot be combined with table's compression parameters

- Compress Type (ZLIB, QUICKLY, RLE_TYPE, NONE)
- Compress Level (0 to 9)
• Block Size (in bytes)

External Table

General tab, Format Typebox - new option CUSTOM.

User Data Type

🚪 User Data Type Properties - E	
UserDataType1	
General To Do Used in Notes SQL Prev	riew Base Type Comment
Input Function (required)	Alignment
Output Function (required)	Storage
Receive Function	Default
Send Function - Not Specified	Element
Analyze Function Not Specified	Delimiter
Internal Length (in bytes)	
Passed by Value	
Compress Type - Not Specified 🗸	Compress Level Not Specified 🗸
Block Size (in bytes)	
W OK Ok+Add	Cancel Apply Help

New options added on tab Base Type:

- Compress Type (ZLIB, QUICKLY, RLE_TYPE, NONE options)
- Compress Level (0 to 9)
- Block Size (in bytes)

Function

General pane - new **With Parameter (Describe Functions)** option, only for generating and reporting functions. **Other objects**:

Aggregate Function

🔀 Aggregate1 - Ε 👘 🔲 🖸	3
Aggregate 1	-
General SQL Preview	_
Name	
Aggregate1	
Schema Not Specified	
Ordered Aggregate	
State Transition Function	
Data Type For State Value	
Preliminary Aggregation Function Not Specified …	
Initial Setting For State Value	
Sort Operator	
Generate Generate SQL Only	
OK Cancel Apply	

Ordered Aggregate option added. If selected, **Preliminary Aggregation Function** is disabled and when applied (OK/Apply), the combo box is set to value -- *Not Specified* --.

Reverse Engineering - Greenplum 4.2

See Reverse Engineering - Greenplum 4.1 for more information.

Script Generation - Greenplum 4.2

B DDL Script Generation of Greenplum 4.2	- • •
What to Generate Detail Settings Referential Integrity Select List	
What to Generate Detail Settings Referential Integrity Select List Image: Use Quotation Marks Image: Generate Schema-Qualified Names Image: Generate Schema-Qualified Names Text Case Selection: Image: Generate Schema-Qualified Names Image: Generate Schema-Qualified Names Image: Generate Schema-Qualified Names Image: Generate Schema-Qualified Names Image: Generate Schema-Qualified Names Image: Generate Schema-Qualified Names Image: Generate Schema-Qualified Names Image: Generate Schema-Qualified Names Image: Generate Schema-Qualified Names Image: Generate Schema-Qualified Names Image: Generate Schema-Qualified Names Image: Generate Schema-Qualified Names Image: Generate Schema-Qualified Names Image: Generate Schema Sc	
 Create Comments Grant Roles to User/Role Generate Permissions Only to Object Types Selected on Tab What to Generate Terminator Dollar Quoting Type in Function Definition String SS 	
Order of Generated Objects You can change order of generated objects. Click Edit and define how objects will be generated.	
Show Preview	
Verify Show Log Save Settings Generate Show Code	Help

Specifics - Ingres 9.3

Entity

Entity Properties						• *
Caption		<u>N</u> am	ie Calaani	- 11		
test Schema.t I		= test	Schema	a.t i		10
Before Script	After Script	Notes	SG	L Preview	Relation	nships
General Attributes	Keys Indexes	Check Constra	ints	Triggers	Permissions	To Do
Schema						
- Not Specified		·]				
With Clause:						
I						^
						Ŧ
Comments:						
						Ŧ
Category						
None	•					
✓ Generate		<u>О</u> К		ancel	Apply	<u>H</u> elp

Index

🔀 Index Properties		- • ×
Entity: testSchema.t1		
Index1		•
General Items Notes With Clause Storage Structure ISAM Unique Scope ROW Persistent NOPERSISTENCE		
*>	OK Cancel Apply	

Entity and Index dialogs contain With Clause.

Synonyms

Synonym 🗆 🖾
testSchema.sampletable 🗸
General Before Script After Script Notes
Name
sampletable
Schema
testSchema 🔻 📖
Object
testSchema.t1 🗸
Base Object is not in List
Generate
OK Ok+Add Cancel Apply

Other objects:

🔀 Sequence1 - E		
Sequence1		
General SQL Preview Aft	er Script Before Script	
Name		
seq1		
Schema		
Not Specified	▼	
Data Tura far Saguenes Va	hua.	
INTEGER		
Start With		
1		
Increment By		
1		
Maxvalue	MinValue	Cache
Is Defined	Is Defined	Is Defined
yes 👻	yes 👻	yes 🗸
Value	Value	Value
500	1	50
_	_	
NO CYCLE	Associated with an Ident	tity Column
NO ORDER		
Conorsto	Concerto SQL Only	
	Cenerate SQL Only	
<%>	<u>0</u> K	Cancel Apply

Reverse Engineering - Ingres 9.3

Available Data Providers are:

Connection via ODBC

Connection via ODBC:

🔀 Reverse Engineering Wizard	
 Stored Connections Select Data Source Select Data Provider Connecting What to Reverse Options Save Connection Tables 	Data Source Name INGRESS Reload Property Data Link User Name qa Password •• Image: Save Password
Show Log Close after Execution	on < <u>Previous N</u> ext > <u>Execute Qlose</u>

Script Generation - Ingres 9.3

BDL Script Generation of Ingres 9.3	
What to Generate Detail Settings Referential Integrity Select List	
What to Generate Detail Settings Referential Integrity Select List Image: Use Quotation Marks Image: Generate Schema to Objects Image: Generate Schema to Objects Text Case Selection: Preserve Case Image: Generate Constraint Names (Foreign Keys) Image: Generate Constraint Names (Foreign Keys) Image: Generate Constraint Names Used in Domains Image: Create Indexes to Foreign Keys ("Generate Constraint Names" must be checked) Image: Create Comments Terminator Image: Order of Generated Objects	
Order of Generated Objects You can change order of generated objects. Click Edit and define how objects will be generated. Edit	
Show Preview	
Verify Show Log Save Settings Generate Show Code	Help

Specifics - Ingres 10.0

See Specifics - Ingres 9.3 for more information.

Reverse Engineering - Ingres 10.0

See Reverse Engineering - Ingres 9.3 for more information.

Specifics - EDB Postgres Advanced Server 10

EDB Advanced Server is closely based on PostgreSQL 10.

EDB 10 also offers support for packages and synonyms. Packages and synonyms are supported in Change Script Generation, Reverse Engineering and in Reports.

Change Script Generation is based on PostgreSQL 10 and differences between EDB and Postgres might not be generated correctly.

Stored procedures

COST in stored procedures is rounded to 3 decimals during Reverse Engineering.

SET in stored procedures is loaded into AfterScript. Default value is 100.

By default procedures will execute with the privileges of the user that created them (SECURITY DEFINER). By default VOLATILE is set for procedures. By default procedures cannot be executed in parallel mode (PARALLEL UNSAFE). Default values are not generated in TDM.

Script Generation - EDB Advanced Server 10

Note: The series of the server th	-		×
What to Generate Detail Settings Referential Integrity Select List			
Image: Product and Provide and Prov			
Terminator Dollar Quoting Type in Function Definition String : \$\$			
Order of Generated Objects You can change order of generated objects. Click Edit and define how objects will be generated. Edit Show Preview			
	ОК	Car	ncel

Reverse Engineering - EDB Advanced Server

Available Data Providers are:

- Connection via ODBC
- Native Connection

Connection via ODBC:

- 1. Install the correct ODBC driver for your database
- 2. In Reverse Engineering Wizard | Connecting select Property Data Link
- 3. Click Add and select the driver
- 4. Enter your connection details, click Test and Save
- 5. Click Reload to refresh the list of data sources and select your desired ODBC connection

🔁 Reverse Engineering Wizard				×
 Stored Connections Select Data Source Select Data Provider <u>Connecting</u> What to Reverse Options Save Connection Tables 	Data Source Name PostgreSQL30 Reload User Name enterprisedb Password Save Password	Property Da	ita Link	>
Show Log Close after Executi	on < Previous Next > Exe	cute	Close	

Native Connection:

🔁 Reverse Engineering Wizard		
 Stored Connections Select Data Source Select Data Provider <u>Connecting</u> What to Reverse Options Save Connection Tables 	Host Host Name Port 10.11.40.173 User User User Name enterprisedb Save Password Database Database SSL SSL SSL SSL SSL SSL CA File	60
	SSL Cert File SSL Key File Connection String HostName=10.11.40.173; Port=55960; Database=enterprisedb; UID=enterprisedb;	
Hide Log Close after Execut	ion < Previous Next > Execute	Close
ld ▲ Date Time	Message	

Specifics - Microsoft Access 2010

Entity

Entity Properties				
Capt <u>i</u> on	Name			
Customers	= Custome	rs		10
Notes	SQL Preview	1	Relationship	s
General Attributes Keys Inc	dexes Check Constraints	To Do	Before Script	After Script
-				
Owner				
aumin	· · · · · · · · · · · · · · · · · · ·			
Linked Table				
Linked Table				
Link Datasource				
C:\Documents and Settings\mario\Doc	uments\MSAccess\fileaccess.md	lb		
Link Provider String				
MS Access; PWD=mypassword				
Remote Table Name				
TableName				
Descriptions				
				$\overline{\nabla}$
Category				
None	▼			
	<u>0</u> K	Cancel	Apply	<u>H</u> elp

Select the **Linked Table** checkbox and fill out the following boxes (name: *filled_value*): Link Datasource: C:\Documents and Settings\mario\Documents\MSAccess\fileaccess.mdb Link Provider String: *Microsoft Access;PWD=mypassword*

Remote Table Name: TableName

Attribute

🔀 Attribute Properties - Customers - E	
Caption Attribute 1	Name Attribute 1
General Check Constraints Foreign Keys Notes	
Data <u>Type</u>	Domains
Default Value Primary Key Not Null Unique (New AK) Descriptions	Default Rule None
	* *
Settings Auto Number Type Random Number of Decimal Places Allow Zero Length Compress Unicode	Format Own Format None Input Mask
	Ok <u>+</u> Add <u>C</u> ancel <u>A</u> pply <u>H</u> elp

Select the AutoNumber LI data type to display the **Auto Number Type** box. From this box, you can select **Increment** or **Random**.

Select the *Byte, Currency, Decimal, Double, Integer, Long Integer, Single* data type to display the **Number of Decimal Places** box.

Select the *Hyperlink, Memo, Text* data type to display the **Allow Zero Length** and **Compress Unicode** checkboxes.

User Data Types in the Model menu

Microsoft Access database does not have user data types. Nevertheless, these user data types in Toad Data Modeler work only as an additional structure that can be used for a data type that Microsoft Access database supports but that is not available in Toad Data Modeler.

Generation of names in brackets

- Check Delimited Identifiers in DDL Script Generation | Detail Settings to generate all names in brackets
- · If unchecked, names will be generated without brackets with exception of names that include spaces

Generation of captions

Check Generate Captions in DDL Script Generation | Detail Settings for MS Access models

Specifics - Microsoft Access 2010

Entity

Entity Properties		
apt <u>i</u> on	Name	
Customers	= Customers	
Notes	SQL Preview	Relationships
General Attributes Keys In	dexes Check Constraints To Do B	Before Script After Script
_		
Owner		
admin	▼	
Linked Table		
V Linked Table		
Link Datasource		
C:\Documents and Settings\mario\Doc	cuments\MSAccess\fileaccess.mdb	
Link Provider String		
MS Access; PWD=mypassword		
Remote Table Name		
TableName		
Descriptions		
		*
		-
Category		
	▼	
Generate	OK Cancel	Apply Help

Select the **Linked Table** checkbox and fill out the following boxes (name: *filled_value*): Link Datasource: C:\Documents and Settings\mario\Documents\MSAccess\fileaccess.mdb Link Provider String: *Microsoft Access;PWD=mypassword* Remote Table Name: *TableName*

Attribute

Attribute Properties - Customers - E	
Caption Attribute1	Name Attribute 1
General Check Constraints Foreign Keys Notes	
Data <u>T</u> ype	Domains
De <u>f</u> ault Value Primary Key Not Null <u>U</u> nique (New AK)	Default Rule None
Descriptions	
Settings	
Auto Number Type	Format Own Format
Number of Decimal Places	Input Mask
Allow Zero Length	
СК <u>О</u> К	Ok±Add Cancel Apply Help

Select the AutoNumber LI data type to display the **Auto Number Type** box. From this box, you can select **Increment** or **Random**.

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Select the *Hyperlink, Memo, Text* data type to display the **Allow Zero Length** and **Compress Unicode** checkboxes.

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Generation of captions

Check Generate Captions in DDL Script Generation | Detail Settings for MS Access models

Reverse Engineering - Microsoft Access 2007/2010

Available Data Providers are:

Connection via ADO and DAO

Connection via ADO and DAO:

🔀 Reverse Engineering Wizard	
 Stored Connections Select Data Source Select Data Provider Connecting What to Reverse Options Save Connection Tables 	Microsoft Access Database C:\Users\knapek\Desktop\factory2000-sample-tables.mdb Database Password
Show Log Close after Executi	Connection String Provider=Microsoft.Jet.OLEDB.4.0;Data Source=C:\Users\knapek\Desktop\factory200C Data Link Properties Test Connection on < Previous

Script Generation - Microsoft Access 2007/2010

Toad Data Modeler doesn't generate an SQL script for the Microsoft Access database, but does generate a fully functional source code in the VBA language. The source code can be executed directly in the Microsoft Access as

Module. Appropriate libraries in Microsoft Access are necessary - "Microsoft ActiveX Data Objects 2.x Library" and "Microsoft ADO Ext. 2.x for DDL and Security" for ADO, or "Microsoft DAO 3.6 Object Library" for DAO.

To select a suitable library, click the **Tools menu** | **References** (in Microsoft Access main menu). In the beginning of every script generated for Microsoft Access, you will see the following order:

BDL Script Generation of Microsoft Access 2007-2010	
What to Generate Detail Settings Referential Integrity Select List	
Text Case Selection: Preserve Case	
Create Defaults: Inside Table Definition	
 Create Descriptions Use DAO for Property that is not Generable with ADO Set Owner for Tables and Queries Order of Generated Objects You can change order of generated objects. Click Edit and define how objects will be generated. 	
Show Preview	
Verify Show Log Save Settings Generate Show Code	Help

Specifics - Microsoft Azure SQL Database V12

Specifics of Toad Data Modeler support

• It is not possible to specify a Filegroup in **Entity Properties | General | Data Space**. When you enable Partition Scheme you can select from available schemes

D	ata Space		
	 Filegroup Partition Scheme 		
	- Not Specified -	\lor	
	Partition Column Name		

- · Definitions of User and Schema objects are not loaded
- There are differences between Azure SQL Database and SQL Server 2016 in External Table syntax
- Right-click External Tables in the Physical Model Explorer and select Add to create external tables.

🛓 ExternalTable1 - E 🚽 🗖 🔜
Capton Name EcemalTable1 EcemalTable1 E
Uennem Before Solot After Solot Notes Permissions Desolotion Edended Properties SQL Preview Schema -Not Specified -
Course Cerrition Lat
Sharded External Table Options External Data Source - Net Second - v
Renote Schema Name
Destibution Sharding Column Name
ap I Generate OK Cancel Apply

i NOTE: Rule, Default - Settings of Attributes are loaded into AfterScript during Reverse Engineering

New Objects in Azure SQL Database V12

- Partition Scheme and Partition Function
- · Fulltext Catalog, Fulltext Index and Fulltext Stoplist

- Extended Property
- XML Schema Collection
- Primary, Secondary, Selective and Secondary Selective XML Index
- Spatial Index, Columnstore Index
- Sequence
- Column Encryption Key
- External Table
- External Data Source
- Security Policy

SQL Server unsupported features in Azure SQL Database

These objects are not supported by Microsoft Azure in comparison with Microsoft SQL Server:

- Assembly
- CLR features such as (CLR procedures, functions, triggers, user-defined type, ORDER property in functions)
- Aggregate Function
- Extended Stored Procedure
- Filestream and its settings
- Semantic search (STATISTICAL_SEMANTICS in CREATE FULLTEXT INDEX)
- FileTable
- Search Property List and its application in Fulltext Index
- STATISTICS_INCREMENTAL property of keys and indexes
- External File Format
- Stretch database (REMOTE_DATA_ARCHIVE v CREATE TABLE)

Reverse Engineering - Microsoft Azure SQL Database V12

Available Data Providers are:

- Connection via ADO
- Native Connection

Connection via ADO:

🔀 Reverse Engineering Wizard		_ • •
- Stored Connections - Select Data Source - Select Data Provider <u>- Connecting</u> - What to Reverse - Options - Save Connection	Connection String Provider=Microsoft.AZU.OLEDB.15.0;Data Source Data Link P	roperties
- Tables	User Identification <u>U</u> ser Name qa@zfdbde4mye IV Save Password	Pass <u>w</u> ord
Show Log Close after Executi	on < <u>P</u> revious <u>N</u> ext >	Execute <u>C</u> lose

Native Connection:

🔀 Reverse Engineering Wizard		
 Stored Connections Select Data Source Select Data Provider <u>Connecting</u> What to Reverse Options Save Connection Tables 	Host <u>Host Name zfdbde4mye.database.windows.net OLE DB Provider Auto If the SQL Native Client provider is found, equals to SQL.</u>	P <u>o</u> rt (optional) Native Client, otherwise equals to
	User Authentication Server User Name qa@zfdbde4mye	Password
	✓ Save Password Database Database Name test	
Show Log Close after Executio	n < <u>P</u> revious <u>N</u> ext >	Execute Gose

Script Generation - Microsoft Azure SQL Database V12

18	DDL Script	Generation of N	Aicrosoft	Azure SQL Dat	abase V12	-		×
What to Generate	Detail Settings	Referential Integrity	Select List					
Delimited Identifi Generate Scherr Text Case Selection Preserve Case Generate Constr Generate Check Check Object E Create Fulltext In Drop Fulltext Ind Create Descripti Create Extended Generate Permis Terminator go Order of Generate You can change of generated.	fiers (Use Brack ma to Objects in: traint Names (Fork K Constraint Nar Existence Before Indexes dexes ions d Properties User/Role issions Only to C ted Objects order of general	ets) reign Keys) mes Used in Domains Processing Drop Cor Object Types Selected ted objects. Click Edit	nmands I on Tab Wha and define h	at to Generate ow objects will be Edit				
Show Preview								
					OK		Cano	el

Specifics - Microsoft SQL Server 2012

Entity

Fulltext Index tab

Entity Properties	- • •
Centing	•
	10
General Attributes Keys Indexes Check Constraints Triggers Per Before Script After Script Notes SQL Preview Relationships Fulltext Index	missions To Do Data Compression
List of Columns	
	~
index Name	
Fulltext Catalog Filegroup	
- Not Specified	▼
Change Tracking AUTO Stoplist	
≪> Cancel App	v <u>H</u> elp

Search Property List

Fulltext Index tab, new combo box Search Property List.

🔀 Entity Properties - E			- • •
Caption	Name		
Entity1	= Entity1		6
General Attributes Keys Indexes	Check Constraints	Triggers Pen	missions To Do
Before Script After Script Notes SQL Previo	ew Relationships	Fulltext Index	Data Compression
List of Columna			
atr1 atr2 STATISTICAL SEMANTICS			
			-
Index Name			
i_name			
Fulltext Catalog	Filegroup		
Not Specified 👻 🗔	Not Specified		▼
Change Tracking			
AUTO			•
Stoplist			
<system></system>			• []
Search Property List			
SearchPropertyList1			
Generate		ncel And	hr Help

SearchPropertyList object has only listing function. It is not possible to define it (CREATE/DROP/ALTER not supported).

🔀 SearchPropertyList1		x
SearchPropertyList1		•
General		
Name		
SearchPropertyList 1		
3	OK Cancel Apply	

Data Compression Tab

😕 Entity Properties		
Capt <u>i</u> on	Name	12
General Attributes Keys Before Script After Script	Notes SQL Preview Relationships	Triggers Permissions To Do Fulltext Index Data Compression
Compression Type NONE Set Compression Type on Individu Set Compression Type on Individu	dual Partitions al Partitions	
Compression Type for Partition	Partition Number Add to List	
		~
		Incel Apply Help

Description Column

Entity Properties - E	
Caption	Name
Entity1	Entity1
Before Script After Script Notes	SQL Preview Relationships Fulltext Index
General Attributes Neys Indexes	Crieck Constraints Inggers Permissions 10 Do
Schema	
- Not Specified	
Hilegroup Net Specified	Partition Scheme
Text Filegroup for Table (TEXTIMAGE ON)	Partition Column Name
- Not Specified -	
Description	
	<u>^</u>
	v
LI None	•
☆ Generate	OK Cancel Apply Help

Take notice of the Data Space area. If you click Filegroup, list of file groups will become available. If you select Partition Scheme, the options will change.

Description text box - The description text is generated in final DDL script.

Note: To generate the table, column descriptions for SQL Server db in Toad Data Modeler, schema/owner has to be defined. Please see the Entity Properties form | General tab and from the Schema box select a schema or click the icon on the right to open the Schema dialog and define a new schema, then select it for the entity.

Index

Columnstore option

Type of Index box - new **Columnstore** index type. For Columnstore indexes, many options are available, though they are not valid and they do not get generated.

🔁 Index Properties	- • •
Entity: Entity1	
i_name	•
	1 - I
Secondary XML Index Parameters Spatial Index Parameters General Items Notes Index Options	Description
Capt <u>i</u> on <u>N</u> ame	
	16
Type of Index	
Not Specified 👻	
Not Specified Relational	
XML	
Columnstore	
Filegroup Partition Scheme	
Not Specified	▼
Partition Column Name	
Filestream Filegroup (for Clustered Index) Filestream Partition Scheme (for C	ilustered Index)
Not Specified v I	<u>_</u>
Everynamian far Eillarad Inday (WHERE)	
Expression for hitered index (WHENE)	
Generate	
OK Cancel Ap	Ply Help

Spatial Index Parameters Tab

🔀 Index Properties - E		
Entity: Entity1		
i_name		•
General Items	Notes Index Options	Data Compression
Secondary XML Index Parameters	Spatial Index Parameters	Description
Spatial Tessalation Scheme GEOMETRY_GRID		
Bounding Box (for Geometric Spatial	Index)	
X-min	Y-min	
X-max	Y-max	
Grids		
Level 1 Level 2 <none> ▼</none>	Level 3 Level 4 <none></none>	
Cells Per Object		
**	<u>O</u> K <u>C</u> ancel	<u>Apply H</u> elp

New **Spatial Tessalation Scheme** box with new options *GEOMETRY_AUTO_GRID* and *GEOGRAPHY_AUTO_GRID*. Based on selection, further **Bounding Box** and **Grids** options are enabled or disabled. **Cells Per Object**— Default value changed to empty from 16.

The FilestreamFilegroup box

🔀 Index Properties - E	
Entity: Entity1	
Index1	
Secondary XML Index Parameters	Spatial Index Parameters Description
General Items No	otes Index Options Data Compression
Caption	Name
Index1	= Index1
Unique	
Clustered	
Data Space	
Filegroup	Partition Scheme
Not Specified 👻	Not Specified
	Partition Column Name
Filestream Filegroup (for Clustered Index	k) Filestream Partition Scheme (for Clustered Index)
Not Specified 💌	Not Specified
Expression for Filtered Index (WHERE)	
Generate	
	OK Cancel Annhy Help

The **FilestreamFilegroup** box is available only for Clustered indexes - see the **Data Space** area. In tables that are not partitioned, you can make selection from a new list **Filestream Filegroup**. In partitioned tables, you can make selection from a new list **Partition Scheme**.

i Note: To be able to define Filestream Filegroup, the database requires columns with the Filestream property in a table.

Possibility to define Filtered Index in the Expression for Filtered Index (WHERE) box.

Data Compression Tab

階 Index Propertie	s - E				- • •
Entity: Entity1					
Index1					~
CanadaauX	ML Index Descusio	- 1 4	Paratial Index D		Description
Secondary A	ML Index Paramete	Notes	l Index Or	arameters	Data Compression
Compression Ty NONE Set Compress Set Compressi	pe sion Type on Individue	dual Partitions al Partitions			
Compression	Type for Partition	Partition Numb	er		
NONE	-			Add to List	
					*
(a)		ОК	Canc	el A	
<%>		<u>О</u> К	Cano	el <u>A</u>	pply <u>H</u> elp

On this tab, you can set Data Compression either for all indexes (combo box "Compression Type") or for particular partitions. (To accomplish this, it is necessary to select checkbox **Set Compression Type on Individual Partitions** and fill out the box in the **Set Compression Type on Individual Partitions** area. See the auxiliary combo box **Compression Type for Partition**, box **Partition Number** and button **Add to List**).
Secondary XML Index Parameters Tab

🔀 Index Properties - E		- • •
Entity: Entity1		
Index1		-
General Items N Secondary XML Index Parameters	otes Index Options Spatial Index Parameters	Data Compression
Secondary XML Index Primary XML Index to Use Type of Secondary XML Index VALUE		
(*)	OK Cancel App	oly <u>H</u> elp

Spatial Index Parameters Tab

🔀 Index Properties - E	
Entity: Entity1	
Index1	
General Items Nator	Index Options Data Compression
Secondary XML Index Parameters	Spatial Index Parameters Description
	·]
Bounding Box (for Geometric Spatial Index)	
X-min Y-min	
X-may Y-may	
Grids	
Level 1 Level 2 Level	3 Level 4
MEDIUM - MEDIUM - MED	
Cells Per Object	
16	
(22)	

- Note: Now index can be generated as normal (relational) index, primary XML index, secondary XML index and Spatial index. What index will be generated is selected automatically by the following conditions (particularly by data type of particular attribute):
 - If index has only one column and this column is of XML type, XML index will be generated. For the XML index it is searched whether the box "Primary XML index..." is filled out. If it is filled out, then it is a secondary XML index. Otherwise it is a primary XML index.
 - If index has only one column and this column is of Geometry or Geography type, Spatial index will be generated then.
 - Database requires a primary key in a table if Spatial Index exists. User has to arrange it on his own.

Key

Data Compression Tab

🔀 Key Properties - E	
Entity: Entity1	
Key1	
General Attributes Notes Index Options Data Compression Description	
Compression Type NONE Image: Set Compression Type on Individual Partitions Set Compression Type on Individual Partitions Compression Type for Partition Partition Number	
NONE Add to List	
	~
OK <u>Cancel</u> Apply	Help

On the **Data Compression** tab, you can set Data Compression either for all key (combo box **Compression Type**) or for particular partitions. (To accomplish this, it is necessary to select checkbox **Set Compression Type on**

Individual Partitions and fill out the box in the Set Compression Type on Individual Partitions area. See the auxiliary combo box Compression Type for Partition, box Partition Number and button Add to List).

i Note: To load Data Compression defined in index during reverse engineering, it is necessary to select the Load Index Options checkbox in the Reverse Engineering Wizard (it is selected by default).

General tab - take notice of the Data Space area. If you click Filegroup, list of file groups will become available. If you select Partition Scheme, schemes will be available.

Index Options tab - Detailed settings for index of the key should be defined here.

Index Options Tab

Detailed settings for index of the key should be defined here.

🔀 Key Properties		- • •
Entity: Entity1		
Key1		•
General Attributes Notes Index Options	Description	
Pad Index	Statistics NoRecompute	
Fill Factor	Allow Row Locks	
Ignore Duplicate Key Values	V Allow Page Locks	
		▲ ▼
**	OK Cancel Apply	Help

Data Space

🔀 Key Properties	
Entity: Entity1	
Key1	-
General Attributes Notes Index Options Description	
Caption Name Key1 E	
Clustered	
Data Space ● Filegroup ● Partition Scheme Not Specified	
Partition Column Name	
Generate	
OK <u>Cancel</u> Apply	Help

Take notice of the **Data Space** area. If you click **Filegroup**, list of file groups will become available. If you select **Partition Scheme**, schemes will be available.

View

🐮 View Properties
View1 👻
General SQL Permissions To Do Triggers Before Script After Script Notes SQL Preview Attributes Where Order Group Having Create Index Fulltext Index View Comment Description
T Index Name
Fulltext Catalog Filegroup Not Specified Not Specified
Change Tracking
AUTO
Stoplist Stoplist
OFF <system></system>
OK Ok±Add Cancel Apply Help

User Data Type

🔁 User Data Type Properties	- • •
UserData Type 1	
General To Do Used in Notes SQL Preview Description	
Capt <u>i</u> on <u>N</u> ame	
UserDataType1 = UserDataType1	ß
Schema	
Not Specified 💌	
Туре	
User-Defined Table Type Definition	
	-
Generate Generate SQL Only	
OK Ok+Add Cancel Apply	Help

When you select **TABLE** from the **Type** box, the **User-Defined Table Type Definition** window will display. Here, write the text that is defined in syntax in brackets after AS TABLE, for example "*a int, b int*" (without the quotation marks).

Although this type is available in attributes, it is not possible to use it there.

When you click the Generate SQL Only checkbox, the SQL tab will display.

Function

🔁 Function Properties - E
Function1
SQL Preview CLR Function Function Comment Description General Permissions To Do Before Script After Script Notes
Caption Name Function1 = Function1
Schema Execute as - Not Specified CALLER
Type of Function CLR Table-valued Function
Return Table Type Definitions
Order (List of Column Names)
Generate Generate SQL Only
OK Ok±Add Cancel Apply Help

When you select the CLR Table-valuedFunction, the Order (List of Column Names) box will become available. Here, you can define order (column names should be separated by commas).

When you select the Aggregate Function, you can write more input parameters separated by comma to the List of Arguments box.

Extended Properties

Extended Properties are supported for the following objects (generally where comments are supported):

- 1. Objects with new tab Extended Properties.
- 2. Objects for which Extended Properties are loaded during reverse engineering as a text as for example After Script, function parameters, procedure parameters, view columns, key/index/foreign key for Filetable.

See other objects in Model Explorer:

- Filegroups
- Partition Schemes
- **FilestreamFilegroups** Similarly to Filegroups, FilestreamFilegroups work in Toad Data Modeler only as a list. During script generation, the FilestreamFilegroups definition is not generated and during reverse engineering the definition is not loaded either (only names are loaded).
- **Stoplists** Similarly to Filegroups, Stoplists work in Toad Data Modeler only as a list. During script generation, the Stoplist definition is not generated and during reverse engineering the definition is not loaded either (only names are loaded).
- Partition Functions
- Fulltext Catalogs
- · XML Schema Collections
- Assemblies

Attribute

🔀 Attribute Properties - Entity1	
Caption Attribute 1	Name Attribute 1
General Check Constraints Foreign Keys Permissions	Notes XML Data Type Properties
Data <u>T</u> ype Char(x) Char(x) Char(x) Char(x)	Domains
Default Value	Default Rule
Primary Key Not Null Unique (New AK) Description	Default Rule Is Default Object
Identity	Other Database Specific Default Value Constraint Name
	Rule Object Not Specified
Computed Column Expression	Row GUID Column
Persisted Computed Column	
СК ОК	Ok <u>+</u> Add <u>C</u> ancel <u>Apply</u> <u>H</u> elp

Data Types

Char, NChar, NText, NVarChar, NVarChar(max), Text, VarChar, VarChar(max) - the **Collation** box available. *Unique indentifier* - Select this item to display the **Row GUID Column** checkbox. *XML* - You can define details on xml attribute on tab **XML Data Type Properties**. *Computed Column* - It is not a data type. Select this item if you want to set column as computed. **Identity** - Define Identity properties. **Default rule Is Default Object** - Select this checkbox to bind default rule (known as default object in Microsoft SQL Server) to attribute.

Rule Object - Select a rule object that will be bound to attribute.

Data types of type DATE: date, datetime2, datetime2(x), datetimeoffset, datetimeoffset(x), time, time(x).

Spatial data types: geometry, geography.

Other data types: hierarchyid.

i Note: Rowversion is generated instead of data type timestamp (they are synonyms and it is recommended to use rowversion).

The Filestream checkbox is displayed only for data type varbinary(max).

The **Sparse** checkbox is not available for the following data types: *geography, geometry, image, ntext, text, timestamp, user-defined data types, computed column.*

Default Rule Is Default Object - Select this checkbox if you want to bind default rule (known as default object in Microsoft SQL Server) to attribute.

Rule Object - Select a rule object that will be bound to attribute.

Trigger

CLR Trigger

CLR Trigger - If you select this checkbox, you can define CLR trigger on tab CLR Trigger.

🔀 Trigger Properties	- • •
Entity: Entity1	
Trigger1	
General Notes CLR Trigger	
Caption <u>N</u> ame	
Trigger1 _ Trigger1	6
Schema	
Not Specified 🔻 📖	
CLR Trigger	
Trigger Fire Execute as	
AFTER - CALLER	
Trigger Events	
Delete	
Insert	
Update	
With Append	
OK Ok±Add Cancel Appl	y <u>H</u> elp

Removal of the With Append option

The With Append option is not available now and the checkbox was removed from trigger.

🔀 Trigger Properties	- • •
Entity: Entity1	
Trigger1	
General SQL Notes	
Caption <u>N</u> ame Trigger1 = Trigger1	
Schema Not Specified 💌	
CLR Trigger With Encryption	
AFTER CALLER	
Trigger Events Delete Insert Update	
Not for Replication	
Generate Generate SQL Only	
OK Ok±Add Cancel Apply	Help

Index Options Tab

Detailed settings of the index should be defined here.

🔁 Index Properties		3
Entity: Entity1		
Index1	-	•
General Items Notes Index Options	Secondary XML Index Parameters Description	
Pad Index	Statistics NoRecompute	
Fill Factor	Allow Row Locks	
Ignore Duplicate Key Values	Allow Page Locks	
	-	
<%>	OK Cancel Apply Help	J

Dictionary Type

👺 Dictionary Type Properties	- • •
DictionaryType1	•
General To Do Used in Notes Description	
Capt <u>ion N</u> ame	
DictionaryType1 = DictionaryType1	6
Schema Not Specified 💌	
Data Type Length	
🔤 Char(x) 🗸 🛄 🏠 1	
Not Null	
Default object	
Pule abject	
None	
Generate	
OK Ok±Add Cancel Apply	Help

Here, you can enter alias data types.

Default Object - Select a default object that will be bound to dictionary type (alias data type in Microsoft SQL). **Rule Object** - Select a rule object that will be bound to dictionary type (alias data type in Microsoft SQL).

User Data Type

階 User Data Type Properties	- • •
dbo.clr_myusertype	•
General To Do Used in Notes SQL Preview Description	
Capt <u>i</u> on <u>N</u> ame	
clr_myusertype = clr_myusertype	6
Schema	
dbo 🔻	
External Name (for User-Defined Type in The CLR)	
Assembly Name	
cir_aggreg	· · · · · · · · · · · · · · · · · · ·
Class Name	
пуцзекуре	
Concerto.	
CK Ok±Add Cancel Apply	Help

Here, you can enter CLR user-defined types.

Users

🔀 User Properties	
User1	-
General Membership To Do SQL Before Script After Script	
Caption <u>N</u> ame	
User1 = User1	6
☑ Generate	
<u>OK</u> <u>Cancel</u> <u>Apply</u>	Help

- CREATE USER statements are supported for SQL Server 2005 and higher they have to be defined in User Properties new tabs - SQL, After Script, Before Script.
- User permissions are loaded into Users After Script when SQL Server databases are Reverse Engineered.

Domain

🔀 Domain Properties	
Domain 1	•
General Check Constraints To Do Used in Notes Identity	
Capt <u>i</u> on <u>N</u> ame	_
Domain1 = Domain1	6
Data Type Image: XML Default Default Rule None Image: XML Data Type Properties XML Data Type Properties XML Schema Collection Not Specified Image: CONTENT/DOCUMENT CONTENT Image: CONTENT	
OK Ok±Add Cancel Apply	/ <u>H</u> elp

Data Types:

- XML data type define XML data type properties.
- Computed Column Computed Column Expression box, Persisted Computed Column checkbox.
- Character define Collation for the Column.

Schema

Schema Properties	- • •
Schema1	-
General Permissions To Do Notes	
Caption <u>N</u> ame	
Schema1 = Schema1	6
Authorization (Owner Name)	
Generate	
OK Ok±Add <u>Cancel</u> Apply	Help

New property for Schemas - Authorization (Owner Name)

View

🔁 View Properties
dbo.view_PartitionTable_index
Create Index Fulltext Index View Comment Description Notes SQL Preview Attributes Where Order Group Having General SQL Permissions To Do Triggers Before Script After Script
Capt <u>i</u> on <u>N</u> ame
view_PartitionTable_index = view_PartitionTable_index 🔞
Schema
Aliases
View Attributes
Encryption
View Metadata
With Check Option
Categories
□ None
✓ Generate Generate SQL Only ✓ SELECT in Views as Text
OK Ok±Add Cancel Apply Help

🔁 View Pro	operties 🗖 🗖 💌
dbo.view_F	Partition Table_index
Notes Create General	SQL Preview Attributes Where Order Group Having Index Fulltext Index View Comment Description SQL Permissions To Do Triggers Before Script After Script
Templates:	Body 💌 🔛
<	4
<%>	OK Ok±Add Cancel Apply Help

Procedure

Stored Procedure Properties	- • •
dbo.p_hotel_No_airport	•
Notes SQL Preview Procedure Comment General SQL Permissions To Do Before Script	Description After Script
Caption Name p_hotel_No_airport = p_hotel_No_airport	6
Schema Execute as dbo CALLER	-
Type of Stored Procedure Stored Procedure	
(@a char(3), @c integer output)	*
Encryption Recompile	
Generate Generate SQL Only	
OK Ok±Add Cancel Apply	Help

Types of Stored Procedure:

- Stored Procedure
- CLR Stored Procedure
- Extended Stored Procedure

Functions

階 Function Properties - E	
dbo.func1	▼
Notes SQL Preview General SQL Permissions	Function Comment Description To Do Before Script After Script
Caption func1 =	Name func1
Schema dbo 🔻	Execute as 'user_name'
Type of Function Scalar Function	dbol OnNULLCall Attribute
List of Arguments	
Retum Data Type	~
int	* *
Encryption Schemabinding Generate Generate	y
(%) OK Ok±Add	Cancel Apply Help

Types of functions:

- Scalar Function
- Table Valued Function
- CLR Scalar Function Appropriate options and tab will appear.
- CLR Table Valued Function Appropriate tab will appear in the dialog.
- Aggregate Function

Select a type and see the options that display then.

Defaults

If you want to generate default as default object, you have to select the Generate checkbox.

Check Constraint Rules

If you want to generate check constraint rule as rule object, you have to select the Generate checkbox.

Synonym

Synonym
dbo.syn1 👻
General Before Script After Script Notes
Name syn1
Schema
dbo 🔹 🛄
☑ Base Object is not in List Base Object
[table2_parent]
☑ Generate
OK Ok±Add Cancel Apply

If you want to enter object that is not in the **Object** box, select the **Base Object is not in List** checkbox and enter the object in the new **Base Object** box.

See othe objects in Model Explorer:

- Partition Functions
- Partition Schemes

- Filegroups
- XML Schema Collections
- Fulltext Catalogs
- Assemblies

Example of Partition Function:

🔀 myRangePF1	
myRangePF1	
General SQL Preview	
Name	
myRangePF1	
Input Parameter Type	
int	
Range	
LEFT	-
Boundary Values	
'1', '100', '1000'	
Generate Code	Generate SQL Only
*>	OK Cancel Apply

Example of Fulltext Catalog:

🔁 ftcatalog	- • •
ftcatalog	-
General SQL Preview	
Name	
ftcatalog	
PRIMART	· · · ·
Path	
C: (Program Files (Microsoft SQL Server (MISSQL, I (MISSQL (FI Data	
Accent Sensitivity	
OFF	-
Default Catalog	
Authorization	
dbo	
Generate Code	
OK Cance	Apply

Filegroup and Path parameters are used only in Microsoft SQL Server 2005.

If you want to write complete DDL statement for fulltext catalog, select Generate SQL Only checkbox and write the statement to SQL tab that will display then.

Extended Properties

Extended Properties are supported for the following objects (generally where comments are supported):

- 1. Objects with new tab Extended Properties.
- 2. Objects for which Extended Properties are loaded during reverse engineering as a text as for example After Script, function parameters, procedure parameters, view columns, key/index/foreign key for Filetable.

File Table

New File Table object is available.

😕 FileTable1				- • •
FileTable1				
Keys	Indexes	Triggers	Permissions	Description
General	SQL Preview	Before Script	After Script	File Table Options
Name				
FileTable1				
Schema				
- Not Specif	fied	▼		
Data Space	9			
Filegroup				
Not Spe	cified	•		
Filestream F	Filegroup		_	
Not Spe	cified	-		
Generate				
19/1				and Apply
(%)				ancel Apply

- Keys can be defined in text on tab Keys (ALTER TABLE tablename ADD UNIQUE (attr)).
- Indexes can be defined in text on tab Indexes (CREATE INDEX ...).
- Triggers can be defined in text on tab Triggers (CREATE TRIGGER ...).
- Permissions can be defined in text on tab Permissions (GRANT ...).
- Comments can be defined on tab **Description**.
- In case the user wants to define checkconstraints in text, the After Script tab can be used.
- In case the user wants to define foreign keys in text, the After Script tab can be used.

File Table 1 Keys Indexes Triqqers Permissions Description General SQL Preview Before Script After Script File Table Options Directory Name	🔀 FileTable1				
Keys Indexes Triqqers Permissions Description General SQL Preview Before Script After Script File Table Options Directory Name	FileTable1				•
Keys Indexes Triqqers Permissions Description General SQL Preview Before Script After Script File Table Options Directory Name					
General SQL Preview Before Script After Script File Table Options Directory Name	Keys	Indexes	Triggers	Permissions	Description
Directory Name Collation Name (for Name column) Primary Key Constraint Name Unique Constraint Name on stream_id column Unique Constraint Name on parent_path and name columns	General	SQL Preview	Before Script	After Script	FileTable Options
Collation Name (for Name column) Primary Key Constraint Name Unique Constraint Name on stream_id column Unique Constraint Name on parent_path and name columns (**) QK Cancel Apply	Directory Nar	ne			
Collation Name (for Name column) Primary Key Constraint Name Unique Constraint Name on stream_id column Unique Constraint Name on parent_path and name columns					
Primary Key Constraint Name Unique Constraint Name on stream_id column Unique Constraint Name on parent_path and name columns	Collation Nan	ne (for Name column)		
Primary Key Constraint Name Unique Constraint Name on stream_id column Unique Constraint Name on parent_path and name columns					
Unique Constraint Name on stream_id column Unique Constraint Name on parent_path and name columns	Primary Key (Constraint Name			
Unique Constraint Name on stream_id column Unique Constraint Name on parent_path and name columns					
Unique Constraint Name on parent_path and name columns	Unique Cons	traint Name on strea	m_id column		
Unique Constraint Name on parent_path and name columns					
OK Cancel Apply	Unique Cons	traint Name on parer	nt_path and name col	umns	
OK Cancel Apply					
OK Cancel Apply					
OK Cancel Apply					
OK Cancel Apply					
OK <u>Cancel</u> Apply					
OK Cancel Apply					
	<%>		<u>O</u> I	K <u>C</u> an	Apply

Sequence

🔁 Sequence1	- • •
Sequence 1	-
General SQL Preview Before Script After Script	
Name	
Sequence1	
Schema	
Not Specified 🔹 🛄	
Data Type for Sequence Value	
bigint	
Increment By	
I Start With	
Maxvalue Minvalue Cache	
NO MAXVALUE NO MINVALUE NO CACHE	
V NO CYCLE	
🖉 Generate 💿 Generate SOL Only	
CK Cance	Apply

Define Data Type in Data Type for Sequence Valuebox.

Available data types: *tinyint, smallint, int, bigint, decimal* and *numeric* with a scale of 0. You can use also any userdefined data type (alias type) that is based on one of the allowed types.

Extended Properties

Extended Properties are supported for the following objects (generally where comments are supported):

- 1. Objects with new tab Extended Properties.
- 2. Objects for which Extended Properties are loaded during reverse engineering as a text as for example After Script, function parameters, procedure parameters, view columns, key/index/foreign key for Filetable.

Other objects in Model Explorer:

- Sequence
- Search Property List
- FileTable
- Filegroups
- Partition Schemes
- FilestreamFilegroups Similarly to Filegroups, FilestreamFilegroups work in Toad Data Modeler only as a list. During script generation, the FilestreamFilegroups definition is not generated and during reverse engineering the definition is not loaded either (only names are loaded).
- **Stoplists** Similarly to Filegroups, Stoplists work in Toad Data Modeler only as a list. During script generation, the Stoplist definition is not generated and during reverse engineering the definition is not loaded either (only names are loaded).
- Partition Functions
- Fulltext Catalogs
- XML Schema Collections
- Assemblies

Reverse Engineering - Microsoft SQL Server 2012

See Reverse Engineering - Microsoft SQL Server 2022 for more information.

Script Generation - Microsoft SQL Server 2012

DDL Script Generation of Microsoft SQL Server 2012	
What to Generate Detail Settings Referential Integrity Select List	
 Delimited Identifiers (Use Brackets) Generate Schema to Objects Text Case Selection: Preserve Case Generate Constraint Names (Foreign Keys) Generate Check Constraint Names Used in Domains Check Object Existence Before Processing Drop Commands Create Fulltext Indexes Drop Fulltext Indexes Create Descriptions 	
✓ Grant Roles to User/Role	
 Generate Permissions Only to Object Types Selected on Tab What to Generate Terminator go Order of Generated Objects You can change order of generated objects. Click Edit and define how objects will be generated. 	
Show Praview	
Verify Show Log Save Settings Generate Show Code	Help

i Note: To generate the table, column descriptions for SQL Server db in Toad Data Modeler, **schema/owner has to be defined**. Please see the **Entity Properties** form | **General** tab and from the **Schema** box select a schema or click the icon on the right to open the **Schema** dialog and define a new schema, then select it for the entity.

Specifics - Microsoft SQL Server 2014

Entity

Caption Name Entity1 After Script Notes SQL Preview Relationships Fullted Index Data Compression Extended Properties General Attributes Keys Indexes Check Constraints Triggers Pemissions To Do Before Scrip Schema -Not Specified Memory Optimized Durability Schema and Data Schema Only Partition Scheme -Not Specified Memory Optimized Memo	Entity Properties - E			
Entity1 ntity1 Entity1 Entity1 Entity1 Entity1 Entity1 Entity1 Entity1 Entity1 Entity1 Entity1 Entity1 Entity1 Entity1 Entity1 Entity1 E	aption		Name	
After Script Notes SQL Preview Relationships Fultext Index Data Compression Extended Properties General Attributes Keys Indexes Check Constraints Triagers Permissions To Do Before Scrip Schema	Entity 1		Entity1	6
SchemaNot Specified Vertice Vert	After Script Notes SQL Preview Relat General Attributes Keys Indexes (tionships Check Const	Fulltext Index Data Compression raints Triggers Permissions To	Extended Properties Do Before Script
Not Specified - Wemory Optimized Durability Schema and Data Schema and Pata Schema and Scheme - Not Specified Not S	Schema			
Memory Optimized Durability Schema and Data Schema Only Text Filegroup - Not Specified -	Not Specified			
Durability Schema and Data Sch	Memory Optimized			
Schema and Data Schema and Data Schema and Data Schema and Data Schema Only Partition Scheme - Not Specified Partition Column Name - Not Specified Partition Column Name - Not Specified Partition Scheme - Partition Sc	Durability			
Schema and Data Schema Only Partition Scheme - Not Specified - Text Filegroup for Table (TEXTIMAGE_ON) Partition Column Name Partition Column Name Partition Column Name Partition Scheme Not Specified - Partition Scheme Partition Column Name Partition Column Name Partition Scheme Partition Scheme Partition Scheme Post Specified Partition Scheme Post Specified Partition Scheme Post Specified Category Category Category Partition Scheme None Will Generate OK Cancel Andy Halp	Schema and Data	-		
Schema Univ Partition Scheme - Not Specified • Partition Column Name Partition Column Name Filestream Filegroup Filestream Partition Scheme - Not Specified • Filestream Partition Scheme - Not Specified • Category - None • W Generate	Schema and Data			
Chatter Center Indition Center Indition Center Indition Center Indition Column Name Partition Column Name Indition Column Name Indition Column Name Partition Column Name Indition Column Name Partition Column Name Indition Column Name Partition Co	Schema Uniy		Partition Scheme	
Indit specified Text Filegroup for Table (TEXTIMAGE_ON) Not Specified - Filestream Filegroup Not Specified - None None None None None None None None None	- Not Specified -		- Not Specified -	
Inter Hegrophic Fable (FEXTMARCE_ON) Image: Not Specified Filestream Filegroup Image: Internet Filegroup Filestream Partition Scheme Image: Not Specified Image: Not Specifi	Text Filegroup for Table (TEXTIMAGE ON)		Partition Column Name	·
Filestream Filegroup Filestream Partition Scheme - Not Specified Description Category - None So Generate	- Not Specified	- I		
- Not Specified - Not Specified Description Category - None ()	Filestream Filegroup		Filestream Partition Scheme	
Description	Not Specified	- I	- Not Specified	
Description				
Category None So Generate	Description			
Category None Generate OK Cancel Anoly Halp				*
	Category			
	- None	•		
	₀		OK Cancel Apply	Help

- New option to define Table as **Memory Optimized** using the new checkbox in **General** tab in **Entity Properties**.
- New option to select Durability. Only active when Memory Optimized is checked

Index

🔀 Index Properties - E	
Entity: Entity1	
Index1	
Secondary XML Index Parameters	Selective XML Index Parameters
Secondary Selective XML Index Parameters	Description Extended Properties
General Items Notes Data Comp	ression Index Options Spatial Index Parameters
Caption	Name
Index1 =	Index1
Type of Index	Memory Ontimized Table Index
- Not Specified	menory optimized rable index
	Hash Index Bucket Count
Data Space	
© Filosovin	Patition Schome
	Patition Column Name
Filestream Filegroup (for Clustered Index)	Filestream Partition Scheme (for Clustered Index)
- Not Specified -	- Not Specified -
Expression for Filtered Index (WHERE)	
✓ Generate	
	K Cancel Apply Help

• New options available for indexes of **Memory Optimized** tables in **Index | General - Hash Index** and **Bucket Count** (only available with checked **Hash Index**

🔀 Index Properties - E	
Entity: Entity1	
Index1	
Secondary XML Index Parameters Selective	ve XML Index Parameters
General Items Notes Data Compression Index Option	ons Spatial Index Parameters
Pad Index Statistics NoRecomput	e 📝 Statistics Incremental
Fill Factor	
Ignore Duplicate Key Values	
	A
	T
OK Cancel	Apply Help

• New option available in Index | Index Options - Statistics Incremental

🔀 Index Properties	
Entity: Entity1	
Index1	
Secondary XML Index Parameters	Selective XML Index Parameters
General Items Notes Data Compr	ession Index Options Spatial Index Parameters
Caption	Name
Type of Index	Memory Optimized Table Index
Not Specified Not Specified	Hash Index Bucket Count
Relational	
Spatial	
Selective XML	. B. W. C.
Secondary Selective XML	Not Specified -
	Partition Column Name
Filestream Filegroup (for Clustered Index)	Filestream Partition Scheme (for Clustered Index)
Not Specified 💌 🛄	Not Specified 💌 🛄
Evenesian for Eliterad Index (MULEDE)	
Expression for Filtered Index (WHERE)	
Concerto.	
<u>v</u> ⊔ <u>c</u> enerate	
	K Cancel Apply Help

- Added new tabs Selective XML and Selective Secondary XML
- New Index types available in Index | General | Type of Index Columnstore, Selective XML, Secondary Selective XML
- i Note:Choosing Columnstore type changes the choices available in Compression Type and Compression Type for Partition combo boxes in Data Compression tab. The specific options for Columnstore type are: COLUMNSTORE and COLUMNSTORE_ARCHIVE.
- i Note:You can now set Index as Clustered Columnstore by choosing Columnstore Index type and checking the Clustered checkbox.

Key

🔀 Key Properties - E	, • 🔀
Entity: Entity1	
Key1	
General Attributes Notes Index Options Data Compression Description Extended Pro	perties
Caption Name	
Key1 E	
Clustered	
Memory Optimized Table Index	
I Hash Index	
Bucket Count	
Data Space	
Filegroup Partition Scheme	
Not Specified Vot	
Partition Column Name	
🖾 Generate	
OK <u>Cancel</u> Apply	<u>H</u> elp

• New options available for keys of **Memory Optimized** tables in **Key | General - Hash Index** and **Bucket Count** (only available with checked **Hash Index**
🔀 Key Properties - E		- • •
Entity: Entity1		
Key1		~
General Attributes Notes Index Options	Data Compression Description	on Extended Properties
Pad Index	Statistics No Recompute	Statistics Incremental
Fill Factor	Allow Row Locks	
Ignore Duplicate Key Values	📝 Allow Page Locks	
		*
		~
(%)	OK Cancel	Apply Help

New option available in Key | Index Options - Statistics Incremental

Procedure

Stored Procedure Properties	• 💌
StoredProcedure1	-
SQL Preview CLR Procedure Extended Stored Procedure Procedure Comment Description Extended Proper General SQL Permissions To Do Before Script After Script	dure ties Notes
Caption Name StoredProcedure1 = StoredProcedure1 Schema Execute as Not Specified	6
Type of Stored Procedure Natively Compiled Stored Procedu Stored Procedure CLR Stored Procedure Extended Stored Procedure Natively Compiled Stored Procedure	*
Encryption Recompile For Replication Generate Generate	
OK Ok±Add Cancel Apply	Help

 New Type of Stored Procedure available in Stored Procedure Properties | General - Natively **Compiled Stored Procedure**

User Data Type

🔀 User Data Type Properties - E	- • •
UserData Type 1	•
General To Do Used in Notes SQL Preview SQL Description Ext	ended Properties
Caption Name UserDataType1 = UserDataType1	
Schema Not Specified 💌	
Type TABLE	
Memory Optimized User-Defined Table Type Definition	
	*
✓ Generate Generate SQL Only	T
OK Ok±Add Cancel Apply	Help

• New option to define User Data Type as **Memory Optimized** (User Data Type Properties | General), User Data Type has to be of TABLE type

Reverse Engineering - Microsoft SQL Server 2014

See Reverse Engineering - Microsoft SQL Server 2022 for more information.

Script Generation - Microsoft SQL Server 2014

BDL Script Generation of Microsoft SQL Server 2014	
What to Generate Detail Settings Referential Integrity Sel	ect List
 Delimited Identifiers (Use Brackets) Generate Schema to Objects 	
Text Case Selection:	
Preserve Case 🔻	
Generate Constraint Names (Foreign Keys)	
Generate Check Constraint Names Used in Domains	
Check Object Existence Before Processing Drop Commar	ıds
Create Fulltext Indexes	
Drop Fulltext Indexes	
Create Descriptions	
Create Extended Properties	
Generate Remissions Only to Object Types Selected on T	Sh What to Generate
Terminator	
go	
Order of Generated Objects	
You can change order of generated objects. Click Edit and	define how objects will be
generated.	
	Edit
Show Preview	
Verify Show Log Save Settings	<u>G</u> enerate <u>S</u> how Code <u>H</u> elp

i Note: To generate the table, column descriptions for SQL Server db in Toad Data Modeler, **schema/owner has to be defined**. Please see the **Entity Properties** form | **General** tab and from the **Schema** box select a schema or click the icon on the right to open the **Schema** dialog and define a new schema, then select it for the entity.

Specifics - Microsoft SQL Server 2016

External Table support (PolyBase external table that references data stored in Hadoop cluster or Azure blob storage). External Tables can be found in **Physical Model Explorer**.

Security Policy support (for row-level security). Security Policies can be found in Physical Model Explorer.

New model objects with simplified support:

- Column Encryption Key currently without any properties, used for Encrypting Columns.
- External Data Source currently without any properties, used for External Table.
- External File Format currently without any properties, used for External Table.

IF EXISTS support for DROP commands of certain object types:

- Entity, View, Relation, Trigger (entity/view), Key, Index, Default, Rule, DictType, UDT, Procedure, Function, Aggregate (Functions), Synonym, Assembly, Sequence, FileTable
- To use the clause, enable the Check Object Existence Before Processing Drop Commands option in DDL Script Generation | Detail Settings.



Entity

- Memory Optimized Tables:
 - It is now possible to create the following objects in memory optimized tables:
 - Triggers (Natively Compiled only)
 - Index (Clustered Columnstore only)
 - Foreign Key constraints (between memory optimized Tables)
 - Check constraints
 - Unique constraints

• "Period for System_Time" and "System-Versioned Temporal Table" support for Tables (Attribute Properties | Temporal Properties tab AND Entity Properties | Temporal Table Properties tab)

aption	Name	•	
DateStart	= Date	Start	R
General Check Cons	traints Foreign Keys	Permissions	s Notes
XML Data Type Properties	emporal Properties Maskin	q and Encryption	Extended Properties
Generated Always as Row Type			
🔘 None 🛛 💿 Start 🔍 E	ind		
V Hidden			
			_
	Entity Propertie	is	
aption	Na	ame	
ntity1	= E	ntity1	
intity1	= E	ntity1 Permissions To D	o Before Script After Scri
ntity1 eneral Attributes Keys Index Notes SQL Preview	es Check Constraints Triggers Relationships	htity1 Permissions To D Fulltext Index	o Before Script After Scri Data Compression
ntity1 eneral Attributes Keys Indexe Notes SQL Preview Temporal Table Properties	es Check Constraints Triggers Relationships Stretch Database Pr	htity1 Permissions To D Fulltext Index operties	o Before Script After Scri Data Compression Extended Properties
ntity1 eneral Attributes Keys Indexo Notes SQL Preview Temporal Table Properties Period Definition	es Check Constraints Triggers Relationships Stretch Database Pr	ntity1 Permissions To D Fulltext Index operties	o Before Script After Scri Data Compression Extended Properties
neral Attributes Keys Index Notes SQL Preview Temporal Table Properties Period Definition	es Check Constraints Triggers Relationships Stretch Database Pr	htity1 Permissions To D Fulltext Index operties	o Before Script After Scri Data Compression Extended Properties
neral Attributes Keys Indexe Notes SQL Preview Temporal Table Properties Period Definition Period for System_Time System Start Time Column Name	es Check Constraints Triggers Relationships Stretch Database Pr	htity1 Permissions To D Fulltext Index operties End Time Column Nar	o Before Script After Scri Data Compression Extended Properties
Period Definition Period for System_Time System Start Time Column Name	E Check Constraints Triggers Relationships Stretch Database Pr	htity1 Permissions To D Fulltext Index operties	o Before Script After Scri Data Compression Extended Properties
reneral Attributes Keys Index Notes SQL Preview Temporal Table Properties Period Definition Period for System_Time System Start Time Column Name	es Check Constraints Triggers Relationships Stretch Database Pr Stretch Database	htity1 Permissions To D Fulltext Index operties	o Before Script After Scri Data Compression Extended Properties
Attributes Keys Indexe Notes SQL Preview Temporal Table Properties Period Definition Period for System_Time System Start Time Column Name System Versioning System Versioning	es Check Constraints Triggers Relationships Stretch Database Pr System	ntity1 Permissions To D Fulltext Index operties	o Before Script After Scri Data Compression Extended Properties
Attributes Keys Index Notes SQL Preview Temporal Table Properties Period Definition Period for System_Time System Start Time Column Name System Versioning Enable System Versioning History Table Name	E Check Constraints Triqqers Relationships Stretch Database Pr	ntity1 Permissions To D Fulltext Index operties	o Before Script After Scri Data Compression Extended Properties
Intity 1 eneral Attributes Keys Indexemporal Properties Notes SQL Preview Temporal Table Properties Period Definition Period for System_Time System Start Time Column Name System Versioning Enable System Versioning History Table Name	es Check Constraints Triggers Relationships Stretch Database Pr System	ntity1 Permissions To D Fulltext Index operties End Time Column Nar	o Before Script After Scri Data Compression Extended Properties

Attribute

- Dynamic Data Masking support for Attributes (Attribute Properties | Masking and Encryption tab | Dynamic Data Masking)
- Always Encrypted support for Attributes (Attribute Properties | Masking and Encryption tab | Encrypting Columns)

Capt <u>ion</u> DateEnd						
DateEnd			<u>N</u> ame			_
		=	DateEnd			0
General	Check Constraints	Foreign K	Keys	Permissions	Notes	
XML Data Type Prope	rties Temporal Prop	erties N	Masking and Er	ncryption	Extended Propertie	es
Column with Dyn Masking Function M random(1,10)	namic Data Mask Iame with Parameters					
Encrypting Columns						
Column Encrypto	eu Kev					
ColumnEncryption	Key1	-				
Encryption Type						
Deterministic		-				
Algorithm AEAD_AES_256_0	CBC_HMAC_SHA_256					

Function

- New Function types:
 - Natively Compiled Scalar Function
 - Natively Compiled Inline Table-valued Function

	<u> </u>
Type of Function	
Scalar Function 👻	
Scalar Function	
Table-valued Function	
CLR Scalar Function	-
CLR Table-valued Function	
Aggregate Function	
Natively Compiled Scalar Function	
Natively Compiled Table-valued Functi	

• EXECUTE AS CALLER for Natively Compiled Stored Procedure Functions (used by default).

Index

• New parameter - COMPRESSION DELAY for COLUMNSTORE Indexes.

🔀 Index Properties - E			
Entity: Entity1			
Index1			
Secondary XML Index Para	ameters	Selective XI	ML Index Parameters
Secondary Selective XML Index	Parameters	Description	Extended Properties
General Items Notes	Data Compression	Index Options	Spatial Index Parameters
Pad Index Fill Factor	Statist	ics NoRecompute Row Locks	Statistics Incremental Compression Delay
Ignore Duplicate Key Values	Allow	Page Locks	*

- Filter predicates (WHERE) can be now used in non-clustered COLUMNSTORE Indexes.
- Non-clustered Indexes can be now created even when CLUSTERED COLUMNSTORE Indexes already exist.

User

• *ALLOW_ENCRYPTED_VALUE_MODIFICATIONS = ON | OFF* support for **Users** (in Reverse Engineering).

Misc.

- Support for Stretch Database (REMOTE_DATA_ARCHIVE) in SQL Server 2016
- To create a Table for remote data archive see Entity Properties | Stretch Database Properties

Entity1		iity1
Notes SG	QL Preview Relationships	Fulltext Index Data Compression
General Attributes Key	ys Indexes Check Constraints Triggers	Permissions To Do Before Script After Scrip
Temporal Table Pro	operties Stretch Database Prop	perties Extended Properties
Create Table with Migration State OUTBOUND	n Stretch Database enabled (Remote Data Archi	ive)

i NOTE: REMOTE_DATA_ARCHIVE is not supported for Memory Optimized Tables.

Reverse Engineering - Microsoft SQL Server 2016

See Reverse Engineering - Microsoft SQL Server 2022 for more information.

Script Generation - Microsoft SQL Server 2016

ntering and the server 2016 DDL Script Generation of Microsoft SQL Server 2016	—		×
What to Generate Detail Settings Referential Integrity Select List			
Image: Second State Sta			
go			
Order of Generated Objects			
You can change order of generated objects. Click Edit and define how objects will be generated.			
Show Preview			
	OK	Ca	ncel

Note: To generate the table, column descriptions for SQL Server db in Toad Data Modeler, schema/owner i has to be defined. Please see the Entity Properties form | General tab and from the Schema box select a schema or click the icon on the right to open the Schema dialog and define a new schema, then select it for the entity.

Specifics - Microsoft SQL Server 2017

Entity

- New node and edge (graph) tables are now supported
- Click Add Atribute to add graph table specific attributes. In Attributes, these will be called using \$node_id and \$edge_id, \$from_id, \$to_id for node and edge tables respectively

📜 Entity Properties - E		– 🗆 X
Caption Entity1	Name = Entity1	▼
Notes SQL Preview Temporal Table Properties S General Attributes Keys Indexes Schema - Indexes - Not Specified Durability Schema and Data Data Space Filegroup - Not Specified Text Filegroup for Table (TEXTIMAC	Relationships Data tretch Database Properties Fulltext Index Check Constraints Triggers Permissions To Data Table Type Add Attri Relational Node Add Attri Relational Node Edge - Not Specified SE_ON) Partition Column Name	Data Compression Extended Properties D Before Script After Script
🔁 Reverse Engineering Wizard		
 Stored Connections Select Data Source Select Data Provider Connecting What to Reverse Options Save Connection Tables 	Options for Reverse Engineering Divide Objects to Workspaces by Scher Infer Relationships Items to Load Tables Referenced by Selected Tables History Tables Graph Table Columns Dataspace for Tables, Indexes and Con Data Compression for Tables	na Terminator: go

Details

- CREATE EXTERNAL LIBRARY: External libraries are not supported
- CREATE OR ALTER: this clause is now supported for procedures, views, functions, and triggers (with exception for Change Script Generation where only Alter or Drop and Create are used)

📜 DDL Script Ger	neration of RE N	/licrosoft SQL Serve	r 2017			-
What to Generate	Detail Settings	Referential Integrity	Select List			
Location of SQL Fi	le					
C:\Users\dbizon\	Documents\Toad	l Data Modeler\Gener	ratedScripts\Ger	nerated.SQL		
Schema				Split Output File		Append To
Not Specified		~				
	a 2		~			
Property Name	les		Extended Ureate	Value		
✓ Fulltext	Catalogs		Create			1
Functio	ns		Create		~	
Check	Constraint Rules		Create			
Partition	n Functions		Create or Drop	Alter		
Partition	n Schemes		Drop and	Create	_	
Permiss	ions to Objects					1
Proced	ures		Create			

Reverse Engineering - Microsoft SQL Server 2017

See Reverse Engineering - Microsoft SQL Server 2022 for more information.

Script Generation - Microsoft SQL Server

			×
What to Generate Detail Settings Referential Integrity Select List			
 Delimited Identifiers (Use Brackets) Generate Schema to Objects Text Case Selection: Preserve Case Generate Constraint Names (Foreign Keys) Generate Check Constraint Names Used in Domains Generate Default Clustered/Nonclustered Keyword Check Object Existence Before Processing Drop Commands Create Fulltext Indexes Create Fulltext Indexes Create Descriptions Create Extended Properties Ganerate Permissions Only to Object Types Selected on Tab What to Generate Terminator go Order of Generated Objects You can change order of generated objects. Click Edit and define how objects will be generated. 			
Show Preview			
	ОК	Car	ncel

i Note: To generate the table, column descriptions for SQL Server db in Toad Data Modeler, **schema/owner has to be defined**. Please see the **Entity Properties** form | **General** tab and from the **Schema** box select a schema or click the icon on the right to open the **Schema** dialog and define a new schema, then select it for the entity.

Specifics - Microsoft SQL Server 2019

Indexes

• New properties Online and Resumable are available in Index Properties | Online Options. The default values are Default.

Functions

• New Inline property is available in Function Properties | General | Inline. The default value is Default.

Reverse Engineering - Microsoft SQL Server 2019

See Reverse Engineering - Microsoft SQL Server 2022 for more information.

Script Generation - Microsoft SQL Server

			×
What to Generate Detail Settings Referential Integrity Select List			
 Delimited Identifiers (Use Brackets) Generate Schema to Objects Text Case Selection: Preserve Case Generate Constraint Names (Foreign Keys) Generate Check Constraint Names Used in Domains Generate Default Clustered/Nonclustered Keyword Check Object Existence Before Processing Drop Commands Create Fulltext Indexes Create Fulltext Indexes Create Descriptions Create Extended Properties Ganerate Permissions Only to Object Types Selected on Tab What to Generate Terminator go Order of Generated Objects You can change order of generated objects. Click Edit and define how objects will be generated. 			
Show Preview			
	ОК	Car	ncel

i Note: To generate the table, column descriptions for SQL Server db in Toad Data Modeler, **schema/owner has to be defined**. Please see the **Entity Properties** form | **General** tab and from the **Schema** box select a schema or click the icon on the right to open the **Schema** dialog and define a new schema, then select it for the entity.

Specifics - Microsoft SQL Server 2022

Keys

New properties Online and Resumable are available in **Keys Properties** | **Online Options**. The default values are **Default**.

🔀 Key Properties	_	
Entity: Entity1		
PK_Entity1		~
General Attributes Notes Index Options Description Extended Properties	Data Con Online Opti	ons
Online		
Default ~		
Resumable Max Duration		
Default		
OK Cancel	Apply	Help

Reverse Engineering - Microsoft SQL Server 2022

Available Data Providers are:

- Connection via ADO
- Native Connection

Connection via ADO:

🞏 Reverse Engineering Wizard		
- Stored Connections - Select Data Source - Select Data Provider <u>- Connecting</u> - What to Reverse - Options - Save Connection	Connection String Provider=SQLOLEDB.1;Persist Security	r Info=False;User ID=sa;Initial Catalog=master;Datz ata Link Properties
- Tables	User Identification User Name sa IV Save Password	Pass <u>w</u> ord
Show Log Close after Executi	on < <u>P</u> revious <u>N</u> ex	kt > Execute Close

Native Connection:

🔀 Reverse Engineering Wizard	
 Stored Connections Select Data Source Select Data Provider Connecting What to Reverse Options Save Connection Tables 	Host Host Port (optional) 10.11.40.25 0 OLE DB Provider Image: Comparison of the second secon
	User Authentication Server User Name Sal Sal Save Password
	Database Database Name master
Show Log Close after Execution	n < <u>P</u> revious <u>N</u> ext > Execute <u>C</u> lose

Reverse Engineering Settings

 Check Graph Table Columns to include graph table columns \$node_id", "\$edge_id", "\$from_id", "\$to_ id in your RE

🔁 Reverse Engineering Wizard			×
- Stored Connections			
Select Data Source Select Data Provider Connecting What to Reverse <u>Options Save Connection </u>	Options for Reverse Engineering Divide Objects to Workspaces by Schema Terminator: Infer Relationships go		
- Tables	Items to Load		
	 Tables Referenced by Selected Tables History Tables Graph Table Columns Dataspace for Tables, Indexes and Constraints Data Compression for Tables Check Constraints Check Constraints System Generated Names of Check and Default Constraints Index Options Index Options Collations for Columns Extended Properties (including Descriptions) DDL Triggers (to Before Script of Model) Aggregate Functions Users and Roles 		
	 Permissions Some Objects as SQL Sentence Only (Views, DML Triggers, Stored Procedures, Functions) Select in Views as Text 		
Show Log Close after Execution	< Previous Next > Execute	Close	

Script Generation - Microsoft SQL Server

🔁 DDL Script Generation of Microsoft SQL Server 2016			×
What to Generate Detail Settings Referential Integrity Select List			
☑ Delimited Identifiers (Use Brackets) ☑ Generate Schema to Objects Text Case Selection: Preserve Case ☑ Generate Constraint Names (Foreign Keys) ☐ Generate Check Constraint Names Used in Domains ☐ Generate Default Clustered/Nonclustered Keyword ☐ Check Object Existence Before Processing Drop Commands ☑ Create Fulltext Indexes ☑ Drop Fulltext Indexes ☑ Create Extended Properties ☑ Generate Permissions Only to Object Types Selected on Tab What to Generate Terminator go Ørder of Generated Objects You can change order of generated objects. Click Edit and define how objects will be generated.			
	ОК	Ca	ncel

i Note: To generate the table, column descriptions for SQL Server db in Toad Data Modeler, schema/owner has to be defined. Please see the Entity Properties form | General tab and from the Schema box select a schema or click the icon on the right to open the Schema dialog and define a new schema, then select it for the entity.

Specifics - MySQL 5.6

Entity

Row Format

Entity Properties		
Caption	<u>N</u> ame	
Entity1	= Entity1	6
ar and the and the		1
Before Script After Script Notes	SQL Preview Relationships	Table Options
Ciencial Attributes Reys Indexes	Check Constraints Inggers Pe	emissions 10 Do
Database Name		
Not Specified	·]]	
Table Ontions	, <u> </u>	
Table Type	Row Format	
Deraut	▼ Default	•
Character Set	Collation	
Initial Autoincrement		
Comments:		
		*
Category		
None 🗸		
ශ⊳ <u>G</u> enerate	OK Cancel Ap	ply <u>H</u> elp

For Row Format item, it's possible to select some of these options:

- Default
- Dynamic

- Fixed
- Compressed
- Redundant
- Compact

Properties **Character Set** and **Collation** must be identical for parent and child tables provided that at least one parent attribute is of a text data type. If the properties are not identical, a warning message is returned during model verification.

Partition tab

partitioning table		
column1	Int	
column2	Char(5)	

Entity Properties		
Caption	Name	
partitioningtable		
partition ingrapic		
General Attributes	Keys Indexes Check Constraints Triggers Permis	sions To Do
Before Script After Script	Notes SQL Preview Relationships Table Options	Partition Options
PARTITION BY HAS(column1)		
C Generate	OK Cancel Apply	Help

On the **Partition Options** tab, you can write SQL code to create partition. The partition will be generated in SQL code as well as in reports.

See the SQL Preview tab:

🔀 Entity	/ Properties	- • •
Caption	n <u>N</u> ame	
Entity1	= Entity1	16
Gene Before 1 2 4 4 5 6 7	ral Attributes Keys Indexes Check Constraints Triggers Permiss e Script After Script Notes SQL Preview Relationships Table Options Table Entity1 CREATE TABLE Entity1 (ENGINE = InnoDB	ions To Do Partition Options
•	III	4
<%>	Generate	Help

Attribute

😕 Attribute Properties - Entity1	
Capt <u>i</u> on Attribute 1	Name Attribute1
General Check Constraints Foreign Keys Permissions Notes Data Type Char(x)	Domains
Length 20 Default Value	Default Rule
Primary Key Not Null Unique (New AK) Comments:	*
Other Database Specific	Enum/Set Data Type Attribute
Autoincrement Binary Unsigned Zemfill	List of values:
Collation:	
🐝 🛃 🔽 ОК	Ok±Add Cancel Apply Help

Comments box on tab **General** - The text written in the **Comments** box on entities and attributes is generated in final DDL script.

Model Conversion from MySQL to SQL Server and Oracle

MySQL Enum data type is converted to Char data type, a check constraint for the attribute is created, the parameter is preserved (see the SQL tab of the **Check Constraint Properties** dialog).

Relationship

Foreign keys are supported only by tables of the InnoDB type.

Index

Properties		- • •
Entity: Entity1		
Index1		-
General Items Notes		
Caption Index1	Name Index1	6
Dique		
E Fulltext Index		
Spatial Index (for spatial columns)		
Index Type Default		
🔲 Don't generate auxiliary Index		
☑ <u>G</u> enerate		
(%)	OK Cancel Appl	y <u>H</u> elp

The following types of indexes are supported:

- Default
- BTREE
- HASH

Fulltext indexes are supported only by tables of type MyISAM.

Trigger

🔁 Trigger Properties	
Entity: Entity1	
Trigger1	•
General SQL Notes	
Capt <u>i</u> on	Name
Trigger1 =	Trigger1 💦
Database Name	
Not Specified 🔻 📃	
Definer	
Trigger Event	
INSERT -	
Trigger Time	
BEFORE	
Teminator	
Terminator	
Generate Generate SOL Only	,
	1
OK Ok <u>+</u> Add Ok	ancel Apply Help

Trigger Event options:

- INSERT
- UPDATE
- DELETE

Trigger Time options:

- BEFORE
- AFTER

User Data Types, Dictionary Types

In MySQL 5, User Data Types and Dictionary types are not available.

Databases

🔀 Database1	
Database1	-
General	1
Name	
Database1	
(%)	OK Cancel Apply

Data Types

• Implemented several **Data Types** with a **fsp** (fractional seconds precision) parameter - *TIME, TIMESTAMP*, *DATETIME*

Index

- New parameters: *ALGORITHM_OPTION* (DEFAULT, INPLACE, COPY), *LOCK_OPTION* (DEFAULT, NONE, SHARED, EXCLUSIVE)
- Support for Index Comments (tab Comment added in the Index Properties dialog)

Entities

New parameters: STATS_AUTO_RECALC, STATS_PERSISTENT, STATS_SIMPLE_PAGES

Reverse Engineering - MySQL 5.6

See Reverse Engineering - MySQL 8.0 for more information.

Script Generation - MySQL 5.6

See Script Generation - MySQL 8.0 for more information.

Specifics - MySQL 5.7

Attributes

[GENERATED ALWAYS] AS (expression) [VIRTUAL | STORED] Configurable in Attribute Properties | Generated tab.

✓ Is Generated		
Expression		
json_extract('c`,'\$.id')	*]
	-	
Stored Type		
- Not Specified -		

Data Types

New data type - JSON



Tables

COMPRESSION, ENCRYPTION parameters (Entity Properties | Table Options tab | Other Table Options)

Triggers

Trigger Order - FOLLOWS, PRECEDES

Trigger Order	
Other Trigger Name	
Trigger2	
Activate	
FOLLOWS 👻	
FOLLOWS	
PRECEDES	

Change Script Generation

- Support for generated columns for ALTER TABLE
- Support for multiple TRIGGERS

Reverse Engineering - MySQL 5.7

See Reverse Engineering - MySQL 8.0 for more information.

Script Generation - MySQL 5.7

See Script Generation - MySQL 8.0 for more information.

Specifics - MySQL 8.0

Toad Data Modeler supports MySQL 8.0 in Reverse Engineering from a database, from a SQL file, Change Script Generation and SQL/DDL Code Generation

Reverse Engineering - MySQL 8.0

Available Data Providers are:

- Connection via TCP/IP
- Connection via ODBC

Connection via TCP/IP:

🔀 Reverse Engineering Wizard		
- Stored Connections - Select Data Source - Select Data Provider <u>- Connecting</u> - What to Reverse	Host <u>H</u> ost Name 10.11.40.31	P <u>o</u> rt 3306
- Options - Save Connection - Tables	User User Name	Password
	root ▼ Save Password	••••
	Database Database Name (optional) information_schema	
	Connection String mysgl://root@10.11.40.31:3306/information_schema	
Show Log Close after Execution	on < Previous Next >	Execute Qose

Connection via ODBC

🔀 Reverse Engineering Wizard	
 Stored Connections Select Data Source Select Data Provider Connecting What to Reverse Options Save Connection Tables 	Data Source Name MYSQL Reload Property Data Link User Name root Password Save Password
Show Log Close after Executi	on < <u>Previous</u> <u>N</u> ext > <u>Execute</u> <u>Close</u>

Script Generation - MySQL 8.0

Contraction Barrier Contraction of MySQL 5.0	
What to Generate Detail Settings Referential Integrity Select List	
Location of SQL <u>Fi</u> le: C:\Users\vnitrova\Documents\Toad Data Modeler Beta\GeneratedScripts\Generate	ad SQL
Database Name	Append To File
Selection	
Default [System] V	
Property Name Extended Value	
⊡- Model	
After Script	
Before Script	
Entities Create	
Indexes Create	
V Keys Create All Keys	
E V Functions Create	
Definer	
Permissions to Objects	
E Procedures Create	
Definer	
Relationships Create	
🗄 🗹 Views Create	
Definer	
Show Preview	
Verify Show Log Save Settings Generate	Show Code Help
_	

See the property *Definer* on tab What to Generate, under Entities/Triggers, Views, Procedures, Functions.

During reverse engineering, the Definer property is loaded. Nevertheless, if user does not have particular permissions, the generated DDL script with the Definer property would not work. Now it is possible to deselect this property for the DDL script generation.

BDL Script Generation of MySQL 5.0	- • ×
What to Generate Detail Settings Referential Integrity Select List	
Use Quotation Marks Generate Database Name to Identifiers Text Case Selection:	
Preserve Case	
Generate Permissions Only to Object Types Selected on Tab What to Generate Terminator	
Order of Generated Objects You can change order of generated objects. Click Edit and define how objects will be generated.	
Edit	
Show Preview	
Verify Show Log Save Settings Generate Show Code	Help

Specifics - Oracle 11g Release 1

Entity

External tables

🔀 Entity Properties		
SCOTT.T_CUSTOMER		-
Caption	Name	
Customer	T_CUSTOMER	
General Attributes Keys Indexes Before Script After Script Notes SQL	B Check Constraints Triggers Per Preview Relationships Physical Propertie	rmissions To Do s Table Properties
External Table (Organization External)		
Tablespace for Table USERS	•	
STORAGE(INITIAL 64k MAXEXTENTS 2147483645 BUFFER_POOL DEFAULT) LOGGING		A
Generate	OK Cancel App	Ny Help

External tables are supported. On tab **Physical Properties**, select the **External Table (Organization External)** checkbox. The **External Table Properties** tab will occur on the form.
Entity Properties		
SCOTT.T_CUSTOMER		-
Caption Customer	Name T_CUSTOMER	6
General Attributes Keys Indexes Chec After Script Notes SQL Preview Relationships	ck Constraints Triggers Permissions Physical Properties External Table Prope	To Do Before Script rties Table Properties
Access Driver ORACLE_LOADER Default Directory Object Not Specified		
Access Parameters		
		* *
Location Specifier List (External Data Sources)		
Reject Limit	TED	
Generate	OK Cancel App	Help

Attribute

Data Types

Caption		Name	
Name		> name	
eneral Check Constra	ints Foreign Keys Permiss	ions Notes	
Data <u>T</u> ype		Domains	
🥌 Varchar2(x)	▼	. ^	▼
Length	Column Length in		
20	CHAR	~	
De <u>f</u> ault Value		Default Rule	
		None	▼
Comment Name column can cor	tain First and Middle name. S	Gumame must be in different column.	*
Comment Name column can cor	tain First and Middle name. S	Sumame must be in different column.	•
Comment Name column can cor Not Null Constraint Constraint Name	itain First and Middle name. S	Sumame must be in different column. Other Database Specifics	•
Comment Name column can cor Not Null Constraint Constraint Name	tain First and Middle name. S	Sumame must be in different column. Other Database Specifics Used Sequence (trigger) - None	•
Comment Name column can cor Not Null Constraint Constraint Name Deferrable	itain First and Middle name. S	Sumame must be in different column. Other Database Specifics Used Sequence (trigger) None Encryption Specification	•
Comment Name column can cor Not Null Constraint Constraint Name Deferrable Initially Deferred	itain First and Middle name. S	Sumame must be in different column. Other Database Specifics Used Sequence (trigger) - None Encryption Specification	•
Comment Name column can cor Not Null Constraint Constraint Name Deferrable Initially Deferred Disable	itain First and Middle name. S	Sumame must be in different column. Other Database Specifics Used Sequence (trigger) - None Encryption Specification	•
Comment Name column can cor Not Null Constraint Constraint Name Deferrable Initially Deferred Disable No Validate	itain First and Middle name. S	Sumame must be in different column. Other Database Specifics Used Sequence (trigger) - None Encryption Specification REF Type	•
Comment Name column can cor Not Null Constraint Constraint Name Constraint Name Deferrable Initially Deferred Disable No Validate Rely	itain First and Middle name. S	Sumame must be in different column. Other Database Specifics Used Sequence (trigger) None Encryption Specification REF Type Use REF Type	•
Comment Name column can cor Not Null Constraint Constraint Name Deferrable Disable No Validate Rely	itain First and Middle name. S	Sumame must be in different column. Other Database Specifics Used Sequence (trigger) - None Encryption Specification REF Type Use REF Type Inline REF Constraint	
Comment Name column can cor Not Null Constraint Constraint Name Constraint Name Deferrable Initially Deferred Disable No Validate Rely	itain First and Middle name. S	Sumame must be in different column. Other Database Specifics Used Sequence (trigger) None Encryption Specification REF Type Use REF Type Inline REF Constraint	

Data Types:

For Char and Varchar2 data types, you can define **Column Length in**. For User data type, you can define REF options. Note: Change for CHAR/BYTE of attributes: Previously, it was necessary to select CHAR or BYTE for Char (x) and Varchar(x) data types of attribute (domain) in **Column Length in** combo box. Now there is a new item "Default" that is selected by default.

Reverse engineering: During RE TDM finds out what is the default item in the Oracle database. Example: BYTE is a default item in Oracle database.

- Previous behavior: BYTE was loaded for the attribute.
- Current behavior: "Default" item is shown for the attribute. BYTE will be shown in Model Properties dialog | Database Parameters tab | Length Semantics box (it is not used during script generation).
- If you want to preserve the previous behavior of TDM, select the "Load CHAR/BYTE to Attributes Regardless Database Default Settings" checkbox in the RE Wizard.

Used Sequence (trigger) - From this box, you can select a sequence that you want to use for the attribute. (A new trigger will be created in SQL script.)

Encryption Specification - Here, you can write e.g. USING 'AES192' NO SALT.

Virtual Column

Virtual Column area - If you want the column to be virtual column, select the Is Virtual Column checkbox and fill out the Expression box (e.g. Attribute2 * Attribute3) and set appropriate data type.

🔁 Attribute Properties - Entity1	
Cratics	▼ Nerre
Attribute 1	Attribute 1
General Check Constraints Foreign Keys Permissions N	Votes
Data <u>T</u> ype Char(x) ▼ ^	Domains
20 Default	
Default Value	Default Bule
	- None
Comment	
	<u>^</u>
	T
Not Null Constraint	Other Database Specifics
Constraint Name	Used Sequence (trigger)
	None 🔻 📖
Deferrable	Encryption Specification
Initially Deferred	
Disable	
No Validate	REF Type
Rely	Use REF Type
Vieture Column	Inline REF Constraint
S Virtual Column	
Expression	
	Ok±Add Cancel Apply Help

Index

Expression Index

Example of Expression index:

🔀 Index Properties	
Entity: SCOTT.IX_TAB_DOM	
SCOTT.IX_TAB_DOM_IX	▼
General Items Notes Index Properties	
Domain Index Indextype SCOTT.INDEXTYPE1 ODCI Parameters 10,20,40	Tablespace Not Specified
	•
ОК	Cancel Apply Help

Example: Index properties (for domain index):

Properties	
Entity: SCOTT.IX_TAB_DOM	
SCOTT.IX_TAB_DOM_IX	•
General Items Notes Index Properties	
Domain Index Indextype SCOTT.INDEXTYPE1 ODCI Parameters 10,20,40	-
	•
Cancel Apply	/ Help

XML Index

🔀 Index Properties	
Entity: Entity1	
Index1	•
General Items Notes Index Properties	
Domain Index / XMLIndex Indextype	Tablespace Not Specified 💌
ODCI Parameters / XMLIndex Parameters	
	*
©K	Cancel Apply Help

Trigger

🔀 Trigger Properties	
Entity: SCOTT.T_BORROWING	
SCOTT.tri_BORROWING	•
General SQL Notes	
Caption Name tri_BORROWING = tri_BORROWING	6
User / Schema SCOTT •	
Trigger Fire BEFORE -	
Trigger Events	
 ☑ Insert ☑ Update 	
Correlation Names (REFERENCING) Image: For Each Row Old New When Condition	
Generate Generate SQL Only	
Cancel Apply	Help

🐮 Trigger Properties 🔲 💷 🔀
Entity: SCOTT.T_BORROWING
SCOTT.tri_BORROWING
General SQL Notes
<pre>declare price number(10,2); begin select price_per_day into price from T_EXEMPLAR where T_EXEMPLAR.exemplar_id = :new.exemplar_id; :new.total_price := Price_Type((:new.end_date-:new.start_date)*price); end;</pre>
OK Ok+Add Cancel Apply Help

Trigger (Entity)

🔁 Trigger Properties	
Entity: Entity1	
Trigger1	•
General SQL Notes	
Capt <u>ion N</u> ame	
Trigger1 = Trigger1	6
User / Schema Not Specified	
Trigger Fire COMPOUND	
Trigger Events Delete Insert Update	
Correlation Names (REFERENCING) For Each Row Old New When Condition	
Trigger Ordering Follows	
Generate 👽 Enabled 🔲 Generate SQL Only	
OK Ok+Add Cancel Apply	Help

The Trigger Fire box with an item COMPOUND.

Body of Compound Trigger, including initial key sentence "COMPOUND TRIGGER", should be written on tab **SQL**. From the **Trigger Fire** box, you can select items **COMPOUND** or **BEFORE** or **AFTER**.

Trigger (View)

🔀 Trigger Properties	
View: View1	
Trigger1	•
General SQL Notes	
Caption <u>N</u> ame	
Trigger1 = Trigger1	6
User / Schema	
Not Specified 🗸	
Trigger Fire	
COMPOUND -	
Trigger Events	
Delete	
Insert	
Update	
Nested Table Column	
Correlation Names (REFERENCING)	
Old New Parent	
	I For Each Row
Trigger Ordering	
Follows	
Generate SQL	Only
OK Ok+Add Cancel	Apply Help

From the Trigger Fire box, you can select items COMPOUND or INSTEAD OF.

User Data Type

🔀 User Data Type Properties 💿 💿 🖾
SCOTT.Phone_List_Type
Consult Branchise Little De Little Li
General Permissions To Do Used in Notes SQL Preview Variaty Type
Create Definition of Varray Type
Maximum Limit Datatype Create Definition
Create Varray Type Definition
AS VARRAY(5) OF VARCHAR2(25)
_
OK Ok+Add Cancel Apply Help

When you select *Varray Type* or *Nested Table Type*, a new tab displays (Varray Type tab or Nested Table Type tab). There, you can see new boxes where you write appropriate values. Click **Create Definition** and the definition will be written in the memobox.

The content of the boxes is not saved and is not used for reverse engineering, script or report generation. Hints in memoboxes for User Data Types are shown.

Other Notes

- Dictionary types are not supported for Oracle models.
- User Data Types on user data types in Oracle model.

Materialized View

Materialized View Properties
SCOTT.MV_EMP_PK_NEVERREFRESH
SQL Preview Refresh Physical Properties Materialized View Properties Create Index General SQL Permissions To Do Before Script After Script Notes
Caption Name MV_EMP_PK_NEVERREFRESH MV_EMP_PK_NEVERREFRESH
User / Schema SCOTT •
Column Aliases "EMPNO"."ENAME"."JOB"."MGR"."HIREDATE"."SAL"."COMM"."DEPTNO"
Prebuilt Table
None 👻
Using Index I Using No Index
For Update Query Rewrite
DISABLE
OK Ok+Add Cancel Apply

Procedure

🗏 Stored Proce	dure Properties			
SCOTT.p_Custo	mer_Has_Num_F	ilm		-
After S General	cript SQL	Notes Permissions	S	QL Preview Before Script
Caption p_Customer_	Has_Num_Film	Name	e ustomer_Has_Nu	m_Film 🔀
User / Schem	ia	• 🗆 In	voker Rights (CL	IRRENT_USER)
cid IN integer	guments r, num OUT intege	er		*
				~
Definition	ls Wrapped			
🔽 Generate	🔲 Gen	erate SQL Only		
(%)	OK Ok+	Add Canc	el Apply	Help

Stored Procedure Properties
SCOTT.p_Customer_Has_Num_Film
General SQL Permissions To Do Before Script After Script Notes SQL Preview
Templates: Body 💌 🖳 📝
<pre>1 AS 2 BEGIN 4 INTO num 5 FROM T_CUSTOMER c, T_BORROWING b, T_EXEMPLAR e, T_FILM f WHERE c.customer_id=cid and c.customer_id=b.customer_id and b.exemplar_id=e.exemplar_id and e.film_id=f.film_id; 10 END; 4 III</pre>
OK Ok+Add Cancel Apply Help

Function

E Function Properties
SCOTT.f_Customer_Has_Num_Film
After Script Notes SQL Preview General SQL Permissions To Do Before Script
Caption Name f_Customer_Has_Num_Film = f_Customer_Has_Num_Film
SCOTT Invoker Rights (CURRENT_USER)
cid IN integer
Datatype of The Return Value integer Definition Is Wrapped
Generate Generate SQL Only
OK Ok+Add Cancel Apply Help

Punction Properties	
SCOTT_f_Customer_Has_Num_Film	•
After Script Notes General SQL Permissions To Do	SQL Preview Before Script
Templates: Body	- 🚽 🛃 💈
<pre>1 IS 2 sol integer; 3 BEGIN 4 p_Customer_Has_Num_Film(cid,sol); 5 RETURN (sol); 6 END;</pre>	
< III.	-
Cancel Appl	y Help

Directory

B DIRECTORY1	
DIRECTORY1	-
General SQL Preview Before Script After Script	
Name	
DIRECTORY1	
Full Path Name	
C:\oracle\product\10.2\oradata\orcl\directory	
Generate Generate SQL Only	
<u>Ф</u> К	Cancel Apply

Java

🞏 Java1	
Java1	•
General SQL Preview SQL Before Script After Script	
Name	
Java1	
User / Schema Not Specified	
Type SOURCE	
RESOLVE / COMPILE	
Generate Generate SQL Only	
OK Canc	el Apply

Support for Oracle Java Source, including reverse engineering: All the three types of Java schema objects (SOURCE, CLASS, RESOURCE) should be written to this object. - During reverse engineering only SOURCE types are loaded, and from them only sequences of characters for Java source. Other Java schema objects (CLASS, RESOURCE) are loaded only as a name. Checkbox **Generate** is unselected for all the Java schema objects (SOURCE, CLASS, RESOURCE).

Sequence

NY_SEQ	
SCOTT.MY_SEQ	•
General SQL Preview Before Script After Script	
Name	
MY_SEQ	
User / Schema	
SCOTT 🔹 📖	
Increment By	
2	
Start With	
Maxvalue Diovalue Cache	
20	
VOCYCLE	
I NOORDER	
Generate Generate SQL Only	
Cancel	Apply

Synonym

🔀 Synonym	
SCOTT.Synonym1	•
General Before Script After Script Notes	
Name	
Synonym1	
Public User / Schema SCOTT	
Object SCOTT.T_FILM	
Dblink	
☑ Generate	
OK Ok+Add Cance	I Apply

Tablespaces

🔀 Tablespace1	
Tablespace1	-
General	1
Name	
Tablespace1	
<%>	OK Cancel Apply

Reverse Engineering - Oracle 11g Release 1

See Reverse Engineering - Oracle 21c for more information.

Specifics - Oracle 11g Release 2

View

🔁 View Properties
View1 -
Notes SQL Preview Attributes Where Order Group Having Edition General SQL Permissions To Do Triggers Before Script After Script
Caption Name View1 = View1
User / Schema Not Specified Aliases
Object View or XMLType View Clause
-
Restriction Create View With One of These Restrictions:
Force View
Categories
□ None
Generate ☐ Generate SQL Only SELECT in Views as Text Section 2.1 Control 1.1 Control
OK Ok±Add Cancel Apply Help

New parameter Editioning - Edition View checkbox.

Restriction area - You can define a constraint for restriction READ ONLY or WITH CHECK OPTION.

🔁 View Properties 📃 🗖 🔳 💌
View1
General SQL Permissions To Do Triggers Before Script After Script Notes SQL Preview Attributes Where Order Group Having Edition
In Edition Not Specified
OK Ok±Add Cancel Apply Help

Edition

Edition1	2 23
Edition1	•
General SQL Preview	
Name	
Edition 1	
Parent Edition	
OK Cancel A	pply

The Edition object can be generated in DDL script and also loaded during reverse engineering.

The following objects can refer to the extra object Edition: Synonym, View, Function, Procedure, Package, Type, Trigger. See their Properties dialog and the new tab Edition | In Edition box.

Edition - Reverse Engineering

RE Wizard | page Options| checkbox Load Objects* Only from Selected Edition: and a box where you can type name of the Edition from which you want to load objects. During RE, all objects to which the defined edition refers are loaded. In the reversed model, the Edition is written on tab Edition in the Properties dialogs of these objects that have been newly defined or modified in the database for the Edition typed in the box.

Edition - DDL Script Generation

DDL Script Generation dialog | Detail Settings tab | checkbox Generate Change of Edition in Session. Select this checkbox if you want Toad Data Modeler to take into account for the script generation an edition defined on tab Edition in Properties dialog of particular object. Example of what will be generated in DDL script:

Before object definition: ALTER SESSION SET EDITION = object_edition After object definition: ALTER SESSION SET EDITION = ora\$base

i Note: This is an example of default edition ora\$base. Default edition is defined in Model | Model Properties dialog | Database Parameters tab | Default Edition Name box.

Trigger (Entity)

🔀 Trigger Properties - E
Entity: Entity1
Trigger1 👻
General SQL Notes Edition
Capt <u>i</u> on <u>N</u> ame
Trigger1 E Trigger1
User / Schema - Not Specified
Trigger Fire Crossedition Trigger BEFORE Forward Crossedition
Trigger Events Delete Insert Update
Correlation Names (REFERENCING) For Each Row Old New When Condition
Trigger Ordering Type Trigger List Follows -
Generate SQL Only
OK Ok±Add <u>Cancel Apply H</u> elp

Parameter CROSSEDITION - Select the Crossedition Trigger checkbox to display a combo-box with options Not Specified, Forward Crossedition, Reverse Crossedition.

Trigger Ordering area - parameter FOLLOWS and PRECEDES. The Type combo-box offers options Follows or Precedes. In the Trigger List box, you can write a list of triggers (e.g. triggername1, triggername2).

Trigger (View)

🔀 Trigger Properties - E	
View: View1	
Trigger1	
General SQL Notes Edition	
Capt <u>i</u> on <u>N</u> ame	
Trigger1 = Trigger1	6
User / Schema	
Not Specified 🔻 🛄	
Trigger Fire Crossedition Trigg	jer
COMPOUND - Not Specified	
Trigger Events	
Delete	
Insert Column List	
Update of	
Nested Table Column	
Correlation Names (REFERENCING)	Each Row
Old New Parent When (Condition
Trigger Ordering	
Type Trigger List	
Follows 👻	
Generate Enabled Generate SQL Only	
Circle Apply	Help

From the Trigger Fire box, you can select items COMPOUND, INSTEAD OF, BEFORE and AFTER. Column List edit box is available when the Update checkbox is selected in Trigger Events section and Trigger Fire option is set to either COMPOUND, AFTER or BEFORE.

For Each Row checkbox and When Condition edit box are enabled based on the Trigger Fire option. Other objects in Model Explorer:

- Edition
- Sequences
- Packages
- Directories
- Tablespaces
- ExtraObjects
- Java

Change Script

• Change Script generation- Use Temporary Tables options are now available for all Oracle Databases in Settings and in Change Script generator.

🔀 Options	
Microsoft SQL Azure	Orașla
···· Microsoft SQL Azure (common)	Olacie
···· Microsoft SQL Server	Code Editor Type
Microsoft SQL Server 2000	Use the Common Setting
··· Microsoft SQL Server 2005	
Microsoft SQL Server 2008	External Editor for Generated Code
Microsoft SQL Server 2012	
MySQL	
MySQL 5.0	
MySQL 5.1	
mysqL 5.5	
Oracle 9i	- Alter Sprint Settinge
···· Oracle 11g Belease 1	Use Temporary Tables to Preserve Data
Oracle 11g Release 2	Use Temporary Tables to Preserve Data on Data Type Change
- Oracle 12c	
PostgreSQL	Path of thshames.ora:
PostgreSQL 8.1	
···· PostgreSQL 8.2	
PostgreSQL 8.3	
PostgreSQL 8.4	
··· PostgreSQL 9.0	
PostgreSQL 9.1	
Postgre SQL 9.2	
SQLite	
SQLITE 3.7	
Subase ASE	
Subase ASE 12.5	
Sybase ASE 15.5	
Sybase ASE 15.7	
Sybase IQ	
Sybase IQ 15.2	
Sybase SQL Anywhere	
Sybase SQL Anywhere 11	
Teradata Teradata	
Default Settings Import	Export OK Cancel Apply

🔀 Generate Change Script		
 Target Comparison Settings Select Object Types <u>DDL Code Generation</u> Items Selection Review 	 ✓ Use Quotation Marks ✓ Generate User/Schema to Objects ✓ Use Temporary Tables to Preserve Data ✓ Use Temporary Tables to Preserve Data on Data Type Change Text Case Selection: Preserve Case ✓ Generate Constraint Names (Not Null, Foreign Keys) Generate Check Constraint Names Used in Domains ✓ Create Triggers for Update of Columns That Uses Sequences Drop Tables with CASCADE CONSTRAINTS Clause Terminator 	
	< <u>Previous</u> Next > Finish	

Script Generation - Oracle 11g Release 2

BDL Script Generation of Oracle 11g Release 2	
What to Generate Detail Settings Referential Integrity Set	lect List
Location of SQL File:	
C:\Users\vnitrova\Documents\Toad Data Modeler Beta\Ger	neratedScripts\Generated.SQL
User / Schema	Append To File
Not Specified 💌	
Property Name	Extended Value
⊡ • Model	
After Script	
Before Script	Create
Unectones	Create
	Create
	Create
V Kevs	Create All Kevs
Physical Properties	
Table Properties	
Triggers	Create
	Create
🔽 Java	Create
Materialized Views	Create
Indexes	
Materialized View Properties	
Market Physical Properties	
	Create
Body Definitions	
	·
Show Preview	
Verify Show Log Save Setting	s Generate Show Code Help

On tab What to Generate see the Editions object.

User Data Types - Click the Extended Values column and see option CREATE OR REPLACE ... FORCE.

i Note: The option is used for CREATE OR REPLACE type. It permits to overwrite a type on which another type depends. If only CREATE OR REPLACE is selected, it leads to error notification.

🔀 DDL Script Generation of Oracle 11g Release 2 📃 🖂
What to Generate Detail Settings Referential Integrity Select List
 ✓ Use Quotation Marks ✓ Generate User/Schema to Objects Text Case Selection: Preserve Case ✓ Generate Constraint Names (Not Null, Foreign Keys) Generate Check Constraint Names Used in Domains Create Indexes to Foreign Keys ("Generate Constraint Names" must be checked) ✓ Create Indexes to Foreign Keys ("Generate Constraint Names" must be checked) ✓ Create Triggers for Update of Columns That Uses Sequence Drop Tables with CASCADE CONSTRAINTS Clause Drop Tables with PURGE Clause ✓ Create Comments ✓ Generate Permissions Only to Object Types Selected on Tab What to Generate ✓ Generate Change of Edition in Session Terminator ✓
Order of Generated Objects
generated.
Show Preview
Verify Show Log Save Settings Generate Show Code Help

Detail Settings tab | checkbox Generate Change of Edition in Session. Select this checkbox if you want Toad Data Modeler to include an edition defined on tab Edition in Properties dialog of particular object for the DDL script generation.

Example of what will be generated in DDL script:

Before object definition:

ALTER SESSION SET EDITION = object_edition

After object definition:

ALTER SESSION SET EDITION = ora\$base

i Note: This is an example of default edition ora\$base. Default edition is defined in Model | Model Properties dialog | Database Parameters tab | Default Edition Name box.

Reverse Engineering - Oracle 11g Release 2

See Reverse Engineering - Oracle 21c for more information.

Specifics - Oracle 12c Release 1

Entity

🔁 Entity Properties - E	
Caption Name	
General Attributes Keys Indexes Check Constraints Triggers Permissions To	Do Before Script
After Script Notes SQL Preview Relationships Inner Script Physical Properties	Table Properties
PERIOD FOR user_valid_time (start_time, end_time)	*
	-
Generate OK Cancel Apply	Help

- Temporal Validity support for table
 Entity Properties dialog | Inner Script tab
 e.g. PERIOD FOR user_valid_time (start_time, end_time)
- *INDEXING ON/OFF* option for partitioned tables, for both whole table and individual partitions. **Table Properties** tab is used for this option. It is also loaded there during reverse engineering.
- Several COMPRESS parameters have been renamed.
- Materialized Zonemap, Clustering, INMEMORY and [NO] ROW LEVEL LOCKING options supported

(added in Oracle patch 12.1.0.2)

• Read permission supported (Oracle patch 12.1.0.2).

Attribute

Attribute Properties - Entity1		•
Caption Attribute 1	Name Attribute1	6
General Check Constraints Foreign Keys Permissions I Data Type Char(x) Length Column Length in 20 Default Value On Null Primary Key Not Null Unique (New AK) Comment	Notes Identity Virtual Column Edition Domains Default Rule - None	
Not Null Constraint Constraint Name Deferrable Initially Deferred Disable No Validate Rely	Other Database Specifics Used Sequence (trigger) None Encryption Specification Invisible REF Type I Use REF Type Inline REF Constraint	
	Ok±Add Cancel Apply	<u>H</u> elp

- Visible/Invisible option
- DEFAULT ON NULL expression On Null checkbox
- Data Types VARCHAR2(x), NVARCHAR2(x) and RAW(size) can acquire length up to 32767 bytes (formerly only 4000).

🔁 Attribute Properties - Entity1						—		×
Caption Attribute 1	Kun Demission I	=	<u>N</u> ame Attribute	e1	[]:	1		• •
Generated Type ALWAYS Start With		votes		virtuai Colur	nn Ealaon	I		
Increment By								
Maxvalue Minvalue	NOMAXVALUE							
ZU ✓ NOCYCLE ✓ NOORDER ✓ NOKEEP	NOCACHE							
<%>	ОК	Ok+A	dd	Cancel	Ap	ply	He	p

- New Identity tab
- Set NOKEEP in Attribute Properties | Identity
- Virtual Column Edition tab where you can define *EDITION* for virtual column. See the comboboxes Unusable Before Edition and Unusable Beginning Edition.

Index

🔀 Index Properties - E	- • ×
Entity: Entity1	
Index1	_
General Items Notes Index Properties	
Domain Index / XMLIndex Tablespace Indextype Indexing	▼
ODCI Parameters / XMLIndex Parameters	
	*
W> OK Cancel Apply	Help

- New option INDEXING PARTIAL/FULL for indexes of partitioned tables Indexing combobox.
- For index and its partitions it is possible to set USABLE (besides UNUSABLE) in the text field.
Keys

Key Properties	
Entity: Entity1	
Key1	•
General Attributes Notes Using Index Properties	
Tablespace - Not Specified	
	*
	Ŧ
Index in Unusable State	
OK Cancel App	ly <u>H</u> elp

Key Properties dialog | Using Index Properties tab | Index in UNUSABLE state checkbox where you can set USABLE (besides UNUSABLE) option.

Materialized View

Haterialized View Properties
MaterializedView1
General SQL Permissions To Do Before Script After Script Notes SQL Preview Refresh Physical Properties Materialized View Properties Create Index Edition
Evaluation Edition CURRENT EDITION Not Specified Flicible for Query Rewrite
Unusable Before Edition Unusable Before Edition Unusable Before Edition Unusable Beginning Edition
CURRENT EDITION Not Specified
OK Ok+Add Cancel Apply

- UNUSABLE EDITION option can be defined in two new comboboxes Unusable Before Edition and Unusable Beginning Edition on tab Edition.
- INMEMORY and [NO] ROW LEVEL LOCKING options supported (added in Oracle patch 12.1.0.2)
- Read permission supported (Oracle patch 12.1.0.2).

Function, Procedure, Package, User Data Type, Synonym, View, Trigger

- Edition tab where you can define a function as NONEDITIONABLE in checkbox Noneditionable.
- White List (ACCESSIBLE BY) supported

View

🔁 View Properties
View1 👻
SQL Preview Attributes Where Order Group Having Row Limit Edition General SQL Permissions To Do Triggers Before Script After Script Notes
Capt <u>i</u> on <u>N</u> ame
View1 = View1
User / Schema Not Specified
Aliases
Object View or XMLType View Clause
^
-
Participa
Create View With One of These Pertictions:
Force View
Functions Executed with View Invoker's Rights (CURRENT_USER)
Categories
None
Generate Generate SQL Only SELECT in Views as Text
OK Ok±Add Cancel Apply Help

- VISIBLE/INVISIBLE option can be defined for alias items (textually in Aliases box)
- Select the Functions Executed with View Invoker's Rights (CURRENT_USER) checkbox to define the BEQUEATH CURRENT_USER/DEFINER option to specify whether functions referenced in the view are executed using the view invoker's rights or the view definer's rights.
- STORE ALL VARRAYS AS LOBS/TABLES option for XMLType views are loaded to **Object View or** XMLType View Clause box on tab General.
- Read permission supported (Oracle patch 12.1.0.2).
- JSON functions now supported (Oracle patch 12.1.0.2).

Sequence

• KEEP/NOKEEP select the NOKEEP checkbox.

Reverse Engineering - Oracle 12c Release 1

See Reverse Engineering - Oracle 21c for more information.

Script Generation - Oracle 12c Release 1

🔁 DDL Script Gene	eration of Oracl	e12c				
What to Generate	Detail Settings	Referential Integrity	Select L	ist		
What to Generate Use Quotation Generate User Text Case Selection Preserve Case Generate Conse Generate Check Create Indexes Create Trigger Drop Tables w Orop Tables w Create Comme Grant Roles to Generate Chart Generate Perm Generate Chart Terminator /	Marks r/Schema to Obje on: straint Names (No ck Constraint Nar s to Foreign Keys s for Update of Co ith CASCADE CO ith PURGE Clausents User/Role nissions Only to Co nge of Edition in 19	ects ot Null, Foreign Keys) mes Used in Domains ("Generate Constrain iolumns That Uses Se DNSTRAINTS Clause se Object Types Selected Session	t Names' quence	'must be checked) What to Generate		
Order of Genera	ated Objects					
You can change generated.	e order of genera	ted objects. Click Edit	and defir	e how objects will be		
Show Preview						
Verify	Show	Log Save Se	ttings	Generate	Show Code	Help

Specifics - Oracle 12c Release 2

- Options are available in Options | Model | Physical Model | Oracle | Oracle 12c Release 2
- Identifiers now can be 128 characters long (exception Tablespaces)

Support for Collation

- New property COLLATION can now be used for tables (column collation), views, materialized views, users, packages, procedures, functions and types
- List of Collations displays objects

8	Options	×	
General	Oracle 12c Release 2		
Dialog Boxes	Code Editor Type		
- Paths	Use the Setting from Oracle		
- Reverse Engineering			
- Reports	External Editor for Generated Code		
- Scripting			
Toad for Oracle Integration	Default DataType	Parameter 1 Parameter 2	
Version Control System		v	
Frint Intelligence Central			
Model	List of Collations (separated by newline)		
Logical Model	USING_NLS_SORT USING_NLS_SORT_CI	^	
Physical Model	USING_NLS_SORT_AI		
- Universal	USING_NLS_SORT_CS BINARY	~	
⊟ Vertica			
Vertica 8.0	Materia and		
SAP/Sybase SQL Anywhere	Vernicator		
- SAP SUL Anywhere 17	Enable Laption	Lategory	
Oracle 12c Belease 2	 Identity and Default in Attribute Check 		
Oracle 12c Release 1	 Identity and Data Type in Attribute Check 	Entity P	roperties – 🖬 🔼
- Oracle 11g Release 2	Unique Index Items		•
Oracle 11g Release 1	Key Using Index Check	Caption	Name
Oracle 10g	User SQL Empty Check	Bidyl	- buyi
⊟- MySQL	Zone Map Definition Check	Notes SQL Preview Relationships Inner Script Phy	sical Properties External Table Properties Table Properties
MySQL 5.7	 Tablespace Assignment Check 	General Attributes Keys Indexes Check Constraints	Triggers Permissions To Do Before Script After Script
MySQL 5.6	 ON STATEMENT Materialized View Para 		
- MySQL 5.5	 ON QUERY COMPUTATION Materialized 	User / Schema	
MySQL 5.0	Syntax Validity	- Not Specified V	
⊟ Microsoft SQL Server		Temporary Table	Other Database Specifics
Microsoft SQL Server 2016		Global Temporary Table	Default Collation
		On Commit Preserve Rows (for Temporary Table)	· · · · · · · · · · · · · · · · · · ·
Enter Search Term Here V St Default Set	tings Import Export		USING_NLS_SORT
		Comment	USING_NLS_SORT_AI
			USING_NLS_SORT_CS
			BINARY_CI
			BINARY_AI

Tables

Table Properties and Physical Properties Tab

In Entity Properties | Physical Properties | Segment Creation selectNot Specifies, Deferred or Immediate

The following properties' definitions need to be entered manually into the text field and are loaded automatically during **Reverse Engineering**:

 FOR SERVICE property of INMEMORY tables - can be defined for the whole tables, for their partitions and subpartitions

- Inmemory_column_clause for NO INMEMORY tables you now can specify it to enable or disable specific table columns for the IM column store, and specify the data compression method for specific columns
- READ ONLY or READ WRITE property can be defined for the whole tables, for their partitions and subpartitions
- New In-Memory Column Store policy
- Compression policy new option COLUMN STORE COMPRESS FOR QUERY ROW AFTER ilm_time_ period OF NO MODIFICATION
- New properties COMPRESSION and INDEXING can be used for subpartition templates
- · Automatic list partitions can now be used for partitions
- Multi-Column List Partitioning can now be used for partitions and subpartitions
- · List of value lists can be specified for multi-column list partitions

External Tables

- Now you can use NOT NULL, UNIQUE, PRIMARY KEY, FOREIGN KEY constraints for external tables
- Can use ENCRYPT property, Virtual Column, range/list partitions and subpartitions
- Do not have to use DEFAULT and LOCATION in their definitions
- In Entity Properties | External Table Properties you can use one of the following drivers:
 - ORACLE_LOADER, ORACLE_DATAPUMP, ORACLE_HDFS, and ORACLE_HIVE

Misc.

• New Encrypt Algorithms are used for columns

Indexes

Index Properties Tab

The following property definition needs to be entered manually into the text field and is loaded automatically during **Reverse Engineering**:

• New Compress parameters COMPRESS ADVANCED and COMPRESS ADVANCED HIGH - can be defined for an index and its individual partitions (global and local)

Misc.

• New option DEFERRED INVALIDATION is available. Default is IMMEDIATE INVALIDATION

12	Index Properties – 🗖 🗙
Entity: Entity1	
Index1	V
General Items Notes Index Properties	s
Caption	Name
Index1	= Index1
User / Schema	
Not Specified V	•
Generate Unusable	Deferred Invalidation
<%>	OK Cancel Apply Help

Column COLLATION is recognized during Reverse Engineering

Keys

Using Index Properties Tab

The following property definition needs to be entered manually into the text field and is loaded automatically during **Reverse Engineering**:

New Compress parameters COMPRESS ADVANCED and COMPRESS ADVANCED HIGH

Materialized Views

- New property FOR SERVICE can be defined for the whole tables, for their partitions and subpartitions; the definition needs to be entered manually into the text field (**Physical Properties Tab**) and is loaded automatically during **Reverse Engineering**:
- New Encrypt Algorithms can be set in the Column Aliases field
- New ON STATEMENT mode:
 - Refresh type needs to be FAST
 - The materialized view's defining query needs to include the ROWID column of the fact table.
 - ON STATEMENT mode cannot be converted to a different mode using ALTER MATERIALIZED
 VIEW but instead DROP/CREATE is performed during Change Script Generation

Refresh	Physical Properties		Materialized View Properties Create Index Edition Commen
Never R	lefresh		
Refresh			
Туре		_	
- Not Spe	ecified	~	
On			
STATEM	ENT	~	
Not Spe DEMAND COMMIT	ecified)		Next
STATEM	ENT		
- Not Sp	ecified	v	
Using	Trusted Constraints		

- New property ENABLE ON QUERY COMPUTATION by default: DISABLE ON QUERY COMPUTATION
 - If enabled, the refresh mode COMMIT cannot be used

General SQL Permissions To Do Before
Caption <u>N</u> ame MaterializedView1 = Materialize User / Schema
Column Aliases
Default Collation
Prebuit Table
- None V
Using Index Using No Index
For Update
On Query Computation - Not Specified - DISABLE ENABLE
Categories
None 🗸
Generate Generate SQL Only

User

The following properties' definitions need to be entered manually into the text field (as CREATE USER sentence) and are loaded automatically during Reverse Engineering:

- New property HTTP DIGEST ENABLE
- New property LOCAL TEMPORARY TABLESPACE

Reverse Engineering - Oracle 12c Release 2

See Reverse Engineering - Oracle 21c for more information.

Script Generation - Oracle 12c Release 2

12 DDL Script Generation of Oracle 12c Release 2 – 🗖 💌
What to Generate Detail Settings Referential Integrity Select List
✓ Use Quotation Marks ✓ Generate User/Schema to Objects Text Case Selection: Preserve Case ✓ Generate Constraint Names (Not Null, Foreign Keys) Generate Check Constraint Names Used in Domains ✓ Create Triggers for Update of Columns That Uses Sequence □ Drop Tables with CASCADE CONSTRAINTS Clause □ Drop Tables with PURGE Clause ✓ Generate Permissions Only to Object Types Selected on Tab What to Generate ✓ Generate Default Collation for Objects Procedure, Function, Package, Type, Trigger Terminator / Order of Generated Objects You can change order of generated objects. Click Edit and define how objects will be generated.
Show Preview
OK Cancel

Specifics - Oracle 18c

Reverse Engineering - Oracle 18c

See Reverse Engineering - Oracle 21c for more information.

Script Generation - Oracle 18c

ntering and the second	-		×
What to Generate Detail Settings Referential Integrity Select List			
✓ Use Quotation Marks ✓ Generate User/Schema to Objects Text Case Selection: Preserve Case ✓ Generate Constraint Names (Not Null, Foreign Keys) ☐ Generate Check Constraint Names Used in Domains ✓ Create Triggers for Update of Columns That Uses Sequence ☐ Drop Tables with CASCADE CONSTRAINTS Clause ☐ Drop Tables with PURGE Clause ✓ Grant Roles to User/Role ✓ Generate Change of Edition in Session ☐ Generate Default Collation for Objects Procedure, Function, Package, Type, Trigger Terminator ✓ ✓ Order of Generated Objects You can change order of generated objects. Click Edit and define how objects will be generated. Edit			
Show Preview			
	ОК	Са	ncel

Specifics - Oracle 19c

Reverse Engineering - Oracle 19c

See Reverse Engineering - Oracle 21c for more information.

Script Generation Oracle 19c

See Script Generation - Oracle 9i for more information.

Specifics - Oracle 21c

Attribute Properties

JSON Data Type

tribute Properties - Entity1 - E			- 0
zion		Name	
ribute1		- Attribute1	
aral Check Constraints Foreign Keys Permissions Notes Identity Virtual Column Edition			
ata <u>T</u> ype		Domains	
Json	× _	^	~
efault Value	□ On	Default Rule Null None	~
Primary Key 🖉 Not Null 🗌 Unique (New AK)			
imment			
of Null Constraint		Other Database Specifics	
of Null Constraint		Other Database Specifics Used Sequence (trigger)	
Io Null Constraint Constraint Name		Other Database Specifics Used Sequence (trigger) - None -	×
lot Null Constraint Constraint Name Defemable		Other Database Specifics Used Sequence (trigger) - None Encryption Specification	v
NotNall Constraint Constraint Name Constraint Name Deferrable NotNall Constraint		Other Database Specifics Used Sequence (trigger) None – Encryption Specification	×/
Not Null Constraint Constraint Name Constraint Name Constraint Constraint C		Other Database Specifics Used Sequence (trigger) None – Encryption Specification (triviable	
NotNull Constraint Constraint Name Defermable Defermable Defermad NotNulldre		Other Database Specifics Used Sequence (trigger) – None – Encryption Specification – Invisible Collation	~ []
Int Nall Constraint Constraint Name Constraint Name Deterrable Initially Deterred Disable In Validate In Validate Refy		Other Database Specifics Used Sequence (trigger) - None – Encryption Specification Invisible Collation	×
Not Null Constraint Co		Other Database Specifics Used Sequence (tropp) In-None – Encryption Specification Collation REF Type	v
Not Null Constraint Constraint Constraint Name Deferrable Deferrable Deferrable Defable Rey Anual Column		Other Database Specifics Uned Sequence (trigger) None – Encryption Specification (invisible Collation REF Type Use REF Type	× _ z
Vel Null Constraint Constraint Name Constraint Name Defensable Defensable Desable No Validate Rely fritual Column Jestatal Column		Other Database Specifics U-ked Sequence (Hgor) I - None – Encryption Specification I mixiable Collation REF Type Inform EF Constant	v 2
io Null Constraint Con		Other Database Specifics Uned Sequence (trogger) Motione Encryption Specification Invisible Collation REF Type Indee REF Type Indee REF Constant	* =
In Null Constraint Constraint Constraint Name Constraint Name Constraint Name Constraint Name Constraint Const		Other Database Specifics Used Segures (Higger) None – EncryptionSpecification (Invisible Collation – EFT Type – Use REF Type – Mine REF Constraint	×
Nct Null Constraint Constraint Constraint Defensable mitally Defensed Defaable Defaable Defaable N Visial Column S Visial Column Expression S Visial Column		Other Database Specifics Uned Sequence (trops) Encryption Specification Invitable Collation REF Type Use REF Type Million REF Constaint	×

The JSON data type was introduced in the Oracle 20c preview release to provide native JSON support and improve JSON processing performance. It became generally available in Oracle 21c.

Reverse Engineering - Oracle 21c

Available Data Providers are:

- Connection via ADO
- Native Connection
- Connection via TCP/IP

Connection via ADO:

🞏 Reverse Engineering Wizard		
- Stored Connections - Select Data Source - Select Data Provider <u>- Connecting</u> - What to Reverse - Options	Connection String Provider=MSDAORA.1;Password=tiger;User ID=s Data Link Pr	cott;Data Source=10.11.40.20;Persist S
- Save Connection - Tables	User Identification <u>U</u> ser Name scott Save Password	Pass <u>w</u> ord
Show Log Close after Execut	ion < <u>P</u> revious <u>N</u> ext >	Execute Close

Native Connection:

🔀 Reverse Engineering Wizard		
 Stored Connections Select Data Source Select Data Provider <u>Connecting</u> What to Reverse Options Save Connection 	Service Identification Home OraClient 12Home 1_32bit Net Service Name OSTORACLE91	<u>tnsnames.ora</u> ✓
- Tables	Login Information User Name scott V Save Password Connect as	Password •••••
	Normal	
Show Log Close after Executi	on < <u>P</u> revious <u>N</u> ext	t > Execute Close

Connection via TCP/IP

🔀 Reverse Engineering Wizard		
 Stored Connections Select Data Source Select Data Provider Connecting What to Reverse Options Save Connection Tables 	Service Identification - Preload identification from a local net service name Available Local Net Service Names No net service name definition available - Or define the identification manually: Host 10.11.40.20 Image: SID Image: Service Name qa	ne: Port 1521
	Login Information User Name scott V Save Password Connect as Normal	Password •••••
Show Log Cose after Execution	on < <u>P</u> revious <u>N</u> ext >	Execute Close
 Note: 1. If the following error permissions. You ha the necessary rights 	message occurs in the Log area: "Unable t ven't assigned the SELECT_CATALOG_F to load users, roles and permissions.	o reverse users, roles and OLE role!", it means you have not all

- 2. To load these items successfully, you need to have the SELECT_CATALOG_ROLE role assigned or need to set a right for user to SELECT tables DBA_USERS, DBA_ROLES, DBA_ROLE_PRIVS, DBA_TAB_PRIVS.
 - Missing access to system table ALL_TABLES.
 - Missing privilege SELECT on system table ALL_TABLES.
- i Note: Connection via TCP/IP does not support Oracle native encryption.

Script Generation - Oracle 21c

🔀 DDL Script Generation of Oracle 9i	
What to Generate Detail Settings Referential Integrity Select List	
Use Quotation Marks	
Generate User/Schema to Objects	
Text Case Selection:	
Preserve Lase	
Generate Constraint Names (Not Null, Foreign Keys)	
Generate Check Constraint Names Used in Domains	
Create Indexes to Foreign Keys ("Generate Constraint Names" must be checked)	
Create Triggers for Update of Columns That Uses Sequence	
Drop Tables with CASCADE CONSTRAINTS Clause	
Create Comments	
Grant Roles to User/Role	
Generate Permissions Only to Object Types Selected on Tab What to Generate Terminator	
Order of Generated Objects	
You can change order of generated objects. Click Edit and define how objects will be generated.	
Show Preview	
Verify Show Log Save Settings Generate Show Code	Help

Changes since Toad Data Modeler v. 3.5

Automatically generated trigger (trigger for an attribute sequence - see the Attribute Properties dialog | General tab | Used Sequence/Trigger box) is generated as a standard trigger (e.g. entity trigger).

This trigger is generated provided that the Triggers item is selected in the DDL Script Generation dialog | What to Generate tab. It is NOT necessary to select also the Entity item.

In the past, this trigger was generated only provided that the Entities item was selected (the Triggers item was not taken into consideration).

Specifics - PostgreSQL 9.5

Entity

Table Type checkbox

Entity Properties - E	
Caption	Name
typed_table	= typed_table
Before Script After Script Notes SQ General Attributes Keys Indexes Che Schema Not Specified	L Preview Relationships Storage Parameters eck Constraints Triggers Permissions To Do
Settings	Table Created As
With OIDs	Temporary Table
	Table Type
- Not Specified 🔻 🛄	Typed Table
Inherited Tables	Select Composite Type
	composite_type
Comment	
Category	*
≪> <u>✓</u> <u>G</u> enerate	OK Cancel Apply Help

New combo box**Table Type** available in **Entity Properties** dialog, tab **General**. When the **Typed Table**option is selected, the new combo box**Select Composite Type** appears below the **Table Type** combo box.**Select Composite Type** combo box lists all existing **User Data Types**.

i Note: Make sure you select **Composite type table** from the combo box or run verification, which will return an Error message in case a wrong type is used.

Unlogged checkbox

New checkbox Unlogged added	(verification changed	accordingly).
-----------------------------	-----------------------	---------------

Caption Name Entity1 = Entity1 # Before Script After Script Notes SQL Preview Relationships Storage Parameters Foreign Table General Attributes Keys Indexes Check Constraints Triggers Permissions To Do Schema	Entity Properties			
Before Script After Script Notes SQL Preview Relationships Storage Parameters Foreign Table General Attributes Keys Indexes Check Constraints Triggers Permissions To Do Schema - - - - - Do Schema - - - - - Do Schema - - - - Do Do Schema - - - - Do Do Schema - - - - Do Do Do Schema - - - - Do Do	Capt <u>ion</u> Entity1		Name Entity1	6
Schema - Not Specified - Image: Settings Image: Not Specified - Inherited Tables Setect Composite Type - Not Specified -	Before Script After Script Notes General Attributes Keys	SQL Preview	Relationships Storage Paramet k Constraints Triggers Per	ers Foreign Table missions To Do
Settings With OIDs Tablespace Not Specified I I Table Type Foreign Table Setect Composite Type Not Specified I I I I I I I I I I I I I I I I I I	Schema Not Specified	▼		
Category None	Settings With OIDs Tablespace Not Specified Inherited Tables Comment	•	Table Created As Temporary Table Unit Table Type Foreign Table Select Composite Type - Not Specified	ogged
	Category	▼		Ŧ

Entity Properties		
Caption	Name	
distributors2	= distributors2	6
Before Script A General Attrib	ter Script Notes SQL Preview Relationships Storage F utes Keys Indexes Check Constraints Triggers	Parameters Foreign Table Permissions To Do
Caption	Name	Status
con1_noinh_t	able con1_noinh_table	۲
	Entity: public.distributors2 con1_noinh_table General SQL Notes Comment	
	Caption Name con1_noinh_table = con1_noinh_table Check Constraint Rule	

Table, Attribute - Check Constraint

No Inherit - Allows not inherited constraints for tables and attributes. Generated SQL:

```
create table distributors2
(
did integer,
name varchar (40),
CONSTRAINT con1_noinh_table CHECK (did > 100 AND name <> ") NO INHERIT
)
```

User Data Type

General tab, **Type** box - New type *Range Type*. See other objects in Model Explorer:

- Aggregates
- Collations
- Foreign Servers

- Tablespaces
- Sequences
- Rewrite Rules

Foreign Table

When Foreign Table is selected in the Table Type combobox, a new Foreign Table tab displays.

🔀 Entity Properties		
Caption	Name	
Entity1	= Entity1	6
General Attributes Keys Index Before Script After Script Notes Sc Server Server1	tes Check Constraints Triggers QL Preview Relationships Storage	Permissions To Do Parameters Foreign Table
List of Options		
		^
		Ŧ
Senerate	<u>O</u> K <u>Cancel</u>	Apply Help

List of Options box should contain the part of CREATE FOREIGN TABLE command written in brackets in OPTIONS—e.g. filename 'c:\\file.txt'.

Although common entity object is used for *Foreign Table* entity in Toad Data Modeler, only the following features can be used:

- Name
- Schema
- Attributes list

- Comment
- Permission
- Foreign Server combobox
- Foreign Table Options tab

For Attributes, only the following features can be used:

- Name
- Data Type
- Null

Materialized Views

🔀 Materialized View Properties - E		- • •
MaterializedView1		-
General SQL To Do Before Scrip	ot After Script Notes SQL Preview	
Caption	Name	
MaterializedView1	= MaterializedView1	6
List of Columns		
Categories		
None	▼	
Generate Generate SC	QL Only	
	OK Ok±Add Cancel	Apply

Views

RECURSIVE parameter

• CREATE RECURSIVE VIEW name (columns) AS SELECT ...;

WITH, CASCADED, LOCAL, CHECK OPTION parameters

Tables

USER_CATALOG_TABLE parameter for Table Storage Parameters

Caption					
Entity1					
General	Attributes	Keys	Indexes	Check (Constraint
After Sc	ript	Notes	SQL Previ	ew	Relation
Fillfactor					
Fillfactor					
Fillfactor User Cata	log Table				_
Fillfactor User Cata	log Table ecified –				
Fillfactor User Cata - Not Sp	log Table ecified -				
Fillfactor User Cata – Not Sp Not Sp false	log Table ecified ecified				• - T

Aggregates

SSPACE, FINALFUNC_EXTRA, INITCOND, MSFUNC, MINVFUNC, MSTYPE, MSSAPCE, MFINALFUNC, MFINALFUNC_EXTRA, MINITCOND, ORDER BY, HYPOTHETICAL parameters

Schemas

IF NOT EXISTS parameter

Caption Entity1 Before Script / General Attri	After Script	Notes Keys	SQL Pr	eview Ch
Entity1 Before Script General Attri	After Script	Notes Keys	SQL Pr Indexes	eview Ch
Before Script	After Script	Notes Keys	SQL Pr Indexes	eview Ch
Before Script	After Script	Notes Keys	SQL Pr Indexes	eview Ch
General Attri	butes	Keys	Indexes	Ch
Scheme				
- Not Specified - Settings With OIDs Tablespace - Not Specifie Inherited Table	:d – :s		•	

COLLATE, CONSTRAINT parameters

MULTIXACT FREEZE MIN/MAX/TABLE AGE for Autovacuum and TOAST Autovacuum Table Storage Parameters

Entity Properties - E			
Caption		Name	
Entity1		= Entity1	6
General Attributes K Before Script After Script	evs Indexes Notes SQL Previe	Check Constraints Trigge ew Relationships Stora	rs Permissions To Do ge Parameters Foreign Table
Fillfactor			
		Use Storage Parameters for	TOAST Table
Autovacuum		TOAST Autovacuum	
Enabled		Enabled	
Vacuum Threshold	Analyze Threshold	Vacuum Threshold	
Vacuum Scale Factor	Analyze Scale Facto	Vacuum Scale Factor	
Vacuum Cost Delay	Vacuum Cost Limit	Vacuum Cost Delay	Vacuum Cost Limit
Freeze Min Age	Freeze Max Age	Freeze Min Age	Freeze Max Age
Freeze Table Age		Freeze Table Age	
Multixact Freeze Min Age	Multixact Freeze Ma:	Multixact Freeze Min Age	Multixact Freeze Max Age
Multixact Freeze Table Age		Multixact Freeze Table Age	
Generate		OK <u>C</u> ancel	Apply <u>H</u> elp

Foreign Server

Servers	
Name Second	State
Server1	
Name Server1	
Cancel	Apply
Add Edit Delete Ok Cancel	Apply

- CREATE/DROP/ALTER are not supported
- only a listing function

Attribute

Collation combobox

Attribute Properties - Entity1		×
Caption Attribute 1 General Check Constraints Foreign Keys P	Name = Attribute 1 emissions Notes	6
Data <u>Type</u> Character(x) Length 20	Domains	
Default Value Primary Key Not Null <u>U</u> niqu	e (New AK)	
	•	
Array Type Is Array Type Array Dimensions	Other Database Specifics Collation Collation	
	OK Ok±Add Cancel Apply Help	

The Collation combobox is available for:

- **Data Type** *Text*, *Character varying(x)*, *Character(x)*, *Varchar*
- User Data Type— Base type with selected Collatable checkbox
- Dictionary Type—if correct Data Type or User Data Type is selected (see above)
- Domain—combobox is disabled (changes not allowed)

Attributes - Foreign Table

Attribute Properties - postgres.T_CUSTOMER
Caption
name
General Check Constraints Foreign Keys Permissions No
Data Type
Gharacter varying(x)
Length
24
Detault Value
Primary Key Not Null Unique (New AK)
List of Options (Foreign Table)
columndelimiter ':'
Comment
Name column can contain First and Middle name. Sumame m

Resulting in:

CREATE FOREIGN TABLE "postgres"."T_CUSTOMER"("customer_id" Integer NOT NULL, "name" Character varying(24) OPTIONS (columndelimiter ':'), "address" Text)

Data Type box - Smallserial and Json new data types.

Collation

🔁 Collation1	- • ×
Collation 1	-
General	1
Name	
Collation 1	
Schema	
OK Cance	

- CREATE/DROP/ALTER are not supported
- only a listing function

🔀 Domain Properti	es - E		- • •
Domain 1			~
General Check Cor	nstraints To Do Used in N	otes	
Caption	Nam	e	
Domain 1	= Don	nain 1	6
Data Type Character(x) Default	•	Length î 20 Is Array T	Collation Collation 1 🔍
None	•		
(%)	OK Ok <u>+</u> Add	<u>C</u> ancel	<u>A</u> pply <u>H</u> elp

User Data Type—Composite Type

🔀 User Data Type Properties	
UserData Type 1	•
General To Do Used in Notes SQL Preview Composite Type Comm	nent
Body of Composite Type	
"a" int4 COLLATE collation "b" bpchar, "c" numeric	
	*
OK Ok±Add Cancel Apply	Help

COLLATE collation definition can be used for every attribute to set its Collation. To set Collation, manually write COLLATE collation expression in **Composite Type** tab right after "attributename datatypename" definition (see the screenshot above). Toad Data Modeler will load it during RE.

No attribute is necessary for Composite Type.

🔀 User Data Type Properties	
UserData Type2	•
General To Do Used in Notes SQL Previe	W Base Type Comment
Input Function (required) Not Specified	Alignment int4
Output Function (required) Not Specified	Storage plain -
Receive Function Not Specified	Default
Send Function Not Specified	Element
Analyze Function Not Specified	Delimiter
Type Modifier Input Function Not Specified	Internal Length (in bytes)
Type Modifier Output Function Not Specified Category Code	Collatable
	Preferred Type
OK Ok <u>+</u> Add	Cancel Apply Help

Index

Set Collation

🔀 Index Properties		
Entity: Entity1		
Index1	•	
Convert Items Natural Comment		
	1	
Available Status barcode_ean item_id	Selected Ascendi	
	2	
	<<	
	() () () () () () () () () ()	
Expression "barcode_ean COLLATE collname DESC, item_id"		
	OK Cancel Apply Help	

It is possible to set Collation of every column/attribute of the table.

To set Collation

- 1. Select the Generate Expression checkbox.
- 2. In the Expression box, write e.g "atr1 COLLATE collname DESC, atr2".

Toad Data Modeler loads this index as an expression during RE.

Index Access Method

🔁 Index Properties	- • •
Entity: postgres.T_CUSTOMER	
Index1	•
General Items Notes Comment	
Capt <u>i</u> on <u>N</u> ame	
Index1 = Index1	6
 Is Exclude Constraint Unique Index Access Method pgist Tablespace - Not Specified Fillfactor Buffering AUTO Fast Update Constraint Expression for Partial Index 	
✓ Generate ✓ Main Concel	Help

Index Access Method- new option *spgist*. **Buffering** parameter option for *gist* index.

Relationship

Relationship Properties		
Caption stock_item_id_fk General To Do Notes SQL Preview Index to Foreign	Name stock_item_id_fk	6
Relationship Type Identifying Non-Identifying Parent Key Key3 Parent Child	Referential Integrity Parent <u>U</u> PDATE None Parent <u>D</u> ELETE None Settings	•
Cardinality Image: Mandatory Parent Cardinality N Image: Mandatory Child 11 to 0n	Category	•
Comment		*
Parent Entity	~	Child Entity public_stock
↔ ⊈ <u>G</u> enerate	QK <u>Cancel</u> Apply	Help

Not Valid checkbox—option when you add a constraint of a foreign key.
Key Properties

🔀 Key Properties		
Entity: typed_table		
Key1		•
General Attributes Notes Comment		1
Caption	Name	
Key1	E Key1	8
Using index tablespace		
Not Specified 💌		
Fillfactor		
 Deferrable Deferred 		
☑ Generate		
<%>	OK Cancel Ap	ply <u>H</u> elp

Options Deferrable and Deferred available on Key Properties dialog, tab General.

Trigger

🔀 Trigger Properties	- • •
Entity: typed_table	
Trigger1	•
General SQL Notes	
CaptionNameTrigger1=Trigger1	
Trigger Fire	
Trigger Events Delete	
✓ Update of col1,col2 Truncate	
For Each Row When Condition OLD.col1 IS DISTINCT FROM NEW .col1	
Function Function Arguments	
Generate Generate SQL Only	
OK Ok±Add Cancel Apply	Help

New Column List box available for trigger event Update (Update checkbox must be selected).

Note: Use comma (,) as a separator.

New When Condition box available on Trigger Properties dialog, tab General.

View - Trigger

🔁 Trigger Properties	- • •
View: View1	
Trigger1	•
General SQL Notes	
Capt <u>i</u> on <u>N</u> ame	
Trigger1 = Trigger1	6
Trigger Fire	
INSTEAD OF	
INSTEAD OF REFORE	
AFTER	
Insert	
Update	
✓ For Each Row	
.	
Function Arguments	
Generate Generate SQL Only	
Cancel Apply	Help

- INSTEAD OF UPDATE does not support columns list
- AFTER/BEFORE UPDATE support columns list
- if INSTEAD OF is used, the FOR EACH ROW checkbox must be applied
- if AFTER/BEFORE UPDATE is used, the FOR EACH STATEMENT checkbox must be applied
- INSTEAD OF does not support WHEN

Other objects in Model Explorer:

- Tablespaces
- Aggregates
- Sequences
- Rewrite Rules
- Collations
- Foreign Tables
- Foreign Servers

User Data Type

Enumerated type does not require any Label. Other objects in Model Explorer:

- Aggregates
- Rewrite Rules
- Sequences
- Tablespaces

Tables

Entity Properties - E			
Caption		Name	
Customer Rating		≥ T_CUSTOMER_RA	TING
General Attributes Key After Script Notes	s Indexes Check Cor SQL Preview R	elationships Storage Par	ions To Do Before Script ameters Foreign Table
Fillfactor]	
User Catalog Table			
- Not Specified	•	Use Storage Parameters for	TOAST Table
Autovacuum		TOAST Autovacuum	
Enabled		Enabled	
Vacuum Threshold	Analyze Threshold	Vacuum Threshold	
Vacuum Scale Factor	Analyze Scale Factor	Vacuum Scale Factor	
Vacuum Cost Delay	Vacuum Cost Limit	Vacuum Cost Delay	Vacuum Cost Limit
Freeze Min Age	Freeze Max Age	Freeze Min Age	Freeze Max Age
Freeze Table Age		Freeze Table Age	
Multixact Freeze Min Age	Multixact Freeze Max Age	Multixact Freeze Min Age	Multixact Freeze Max Age
Multixact Freeze Table Age		Multixact Freeze Table Age	
Log Min Duration		Log Min Duration]
»> Generate		OK Cancel	Apply Help

Storage Parameters - Log Min Duration for Autovacuum and TOAST Autovacuum

Check constraint generation and inheritance is now allowed for foreign tables.

CREATE TABLE users (id SERIAL PRIMARY KEY, username TEXT NOT NULL); CREATE FOREIGN TABLE users_shard_5 (CONSTRAINT us5 CHECK (id <> 0 AND username <> '')) INHERITS (users) server myserver options (table_name 'users');

```
CREATE FOREIGN TABLE users_shard_5a (CHECK (id <> 0 AND username <> ''))
INHERITS (users) server myserver options ( table_name 'users' );
```

Indexes

Index Access Method - brin

Index properties - Pages Per Range, Gin Pending List Limit

Index1	
General Items Notes Comment	
Caption Index1	Name
Is Exclude Constraint Unique Index Access Method	Exclude Constraint Setting Deferrable Deferred
btree hash gist gin spoist	 Pages Per Range
Buffering AUTO	Gin Pending List Limit
Fast Update Constraint Expression for Partial Index	

Materialized Views

Storage Parameters - Log Min Duration for Autovacuum and TOAST Autovacuum

illfactor			•
lser Catalog Table			
- Not Specified	•	Use Storage Parameters for	TOAST Table
Autovacuum		TOAST Autovacuum	
📝 Enabled		✓ Enabled	
Vacuum Threshold	Analyze Threshold	Vacuum Threshold	
Vacuum Scale Factor	Analyze Scale Factor	Vacuum Scale Factor	
Vacuum Cost Delay	Vacuum Cost Limit	Vacuum Cost Delay	Vacuum Cost Limit
Freeze Min Age	Freeze Max Age	Freeze Min Age	Freeze Max Age
Freeze Table Age		Freeze Table Age	
Multixact Freeze Min Age	Multixact Freeze Max Age	Multixact Freeze Min Age	Multixact Freeze Max Age
Multixact Freeze Table Age		Multixact Freeze Table Age	
Log Min Duration]	Log Min Duration	

User Groups

Role Options - BYPASSRLS, NOBYPASSRLS

```
CREATE ROLE tangerine3 BYPASSRLS;
```

```
CREATE ROLE tangerine5 WITH LOGIN PASSWORD 'jw8s0F4' VALID UNTIL '2005-01-01' BYPASSRLS;
```

Change Script Generation

• Support of the following PostgreSQL 9.5 features:

DDL	New Syntax
CREATE SEQUENCE	IF NOT EXISTS
CREATE MATERIALIZED VIEW	IF NOT EXISTS Support for SET and RESET of storage parameters log_autovacuum_min_duration, toast.log_autovacuum_min_duration (integer)
CREATE TABLE	Support for SET and RESET of storage parameters log_autovacuum_min_duration, toast.log_autovacuum_min_duration (integer)
CREATE INDEX	IF NOT EXISTS BRIN method Support for SET and RESET of pages_per_range parameter in WITH section Support for SET and RESET of new GIN method parameter gin_pending_list_limit in WITH section
CREATE FOREIGN TABLE	INHERITS

Functions

Leakproof checkbox on tab General.

After Script	1,	Notes		SQL Previe
General SQ	L Per	nissions	To Do	Befor
Caption		<u>N</u> ame		
add	=	add		
Schema		Language		
public	 - -] SQL		•
int4, int4				^
				-
		Volatility		

Generated SQL:

create function add4 (integer, integer) RETURNS integer AS 'select \$1 + \$2;' LANGUAGE SQL LEAKPROOF RETURNS NULL ON NULL INPUT;

Reverse Engineering - PostgreSQL 9.5

See Reverse Engineering - PostgreSQL 12 for more information.

Script Generating - PostgreSQL 9.5

See Script Generation - PostgreSQL 12 for more information.

Specifics - PostgreSQL 10

Reverse Engineering - PostgreSQL 10

See Reverse Engineering - PostgreSQL 12 for more information.

Script Generating - PostgreSQL 10

See Script Generation - PostgreSQL 12 for more information.

Specifics - PostgreSQL 11

Reverse Engineering - PostgreSQL 11

See Reverse Engineering - PostgreSQL 12 for more information.

Script Generating - PostgreSQL 11

See Script Generation - PostgreSQL 12 for more information.

Specifics - PostgreSQL 12

Reverse Engineering - PostgreSQL 12

Available Data Providers are:

- Connection via ODBC
- Native Connection

Connection via ODBC:

🔁 Connections					x
- Name - Select Data Source - Select Data Provider <u>- Connecting</u> - What to Reverse - Options	Data Source Name PostgreSQL35W User Name postgres		Reload	Property Data Link	
	Password				
	☑ Save Password				
Show Log Close after Execut	ion	< <u>P</u> revious	<u>N</u> ext >	Finish <u>C</u> lose	

Native Connection:

- Name - Select Data Source - Select Data Provider - Connecting	P <u>o</u> rt 5444
- What to Reverse	
- Options User User Name qa ♥ Save Password	Password ••
Database Database Name qa	
SSL CA File	able V
SSL Cert File	
Connection String HostName=10.11.40.	0; Port=5444; Database=qa; UID=qa;
Hide Log Close after Execution	<u>Previous</u> <u>Next</u> > Finish <u>Qose</u>
Id 🔺 Date Time Message	

Script Generation - PostgreSQL 12

10 DDL Script Generation of PostgreSQL 10	—		×
What to Generate Detail Settings Referential Integrity Select List			
 ✓ Use Quotation Marks ✓ Generate Schema-Qualified Names Text Case Selection: Preserve Case ✓ Generate Check Constraint Names Used in Domains Generate Empty Comments as NULL Generate Treate or Replace" in Generated Views and Functions Drop Object Integrity Drop Tables Integrity RESTRICT ✓ Orop Schemas Integrity RESTRICT ✓ Generate IF EXISTS in DROP statements ✓ Create Comments ✓ Grant Roles to User/Role ✓ Generate Deminipation On both Object Integrity 			
Terminator Dollar Quoting Type in Function Definition String			
: \$\$			
Order of Generated Objects You can change order of generated objects. Click Edit and define how objects will be generated. Edit			
Show Preview			
	ОК	Са	ncel

Specifics - SQLite 3.7

Though SQLite database is case insensitive, Reverse Engineering in is case sensitive. This leads to a problem that e.g. when a column name is "ATR" and an index is defined with column name "Atr", the names do not get paired and an error message is thrown.

If some object name includes UTF characters, the object does not get loaded during Reverse Engineering.

Entity

Entity Pro	perties						
Caption				<u>N</u> ame			
Entity1				= Entity1			
Afte	er Script	1	Notes	SQL Prev	riew	Rela	tionships
General	Attributes	Keys	Indexes	Check Constraints	Triggers	To Do	Before Script
Database	Name						
Not Spe	ecified		-				
Settings	nporary Table lot Exists						
Inner Scrip	ot						*
Category	e		•				Ŧ
‰ <u>⊽</u> <u>G</u>	enerate			Οκ	Cancel	Apply	Help

Inner Scriptbox — e.g. for defining constraint in text. Code in Inner Script is generated in the body of CREATE TABLE command, at the end after all attributes and constraints. During reverse engineering, foreign key constraint definitions, which are not possible to visualize by relationship, are loaded here.

Attribute

Attribute Properties - Entity1	
Caption	<u>N</u> ame
Attribute 1	E Attribute1
General Check Constraints Foreign Keys Notes	
Data Type	Domains
De <u>f</u> ault Value	Default Rule
Primary Key Not Null <u>U</u> nique (New AK)	
Constraints Settings Not Null Constraint Name Conflict Resolution Algorithm for Not Null - Not Specified Default Value Constraint Name Collation Constraint Name	Other Database Specific Autoincrement Collation
	Ok <u>+</u> Add <u>C</u> ancel <u>Apply</u> <u>H</u> elp

Autoincrement— Data type must be set to *INTEGER* and the particular attribute must be in a single-attribute primary key. Note that in SQLite syntax, Autoincrement is defined as a part of a column constraint of a primary key statement but in Toad Data Modeler it is set directly in the Attribute.

Collation

3 built-in collating functions: BINARY, NOCASE, and RTRIM, defined in text in particular box. For keys and indexes you can define Collation for the selected item in Key/Index Properties dialog, Attributes/Items tab, in the **Collation** column (see the screenshots below.)

Relationship

Relationship Properties		
Caption	<u>N</u> ame	
Relationship1	= Relationship1	6
General To Do Notes SQL Preview Relationship Type Image: Identifying Image: Non-Identifying Parent Key Key1 Image: Parent Child	Referential Integrity Parent UPDATE None Parent DELETE None Settings Deferrable Deferred	•
✓ Mandatory Parent Cardinality N ✓ Mandatory Child 11 to 0n	Category	▼
Parent Entity + Entity1		Child Entity Entity2
Cenerate	OK Cancel Apply	Help

Property MATCH is available in syntax but it is not used and therefore not supported in Toad Data Modeler.

Relationships can be defined only by CREATE TABLE command.

It is not possible to have relationships between entities from different databases.

If a foreign key is created, it can contain a reference to a non-existing table/name. During reverse engineering, thus foreign key is loaded in the Inner Script box of the particular entity.

Note: By default, foreign keys are not supported in SQLite; they can be created but are disabled. They can be enabled by command PRAGMA foreign_keys=ON;, but default value after SQLite start is OFF!

Key

🔀 Key Properties - E		
Entity: Entity1		
Key1		-
General Attributes Notes		
Capt <u>i</u> on Key1	Name = Key1	ß
Conflict Resolution Algorithm REPLACE - Not Specified ROLLBACK ABORT FAIL IGNORE REPLACE		
🔽 Generate		
<%>	OK Cancel	Apply Help

New Conflict Resolution Algorithm box.

🔀 Key Properties				- • •
Entity: tab_trig				
Key1				•
General Attributes Notes				
Available Attribute3 Attribute4	Status	Selected Attribute2 Attribute1	Ascending Collation V	Status ©
		<u>O</u> K	Cancel Appl	/ <u>H</u> elp

On tab Attributes, you can define Collation for the selected item in the Collation column.

Index

🔁 Index Properties		
Entity: Entity1		
Index1		
General Items Notes		
Capt <u>i</u> on	Name	
Index1	= Index1	6
 Unique If Not Exists 		
☑ <u>G</u> enerate		
	QK <u>Cancel</u>	pply <u>H</u> elp

New If Not Exists checkbox.

On tab Items, you can define Collation for the selected item in the Collation column.

Trigger - Entity

🔀 Trigger Properties	- • •
Entity: tab_trig	
tr5_tab_trig	•
General SQL Notes	
Capt <u>i</u> on <u>N</u> ame	
tr5_tab_trig = tr5_tab_trig	6
 Temporary Trigger If Not Exists Trigger Fire 	
BEFORE	
Trigger Event	
When Condition	
a>5 and b> tox'	
Generate 🔲 Generate SQL Only	
Ok <u>+</u> Add <u>Cancel</u> <u>Apply</u>	/ <u>H</u> elp

New checkboxes Temporary Trigger and If Not Exists.

Trigger - View

🔀 Trigger Properties	
View: view_trig	
tr7_view_trig	-
General SQL Notes	
Caption	<u>N</u> ame
tr7_view_trig	= tr7_view_trig
_	
Temporary Trigger	
If Not Exists	
Trigger Event	Column List
UPDATE -	of a
When Condition	
a>5	
Generate Generate SQL	. Only
CK Ok±Add	<u>C</u> ancel <u>Apply</u> <u>H</u> elp

View Trigger has Trigger Fire box disabled with INSTEAD OF set.

View

🔁 View Properties
view_trig
SQL Preview Attributes Where Order Group Having Limit General SQL To Do Triggers Before Script After Script Notes
Caption <u>N</u> ame view_trig = view_trig
Database Name
Temporary View
Categories
✓ Generate Generate SQL Only SELECT in Views as Text
OK Ok±Add Cancel Apply Help
General SQL To Do Triggers Before Script After Script Notes SQL Preview Attributes Where Order Group Having Limit
Offset

The content of a new Limit tab is generated in script only if Generate SQL Only and SELECT in Views as Text are not selected.

Virtual Table

SVirtualTable1		
VirtualTable1		-
General SQL Preview	SQL Before Script After Script	
VirtualTable1		
Database Name Not Specified	▼	
Module Name		
Module Arguments		
		^
		-
🔽 Generate	Generate SQL Only	
*>	<u>o</u> k <u>c</u>	ancel Apply

During Reverse Engineering, virtual table is loaded as text - CREATE VIRTUAL TABLE.

Database

🔁 Database1	
Database1	▼
General	
Name Database1	
	OK Cancel Apply

Database serves only for listing function. Available for Entity, View, Virtual Table. It denotes to which database the object belongs.

During reverse engineering, objects from only one database are loaded. Therefore, database name is not loaded during reverse engineering.

Reverse Engineering - SQLite 3.7

Available Data Providers are:

Native Connection

Native Connection:

🔀 Reverse Engineering Wizard		- • •
 Stored Connections Select Data Source Select Data Provider <u>Connecting</u> What to Reverse Options Save Connection Tables 	DB Identification Database File C:\sqlite\ProductDatabase Library File (SQLite3.dll) Using embedded SQLite3 engine	
Show Log Cose after Executio	n < <u>P</u> revious <u>N</u> ext > Execute	Close

Though SQLite database is case insensitive, Reverse Engineering in Toad Data Modeler is case sensitive. This leads to a problem that e.g. when a column name is "ATR" and an index is defined with column name "Atr", the names do not get paired and an error message is thrown.

If some object name includes UTF characters, then the object does not get loaded during Reverse Engineering. Appropriate SQLite3.dll library is necessary for successful connection.

Note:

- 1. On page Options, the **Load Some Objects as SQL Sentence Only** checkbox is applicable for Views, Triggers and Virtual Tables. If selected, triggers are loaded as they are saved in system table.
- 2. During Reverse Engineering, objects from only one database are loaded. Therefore, database name is not loaded during Reverse Engineering.

Script Generation - SQLite 3.7

A DDL Script Generation of SQLite 3.7	- • •
What to Generate Detail Settings Referential Integrity Select List	
 Use Quotation Marks Generate Database Name to Identifiers Text Case Selection: Preserve Case Generate IF EXISTS in DROP statements Terminator Order of Generated Objects You can change order of generated objects. Click Edit and define how objects will be 	
generated.	
Show Preview	
Verify Show Log Save Settings Generate Show Code	<u>H</u> elp

Vhat to Ge	enerate	Detail Settings	Referential Integrity	Select List	
<u>V</u> orkspace		Entire Model		•	Generate by Property "Generate"
ilter:				Ŷ	
Entities	Views	Relationships	Virtual Tables		
	Name			Caption	
1	Entity	1		Entity1	
1	Entity	2		Entity2	
1	Entity	3		Entity3	
1	Entity	4		Entity4	
1	Entity	5		Entity5	
1	Entity	6		Entity6	
1	Entity	7		Entity7	
1	Entity	8		Entity8	
Show P	review				

Specifics - Sybase ASE 15.5

Entity

Entity Properties - I	E		
Caption		<u>N</u> ame	
Entity1		Entity1	6
Before Script	After Script Notes es Keys Indexes	SQL Preview Relationships Check Constraints Triggers	Partitions Definition
Not Specified	•		
Settings		Space Management Properti	ies
Locking Scheme		Max Rows Per Page	
default	•		
Identity Gap		Expected Row Size	
Segment Name Not Specified DML Logging default default full minimal		Reserve Page Gap	
Category	•		Apply Uply

DML Logging box with default / full / minimal values.

Attribute

Attribute Properties - Entity1	
Caption Attribute 1 General Check Constraints Foreign Keys Permissions N	Name Attribute 1
Data Type	Domains
Default Value	Default Rule None
Java-SQL Column Parameters In Row In Row Column Maximum Size Encrypted Column Column Is Encrypted Encryption Key -Not Specified Decrypt Default	Settings Identity Default Rule Is Default Object Rule Object ~ Not Specified
Computed Column Computed Column Expression	
	Ok <u>+</u> Add <u>C</u> ancel <u>Apply</u> <u>H</u> elp

New Encrypted Column area with Encryption Key and Decrypt Default.

Computed Column - It is not a data type. Select this item from **Data Type** box if you want to set column as computed.

Default rule Is Default Object - Select this checkbox if you want to bind default rule (known as default object in Sybase ASE) to attribute.

Rule Object - Select a rule object that will be bound to attribute.

Encryption Keys

EncryptionKey1	- • •
EncryptionKey1	•
General SQL Preview	
Name	
EncryptionKey1	
Owner Database Name	
Not Specified 💌	
Algorithm	
Key Length	
128 -	
Password	
Initialization Vector (random) Radding (random)	
Generate Default	
<u>о</u> к	Cancel Apply

Trigger

🔀 Trigger Properties	- • •
Entity: Entity1	
Trigger1	
General SQL Notes	
Capt <u>i</u> on <u>N</u> ame	
Trigger1 = Trigger1	6
Owner	
Not Specified	
FOR	
Trigger Events	
Delete	
Update Update	
Generate Generate SQL Only	
OK Ok±Add Cancel Apply	<u>H</u> elp

New inactive (informational) box **Trigger Fire** . Trigger is now available also for Views.

Web Services

🔀 WebService1	- • ×
WebService1	•
General SQL Preview SQL	
Name WebService1	
Owner Not Specified 🔻 🛄	
Generate 🔲 Generate SQL Only	

See other objects in Model Explorer:

- Segments
- Encryption Key
- Web Service

Reverse Engineering - Sybase ASE 15.5

Available Data Providers are:

- Connection via ODBC
- Connection via ADO
- Native Connection

Connection via ODBC

🔀 Reverse Engineering Wizard	
- Stored Connections - Select Data Source	Data Source Name SYBASE_ASE
- What to Reverse - Options	Reload Property Data Link User Name
- Save Connection - Tables	sa Password
	I Save Password
Show Log Close after Executi	ion < Previous Next > Execute Glose

Connection via ADO

🔀 Reverse Engineering Wizard			- • •
- Stored Connections - Select Data Source - Select Data Provider <u>- Connecting</u> - What to Reverse - Options	Connection String Provider=ASEOLEDB.1;Password	d=qaqaqa;Persist Security Info=True Data Link Properties	;User ID=sa;Initial C; est Connection
- Save Connection - Tables	User Identification User Name sa IV Save Password	Pass <u>w</u> ord	
Show Log Close after Executi	on < <u>P</u> revious	Next > Execute	Qose

Native Connection:

🔀 Reverse Engineering Wizard		
- Stored Connections - Select Data Source - Select Data Provider <u>- Connecting</u> - What to Reverse	Host <u>H</u> ost Name 10.11.40.43	P <u>o</u> rt 5000
- Options - Save Connection - Tables	User Name	Password
	sa	•••••
	✓ Save Password	
	Database	
	Database Name sales	
	Connection String	
	HostName=10.11.40.43; Port=5000; Database=sales; U	JID=sa;
Show Log Close after Execution	on < <u>P</u> revious <u>N</u> ext >	Execute Qose
Specifics - Sybase ASE 15.7

Entity

Entity Properties - E	
Caption Entity1	Name Entity1
Before Script After Script Notes SQL F General Attributes Keys Indexes Check	Preview Relationships Partitions Definition Constraints Triggers Permissions To Do
Owner Not Specified 🔻 🗔	
Settings	Space Management Properties
Locking Scheme	Max Rows Per Page
default 🔻	
Identity Gap	Expected Row Size
Segment Name Not Specified DML Logging default Incremental Transfer	Reserve Page Gap
Compression	
page 👻	
LOB Compression	
LOB Compression Level	
Category	
↔ <u>G</u> enerate	<u>QK</u> <u>Cancel</u> <u>Apply</u> <u>Help</u>

Compression box: none, page, row. Examples:

Table Compression

create table t01 (a varchar(50) not null, b varchar(50) not null) with compression = none

Table Lob Compression + level

create table t02 (a varchar integer) with lob_compression = 0

Column Compressed

create table tab03 (a text not compressed)

Attribute

Attribute Properties - Entity1 - E	
Cantion	Name
Attribute 1	Attribute1
General Check Constraints Foreign Keys Permissions I	Notes
Data <u>T</u> ype	Domains
Computed Column	· · · · · · · · · · · · · · · · · · ·
De <u>f</u> ault Value	Default Rule
	None 🔻 📖
Primary Key Not Null <u>U</u> nique (New AK)	
Java-SQL Column Parameters	Settings
In Row	ldentity
In Row Column Maximum Size	Default Rule Is Default Object
	Rule Object
	Not Specified 👻
Encrypted Column	Compressed
Column In Econoted	- Not Specified 👻
	Compression Level
Encryption Key	
Not Specified	
Decrypt Default	
Computed Column	
Computed Column Expression	
Matenalized	
🐝 🛃 🛛 🔼	Ok <u>+</u> Add Cancel Apply Help

From the **Data Type** box, select *Computed Column* and define other properties in the **Computed Column** area. **Example:**

create table tab04 (acompa as 'orderno' materialized not compressed) with lob_compression = 5

See other objects in Model Explorer:

- Encryption Keys
- Segments
- · Web Services

Reverse Engineering - Sybase ASE 15.7

Available Data Providers are:

- Connection via ODBC
- Connection via ADO
- Native Connection

Connection via ODBC

🔀 Reverse Engineering Wizard	
- Stored Connections - Select Data Source - Select Data Provider <u>- Connecting</u> - What to Reverse - Ontions	Data Source Name SYBASE_ASE Reload Property Data Link User Name
- Save Connection	sa
	Password
	Save Password
Show Log Close after Executi	on < <u>Previous</u> <u>N</u> ext > Execute <u>C</u> lose

Connection via ADO

🔀 Reverse Engineering Wizard			- • •
- Stored Connections - Select Data Source - Select Data Provider <u>- Connecting</u> - What to Reverse - Options	Connection String Provider=ASEOLEDB.1;Password	d=qaqaqa;Persist Security Info	=True;User ID=sa;Initial C; Test Connection
- Save Connection - Tables	User Identification User Name sa IV Save Password	Pass <u>w</u> ord	
Show Log Close after Executi	on < <u>P</u> revious	Next > Execu	te <u>Q</u> ose

Native Connection:

🔀 Reverse Engineering Wizard		
- Stored Connections - Select Data Source - Select Data Provider <u>- Connecting</u> - What to Reverse	Host <u>H</u> ost Name 10.11.40.43	P <u>o</u> rt 5000
- Options - Save Connection - Tables	User User Name	Password
	sa IV Save Password	•••••
	Database Database Name	
	sales	•
	Connection String HostName=10.11.40.43; Port=5000; Database=sales; U	JID=sa;
Show Log Close after Execution	on < <u>P</u> revious <u>N</u> ext >	Execute Qose

Specifics - SAP ASE 16.0

New OR REPLACE statement for Functions, Procedures, Triggers, Views, Defaults, Rules

• CREATE [OR REPLACE] objectType

Entities

ERASE RESIDUAL DATA, INDEX COMPRESSION parameters

🔀 Entity Properties	
Caption Entity1	Name
Before Script After Script Notes General Attributes Keys Indexes	SQL Preview Relationships Partitions Definition Check Constraints Triggers Permissions To Do
Owner	
- Not Specified -	
Settings	Space Management Properties
Locking Scheme	Max Rows Per Page
default	
Identity Gap	Expected Row Size
Segment Name	Reserve Page Gap
- Not Specified -	
DML Logging	
Incremental Transfer	
Compression	
- Not Specified -	
LOB Compression	
- Not Specified -	
LOB Compression Level	
Ence Desider Dete	1
Index Residual Data Not Specified	
Index Compression	
- Not Specified -	
Category	L L L L L L L L L L L L L L L L L L L
None 🗸 🧰	
	OK Cancel Apply Help

Triggers

ORDER parameter for Entity Triggers

🔀 Trigger Properties	
Entity: Entity1	
Trigger1	•
General SQL Notes	
Caption Name	
Trigger1 = Trigger1	6
Owner	
- Not Specified -	
Trigger Fire	
FOR v	
Trigger Events	
Update	
Order	
Generate Generate SQL Only	
OK Ok±Add Cancel Apply	Help

Indexes

STATISTICS HASH OPTIONS, STATISTICS MAX RESOURCE GRANULARITY, STATISTICS HISTOGRAM TUNING FACTOR, STATISTICS PRINT PROGRESS, WITH INDEX COMPRESSION parameters

🔁 Index Properties	
Entity: Entity1	
Index1	
General Items Notes Partitions Definition	
Caption	Name
Index1 =	Index1 🚯
Unique Clustered Space Management Properties Fill Factor	Ignore Duplicate Key
Max Rows Per Page	Alow Duplicate Row Sorted Data Online
Reserve Page Gap	Consumers
Segment	Statistic Using Values
– Not Specified – 🔹 🖳	
Compression	Statistic Hash Option
	Statistic Max Resource Granularity
	Statistic Histogram Tuning Factor
	Statistic Print Progress
✓ Generate	
	K Cancel Apply Help

Procedures

WITH RECOMPILE, EXECUTE AS parameters

Reverse Engineering - SAP ASE 16.0

Available Data Providers are:

- Connection via ODBC
- Connection via ADO
- Native Connection

Connection via ODBC

🔀 Reverse Engineering Wizard	
- Stored Connections - Select Data Source - Select Data Provider <u>- Connecting</u> - What to Reverse	Data Source Name SYBASE_ASE
	Reload Property Data Link User Name
- Options - Save Connection - Tables	sa Password
	✓ Save Password
Show Log Close after Executi	on < <u>Previous</u> <u>N</u> ext > <u>Execute</u> <u>Close</u>

Connection via ADO

🔀 Reverse Engineering Wizard			- • •
- Stored Connections - Select Data Source - Select Data Provider <u>- Connecting</u> - What to Reverse - Options	Connection String Provider=ASEOLEDB.1;Password	d=qaqaqa;Persist Security Info	=True;User ID=sa;Initial C; Test Connection
- Save Connection - Tables	User Identification User Name sa IV Save Password	Pass <u>w</u> ord	
Show Log Close after Executi	on < <u>P</u> revious	Next > Execu	te <u>Q</u> ose

Native Connection:

🔀 Reverse Engineering Wizard		
- Stored Connections - Select Data Source - Select Data Provider <u>- Connecting</u> - What to Reverse	Host <u>H</u> ost Name 10.11.40.43	P <u>o</u> rt 5000
- Options - Save Connection - Tables	User User Name	Password
	sa IV Save Password	•••••
	Database Database Name	
	sales	•
	Connection String HostName=10.11.40.43; Port=5000; Database=sales; U	JID=sa;
Show Log Close after Execution	on < <u>P</u> revious <u>N</u> ext >	Execute Qose

Script Generation - SAP ASE 16.0

🔀 DDL Script Generation of Sybase ASE 15.7	- • •
What to Generate Detail Settings Referential Integrity Select List	
 Indicto denoted encoded encoded in the provided and the provided but Indicto denoted encoded /li>	
Show Preview Verify Show Log Save Settings Generate Show Code	Help

Specifics - Sybase IQ 15.2

Attribute

Attribute Properties - Entity1 - E	
Caption Name Attribute1 = Attribute1	
General Check Constraints Foreign Keys Permissions Notes	
Data Type Domains Concernant Length in Description Des	
Default Value Default Rule	
None	
Primary Key Not Null Unique (New AK) Comments	A
Partition	
Settings BLOB Data Type Specific	
Database Space Inline (in bytes)	
Compute Expression Prefix (in bytes)	
Compressed No BLOB Index	
OK Ok±Add Cancel	<u>Apply</u> <u>H</u> elp

Data types marked with '*' are system domains.

Second parameter BYTE (byte-length semantics [default]) or CHAR (character-length semantics) are available for data types CHAR and VARCHAR.

Relationship

😤 Relationship Properties	
Caption Relationship1	Name = Relationship1
Relationship Type Identifying Non-Identifying Parent Key Parent Child Continuity	Referential Integrity Parent UPDATE None Parent DELETE None Settings Not Null For OLAP Workload Clustered (Cluster Index) Database Space - Not Specified
✓ Mandatory Parent Cardinality N ✓ Mandatory Child 11 to 0n	Category
Comments	
Parent Entity	Child Entity
✓ Generate	<u>O</u> K <u>Cancel</u> <u>Apply</u> <u>Help</u>

It is not possible to load FOR OLAP WORKLOAD statements during reverse engineering.

Index

1 Index Properties	- • •
Entity: Entity1	
Index1	•
General Items Notes Text Index Parameters Comment	
Caption <u>N</u> ame	
Index1 = Index1	6
Unique Clustered	
Index Type	
Not Specified 👻	
Database Space	
Not Specified 🔹 📖	
Notify	
Delimited By	
Limit	
✓ Generate ✓ Is Text Index	
Cancel Apply	Help

TEXT INDEX supported – select the **Is Text Index** checkbox and see the options on tab **Text Index Parameters**.

🔀 Index Properties	- • •
Entity: Entity1	
Index1	•
General Items Notes Text Index Parameters Comment	
Text Configuration Object Not Specified	
Refresh Type IMMEDIATE	
CK Cancel Apply	<u>H</u> elp

Other objects in Model Explorer:

- Database Spaces
- Text Configuration Objects
- User-Defined Messages

Text Configuration Object

🔁 TextConfiguration1	- • •
TextConfiguration 1	-
General SQL Preview Comment	
Name	
TextConfiguration1	
Owner	
- Not Specified	····
From (Text Configuration Object Name as Template)	
Stanlist	
	*
	-
Minimum Term Length Maximum Term Length	
Term Breaker GENERIC -	
Generate	
	cel <u>Apply</u>

Database Spaces (DBSPACE (51001))

BSpace1	- • •
DBSpace1	•
General SQL Preview Comment	
Name	
DBSpace1	
Database File Name	
Generate	
<u>O</u> K <u>C</u> ance	<u>Apply</u>

User-Defined Messages (MESSAGE (53201))

🔀 Message1	- • •
Message 1	•
Court lance at 1	
General SQL Preview	1
Name	
Message 1	
Text of Message	
📝 Generate	
	a <u>A</u> pply

Reverse Engineering - Sybase IQ 15.2

Available Data Providers are:

- Connection via ODBC
- Connection via ADO

Connection via ODBC

🔀 Reverse Engineering Wizard	
- Stored Connections - Select Data Source	Data Source Name SYBASE_IQ
- Select Data Provider - Connecting - What to Reverse	Reload Property Data Link User Name
- Save Connection - Tables	qa Password
	I Save Password
Show Log Close after Executi	on < <u>Previous N</u> ext > Execute <u>Close</u>

Connection via ADO

🔀 Reverse Engineering Wizard		
- Stored Connections - Select Data Source - Select Data Provider <u>- Connecting</u> - What to Reverse - Options Source Connection	Connection String Provider=ASEOLEDB.1;Password=qaqaqa; Data L	Persist Security Info=True;User ID=qa;Data Si ink Properties <u>T</u> est Connection
- Tables	User Identification User Name qa IV Save Password	Pass <u>w</u> ord
Show Log Close after Execution	on < <u>Previous</u> <u>N</u> ext >	Execute Close

Specifics - Sybase SQL Anywhere 11

Attribute

🔁 Attribute Properties - Entity1	
Caption Attribute 1	Name Attribute 1
General Check Constraints Foreign Keys Permissions	Notes
Settings Compute Expression	BLOB Data Type Specific Inline (in bytes) Prefix (in bytes) No BLOB Index
	Ok <u>+</u> Add <u>C</u> ancel <u>Apply</u> <u>H</u> elp

Data types marked with '*' are system domains.

Second parameter BYTE (byte-length semantics [default]) or CHAR (character-length semantics) are available for data types CHAR and VARCHAR.

Relationship

👺 Relationship Properties - E		
Caption Relationship 1	Name Relationship1	
Relationship Type Identifying Non-Identifying Parent Key Key1 Parent Child	Referential Integrity Parent <u>U</u> PDATE None Parent <u>D</u> ELETE None Settings Not Null Check on Commit	•
Cardinality Image: Cardinality Mandatory Parent Cardinality N Image: Mandatory Child 11 to 0n	Check on Commit For OLAP Workload Clustered (Cluster Index) Match Type Default Default SIMPLE Cat FULL UNIQUE SIMPLE UNIQUE FULL	•
		•
Parent Entity Entity1	≪	Child Entity <u>Entity2</u>
Generate Generate	OK Cancel Apply	Help

Box **Match Type** with options *Default, SIMPLE, FULL, UNIQUE SIMPLE, UNIQUE FULL*. It is not possible to reload FOR OLAP WORKLOAD during reverse engineering.

Index

🔀 Index Properties	- • •
Entity: Entity1	
Index1	-
General Items Notes Text Index Parameters Comment	
Capt <u>ion N</u> ame	
Index1 = Index1	6
Unique Clustered	
Database Space	
Not Specified	
For OLAP Workload	
Image: Wight of the sector	
OK Cancel Apply	Help

It is not possible to reload FOR OLAP WORKLOAD during reverse engineering.

TEXT INDEX supported – select the **Is Text Index** checkbox and define other properties on tab **Text Index Parameters**.

🔁 Index Properties 📃 📼 💌
Entity: Entity1
Index1
General Items Notes Text Index Parameters Comment
Text Configuration Object Not Specified
Refresh Refresh Type Every Interval In IMMEDIATE MINUTES

Other objects in Model Explorer:

- Database Spaces
- Text Configuration Objects
- User-Defined Messages

Reverse Engineering - Sybase SQL Anywhere 11

Available Data Providers are:

- Connection via ODBC
- Connection via ADO

Connection via ODBC

🔀 Reverse Engineering Wizard	
 Stored Connections Select Data Source Select Data Provider <u>Connecting</u> What to Reverse Options Save Connection 	Data Source Name SYBASE_SQL_ANYWHERE Reload Property Data Link User Name dba
- Tables	Password
	•••
	Save Password
Show Log Close after Executi	ion < Previous Next > Execute Close

Connection via ADO

😕 Reverse Engineering Wizard		
- Stored Connections - Select Data Source - Select Data Provider <u>- Connecting</u> - What to Reverse - Options - Save Connection	Connection String Provider=ASEOLEDB.1;Password=sql;Persist Se Data Link	ecurity Info=True;User ID=dba;Data Sourc Properties <u>T</u> est Connection
- Tables	User Identification <u>U</u> ser Name dba IV Save Password	Pass <u>w</u> ord
Show Log Close after Execution	on < <u>P</u> revious <u>N</u> ext >	Execute Close

Specifics - SAP SQL Anywhere 17

- Global Options are available in Options | Model | Physical Model | SAP/Sybase SQL Anywhere | SAP
 SQL Anywhere 17
- New checkbox Generate IF EXISTS in DROP statements in DDL Script Generation | Detail Settings
- Changes to DDL CREATE DOMAIN, CREATE PROCEDURE, CREATE INDEX, CREATE TABLE, CREATE FUNCTION
- New object SEQUENCE; available syntax CREATE SEQUENCE and DROP SEQUENCE
- New datatypes TIMESTAMP WITH TIME ZONE, DATETIMEOFFSET and spatial datatypes

Reverse Engineering - SAP SQL Anywhere 17

Available Data Providers are:

- Connection via ODBC
- Connection via ADO

Connection via ODBC

🔀 Reverse Engineering Wizard	
 Stored Connections Select Data Source Select Data Provider Connecting What to Reverse Options Save Connection Tables 	Data Source Name SYBASE_SQL_ANYWHERE Reload Property Data Link User Name dba Password ••• Image: Save Password
Show Log Close after Execution	on < <u>Previous</u> <u>N</u> ext > <u>Execute</u>

Connection via ADO

🔀 Reverse Engineering Wizard		- • •
- Stored Connections - Select Data Source - Select Data Provider <u>- Connecting</u> - What to Reverse - Options Source Connection	Connection String Provider=ASEOLEDB.1;Password=sql;Persist Sec Data Link Pro	urity Info=True;User ID=dba;Data Sourc operties <u>T</u> est Connection
- Save Connection - Tables	User Identification User Name dba IV Save Password	Pass <u>w</u> ord ●●●
Show Log Close after Execution	on < <u>Previous</u> <u>N</u> ext >	Execute <u>Close</u>

Script Generation - Sybase SQL Anywhere 11

🔀 DDL Script Generation of Sybase SQL Anywhere 11	_ 0 ×
What to Generate Detail Settings Referential Integrity Select List	
 Use Quotation Marks Generate Owner Name to Objects Text Case Selection: Preserve Case Generate Check Constraint Names Used in Domains Create Comments Grant Groups to User/Group Generate Permissions Only to Object Types Selected on Tab What to Generate Terminator . 	
Order of Generated Objects You can change order of generated objects. Click Edit and define how objects will be generated. Edit	
Show Preview	
Verify Show Log Save Settings Generate Show Code	Help

Specifics - Teradata 13

Entity

Caption Name Entity1 = Entity1 Relationships Table Options Schema TESTDB Table Kind SET MULTISET GLOBAL TEMPORARY VOLATILE Comments Category None -	Entity Properties		- • ×
Entity1 Before Script After Script Notes SQL Preview Relationships Table Qptions Table Kind SET MULTISET GLOBAL TEMPORARY VOLATILE Category Category None	Caption	Name	
Before Script After Script Notes SQL Preview Relationships Table Options General Attributes Keys Indexes Check Constraints Triggers Permissions To Do Schema TESTDB Table Kind SET MULTISET GLOBAL TEMPORARY VOLATILE Comments Category Category	Entity I		10
General Attributes Keys indexes Check Constraints Inggers Permissions To Do Schema TESTDB Table Kind SET MULTISET GLOBAL TEMPORARY VOLATILE Comments Category None Table Constraints	Before Script After Script	Notes SQL Preview Relationships	Table Options
Schema TESTDB Table Kind SET MULTISET GLOBAL TEMPORARY VOLATILE Comments Category -None - Total	General Attributes Keys	Indexes Check Constraints Inggers Permiss	sions To Do
TESTDB Table Kind SET MULTISET GLOBAL TEMPORARY VOLATILE Comments Category None Total Category	Schema		
Table Kind SET MULTISET GLOBAL TEMPORARY VOLATILE Comments Category - None -	TESTDB		
SET MULTISET GLOBAL TEMPORARY VOLATILE Comments Category None	Table Kind		
MULTISET GLOBAL TEMPORARY VOLATILE Comments Category None	SET		
Comments			
Comments			
Comments Category Category			
Category - None -	Comments		
Category None			^
Category - None -			
Category None			
Category None			Ŧ
└── None	Category		
	U None	▼	
Image: Constraint of the second sec	✓ Generate	OK Cancel Apply	Help

Attribute

Attribute Properties - TESTDB.Entity1	
Caption Attribute 1	Name Attribute1
General Check Constraints Foreign Keys Permissions	lotes Identity
Data <u>T</u> ype Char(x)	Domains
1 De <u>f</u> ault Value	Default Rule
Primary Key Not Null Unique (New AK) Comments	
	T
Settings	
Format	Compress
Title	CASESPECIFIC
Named	WITH DEFAULT
Character Set	
СК <u>О</u> К	Ok <u>+</u> Add <u>C</u> ancel <u>Apply</u> <u>H</u> elp

Index

Primary index is generated only as an inside create table statement.

🔁 Index Properties		- • •
Entity: TESTDB.Entity1		
OrdHldx_1		•
General Items Notes Index Options	3	1
Caption	Name	
OrdHldx_1	= OrdHldx_1	6
Unique		
Index Type Primary		
Primary Partitioned Primary		
Secondary Join		
Hash		
☑ Generate		
<%>	OK Cancel Apply	Help

For index type Join and Hash, Schema is available.

🔁 Index Properties - E				- • •
Entity: TESTDB.Entity1				
OrdHldx_1				~
General Items Notes In	dex Options			
Available	Status		Selected	Status
o_clerk o_comment	•	+	o_orderdate o_orderkey	•
o_custkey	•	2		\$
		٤		*
		>>>		
		<<		
Expression				
<%>		<u>о</u> к	Cancel App	ly <u>H</u> elp
eneral Items Notes Inde	x Options			

BY (o_orderdate) ORDER BY (o_orderdate);
Procedure

Stored Procedure Properties
TESTDB.sp_sample1
Notes SQL Preview Comment
General SQL Permissions To Do Before Script After Script
Capt <u>i</u> on <u>N</u> ame
sp_sample1 = sp_sample1
Schema TESTDB
List of Arguments
ip INTEGER, OUT op INTEGER
Generate Generate SQL Only
OK Ok±Add Cancel Apply Help

Images

🔁 Image	
General	
Name:	
Image 1	
File Path:	
	el <u>A</u> pply

Reverse Engineering - Teradata 13

Available Data Providers are:

Connection via ODBC

Connection via ODBC

🔀 Reverse Engineering Wizard	
 Stored Connections Select Data Source Select Data Provider <u>Connecting</u> What to Reverse Options Save Connection Tables 	Data Source Name TERADATA_13 Reload Property Data Link User Name tduser Password Save Password
Show Log Close after Execution	on < <u>P</u> revious <u>N</u> ext > <u>Execute</u> <u>Close</u>

Specifics - Vertica Database 8.0

Options are available in Options | Model | Physical Model | Vertica | Vertica 8.0

Objects supported

- Tables
- Columns
- Keys
- CheckConstraints
- Functions
- Libraries
- Procedures
- Projections
- Sequences
- Schemas
- Users
- Views

i NOTE: In Vertica Database there are no indexes and triggers.

Reverse Engineering - Vertica 8.0

Available Data Providers are:

- Connection via ODBC
- Database Connection via ODBC (Open Database Connectivity) Driver. ODBC Driver is not part ofToad Data Modeler. In most cases, it is distributed directly with database.

Script Generation - Vertica Database 8.0

12	DDL Script Generation of Vertica 8.0	-		x		
What to Generate Detail Settings	Referential Integrity Select List					
 Use Quotation Marks Use Qualified Names Text Case Selection: Preserve Case Generate Constraint Names (Foreign Keys) Generate Check Constraint Names Used in Domains Generate Permissions Only to Object Types Selected on Tab What to Generate 						
Order of Generated Objects You can change order of generated objects. Click Edit and define how objects will be generated.						
	Edit					
	ОК		Cano	el		

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Acknowledgments

Gallery Samples

Permissions for database specific and other gallery items were given by Oracle, Microsoft and TPC.org representatives.

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