Toad® for Oracle 12.1

Guide to Using Toad

Toad for Oracle 12.1

Beginner's Guide to Using Toad

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Chapter 1: Getting Started

Welcome to Toad

Toad for Oracle provides an intuitive and efficient way for database professionals of all skill and experience levels to perform their jobs with an overall improvement in workflow effectiveness and productivity. With Toad for Oracle you can:

- Understand your database environment through visual representations

- Meet deadlines easily through automation and smooth workflows

- Perform essential development and administration tasks from a single tool

- Deploy high-quality applications that meet user requirements; perform predictably and reliably in production

- Validate database code to ensure the best-possible performance and adherence to best-practice standards

- Manage and share projects, templates, scripts, and more with ease

The Toad for Oracle solutions are built for you, by you. Over 10 years of development and feedback from various communities like Toad World have made it the most powerful and functional tool available. With an installed-base of over two million, Toad for Oracle continues to be the "de-facto" standard tool for database development and administration.

Note: If you are using an older version of Toad, you can save *hours* with features introduced in later versions, notably Toad 12, such as Jump search, the Private Script Repository, Compare Multiple Schemas, the new Team Coding Dashboard, access to Toad World User Forums and how-to videos directly within Toad, Workspaces, Code Analysis (formerly Code Xpert), and Query Builder. (Some features are addressed only in online Help within Toad.)

About This Guide

This guide will help you to quickly start using Toad by learning basic features and tasks. Toad is a very diverse and powerful tool, hence there are features not covered. Refer to the online help for additional information about Toad, which you can access at any time by pressing F1.

Many Toad for Oracle users access data via Toad to work with it in another environment. Others extensively use the deeply robust features of Toad more fully. Both groups will find their needs met in the logical organization of this guide:

- Getting Started

- Toad Without Code

- Toad and Your Code.

The following topics are not included in the guide. They will be covered in other content:

- Using the Toad Report Manager

- SQL Optimizer.

Meanwhile, please refer to online help and to our award-winning Support team's knowledge base and to Toad World for instructions on using those features.

Help and Resources

Toad is self-diagnosing. If you are having difficulties with Toad that you cannot understand nor fix, the Toad Advisor may be able to help you. It offers warnings, alerts, and hints concerning the current state of your Toad installation. If you are in a managed environment, it specifies which features in Toad are managed, and to what extent.

To use Toad Advisor

1. Select **Help | Toad Advisor**.

2. Review the results, which are divided into the following categories:

Warnings	Describe things that should be fixed immediately
Alerts	Describe things that may have an impact upon Toad's functionality
Hints	Provide information about your Toad installation that may affect how Toad works
Performance suggestions	Describe settings that could be changed to improve speed of performance

> **Tip:** Select a result for additional information in the bottom pane. You can double click the performance suggestions to navigate direction to the relevant Toad option.

In **View | Toad Options,** search for specific options using the Search field at the bottom of the Options window.

In Toad 12.0, Jump search was introduced system-wide.

Jump search example:

- Type "code snippets" in the Jump search field on the main toolbar.
- Under "Menus and Toolbars," double-click **View > Code Snippets**.
    - You are taken *to* that menu item.
- Click the 'Toad World' header to expand results in the list for the user forum, knowledge base, blog posts, and how-to videos.
    - Also searched (and listed if your search-term is found there) are your files, Code Analysis rules, SQL Recall history, and Code Snippets.
- Double-click the 'Search Web' header to open your default browser.

Toad also jumps from error dialogs to the Jump search where the error message is then copied so you can quickly find answers.

There are many resources for you to learn more about Toad, and many of them can be reached from the Jump search on the main toolbar.

Resource	Description
Helpfile	Provides step-by-step directions on how to use Toad. Press F1 in any Toad window to open the helpfile to the relevant topic.
Knowledge Xpert for Oracle	An extensive Oracle technical resource with thousands of insightful topics and working examples.
Oracle documentation	Oracle's database documentation. Since Toad is a tool to help you manage Oracle databases, the more you understand Oracle the more intuitive Toad becomes.
ToadForOracle.com	The main website for all things Toad for Oracle, including: - Forums—Connect with thousands of other Toad users to get help.

Resource	Description
	Tip: Customers often use common Toad acronyms in the forums. • Documentation—Download the latest product documentation, including the Install Guide, Release Notes, and other documents. • Downloads—Download the latest update, beta, or trial version. • Idea Pond—Submit ideas to improve Toad and vote on other customers' ideas.
ToadWorld.com	The parent site for all Toad family products, providing videos, tech briefs, white papers, expert blogs, podcasts, user forums, and tech tips.

Toad World User Forum

ToadWorld has been completely updated, and now you can ask questions and find answers directly within Toad.

Simply go to **Help | Toad World** to access:

- Forums
- Ask Question
- Start Discussion
- Sign In or Register

This feature uses single sign-on (SSO), so the Forgot Password option is there, too.

Content is displayed in a Toad window. Of course, you can also access the completely updated Toad World online for how-to videos, expert blogs, Wiki posts, and more.

Follow forum threads

- To receive emails for all posts, go online to ToadForOracle.com | **Forums** | **Email Subscribe to Forum**.
- To follow a thread, select **Email me replies to this post** (in the lower left corner) when you ask a question, start a discussion, *or* reply to a post (online or within Toad).
- You can select **Stop receiving emails on this thread** in the emails you receive.

Customize Toad

There are many ways to customize Toad to fit your processes and save you time. A few important ones are included here.

Use Workspaces to Save Time when you Restart Toad

You can save your current Toad windows and connections as a Workspace. This allows you to quickly resume work after restarting Toad.

If you don't see the Workspace toolbar, right-click in the main toolbar to select **Workspaces**, or select **Restore Defaults**.
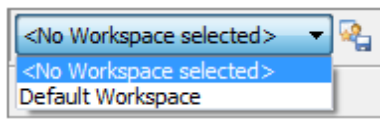
To create a Workspace

» In the Workspace toolbar, click to name and save your Workspace.

Your open windows and connections are saved and will be reestablished the next time you open this Workspace.

These components are saved:

Schema Browser - The currently active database objects (type and name)

Editor - The tab contents, the number of tabs, the last active tab, each tab's line and caret position, and the split mode of the Editor

Other windows - All other MDI style windows are managed with Workspaces. Non-MDI windows, that is, docked windows such as the Project Manager, are retained across Workspaces since they likely represent an overall working desktop state you may need across Workspaces.

To save changes to your Workspace configuration

» Click in the Workspace toolbar to save changes to your Workspace configuration (newly opened windows and connections).

You can customize schema drop-downs by creating a list of favorites, hiding schemas, setting the default schema for connections, and other options. Changes apply to allow windows with the schema drop-down, such as the Editor and Schema Browser.
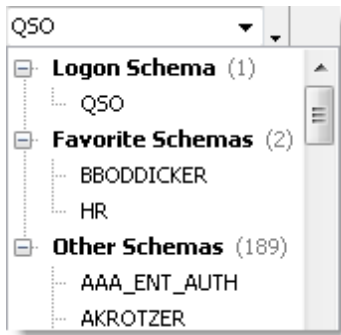
To set a default schema

» Right-click the schema in the schema drop-down and select **Set <*schema name*> to Default Schema**.

To customize schema drop-downs

1. Right-click the schema drop-down and select **Customize**.

2. Select schemas to categorize and click the **>** button.

3. To hide schemas, select *Hidden Schemas* in the **Category** field for the schema.

4. To create a new category, enter the category name in the **Category** field for the schema. The new name becomes available in the Category drop-down.

5. To change when the schema is categorized, select the **When to Categorize** field for the schema and click ⋯ .

You can customize Toad's default menus and toolbars, and you can create new ones with custom options. This lets you arrange Toad to best reflect how you want to work.

In addition, Toad menu bars can configure themselves to how you work with Toad. As you work, Toad collects usage data on the commands you use most often. Menus personalize themselves to your work habits, moving the most used commands closer to the top of the list, and hiding commands that you use rarely.

Note:

○ As of version 11.5, these customizations are not automatically imported when you upgrade to a newer version of Toad.

○ Toad automatically copies user files from the previous version when upgrading to a new version (if the new version is within two releases of the previous version), but toolbar and menu customizations are not auto-imported. This allows you to see new Toad windows in your menus.

- ○ If you wish to restore your previous Toad settings, including your menu and toolbar customizations, simply go to **Utilities | Copy User Settings**.

See "Manually Import Toad Settings" in the online help for more information.

If you are using a custom configuration, new commands are not added to your custom toolbars when you upgrade Toad. However, you can see both new commands and commands that have been completely removed from the toolbars and menus.

Note: Commands that have been removed from the toolbar and not the menu bar (or the other way around) do not display in the Unused area. Because of this, it may not be obvious that you have removed a command from one location and not the other.

To view new/removed commands

1. Right-click the toolbar/menu and select **Customize**.

2. Select the Commands tab.

3. To view new commands, select *[New]* in the **Categories** field.

4. To view commands you removed, select *[Unused]* in the **Categories** field.

5. To add a new/removed command to a menu/toolbar, drag the command to the toolbar/menu.

If you want to heavily modify an existing toolbar or menu, it may be easier to create your own custom toolbar or menu instead.

To create a custom toolbar or menu

1. Right-click the toolbar/menu and select **Customize**.

2. Create the new toolbar/menu. Review the following for additional information:

To create a...	Complete the following:
toolbar	a. Click **New**. b. Enter a name your new toolbar. A blank toolbar displays in the user interface below the existing toolbars.
menu	a. Select the Commands tab. b. Select *New Menu* in the **Categories** field. c. Select *New Menu* in the **Commands** field and drag it to the menu bar where you want it located. The pointer changes to

To create a...	Complete the following:
	a vertical I-bar at the menu bar. **Tip:** You can create sub-menus by dragging a new menu into an existing one.

3. To add commands, select the Commands tab in the Customize window. Drag the command from the **Commands** field to the toolbar/menu. An I-bar pointer marks where the command will be dropped

    Note: You can rearrange and rename the commands, toolbars, and menus.

4. To lock the toolbars, right-click a toolbar and select **Lock Toolbars**.

To customize the toolbar or menu

1. Right click the toolbar or menu and select **Customize**.

2. Change the toolbar or menu.

If you want to...	Complete the following:
Change the order of commands	Drag the item on the toolbar/menu to where you want it. An I-bar pointer marks where the command will be dropped.
Add commands	Complete the following: a. Select the Commands tab in the Customize window. b. Drag the command from the **Commands** field to the toolbar/menu. An I-bar pointer marks where the command will be dropped.
Rename the toolbar, menu, or command	Complete the following: a. Right-click the icon or text on the item you want to change. b. Enter the new name in the **Name** field. If you want to define a hotkey, include an ampersand (&) before the letter you want to assign as the hotkey. **Note:** These are not the same as Toad shortcut keys, but

If you want to...	Complete the following:
	rather the underlined letter for keyboard navigation.
Remove a command or menu	Right-click the item and select **Delete**.
Tip: You can create sub-menus by dragging a new menu into an existing one.	

3. To have Toad menus configure themselves, select **Menus show recently used commands first** on the Options tab.

   If you select this option, Toad collects usage data on the commands you use most often. Menus personalize themselves to your work habits, moving the most used commands closer to the top of the list, and hiding commands that you use rarely.

4. To lock the toolbars, right-click a toolbar and select **Lock Toolbars**.

You can display additional menus, such as Team Coding or Create Objects.

To display additional menus

1. Right-click the menu bar and select **Customize**.

2. Select the Commands tab.

3. Select *Menus* in the **Categories** field.

4. Click the menu you want to add (for example, Team Coding) in the right pane and drag it to the menu bar where you want it located. The pointer changes to a vertical I-bar at the menu bar.

To change the toolbars you display

1. Right-click the toolbar area.

2. Select the toolbars you want to display, and clear the toolbars you want to hide.

To reset default toolbars and menus

» Right-click a toolbar and select **Restore defaults**.

It is possible to remove all the toolbars from the Editor. If this happens, you can restore the toolbars to your windows without resetting all the default settings.

To restore lost toolbars from the Editor

1. Right-click the Desktop panels tab area.

2. Select **Customize**.

3. Select the Toolbars tab.

4. Select the Editor toolbars you want to display.

Toad provides hundreds of options for you to customize its behavior. If there is a specific feature or behavior you would like to change, try searching for it in the Options window.

Customize Shortcut Keys

Note: If you have customized your shortcut keys, you will not automatically be able to use new shortcuts added in future Toad upgrades. However, you can reset your shortcut keys to the default in order to gain access to all new shortcuts.

Menu hot keys are the keys that you access by pressing the ALT key and then the character in the menu item that is underlined to open that menu or command. You can configure the underlined character.

To change the hot key

1. Right-click the toolbar and select **Customize**.

2. Right-click the menu item you want to change.

3. Change the underlined character by changing the location of the ampersand in the **Name** field. For example, *&Tools* underlines the *T*, while *T&ools* underlines the *o*.

To change shortcut keys

1. Click on the standard toolbar.

    Tip: You can also select **View | Toad Options**.

2. Select **Toolbars/Menus | Shortcuts**.

3. Select the command for which you want to set or change the shortcut keys.

4. Type the keystrokes you want to use.

    The shortcut key is changed as you type. If there is a conflict with another shortcut key, an asterisk (*) displays in the Conflict column. You can then find the conflict and remove it.

Note: This option only allows you to use one keystroke after a control key (such as CTRL or ALT).

Toad provides dozens of standard shortcut keys, plus you can assign new ones or customize the standard ones. Toad also allows you to print out your current list of shortcut keys.

General	Description
CTRL+D	Open Quick Describe window.
CTRL+TAB	Cycle through a collection of "child windows" or tabs in a window
F1	Open the Toad documentation
F4	Immediately describe object in popup window.
F10	Display right-click menu
Debugger	**Description**
CTRL+F5	Add watch at cursor
CTRL+ALT+B	Display the PL/SQL Debugger Breakpoints window
CTRL+ALT+D	Display the PL/SQL Debugger DBMS Output window
CTRL+ALT+E	Display the PL/SQL Debugger Evaluate/Modify window
CTRL+ALT+C	Display the PL/SQL Debugger Call Stack window
CTRL+ALT+W	Display the PL/SQL Debugger Watches window
F11	Run (continue execution)
F12	Run to cursor
SHIFT+F5	Set or delete a breakpoint on the current line
SHIFT+F7	Trace into
SHIFT+F8	Step over
SHIFT+F10	Trace out

SHIFT+CTRL+F9	Set parameters
Editor	**Description**
ALT+UP	Display previous statement
ALT+DOWN	Display next statement (after ALT+UP)
CTRL+B	Comment block
CTRL+E	Execute Explain Plan on the current statement
CTRL+M	Make code statement.
CTRL+N	Find sum of the selected fields. You can also include additional calculations, such as the average or count.
CTRL+P	Strip code statement.
CTRL+T	Display pick list drop-down There are a variety of shortcut keys to use with the pick list.
CTRL+F9	Verify statement without execution (parse) in the Editor
CTRL+F12	Pass the SQL or Editor contents to the specified external editor.
CTRL+PERIOD	Display code completion list
CTRL+ENTER	Execute current SQL (same as SHIFT+F9)
CTRL+ALT+PAGEUP	Navigate to the previous results panel tab
CTRL+ALT+PAGEDOWN	Navigate to the next results panel tab
F2	Toggle full screen Editor
F5	Execute as script.
F6	Toggle between Editor and Results panel
F7	Clear all text, trace into the Editor

F8	Recall previous SQL statement in the Editor
F9	Execute statement in the Editor
SHIFT+F2	Toggle full screen grid
Find and Replace	**Description**
CTRL+F	Find text
CTRL+G	Go to line number
CTRL+R	Find and replace
F3	Find next occurrence
SHIFT+F3	Find previous occurrence

Toad Insight Pick List Shortcuts

There are a variety of shortcuts you can use to display the pick list and make a selection. Toad also provides options for you to customize the pick list behavior.

See "Code Assist Options" in the online help for more information.

General	**Description**
CTRL+T	Display pick list for object (name) at caret. If a stored alias exists by that name, then that alias' object is shown in the pick list.
CTRL+SHIFT+T	Display pick list for object (name) at caret. This option ignores aliases with the same name.
LEFT ARROW	Move the caret left while filtering the pick list.
RIGHT ARROW	Move the caret right while filtering the pick list.
Make Selection	**Description**
Double-click the selection	Insert the selection and close the pick list.
ENTER	Insert the selection and close the pick list.

PERIOD	Insert the selection and a period after it. The pick list remains open and displays child objects, if there are any.
SPACE	Insert the selection and a space after it.
TAB	Insert the a partial selection if possible and leave the pick list open; if a partial selection is not possible, insert the selection and close the pick list.
	TAB accepts as much as possible without changing the list of displayed objects. For example, if the pick list displays a list of columns that all start with MY_COL, Toad would insert MY_ COL when you press TAB and leave the picklist open. If the columns did not have a common preface, Toad would insert the selected column and close the pick list.
(OPEN PARENTHESIS	Insert the selection and "(" after it.
Close Pick List	**Description**
Click outside the pick list	Close the pick list without making a selection.
ESC	Close the pick list without making a selection.

You can print your list of shortcut keys to use as a reference.

To print the list of shortcut keys

1. Click ![icon] on the standard toolbar.

   Tip: You can also select **View | Toad Options**.

2. Select **Toolbars/Menus | Shortcuts**.

3. Click the Category or Shortcut column to sort the list.

4. Click **Print**.

Create and Manage Connections

This is a very general overview of how Toad connects to Oracle databases. Please refer to Oracle's documentation for more information on Oracle connections.

Troubleshooting: If your previous connections do not display in the Database Login window, ensure that the **Show favorites only** and **Show selected home only** fields in the bottom of the Database Login window are not selected.

To connect to a database server (referred to as "database"), Toad requires that you have a database client ("client") installed on your computer. A client is simply software that accesses the database through a network.

You can have multiple Oracle clients installed on your computer. These client locations are also referred to as Oracle homes, and you can select which one Toad currently uses on the Database Login window.

See the Release Notes for a complete list of the client and database versions that Toad supports.

Important: It is recommended that your client version be of the same release (or later) as your database server. This is an Oracle recommendation to prevent performance issues.

Connection Files

The Oracle client installation generally includes connection configuration files that are used to facilitate communication between your computer and the database. Toad uses the following connection configuration files, depending on the connection type you select:

Connection File	Description
SQLNET.ora	Specifies configuration details for Oracle's networking software, such as trace levels, the default domain, session characteristics, and the connection methods that can be used to connect to a database (for example, LDAP and TNSNAMES). If a method is not listed, you cannot use it. Toad uses the SQLNET.ora file for all connection methods, and consequently you must be able to access this file for any connection method.
TNSNames.ora	Defines database address aliases to establish connections to them. Toad must be able to access the TNSNames.ora file for TNS connections.

Connection File	Description
	Note: If you have multiple Oracle clients installed or want to use a TNSNames.ora file on a network, you may want to use the TNS_NAMES environment variable to simplify managing TNS connections.
LDAP.ora	Defines directory access information using Lightweight Directory Access Protocol (LDAP). Toad must be able to access the LDAP.ora file for LDAP connections.

Create New Connections

There are a few prerequisites you must have to connect to an Oracle database.

To create a new connection

1. Click [icon] in the standard toolbar to open the Database Login window.

   Note: You can also select **Session | New Connection**.

2. Click [icon] on the Database Login toolbar. The Add Login Record window displays.

   Note: Instead of creating the connection in the Add Login Record window, you can directly enter the connection information in the Database Login window. However, this method forces you to connect to the database, and you cannot enter some of the additional connection information until after you connect.

3. Complete the **User/Schema** and **Password** fields.

4. Select a connection method:

TNS	Select a database in the **Database** field. Toad uses the listings in your TNSNames.ora file to populate the list.
	You can edit the TNSNames.ora file directly in Toad.
	Note: If you have multiple Oracle clients installed or want to use a TNSNames.ora file on a network, you may want to use the TNS_NAMES environment variable to simplify managing TNS connections.
	See "Create a Variable for the TNSNames.ora File" in the online help for more information.

Direct	Enter the **Host**, **Port**, and either the **Service Name** or **SID** of the database to which you want to connect.
LDAP	Select the LDAP descriptor in the **LDAP Descriptor** field. You can edit the LDAP.ora file directly in Toad.

Notes:	
- Toad must be able to access the SQLNET.ora file to use any of the connection methods. Toad must also be able to access the LDAP.ora file for LDAP connections and the TNSNames.ora file for TNS connections. - If Toad cannot connect to one of these files, a red X displays beside the editor button for that file. For example, the following image indicates that Toad cannot access the LDAP.ora file. You would have to resolve the issue before you could make an LDAP connection. LDAP Editor ✖	

5. Complete the remaining fields as necessary.

Connect as	Select the connection privilege level field.
Color	Select a color to border windows that use the active connection. **Note:** The color displays in all Toad user interface elements that use the connection, which is very helpful when you have multiple active connections.
Connect Using	Select the Oracle home. **Note:** You can only connect to one Oracle home at a time. This field is disabled if you are already connected to a database.
Alias	Enter a description or Toad based alias or nickname for the connection. By default the alias only displays in the connections grid, but you can have Toad display the alias instead of the database name. To enable this option, select **View** | **Toad Options** | **Windows** and select the **Use alias instead of database** checkbox.
Execute Action	Select to execute an action whenever Toad connects to the database. Then, click [...] by the **Action** field to select the action. See

upon Connection	"Automation Designer Overview" in the online help for more information. You can also select a parameter file. **Note:** Toad only executes actions upon connection when you execute through the user interface. Toad does not execute actions when it is executed through command line.
Custom Columns	Complete the custom fields, if you have defined any.
Save Password	Select to have Toad remember the password for only this connection. If **Save passwords** is selected in the Database Login window, then this field is selected by default.
Auto Connect	Select to have Toad automatically make the selected connection on startup.
Favorite	Select this checkbox to mark the connection as one of your favorites. You can have the Database Login window only display your favorites by selecting **Show favorites only** at the bottom of the window.
Read Only	Select this checkbox to make the connection read only, meaning that you cannot make any changes to the database. This option is especially helpful when you want to access data for a production database but you do not want to accidentally make any changes.

6. Save the login record.

    Review the following for additional information:

    - To save the record without connecting to the database, click **OK**

    - To save the record and connect to the database, select the **Connect** checkbox and click **OK**.

    - To save the record and reuse the field values to quickly enter new connections, click **Post**.

7. Optional: Manage multiple connections.

Import/Export Connection Settings

You can export your connections settings and import them back into Toad.

This feature is especially helpful when you need to work on a different computer or share the settings with another person. If you save your connection password, it is encrypted in the exported file.

Notes:

- This feature was introduced in Toad 11, and consequently you can only import these files with Toad 11 and later versions.

To export connection settings

1. Click [icon] in the standard toolbar to open the Database Login window.

   Note: You can also select **Session | New Connection**.

2. Click [icon] on the toolbar.
3. Enter a file name in the **File Name** field and click **Save**.

To import connection settings

1. Click [icon] on the toolbar.
2. Select the connection settings file and click **Open**.

Basic Connection Controls

You can choose to connect automatically upon opening Toad, use previous connections, save connection passwords, and manage multiple connections.

To select connections to automatically make when Toad starts

1. Click [icon] in the standard toolbar to open the Database Login window.

   Note: You can also select **Session | New Connection**.

2. In the connections grid, select the checkbox in the **Auto Connect** column.

Toad saves your previous connections so you can easily connect to them again. You can also change the active connection in open windows.

To open a previous connection

» Select one of the following:

- Click [icon] in the standard toolbar to open the Database Login window, and then double-click the previous connection from the grid.

- Click the arrow beside ⧉ in the standard toolbar, and then select a connection from the list.

You can easily change the connection in an open window to a connection you currently have open or a connection that you have recently used.

To change the active connection in a window

» Click the arrow beside ⧉ in the window toolbar and select an open or recent connection from the drop-down.

You can have Toad save all passwords automatically or individually save passwords for selected connections. Passwords are saved in an encrypted file called connectionpwds.ini. The encryption is tied to the currently logged in user profile, and it supports roaming profiles and Citrix installations.

Important: To save a connection password, you must connect to the database first, and then you can save the password in the connections grid.

Note: If the **Save Password** field is disabled, your ability to save passwords may have been removed during installation. See the *Toad for Oracle Installation Guide* for more information.

To automatically save all passwords

1. Click ⧉ in the standard toolbar to open the Database Login window.

   Note: You can also select **Session | New Connection**.

2. Select the **Save passwords** checkbox in the bottom of the window.

To save passwords for individual connections

1. Click ⧉ in the standard toolbar to open the Database Login window.

   Note: You can also select **Session | New Connection**.

2. Clear the **Save passwords** checkbox in the bottom of the window, if it is selected.

3. Select the **Save Pwd** checkbox for the connection in the connection grid.

   Note: If the connection is not listed in the connection grid, ensure that the **Show favorites only** and **Show selected home only** fields are cleared. If it still does not display, connect to the database again.

4. Enter the password in the **Password** field on the right.

5. Click **Connect**.

You can commit or rollback recent changes to the database from the Session menu at any time while working with Toad.

Note: You can configure Toad to either automatically commit changes or prompt to commit on exit.

See "Oracle Transaction Options" in the online help for more information.

To commit or rollback your changes

» Select **Session | Commit** or **Session | Rollback**.

Tip: You can also right-click the connection in the Connection Bar, and select **Commit** or **Rollback**.

You can end single connections or all connections.

To end one connection

» Select **Session | End Connection**.

Or

Click in the standard toolbar to end the currently active session. You can also click the arrow by the button to select a different open connection to end.

To end all connections

» Select **Session | End All Connections**.

You can easily test connections.

To test connections if the session has dropped

» Select **Session | Test Connection (Reconnect)** *or* **Test All Connections (Reconnect)**

To test connections in the Database Login window

» Select connections in the grid and click Toad opens a new session to test the connection and lists any errors that occur.

Manage Multiple Connections

When working with Toad you may have multiple database connections open at once. Trying to keep track of which open window is related to which connection can be difficult. Toad provides a variety of features and options to help you manage multiple open connections.

Method	Description
	The Database Login window displays all of your previous connections in the connections grid. You can reduce the number of connections that display and organize how they display in a variety of ways.
	You can use connection colors to help you distinguish between open connections. The color coding displays prominently throughout Toad's user interface. For example, you may use red for all production databases and yellow for all test databases.
	You can use the Window and Connection bars to help you keep track of your open windows and connections. The active window and connection are selected in the bars (they display with a lighter color), which is helpful so you can always tell which connection you are using.

You may also find the following general connection management features helpful:

- Automatically Connect on Startup

- Change Active Connection in Window

- Commit or Rollback Changes

- Customize Schema Drop-Downs

- Use Previous Connections

Display Connection and Window Bars

You can use the Window and Connection bars to help you keep track of your open windows and connections. The active window and connection are selected in the bars (they display with a lighter color), which is helpful so you can always tell which connection you are using.
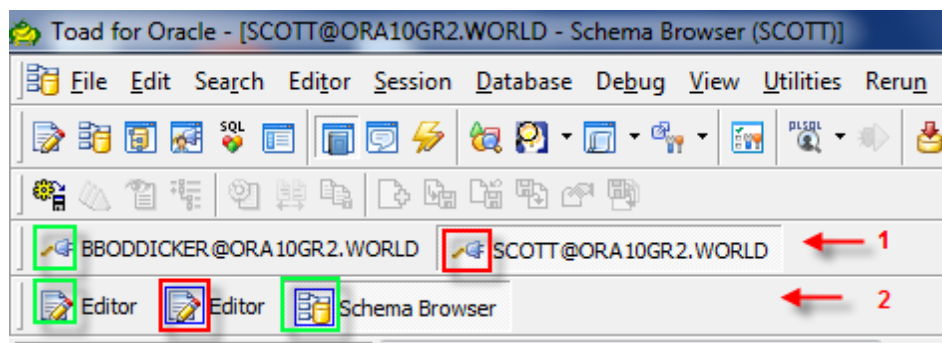
1) Connection Bar 2) Window Bar

Notes:

- Toad provides a variety of features and options to help you manage multiple open connections.

- You can rearrange the order of items in the Connection and Window bars. Right-click the bar and select **Connection/Window Bar Button Order**. Then, use the arrows to determine the order for items to display. Toad remembers these settings. For example, if you list Editor first, then Editor windows always display in front of other windows (even if the Editor was opened last).

- You can customize the display settings, such as displaying connection strings or allowing the bars to span multiple lines.

Connection Bar

The Connection bar lists all of the connections that you have open. Right-clicking one of the connections in the Connections bar gives you helpful options, including:

- Opening a new Editor or Schema Browser window for the connection

- Ending the connection, which closes all windows that use the connection

- Rearranging the order of connections in the Connection bar

  Tip: Select **Show All** to display connections that are not currently open.

- Committing or rolling back changes

- Viewing a list of all of the windows that use the connection, which you can click to bring the window to the front

To display the Connection bar

» Right-click the file menu area and select **Connection Bar**.

Window Bar

The Window bar lists all of the windows that you currently have open. Right-clicking one of the windows in the Windows bar gives you helpful options, including:

- Rearranging the order of windows in the Window bar

  Tip: Select **Show All** to display windows that are not currently open.

- Only displaying windows for the active connection, which can be very helpful when you have numerous windows open for one connection

> **Note:** To use this feature, right-click *a blank area* in the Window bar and select **Show Buttons for Current Connection**.

- Closing all open windows

To display the Window bar

» Right-click the file menu area and select **Window Bar**.

Organize the Database Connections Grid

The Database Login window displays all of your previous connections in the connections grid. You can reduce the number of connections that display and organize how they display in a variety of ways:

- Display Only Favorite Connections

- Add Custom Columns

- Group Connections (Create Tree View)

- Hide/Display Columns

- Display Only Connections for Selected Oracle Home

- Display Tabs for Each Server or User

- Delete Previous Connections
  See the online help topics listed above for more detail.

Tips:

- Toad provides a variety of features and options to help you manage multiple open connections.

- Click at the top of the Database Login window to refresh the connections grid.

Access the Database Login Window

All of the organization options are configured from the Database Login window.

To access the Database Login window

Click in the standard toolbar to open the Database Login window.

Note: You can also select **Session | New Connection**.

Display Only Favorite Connections

If you have a long list of connections but only use a few of them regularly, you can mark the connections that you use frequently as favorites and hide the other connections. You can still view the other connections by displaying all connections instead of just favorites.

To select favorite connections

» In the connections grid, select the **Favorite** check box of the connection you want to make a favorite.

To view only favorites in the connections grid

» Below the connections grid, select the **Show favorites only** checkbox.

To view all connections in the connections grid

» Below the connections grid, clear the **Show favorites only** checkbox.

Add Custom Columns

You can add columns to the connections grid. For example, you may want to add a Locations column if you manage databases in multiple physical locations, or you may want to add an Environment column to distinguish between Test and Production databases.

Tip: You can also group the connections grid by custom fields.

1. Click 🖽 in the Database Login window toolbar.
2. Click **Add**.
3. Enter the name for your custom field.

Group Connections (Create Tree View)

You can group connections by column header to create a tree view. You can add multiple column headers to add grouping levels.

To group connections in the data grid

1. Drag a column header into the grey area above the grid.

2. Drag additional column headers to add grouping levels.
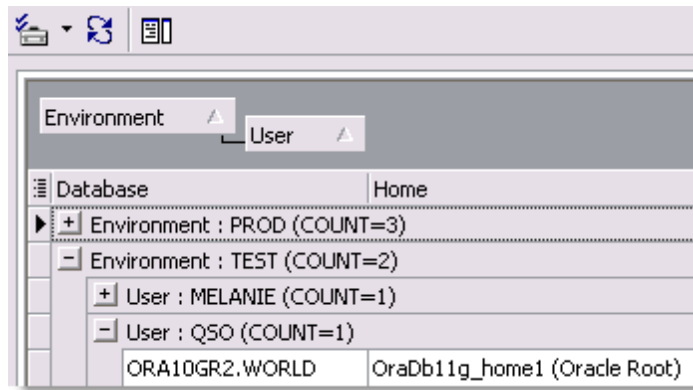
> **Tip:** The image above is grouped by a custom column.

To remove grouping

» Drag the column header into the connections grid.

Hide/Display Columns

If you have a small screen area, you can hide some of the columns that display in the connections grid.

To hide or show columns

1. Click in the left-hand side of the grid headers.
2. Select the columns you want to display, or clear the checkbox for columns you want to hide.

Display Only Connections for Selected Oracle Home

If you have many connections using different Oracle homes, you may want to display only those using a particular home in the grid.

To limit connections to one Oracle home

1. Select the Oracle home you want to display in the **Connect using** field on the right side of the Database Login window.

   Note: You can only connect to one Oracle home at a time. This field is disabled if you are already connected to a database.

2. Click the **Show selected home only** checkbox at the bottom of the window.

By default, the connections grid does not contain tabs; it is a unified grid that displays all connections. You can change the grid to display separate tabs for each server or user. Each tab contains a grid of its database connections.

To display tabs for each server or user

» Click at the top of the Database Login window and select **Tabbed by Server** or **Tabbed by User**.

Delete Previous Connections

To permanently remove connections from the Database Login window

» Select the connection and press the DELETE key.

Color Code the User Interface per Connection

You can use connection colors to help you distinguish between open connections. The color coding displays prominently throughout Toad's user interface. For example, you may use red for all production databases and yellow for all test databases. The color coding would display as follows:

- Any open window related to that connection
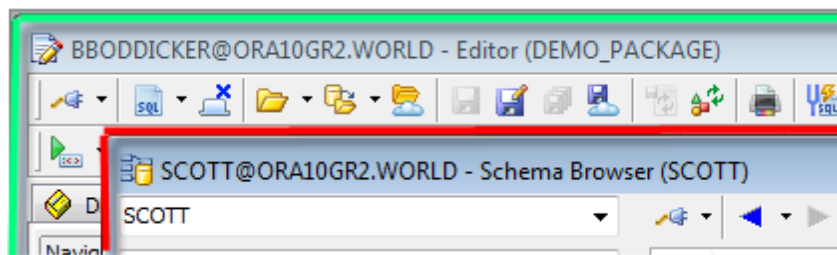
- Window and Connection bar buttons
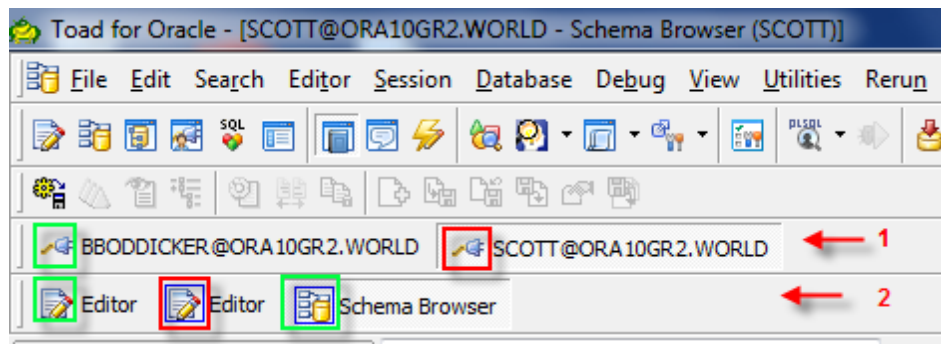
1) Connection Bar 2) Window Bar

- Status bars

Tip: Toad provides a variety of features and options to help you manage multiple open connections.

To select a connection color

1. Click ⚏ in the standard toolbar to open the Database Login window.

   Note: You can also select **Session | New Connection**.

2. Select a color in the **Color** column in the connection grid.

Manage Oracle Homes

Toad provides much of the same functionality as the Oracle Home Selector.

Tip: If comparing results in SQL*Plus and Toad for Oracle, confirm they are pointing to the same Oracle home.

Only one Oracle home can be in use at one time. This means that once a connection is made, all future connections will use the same Oracle home, regardless of default home listed for a connection. If you want to use a different Oracle home for a new connection, you must close all open connections first.

Default homes can be assigned for a connection or for Toad. When a default Oracle home is assigned to a particular connection, any time you make that connection from the connection grid,

Toad automatically uses that Oracle home. When a default Oracle home is assigned to Toad, Toad automatically uses that Oracle home any time you create a connection to a new database.

Toad searches for Oracle homes in several different ways.

Select an Oracle Home

Note:

- If you have multiple Oracle clients installed or want to use a TNSNames.ora file on a network, you may want to use the TNS_NAMES environment variable to simplify managing TNS connections.

To select an Oracle home

1. Click ⊞◢ in the standard toolbar to open the Database Login window.

   Note: You can also select **Session | New Connection**.

2. With no open connections, select an Oracle home in the **Connect using** field.

   Note: To see more information about the home you have selected or change the SID, NLS_LANG, or SQLPATH, click [...] to open the Oracle Home Editor.

3. To set this as the default Oracle home for all connections, select **Make this the Toad default home**.

You must restart Toad to have changes made here take effect.

To edit the Oracle home

1. Click [...] beside the **Connect using** box on the Database Login window.
2. Select an Oracle home by clicking on its node. You can then:

   - Click **Clipboard**. This will copy the selected information to the clipboard so you can past it into an email, or another document.

   - Click **Advice**. This will tell you if you have a proper Net8 installation for this home, or suggest changes to your installation.

   - Right-click and choose to edit one of the following:

     - SID for the selected home

     - NLS_LANG for the selected home

     - SQLPATH for the selected home

Edit Oracle Connection Files

From the SQLNET editor you can easily edit your SQLNET.ora parameters. The parameters on this window are standard Oracle parameters. See Oracle's documentation for more information.

To edit your SQLNET.ora file

1. Click in the standard toolbar to open the Database Login window.

   Note: You can also select **Session | New Connection**.

2. Click **SQLNET Editor**.

3. To back up your file before editing it, click **Create Backup File**.

   Note: It is recommended that you create a backup file before you make any changes. This assures that if something goes wrong you can restore the original settings.

4. Make any necessary changes.

   Note: If you are using a multi-threaded server and plan to use the PL/SQL Debugger, make sure you check the **USE_DEDICATED_SERVER** checkbox. This allows the PL/SQL Debugger to work.

5. To view the SQLNET.ora file after you update parameters, click **View File as Modified**.

You can use the LDAP editor to edit your LDAP parameters. Toad supports both Oracle LDAP and Windows LDAP servers.

The parameters on this window are standard Oracle parameters. See Oracle's documentation for more information.

To edit your LDAP.ora file

1. Click in the standard toolbar to open the Database Login window.

   Note: You can also select **Session | New Connection**.

2. Click **LDAP Editor**.

3. To back up your file before editing it, click **Create Backup File**.

   Note: It is recommended that you create a backup file before you make any changes. This assures that if something goes wrong you can restore the original settings.

4. Make any necessary changes.

> **Note:** The directory server types apply to all servers listed in the Directory Servers area.

5. To view the file after you update parameters, click **View File**.

From the TNSNames Editor, you can easily edit your TNSNames files. You can add a new service, edit a service, delete a service, or work with two files and transfer services back and forth between the two.

Notes:

- The TNSNames Editor supports much of the standard Oracle syntax, but there are certain old or advanced features that it does not support.

- An incorrect TNSNames.ora entry may block all valid entries after it. You can copy names to the top of the list until you find the incorrect entry.

To edit TNSNames files

1. Select **Utilities | TNSNames Editor** to open the TNSNames Editor.

2. Open a TNSNames file in one or both sides of the window.

   Note: If you are working with two TNSNames files at the same time, the TNSNames Editor does not prevent duplicate entries in the tnsnames.ora file. This allows you to copy a service and then edit it. Use the arrows in the middle of the screen to copy entries between the two files.

3. Make changes as necessary.

Add new service	Click 🗋 and complete the required fields.

Clone a service	To clone a service:
	
	  a. Right-click the service and select **Clone Service**.
	
	     Note: When you clone a service, the new service entry will have a blank Net Service Name and displays at the top of the service list.
	
	  b. Select the new service and click 🖹 to make necessary modifications.

Copy and paste entries	You can paste entries directly into either side of the TNSNames Editor from either the Project Manager or from a text file. To copy

	connections to the TNS Names Editor:
	a. Copy the text of the connection information from the email, file, or Project Manager. **Note:** To copy from the Project Manager, right-click the connection in the Connections tab and select **TNSNames information to clipboard**. b. Click ▣ in the pane containing the TNSNames.ora where you want the information.
Test a connection	To test a connection: a. Save the file to the location where your TNSping executable reads files. b. Select the connection and click ⚡.
Tip: Click ✅ to check the syntax of your TNSNames file from the editor. If there are errors, Toad lists them in the Message tab and suggest ways to fix them. **Note:** You can add a UR tag to a CONNECT_DATA tag of a TNS entry. This is available ONLY through the text edit area of the editor, not the Edit Service window. This tag is supported as a patch to Oracle 10g and is no longer necessary in Oracle 11 and later.	

If you have multiple Oracle clients installed or want to use a TNSNames.ora file on a network, you may want to use the TNS_NAMES environment variable to simplify managing TNS connections. This variable specifies the location of your TNSNames.ora file, and all installed Oracle clients use this file for connections. If the TNS_ADMIN variable is not defined, then each Oracle client must have its own TNSNames.ora file. Consequently, using the TNS_NAMES variable allows you to maintain one TNSNames.ora file instead of maintaining multiple copies for the clients.

To create an environment variable for the TNSNames.ora file

1. Access the Environment Variables window:

Windows 7 Windows Vista	Select **Start	Computer	System Properties	Advanced system settings	Environment Variables**.
Windows XP	Select **Start	My Computer	View system information	Advanced	Environment Variables**.

2. Click **New** beneath the **System variables** field.

3. Enter *TNS_ADMIN* in **Variable name** the field. This must be an exact match.

4. Enter the TNSNames.ora file location in the **Variable value** field.

   Note: This file is generally located in the following directory: ORACLE_ HOME\NETWORK\ADMIN.

Limitations of the TNSNames Editor

The TNSNames Editor supports much of the standard Oracle syntax. There are, however, certain old or advanced features that it does not support:

- Multiple Description Lists

  Note: Multiple Description *entries* are supported, and a DESCRIPTION_LIST will be created automatically to encompass them.

- Multiple Address Lists

- No ADDRESS_LIST keyword (The editor parses it correctly, but it adds the ADDRESS_ LIST parameter back in to the entry, which produces a completely equivalent configuration. Existing entries with multiple ADDRESS_LIST tags are preserved, even if edited in the Editor window.)

In all of these cases, the TNSNames Editor will not change the entry unless the user chooses to edit that particular entry. If you do not try to change a non-supported entry, the file will remain useable.

If you do try to edit a service name with one of these unsupported features, the editor does its best to parse the entry into the Edit Service dialog box. It will write the entry into a structure it does support, if you click **OK** in the Edit Service dialog box and then save the file.

Whenever the TNSNames Editor overwrites a file, it first makes a backup of that file in the same directory. So if you do accidentally cause problems to your file, you can revert to the backup.

Troubleshoot Connections

Problem	Description and Possible Solution
Cannot connect to Oracle	You must have a full install of a 32-bit version of Net8. Connecting by SQL*Plus is *not* verification that Net8 is installed. Confirm that the registry setting specifies the correct folder where your TNSNames.ora file lives: `HKEY_LOCAL_MACHINE\Software\Oracle\TNS_ADMIN` If you cannot connect to Oracle using Toad, your Oracle client software may not be installed correctly. Re-install the Net8 client from the Oracle setup disks. Or, if you have installed OEM, NetAssist, Oracle Lite, or any other Oracle software recently, remove that software and see if you can connect using Toad. This issue can also be caused by an error in the TNSNames file.
Toad is connecting with the wrong Oracle Home	The default home that Toad uses matches the one you have chosen in the Oracle Home Selector, unless you have previously selected the checkbox: **Make this the Toad default home**. Only one Oracle home can be in use at one time. This means that once a connection is made, all future connections will use the same Oracle home, regardless of default home listed for a connection. If you want to use a different Oracle home for a new connection, you must close all open connections first.

Database Login Window

Problem	Description and Possible Solution
There's an X beside TNSNames Editor or SQLNet Editor.	Toad can't find the TNSNames.ora file or the appropriate SQLNet file. Make sure they are in the appropriate directory, and that your path points to them.
All of my past connections are not visible in the grid.	Clear the **Show favorites only** and **Show selected home only** fields in the bottom of the Database Login window.

Problem	Description and Possible Solution
Toad is/is not saving the password for a connection.	Make sure the **Save Password** column is selected or cleared as appropriate in the row for that connection. If Toad is saving all passwords and you do not want them saved, make sure the **Save passwords** checkbox beneath the grid is cleared. **Note:** If the **Save Password** field is disabled, your ability to save passwords may have been removed during installation. See the *Toad for Oracle Installation Guide* for more information.

Execute and Manage Code

The Toad Editor lets you edit many types of statements and code, and Toad provides many options to customize the Editor's behavior.

Working in the Editor

The Editor attaches itself to the active connection in Toad, but if you do not have a connection you can still use it as a text editor. You can also change the schema to execute against from the Current Schema toolbar.

Tips:

- The Editor's right-click menu contains many options to help you work with code. When you are trying to figure out how to do something, try right-clicking the Editor to see if it is available in the menu.

- Select an object and press F4 to display the object's properties.

- Select an object and press SHIFT+F4 to open the Action Console and select from the listed Actions related to that object.

- If you press CTRL and click a PL/SQL object, the object opens in a new Editor tab. If you press CTRL and click a non-PL/SQL object, the object opens in the Describe Objects window.

The Editor is organized into the following areas:

Area	Description
Navigator Panel	The Navigator Panel is a desktop panel that displays an outline of the Editor contents in the active tab. You can click on the items listed to navigate to that statement in the Editor. The Navigator Panel is displayed on the left-hand side by default, but you can change where it is docked.
Editor	The main Editor window displays code in separate tabs. You can create tabs for different bits of code, or different types of code. SQL and PL/SQL can go in the same tab. Toad can tell where the cursor is located and compile PL/SQL or run SQL as required. **Note:** If you have multiple statements in the Editor, you must trail them with a valid statement terminator such as a semi-colon.
Desktop	The desktop panels contain many options for tab display, depending on what

Area	Description
Panels	kind of code you are working with and what you want to do with it. In addition, you can configure how these panels display to make Toad work for you.

Important Editor Settings

Toad provides many options to let you customize the Editor's behavior. The following table describes some of the most popular or important Editor options:

Option	Description	Navigate
Code templates	Select code template settings. Code templates use a manual keystroke (CTRL+SPACE) to perform substitutions. See "Code Completion Templates" in the online help for more information.	View | Toad Options | Editor | Behavior
Commit after every statement	Commit every time a statement is run, after any posted edits are made in the grid, and after a row is deleted in the grid. **Enabling this option makes it very easy to accidentally change or delete data.** It is recommended that you do not select this option, and you should never have it enabled when you are working on a production database.	View | Toad Options | Oracle | Transactions
Font	Select the Editor display font.	View | Toad Options | Editor | Display
Syntax highlighting	Select syntax highlighting settings. See "Syntax Highlighting" in the online help for more information.	View | Toad Options | Editor | Behavior
Tab stops	Enter the number of spaces entered when you press TAB.	View | Toad Options | Editor | Behavior
When closing	Commit, rollback, or prompt when closing connections. This field is disabled if you select **Commit after every**	View | Toad Options |

Option	Description	Navigate
connections	**statement**. Selecting **Commit** makes it very easy to accidentally change or delete data. It is recommended that you select **Prompt**.	Oracle | Transactions

You can easily configure which panels display on your Editor desktop and where they display. You can select panels to display one at a time or in groups. When you have configured it, you can save the desktop with its own name, returning to it whenever the need arises. In addition, you can turn on Auto-save current desktop, and however you have the desktop set when you change tabs or close Toad will be how your desktop is defined the next time you open the Editor.

To display panels one at a time

1. Right-click the Editor and select **Desktop**.

2. Select the panel you want to display or hide.

To configure your desktop

1. Right-click the panel area near the bottom of the window.

2. Select **Desktop | Configure Desktop Layout**.

3. Select the panels you want to display in the Show column, and click the drop down menus in the Dock Site column to change where the panel is docked. By default, all except the Navigator will be docked below the Editor.

To save your desktop

1. Click on the Desktops toolbar.

2. Enter the name you want to use for this desktop.

To use a saved desktop

» From the drop-down desktop menu, select the desktop you want to use.

To restore a desktop

» Click the drop-down arrow on and select **Revert to Last Saved Desktop** or **Restore Default Desktop**.

You can split the Editor to easily compare code revisions.

Tip: To remove the split layout, right-click in the Editor and select **Split Editor Layout | Not Split**.

To split the Editor

1. Right-click the Editor and select **Split Editor Layout**.

2. Select one of the following options:

   Left-Right
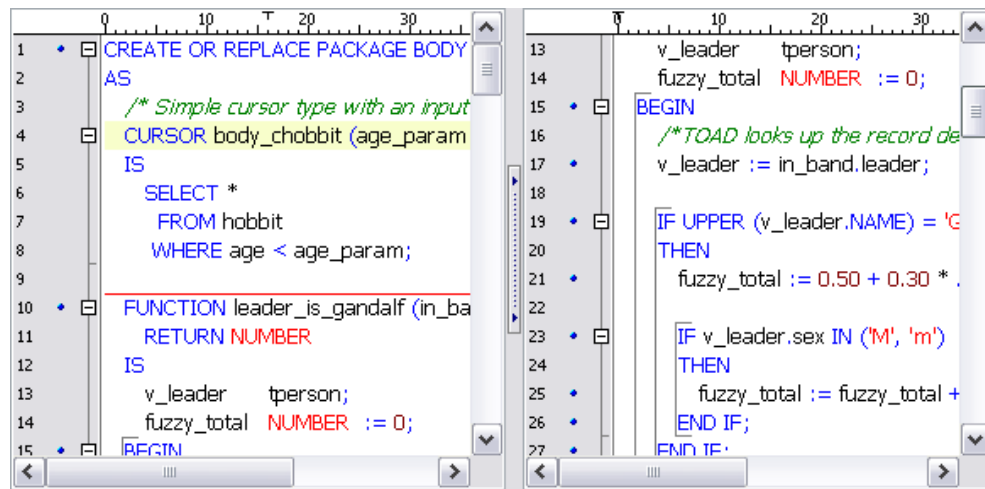
   Top-Bottom
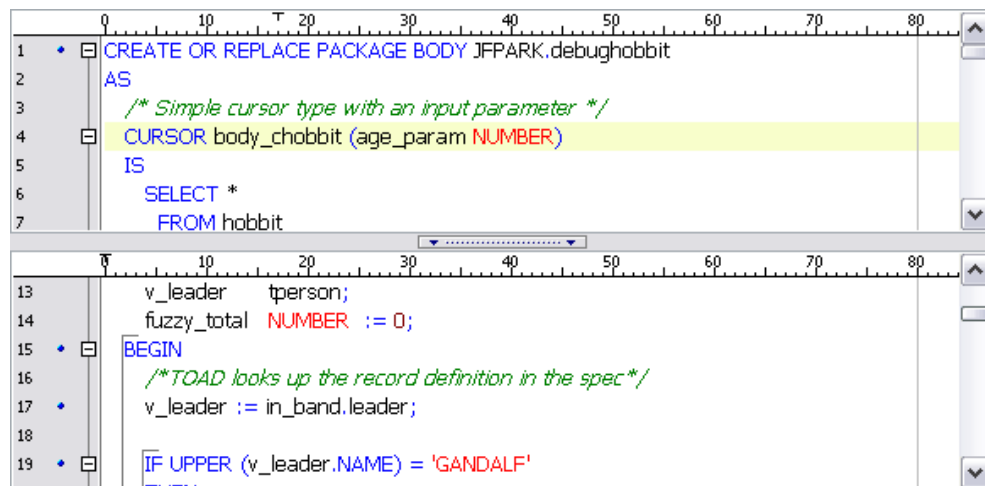
Execute Statements and Scripts

Toad provides many different options for you to execute scripts:

Execute Single Statements

You can easily execute a single statement in the Editor. Toad's parser identifies and executes the statement or compiles the PL/SQL at the cursor.

Note: If you select code and execute, Toad ignores the parser results and executes the portion that is selected. This may cause errors, especially if you select more than one statement. It is better to place your cursor in the statement you want to execute and let Toad select the statement.

This method fetches matching records in batches to improve performance.

Notes:

- Executing a statement can produce editable data.

- Toad provides several options to execute a full script or multiple statements.

- You can easily execute a SQL statement embedded within PL/SQL.

To execute a statement in the Editor

» Place the cursor in the statement and click on the Execute toolbar (F9).

   Note: To cancel the execution, click in the Execute toolbar.

Execute Scripts in the Editor

Toad's **Execute as script** command is generally the best method when you want to execute multiple statements or a script in the Editor. However, there are some important differences between executing scripts and a single statement. For example, executing scripts:

- Does not support bind variables

- Cannot produce editable datasets

- Fetches all matching records at the same time, which may cause it to execute slower and use more resources than executing a single statement

If you want to execute a script that may take a long time to run, executing with Quest Script Runner may be the best choice. Quest Script Runner is an external execution utility, which allows you to keep working in Toad while the script executes in the background. See "Execute Scripts with Quest Script Runner" (page 46) for more information.

Notes:

- Toad does not support all SQL*Plus commands. See "SQL*Plus Commands" in the online help for more information.

- Linesize in Toad defaults to 80, just as in SQL*Plus. If you want to change this to a longer amount, you can do it using the SET LINESIZE command in your script.

- To load and immediately execute a script file, select **Editor | Load and Execute a Script File**.

To execute the contents of the Editor as a script

» Click ▣ on the Execute toolbar (F5).

> **Caution:** If any changes have been made, the script in the current window is *automatically saved*, and then executed as a script.

Note: To cancel the execution, click 🚫 in the Execute toolbar.

Execute Scripts with Quest Script Runner

Quest Script Runner (QSR) looks and operates the same way as the Toad Editor, but it only includes a subset of the Editor's features. Quest Script Runner is a small script execution utility that can run in the background or from the command line. Quest Script Runner can be helpful when you need to run long scripts and want to perform other tasks in Toad. In addition, several instances of Quest Script Runner can run at one time because of its small size.

The Quest Script Runner window is divided into the following regions:

- Editor (top)—Displays the script for you to review and edit. You can use the toolbar to save the script, open a different one, search, manage your connection, and other options.

- Script output (bottom)—Displays the script output and variable settings. See "Script Output Tabs" in the online help for more information.

Notes:

- Quest Script Runner is not completely SQL*Plus compatible; however, most DDL and DML scripts should be supported. See "SQL*Plus Commands" in the online help for more information.

- If you change data in the script session, the changes will not reflect in Toad until you commit the changes in the script session. Also, any session control statements executed in the script session (such as ALTER SESSION) are not visible to the Toad session.

To execute scripts from Toad in Quest Script Runner

1. Open the script in the Toad Editor.

2. Select **Editor | Execute SQL via QSR**. Quest Script Runner opens using your current connection and executes the script.

    Note: You can also click the drop-down beside the icon and select **Execute in QSR**.

To execute scripts within QSR

1. Open the script in the Quest Script Runner Editor.

2. Click on the Quest Script Runner toolbar.

Work with Code

The Current Schema drop-down lets you work with a schema other than the one to which you are connected. This can be useful if, for example, you have tested a SQL statement in your test schema and now want to execute it on several other schemas without disconnecting and reconnecting.

By default, the current schema is set to your current connection. When you use this drop-down, Toad issues an `ALTER SESSION SET current_schema` command. After you execute, Toad issues the `ALTER SESSION SET current_schema` command again to return to the original connection schema.

Notes:

○ You must have the ALTER SESSION system privilege to use this feature. If you do not have the privilege, the drop-down is disabled.

○ Using this feature eliminates the need to prefix every table name with a schema name, and helps to eliminate ORA-00942 "table not found" errors.

To change the current schema

» Select a different schema in the Current Schema toolbar.

The Current Schema drop-down does not work with script execution or debugging commands. However, because Execute as Script is designed to mimic SQL*Plus, you can use a set schema command to change the schema.

To change the schema in scripts

» Include the following command at the beginning of your script:

```
ALTER SESSION SET current_schema = "USERNAME"
```

You can save SQL statements and easily insert them into the Editor at any time. The best way to save SQL statements is with the Named SQL feature. Toad also allows you to export and import your saved SQL.

Toad lists saved and recently executed SQL statements in the SQL Recall pane.

Notes:

- If you want a quicker way to save SQL statements, you can save them as Personal SQL statements by selecting **Editor | Add to Personal SQLs**. This bypasses the dialog to name the SQL. However, the only way to reuse Personal statements is from the SQL Recall pane.

- Toad stores all saved SQL in `User Files\SavedSQL.dat`.

To save statements from the Editor

1. Select the statement in the Editor.

2. Select **Editor | Add to Named SQLs**.

3. Enter a name for the SQL statement.

   Note: The name is case sensitive. For example, you can save both "sql1" and "SQL1".

To use a saved statement in the Editor

1. Select one of the following options:

   - Press **CTRL+N** in the Editor and select the statement from the pick list.

   - Enter *^MyNamedSQL* in the Editor, where *MyNamedSQL* is the name of your saved SQL statement. Toad replaces the SQL name with the saved statement at execution.

   - Double-click or drag the statement from the SQL Recall pane.

To view saved statements

» Select **View | SQL Command Recall | Named**.

To edit statements in the SQL Recall pane

» Select a statement and click 🗐 on the SQL Recall toolbar.

Toad saves recently executed statements in the History tab of the SQL Recall pane. This list is organized with the most recent SQL at the top by default. You can select a statement from this list and run it, save the statement for easy recall, or remove a statement from this list.

The SQL Recall pane also lists your saved SQL statements in the Named and Personal tabs.

Note: You can change the number of statements that SQL Recall saves in the History (500 is default) or save only SQL statements that executed successfully. You can select these options and other SQL Recall settings on the Code Assist options page.

To view previously executed SQL statements

» Select **View | SQL Command Recall | History** (F8).

Tip: You can also press ALT+UP ARROW or ALT+DOWN ARROW in the Editor.

To open SQL statement directly in the Editor

» Double-click or drag the statement from the SQL Recall pane.

To save statements in the History tab

1. Select a statement and click 🗟 in the SQL Recall toolbar.

2. Select *Named* in the **Type** field and enter a name for the statement in the **Name** field.

To edit statements in the SQL Recall pane

» Select a statement and click 🗟 on the SQL Recall toolbar.

Format Code

You can have Toad format your code in the Editor. The following images display part of a script before and after formatting.

Before

After

```
CREATE OR REPLACE FUNCTION purge_syn_file
  RETURN NUMBER
IS
  v_sqlstring    VARCHAR2 (4000);
  v_hex_value    VARCHAR2 (100);
  v_decin        NUMBER;
  v_next_digit   NUMBER;
  v_result       VARCHAR (2000);
  done           BOOLEAN;
  v_sqlname      VARCHAR2 (40);
  v_count        NUMBER;
  v_md5_count    NUMBER;
  v_bdelete      CHAR (1);
  v_rowcount     NUMBER;
  v_classid      NUMBER (11, 0);

  CURSOR purged_files_temp_cursor
  IS
    SELECT * FROM purged_files_temp;
```

You can customize how Toad formats the code, such as inserting spaces instead of tabs or changing the case for SQL commands.

See "Formatter Options" in the online help for more information.

Note: You can format multiple scripts at one time from the Project Manager.

See "Format Files" in the online help for more information.

To format a statement

> » Select the statement you want to format and click 'Format Code' 🔧 on the Editor toolbar, or select the drop-down arrow to select:.
>
>> ○ Format Case Only,
>>
>> ○ Profile Code, *or*
>>
>> ○ Formatter Options (opens the Options window).

To format an entire script

> » Click 🔧 on the Edit toolbar.

Display Pick List (Automatically Complete Code)

The Toad Insight feature helps you write code by displaying a pick list with relevant object or column names. For example, if you start typing SYS and invoke the pick list, the SYSTEM user would be included in the pick list:
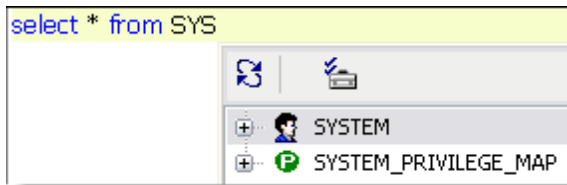
Toad provides options for you to customize Code Insight's behavior, such as adjusting the length of time before the pick list displays.

See "Code Assist Options" in the online help for more information.

To display the pick list

» Press CTRL+T, or begin typing a name and pause 1.5 seconds.

Note: There are additional shortcut keys you can use with Toad Insight.

You can extract a procedure from existing code into a new stored procedure or locally defined procedure.

Creating the new procedure and call depend heavily on the parser to determine which identifiers in the text selection must be declared as parameters in the new procedure. If Toad cannot parse the code, no extraction occurs.

To extract procedures

1. Select the code you want to extract in the Editor.

2. Right-click and select **Refactor | Extract Procedure**.

3. Select a procedure type.

   Note: If you select stored procedure, you can choose to either include the "CREATE OR REPLACE" in the DDL instead of just "CREATE".

4. Enter the procedure name.

   Tip: The new procedure and the resulting procedure call are created an inserted so that the code is syntactically correct, but no formatting is done to the code. You can have Toad format the code by pressing SHIFT+CTRL+F.

These commands add or remove comments from the selected block of text by adding or removing "--" from the beginning of each line.

To comment code

1. Select the code block.

2. Right-click and select **Refactor | Comment Block**.

   Tip: You can also press CTRL+B.

To uncomment code

1. Select the code block.

2. Right-click and select **Refactor | Uncomment Block**.

   Tip: You can also press SHIFT+CTRL+B.

Toad can find unused variables and identifiers in PL/SQL with code refactoring. If Toad finds unused variables, it displays the variables and lets you jump to the occurrence in the Editor.

Notes:

- Toad only searches the object in the Editor, and does not evaluate other PL/SQL objects that may reference it. Be careful when removing unused variables from package specifications, because they may be referenced in other PL/SQL that is not searched.

To find unused variables

1. Right-click code in the Editor.

2. Select **Refactor | Find Unused Variables**.

You can easily rename identifiers (variables, parameters, or PL/SQL calls) for PL/SQL in the Editor with code refactoring.

Notes: Toad only searches the PL/SQL object in the Editor. Be careful when renaming identifiers in package specifications, as they maybe be referenced in other PL/SQL that is not searched.

To rename identifiers

1. Right-click an identifier in the Editor and select **Refactor | Rename Identifier**.

2. Enter the new name in the **Name** field.

Debug PL/SQL

You can debug PL/SQL, SQL scripts, and Java in Toad. Toad's documentation includes tutorials on how to debug. See "Debugging a Procedure or Function Tutorial" in the online help for more information.

Notes:

- There are minimum Oracle database requirements for using this feature.

- The debugger is not designed to work with word-wrapped lines, since the Editor will then have a different set of line numbers than what is stored in Oracle. Toad provides a warning message about this if you open the procedure Editor while word-wrapping is enabled. To disable word-wrap, select **View | Toad Options | Editor | Behavior** and clear **Word wrap**.

Types of Debugging

Debugging in Toad requires you to select one type of debugging at a time for all database instances open per instance of Toad. For example, if you have three database connections in one instance of Toad, they must all be in the same debugging state. If you then opened another instance of Toad, with the same or different connections, they could be in a different debugging state.

DBMS Debugger	Debugs PL/SQL. Using the Debugger, you can set breakpoints, watches, and see call stacks. In addition, you can view DBMS output.
	Note: When using the PL/SQL Debugger and connecting to a RAC instance, you must have the TNSNAMES entry for the instance with the server directed the use connection or session here. Or, you must connect directly to an instance of the cluster without letting the server assign an instance.
Script Debugger	Debugs SQL scripts. You can set breakpoints, run to cursor, step over, trace into, and halt execution of your scripts.
Attach External Session	External debugging allows you to debug PL/SQL that is run from an external session, such as another Toad window, SQL*Plus, or any other development tool which calls Oracle stored procedures.

You can also use Toad's Auto Debugger, which automatically inserts DBMS_OUTPUT.PUT_LINE statements into the DDL. Once you compile the code and inspect the contents of the DBMS_OUTPUT buffer, you can remove all instances of DBMS_OUTPUT.PUT_LINE with the click of a button. See "Automatically Insert DBMS_OUTPUT Statements (Auto Debugger)" in the online help for more information.

Compile with Debug Information

To use the debugger fully with PL/SQL or Java packages, you need to compile your object with debug information. If you have not compiled with debug information, in databases in versions before 10g you can step into a unit, step over and so on, but you cannot see watches unless the object is compiled with debug. In a 10g database you cannot step into code or step over unless the object was compiled with debug. You can only execute.

In addition, if you are debugging an object that has dependent objects, you cannot step into the dependents unless they, too, are compiled with debug information.

See "Dependencies and References" in the online help for more information.

To enable compile with debug

» Click ![icon] on the main toolbar or select **Session | Toggle Compiling with Debug**.

   Note: You can have Toad enable **Toggle Compiling with Debug** by default for each new session.

   See "Execute and Compile Options" in the online help for more information.

You can debug PL/SQL objects in the Editor. When you open a complete package or type in the Editor, the spec and body open in separate tabs by default. However, Toad provides options to control how objects are split, reassembled, and saved.

To start the Debugger

1. Open a PL/SQL object in the Editor.

2. Click ![icon] on the main toolbar or select **Session | Toggle Compiling with Debug**. This enables debugging.

3. Compile the object on the database.

4. Select one of the following options on the Execute toolbar to begin debugging:

   - Execute PL/SQL with debugger (![icon])
   - Step over
   - Step into
   - Run to cursor

   ![toolbar icons]

View DBMS Output

Oracle provides a specifically designed package called DBMS_OUTPUT with functions for debugging PL/SQL code. It uses a buffer that your PL/SQL code writes into and then a separate process queries the buffer out and displays the contents.

You must enable DBMS Output before executing the PL/SQL. In Toad, output displays after the procedure has completed execution, not while you are stepping through the code. In nested procedure calls, all procedures must have run to completion before any DBMS Output content is displayed.

Troubleshooting

If you do not see DBMS Output, try the following suggestions:

- Right-click the lower pane and select **Desktop Panels | DBMS Output**.

- Make sure the **Toggle Output On/Off** button is on (⬤) in the DBMS Output tab. Then, set the interval in the Polling Frequency box. If the toggle is on, Toad periodically scans for and displays DBMS Output content.

- Contact your Oracle DBA to make sure the DBMS_OUTPUT package is enabled on your database.

Debug External Sessions

This feature is extremely useful when the external session calls a stored procedure with complex parameters, such as cursors, that are not easily simulated from Toad. Rather than trying to simulate the complex environment within Toad, you can simply connect to the external application and then debug the code in its native environment.

To debug an external session

1. Prepare the external session:

    a. Disable server output on the external session by executing the following command:

    ```
    set serveroutput off
    ```

    Note: If server output capture is enabled, Oracle freezes on calls to the DBMS_ OUTPUT package.

    b. Execute the following command:

    ```
    id = dbms_debug.initialize('TOAD')

    dbms_debug.debug_on;
    ```

    where TOAD can be replaced by any ID string.

    c. Execute the PL/SQL.

2. Attach to the external session and begin debugging in Toad:

    a. In the Editor, connect to the same database instance as the external application.

    b. Compile the PL/SQL with debug enabled. See "You can debug PL/SQL objects in the Editor. When you open a complete package or type in the Editor, the spec and

body open in separate tabs by default. However, Toad provides options to control how objects are split, reassembled, and saved. " (page 54) for more information.

   c. Select **Debug | Attach External Session**.

   d. Enter the ID specified in the initialize statement (in step 1b) and click **OK**. Toad begins debugging the procedure called from the external session.

Troubleshoot External Debugging

There may be cases where the debug ID is set incorrectly, or some other error may hang the debugger. In this case it is necessary to clear out any open debug pipes from the database.

Pipes may be viewed in the V$DB_PIPES dynamic view, and removed with the following procedure when executed as SYS:

```
CREATE OR REPLACE PROCEDURE drop_pipe (p_pipename IN VARCHAR2)

AS

  x NUMBER;

BEGIN

  x := SYS.DBMS_PIPE.remove_pipe (p_pipename);

  DBMS_OUTPUT.put_line (

   'Drop Pipe ' || p_pipename || DECODE (x, 1, ' SUCCESS', ' FAILED'));

END;

/
```

Disable Debugging in External Session

Ensure that debugging in the external session has been disabled. After the external application finishes execution, it should execute the command:

```
dbms_debug.debug_off
```

Otherwise, all subsequent PL/SQL that this application submits for execution will be run in debug mode. This causes the application to hang until Toad attaches to it again.

Work with Database Objects

The Schema Browser allows you to view, add, and modify database objects. It also displays detailed information about a selected object. For example, the detailed information for a table includes its subpartitions, columns, indexes, data, grants, and so on.

Notes:

- Some Schema Browser features may not be available unless you have the commercial version of Toad with the DB Admin Module.

- You can set the Schema Browser to open automatically when a new connection is made. Select **View | Toad Options | Windows** and select the **Auto Open** checkbox of the Schema Browser row.

Schema Browser Panes

The Schema Browser is divided into two panes to help you review objects and their details:

Pane	Description
List of objects (left-hand side)	The left-hand side of the Schema Browser provides a list of objects that you can view. In general, you select a schema and an object type, and the list refreshes to display the relevant objects. You can filter the objects and save your filters for future use. See "The Schema Browser has several types of filters:" (page 68) for more information.
	The list can display additional information about the objects, such as the tablespace and number of rows. To view additional information, right-click a column in the left-hand side and select additional columns to display. (This feature is unavailable with the tree view display.)
	Tip: In drop-down mode, you can hide leading characters of object names in the left-hand side. Right click a column and select **Hide leading characters of name**. The display resets when you change the schema or connection.
Object details (right-hand side)	The right-hand side initially displays the same list of objects as the left-hand side. When you select an object on the left-hand side, Toad displays its details in the right-hand side. This format makes it easy for you to compare details between objects of the same type.
	Note: You can use Toad's Describe Objects feature to display an object's details in a new window. The Describe Objects window displays the

Pane	Description
	same information you would see in the right-hand side of the Schema Browser. From the Schema Browser you can drop most objects, enable/disable applicable objects, and disable triggers for a table or for an entire schema. You can recompile procedures, functions, packages, triggers, and views, or they can be extracted from the database and loaded into the clipboard or Editor.

Tips:

- To reset the right-hand side to mirror the list of objects on the left-hand side, click ⟲ in the toolbar or select multiple objects on the left-hand side.

- Many of the panes within the Schema Browser have icons to identify the objects.

- Many of the objects and panes have enhanced right-click menus. Right-click an object or its details to see what options are available.

You can customize how the Schema Browser displays to better suit the way you work. The most common customization is to change how object types display in the left-hand side.

Toad also provides dozens of options to further customize the display and behavior of the Schema Browser. Select **View | Toad Options | Schema Browser** to view the options.

Helpful Features

These features will help you work more easily with database objects.

You can use the Describe Objects feature anywhere in Toad to find objects and display their information in the Describe Objects window. The Describe Objects window displays the same information you would see in the right-hand side of the Schema Browser.

Note: You can describe many objects types through database links. However, the following object types are not supported: policy, policy group, java, refresh group, resource groups/plans, sys privs, and transformations.

To immediately describe the object

1. Select the object and press **F4**.

   Tip: You can also right-click the object and select **Describe**.

2. If multiple objects have the same name, select the appropriate object from the Multiple
    Object Found window. (This only applies to the object types in DBA_OBJECTS.)

To specify the object schema and name before describing the object

1. Press **CTRL+D** to open the Quick Describe window.

2. Enter the object name in the **Object Name** field. You can complete the rest of the fields
    to refine your search. These fields are helpful when multiple schemas may contain objects
    with the same name, or when different object types have the same name (for example, a
    SYSTEM user and table).

3. Click **Describe and Close** to open the object in the Describe Objects window and close
    the Quick Describe window. If you click **Describe** instead, the Quick Describe window
    remains open.

Objects are displayed in the Schema Browser right-hand side within a data grid or a label. You
can directly jump to the displayed object.

To jump to the object from the data grid

» Select the object and press **SHIFT+F4**.

To jump to an object in a label

» CTRL+click and the object. In the following screenshot, you would click SCOTT.EMP to
    jump to the SCOTT.EMP table in the Schema Browser.
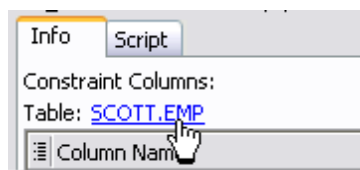
To quickly learn more about an index:

• In the Schema Browser, highlight an index on the Indexes tab.

• Press SHIFT+F4.
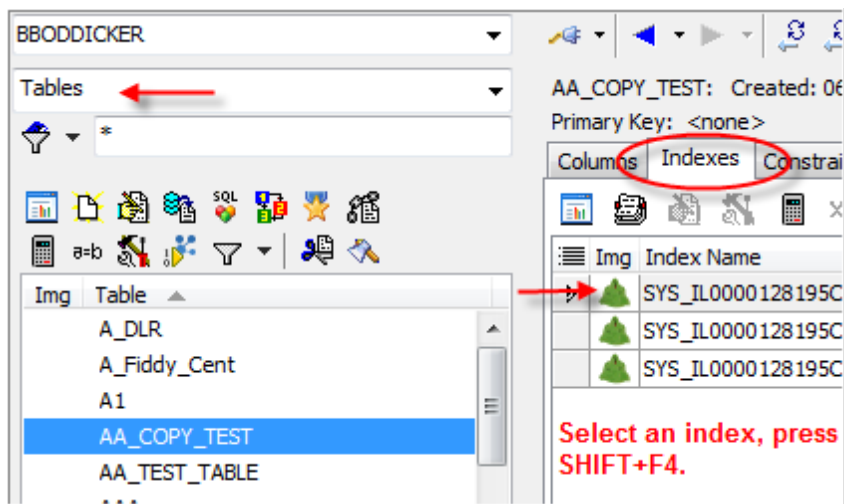
Toad jumps to the indexes on that index. This is faster than changing the left-hand-side (LHS) selection from Tables to Indexes and scrolling down to choose that Index.
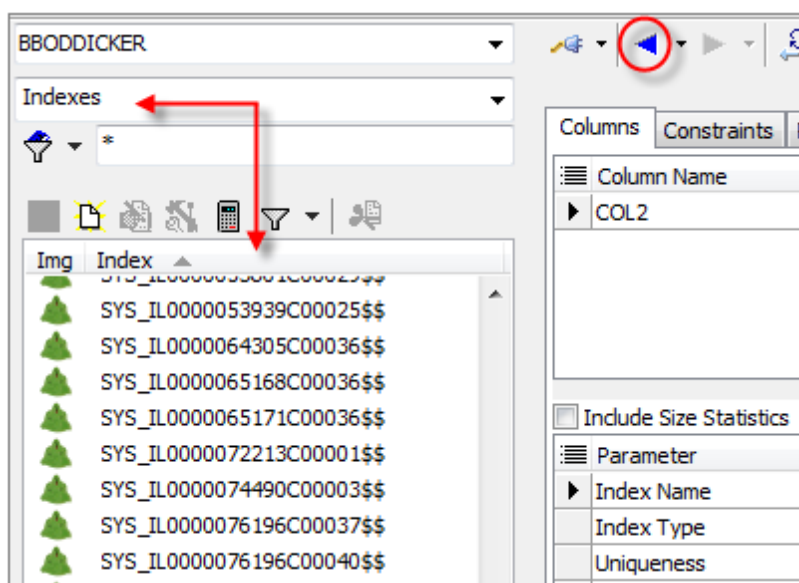
- Then click the blue arrow 'Back to...' button on the toolbar ◀ to jump back to the table.
- Use the 'Back to...' and 'Forward to...' buttons or click the drop-down arrow next to the 'Back to' or 'Forward to' button to choose from your browsed history.
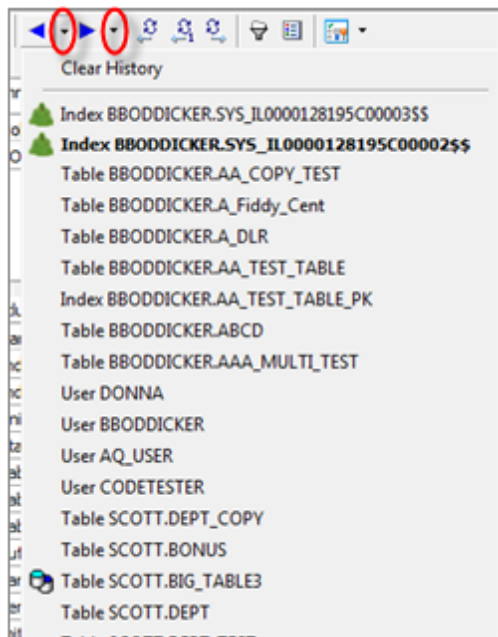
These arrows function much like Internet browser buttons and can save you time when working in the Schema Browser.

Many of the panes within the Schema Browser have icons to identify the objects. Toad includes an Icon Legend that you can use to easily decipher these images.

To view the icon legend

> » Click ▣ on the Schema Browser toolbar.

When you view a table's data in the Schema Browser, you can split the window to also show child or parent tables in a new detail grid. You can also change the query for the detail grid.

To view parent/child datasets in the Schema Browser

1. Select a table in the Schema Browser.

2. Select the Data tab and click ▣ on the Data tab toolbar.

   If the table has a single foreign key, Toad automatically displays the related table. If there

   is more than one foreign key, click the arrow beside 🗗 on the detail grid toolbar and select a table. Toad remembers your selection.

3. To edit the query in the detail grid, click 🗗 on the detail grid toolbar.

Customize the Schema Browser
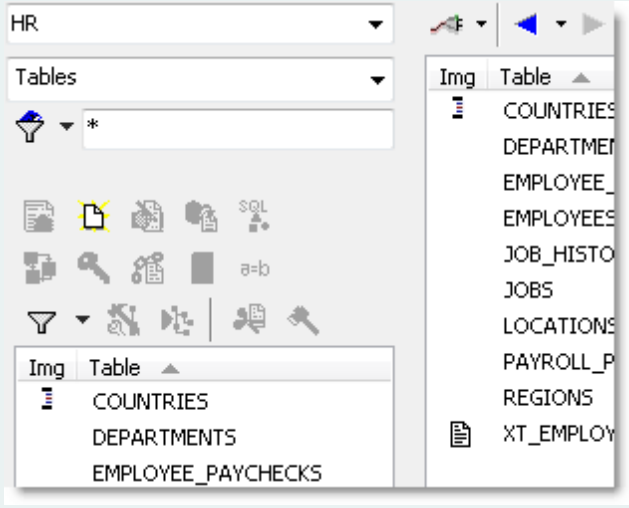
You can customize how the Schema Browser displays to better suit the way you work. The most common customization is to change how object types display in the left-hand side. Once you select a basic display style, you can rename, hide, or rearrange the object types on the left-hand side and detail tabs on the right-hand side.
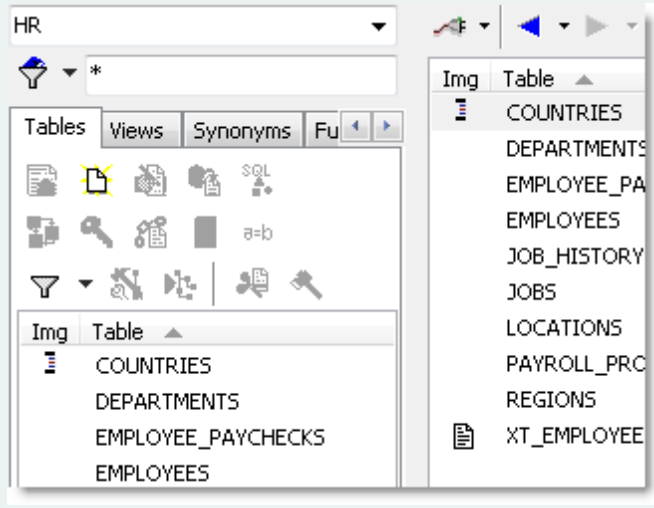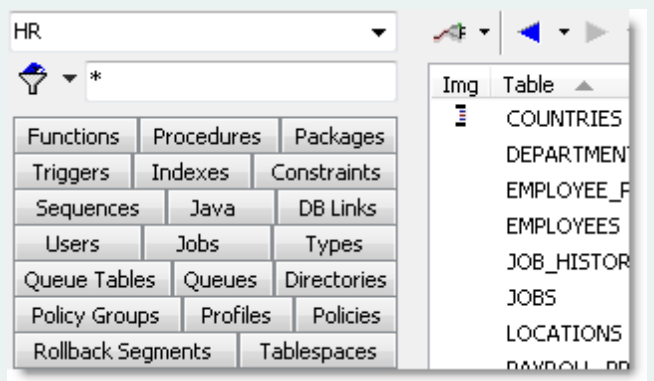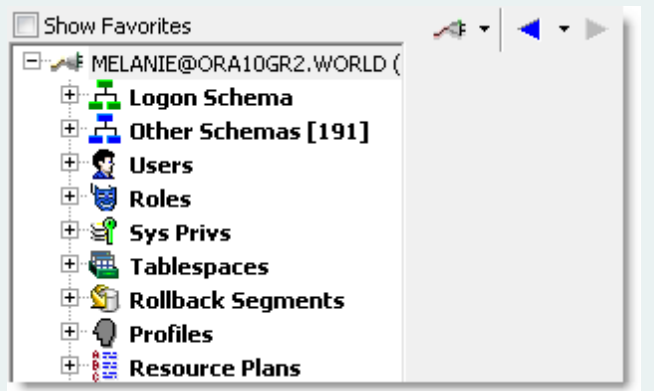
Tips:

- To hide the right-hand side of the Schema Browser, press F12. You can press F12 again to display it again.

- To hide or display images and tips in the left-hand side, click in the Schema Browser toolbar and select the appropriate option.

- In drop-down mode, you can hide leading characters of object names in the left-hand side. Right click a column and select **Hide leading characters of name**. The display resets when you change the schema or connection.

To select the left-hand side display style

1. Click in the Schema Browser toolbar.
2. Select one of the following options:

Drop-down	Displays object types in an alphabetical drop-down field.
Tabbed (single row of tabs)	Displays object types as a single line of tabs. You must scroll through the tabs to view all object types.

Tabbed (multi line tabbed)	Displays multiple rows of tabs instead of the scroll bar.
Tree view	Displays object types in a tree view.

Note: You may need to close any open instances of the Schema Browser for the new browser style to display.

The Schema Browser displays object types on the left-hand side and detail tabs on the right-hand side. You can rename, rearrange, and hide the object types that display in the left-hand side or the tabs on the right-hand side.

To customize tabs and object types

1. Click ![icon] on the Schema Browser toolbar.

2. Select **Configure LHS Object Types** to customize the left-hand side, or select **Configure RHS Tabs** to customize the right-hand side.

3. Customize the display settings.

If you want to...	Complete the following:
Rename an object type or tab	Enter a new name in the **Caption** field.
Hide an object type or tab	Clear the **Visible** field.
Rearrange tabs	Select a tab and click the up or down arrow on the right. **Note:** You can only rearrange the order of object type tabs if you are in a tabbed view.
Tip: To restore the default settings, click ![icon] at the bottom of the window.	

4. To save the left-hand side settings as a configuration file, click ![icon] at the bottom of the window.

    Notes: You can save and load different configurations. This gives you more flexibility when you are working, because you can easily change the display to suit different tasks.

You can group objects that you use frequently into a tab on the Schema Browser. These different objects can be grouped into one or several folders. Folders are specific to an instance (not a connection or a schema).

Note: The configuration file for this tab is saved as **Projects.lst** in the User Files folder.

To group favorite objects

1. Click ![icon] on the Standard toolbar to open the Schema Browser.

2. Select *Favorites* in the object list in the left-hand side.

3. Add one or more folders to group the objects:

    a. Click on the Favorites toolbar.

    b. Enter a folder name.

4. Add objects to a folder.

To search for and select objects	Complete the following: a. Click **+** on the Favorites toolbar. b. Search for objects. c. Highlight the objects you want to add in the Results tab and click ★. d. Select the folder where you want the object.
To add objects directly	Complete the following: a. Right-click an object in the left-hand side and select **Add to SB Favorites List**. b. Select the folder where you want the object.
To add scripts/files	Complete the following: a. Right-click the folder where you want the item in the Favorites list and select **Add Files**. b. Select the file and click **Open**. **Note:** Multi-select files to add more than one at a time. c. Select the folder where you want the object.

Tips:

- To remove objects from a folder, select the object in the Favorites list and click ▬.

- To empty or remove favorites folders, right-click the folder and select **Remove Folder** to remove the folder and its contents or **Empty Folder** to leave the folder in the list but remove its contents.

Create Objects

Toad lets you select Oracle object parameters and generate a DDL statement to create or alter objects. It is generally a good idea to review the DDL statement before executing it. When you execute the statement, Toad passes it to the database, and the object is created or altered.

The options to create or alter an object in Toad follow the parameters defined by Oracle. If you need clarification on what an option means or how it should be used, see Oracle's documentation for more information. Oracle provides detailed documentation about objects, including their purpose, properties, and restrictions.

Notes:

- Toad strictly adheres to the database security. Consult your DBA to learn what privileges you have.

- You can also find detailed information about parameters in Knowledge Xpert. Knowledge Xpert is an extensive Oracle technical resource which you can search in the Jump search.

- You can use an existing object as a template when creating a new one.

To create an object

1. Click 📇 on the Standard toolbar to open the Schema Browser.

2. Select the object type in the left-hand side and click 🗋.

   Note: You can also create an object by selecting **Database | Create | *<Object type>*.**

3. Complete the fields as necessary.

4. To add the object to the Project Manager, select **Add to PM**.

5. To view the CREATE statement, click **Show SQL** or select the SQL tab.

6. Click **OK** or **Execute** to create the object immediately. You can also schedule the script to run later.

   Note: To alter or edit an object, double-click it in the Schema Browser. You can also press F2 to rename an object (if it can be renamed).

You can copy objects to another schema.

To copy objects to another schema

1. Click 📇 on the Standard toolbar to open the Schema Browser.

2. Right-click the object you want to copy in the left-hand side and select **Create in another schema**.

3. Select export settings and click **OK**.

4. Enter the destination connection and destination schemas.

5. To review the script to create the objects, click the Script tab.

6. Click **Execute**.

You can use an existing object as a template for creating a new object. Toad loads the original object's properties in the Create window for you to edit as necessary and execute.

Note: This feature is not available for all object types.

To create an object based on an existing one

1. Click 🔲 on the Standard toolbar to open the Schema Browser.

2. Right-click the object you want to use as a template in the left-hand side and select **Create Like**.

3. Complete the fields as necessary.

4. To view the CREATE statement, click **Show SQL** or select the SQL tab.

5. Click **OK** or **Execute** to create the object immediately. You can also schedule the script to run later.

Toad has standard query templates, such as Show Dependent Objects or Column Counts, and you can also create your own custom query templates. When you use a query template in the Schema Browser, Toad builds the query with the selected objects and opens the query in the Editor.

To use a query template

1. Click 🔲 on the Standard toolbar to open the Schema Browser.

2. Select the objects you want to use for the query on the left-hand side.

3. Right-click the objects and select **Custom Queries | <Query Name>**.

Custom queries are designed to select from the data dictionary about the tables you select, rather than making custom SELECT statements. For example, the following query is not valid as a custom query because there is no specific object stated:

```
select * from <ObjectOwner>.<ObjectList>>
```

However, this more specific query is valid:

```
select *
from dba_tables
where owner = <ObjectOwner>
and table_name in <ObjectList>
```

To create a new query template

1. Right-click in the left-hand side of the Schema Browser and select **Custom Queries | Edit Custom Queries**.

2. Click ➕ above the query list.

3. Enter your new query name, and query.

4. Click ✔ to create the query and add it to the selection list.

Filter Schema Browser Content

The Schema Browser has several types of filters:

Type	Description
Object filter (left-hand side)	Object filters reduce the number of objects displayed in a schema. By default, Toad automatically saves your filter settings per schema name. When you reopen the schema, Toad remembers and applies the last filter that you used for it. However, Toad provides other options to save and apply filters. You can: • Create and apply new filters, which you can save to reuse later. • Create a default filter for each object type, which is used for all schemas. **Note:** You can have Toad automatically apply the default filter when you open a schema, instead of the last filter used.
QuickFilter (left-hand side)	The QuickFilter is a client-side filter, so it filters all Schema Browser object lists without re-querying the database. This filter works in conjunction with the existing browser filters.
Data filter (right-hand side)	This is a server-side filter that limits which rows are retrieved from the database. This method is much faster than the grid filter when you are filtering a large dataset.
Note: For performance reasons, Toad caches the list of table names for the current schema once the list has been queried from any window. The browser filter, although primarily intended to filter the Schema Browser window, also affects the table lists throughout Toad. For example, if your filter is set to display only tables that begin with GEO, every table list displays a filtered list until the filter is changed.	

Object filters reduce the number of objects displayed in a schema.

To create browser filters

1. Click ▽ in the left-hand side. This displays the browser filter for the selected object type and schema.

2. Complete the fields as necessary.

3. To save the filter, click **Saved Filters** and select **Save Current Filter As**.

   a. 'Save filter data for all object types,' *or*

   b. 'Save filter data for roles only' (in this example).
      Saves into an SBFLT file. When such a file is reloaded, current settings for other object types are not changed.

4. To customize or review the query before applying it, select **View/Edit Query Before Executing** and click **OK**.

   Notes:

   - Do not change the SELECT list.

   - When entering the IN clause, you must enclose the table name in single quotes ('TEST'). This lets you enter multiple table names (such as `'TABLE1'`, `'TABLE2'`, `'TABLE3'`) or enter a sub-query.

The Schema Browser has the following methods to filter data:

- Filter/Sort—This is a server-side filter that limits which rows are retrieved from the database. This method is much faster than the grid filter when you are filtering a large dataset. Access this filter by clicking the ▽ button in the tab's toolbar.
- Filter Data—This is a client-side filter that retrieves all rows from the dataset before filtering them. Access this filter by right-clicking the data grid.

To filter data in the Schema Browser

1. Click ▽ in the tab's toolbar (right-hand side of the Schema Browser).
2. Complete the fields as necessary.

The QuickFilter is a client-side filter, so it filters all Schema Browser object lists without re-querying the database. This filter works in conjunction with the existing browser filters. The QuickFilter provides a faster way to filter the list than just using the browser filters.

The QuickFilter field is located below the schema drop-down for the tabbed and drop-down Schema Browser display styles:

Note: QuickFilter does not work in the tree view Schema Browser or the Favorites Schema Browser tab.

To use the QuickFilter

» Enter the filter information. You can use wildcard characters at any point in your filter.

Wildcard	Description
* and %	Use for multiple character wildcards. **Note**: % is the Oracle standard.
? and _	Use for single character wildcards. **Note**: _ is the Oracle standard.
!	Use to exclude the following characters. One exclamation point affects the entire string. For example, *!A*;B** would return everything that does not start with A or B.

Notes:

- You can use multiple filters by separating them with a semicolon. For example, `A*;B*` would display everything that starts with A or B.

- The QuickFilter maintains a history of up to 25 items, listed most recent first. Right-click the QuickFilter to access this list.

Clear Schema Browser Filters

To clear filters on the left-hand side

» Click the arrow beside ▽ and select **Clear Filter**.
   - 'Clear Filter for <object type>,' *or*
   - 'Clear Filter For All Object Types'

To clear data grid filters in the Schema Browser

» Click ▽ on the Schema Browser right-hand side.

Work with Data Grids

Throughout Toad, information is presented in a grid format. Within grids, you can customize grid views, filter resultsets, print the grid contents, and other standard operations.

Grids that provide query results have additional functionality. In most data grids you can:

Edit data:

- Post/Revert Edited Data
- Insert and Delete Rows
- Edit Data in Popup Editor
- Use an External Editor
- Access the Calculator

Customize the data grid display:

- Perform Calculations on Grid Cells
- Anchor Column in Data Grid
- View a Single Record
- Preview Selected Column
- Hide Columns
- Sort and Group Data

Filter results:

- Filter Data
- Use Excel-Style Filtering
  See "Create Schema Browser Filters" in the online help for more information.

Export data: (Note that this topic is covered in Chapter 2)

- Export Dataset
- Export Data to Flat File

View special data types:

- Date Editor
- View BFILE data

- View CURSORs

- View Nested Table Data

- View Object Data

- View VARRAY Data

Edit Data

A data grid is fully editable providing that the query itself returns a resultset that can be updated. Query statements *must* return the ROWID to be editable. For example:

Not Editable	Editable
`select * from employee`	`select employee.*, rowid from employee`

Notes:

- You can substitute `EDIT` for `SELECT * FROM`. Toad translates it into the editable version of the statement. For example, `edit employee` returns the same result as `select employee.*, rowid from employee`.

- If the resultset should be editable but remains read only, make sure the **Use read-only queries** checkbox is not selected on the Data Grids | Data options page.

You can Post/Revert edited data.

To post data

1. Make changes to an editable resultset in the data grid.

2. Click ✔ in the grid navigator.

To revert data

» Click ✕ in the grid navigator.

You can insert and delete rows.

The dataset must be editable for you to make any changes.

To insert a blank row

» Click + on the data grid toolbar.

To copy an existing row

» Right-click the cell you want to copy and select **Duplicate Row**. If you have a sequence set, then the sequence number advances when you finish editing.

To delete a row

> » Click ▬ on the data grid toolbar.

You can view and edit data in a Popup Editor. This feature is helpful when there is too much data to view in the data grid.

Note: The dataset must be editable for you to make any changes.

To edit data in the Popup Editor

> » Right-click a cell in the data grid and select **Popup Editor**.

You can use an external editor of your choice, and copy the text to the external editor, edit the text, and bring the results back into Toad.

To set up your External Editor

1. Select **View | Toad Options | Executables**.

2. Navigate to and select the executable for the external editor in the **Editor** field.

To open text in External Editor

> » Select **Edit | Load in External Editor** (CTRL+F12).

> **Note:** If you have not saved the contents of the Toad Editor to a file, Toad prompts for a filename before launching the external editor.

To return to Toad from the External Editor

1. Save the file from the external editor and then close it.

2. Open Toad and load the file.

> **Note:** Toad prompts you to reload the contents of the file only if the **Prompt for reload on activation if timestamp has changed** option is selected on the Editor | Open/Save page.

Access the Calculator

You can access a calculator within Toad data grids. To use the calculator, the table must be editable.

To access the calculator

1. Click in a numeric cell. A drop-down arrow displays.

2. Click the arrow to display the calculator.

Customize Data Grid Display

You can perform basic calculations on grid cells, such as finding the sum or average of the selected cells.

Note: This feature is not available if Row Select is enabled. To disable Row Select, right-click the grid and clear the **Row Select** option.

To perform calculations on grid cells

1. Select adjacent cells in the grid.

   Note: Calculations on non-adjacent cells is not supported.

2. Click Σ in the grid toolbar (CTRL+N). The calculations display in a new row below the grid.

   Tip: You can also right-click the grid and select **Calculate Selected Cells**.

3. To include additional types of calculations (such as the average or count), click the arrow by Σ and select the appropriate options.

If the query does not contain an "Order By " command, you can sort the grid manually. You can also group data by column header.

To sort by column

1. Click a grid column header.

2. Select the appropriate option, and click **Apply**.

To group by column

» Drag the column header into the area above the grid.

You can anchor a column on the left side of the data grid (also referred to as locking, fixing, or freezing the column). This can make it easier to track information you must scroll through a large amount of content.

Note: Row numbers automatically display as fixed columns. With the exception of row numbers, fixed columns remain editable.

To anchor a column

» Right-click a column and select **Fix Column**.

To remove the column anchor

» Drag it to the right of the bold fixed column divider bar.

You can view an individual record from a data grid. This feature presents the information in a format that is easy to view and edit, which is very helpful when the record contains long or complicated information.

To view a single record

» Right-click the grid and select **Single Record Viewer**.

Tip: Click to edit the display options, such as the sorting order and alignment.

You can display or hide a full row below each data row that shows the value of the selected column.

To preview current column

» Right-click the column in the Data grid and select **Preview Column**.

You can hide columns from the data grid after running a query.

To select columns to display

1. Click in the upper left corner of a data grid.

2. Clear the checkbox by the column name.

Tip: To sort the column list alphabetically, right-click the column list and select **Sort Alphabetically**.

Filter Results

Filters reduce the amount of data displayed and let you display only what you want to see. They work by modifying the query used to fetch the data. If you frequently search for the same criteria, you can save the filter for reuse.

Note: Importing and exporting data is explained in Chapter 2.

To filter data

1. Right-click the data grid and select **Filter Data**.

2. To change the grouping clause, click **AND** to select a different option.

3. Click **press the button to add a new condition**.

4. To change the column, click the listed column and select a new one. The first column in the grid is selected by default.

5. To change the condition, click **equals** and select the appropriate condition (LIKE, EQUAL TO, LESS THAN, and so on).

6. Click **<empty>** and add your criteria.

7. To add additional conditions or groupings, click **Filter** and then select **Add Condition** or **Add Group**.

Toad automatically uses Excel style filtering in its data grids.

To use Excel-style filtering

1. Hover over a column heading to display the drop-down arrow.

2. Click the arrow and select a filter.
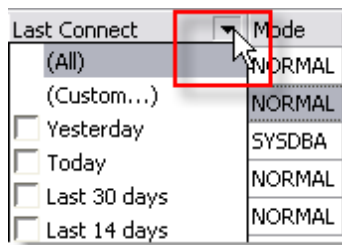
3. If you selected **(Custom)**, specify the filter criteria.

View Special Data Types

In the SQL Results panel, a BLOB or ORABLOB entered in a column field indicates that a BLOB resides in that field. If BLOB or ORABLOB is entirely in capital letters, it indicates that the field is not null. These words in initial caps (Blob; Orablob) indicate that the field may be null, or the BLOB not initialized.

You can edit a BLOB.

To edit a BLOB

» Do one of the following:

- From the data grid of a table containing a LONG RAW or BLOB datatype column, right-click the field and select the Popup Editor.

- From a create/alter table window, LONG RAW or BLOB datatype, click ... in the LOB column of the grid.

You can use the date editor to change the date, select the date format, null the date, or null the time. You can navigate through records as in the Text Editor, and post or cancel the edit.

To access the date editor

>> Double-click in a data grid cell containing a date.

To change the date

>> Click the drop-down beside the date and select the correct date from the popup calendar.

To change the date format

>> Select or clear the **Long date format** checkbox.

To null the date or time

>> Click 🐦 beside the appropriate information.

To enter the SYSDATE

>> Click **SYSDATE**.

You can View BFILE data. A cell with BFILE information contains the word **BFILE**. In addition, another column is added to the grid to show the BFILE directory.

To view BFILE data

>> Right-click a cell in the data grid and select **Popup Editor**.

A cell in the results grid that contains nested data will display as "DATASET".

To view nested table data

>> Right-click a cell in the data grid and select **Popup Editor**.

You can View and edit VARRAY data. A cell with VARRAY information contains the word **VARRAY**.

Note: The memo editor displays the first 100 entries in the VARRAY.

To view VARRAY data

>> Right-click a cell in the data grid and select **Popup Editor**.

You can view and edit object data. A cell containing object type data displays the data in parentheses, delimited by commas.

Note: You can edit nested object types, but you will not be able to edit attributes of certain types, such as a nested table, or a CLOB.

To view and edit object data

>> Right-click a cell in the data grid and select **Popup Editor**.

Queries run with CURSORs display results in the data grids. The cell with the cursor displays the word CURSOR.

To view CURSORs

» Right-click a cell in the data grid and select **Popup Editor**.

Note: Data can only be displayed once per cell each time the query is run. Once the data is displayed, it is lost until the query is run again.

Example

```
SELECT m.ename, CURSOR (SELECT e.ename

FROM scott.emp e

WHERE e.mgr = m.empno) employees

FROM scott.emp m

WHERE job = 'MANAGER'
```

Chapter 2: Toad Without Code

There is an enormous amount of functionality which you can use in Toad without ever writing or using a single line of SQL or PL/SQL.

This chapter explains some basic features and functions, including new features introduced in 12.0.

New Online Options

These three tools will help you access your data remotely, move more smoothly between instances of Toad, and share your Oracle and Toad wisdom with others.

Toad for Oracle 11.6 introduced MyToad, the Toad World Repository, and the ability to Sync User Files.

Toad for Oracle 12.0 introduces the Private Script Repository.

MyToad

MyToad is a Web application you can use to store files using your Dropbox account, view them via the Web, and choose which ones to execute remotely.

If you have multiple Toad installations, you can select the machine to execute the scripts.

This data is encrypted using 256-bit AES encryption.

First-time use of MyToad

- Go to **Options | Online | MyToad Monitor**.

- Check **Enable MyToad** and click **OK**.

  You will notice the Toad for Oracle Cloud Monitor icon displayed on your taskbar.

- Complete the Initial Setup dialog.

  Note: If you don't see the Initial Setup dialog, click the MyToad Monitor icon on your taskbar.

- Register with Dropbox or sign in if you have an account and click **Allow** to let Toad for Oracle connect with your Dropbox account.

- Go to mytoad.toadworld.com and sign in.

  - Once more, click **Allow** to let Toad for Oracle connect with your Dropbox account.

    On the Remote Script Execution page:

    - Enter database information or select it from the grid.

    - Select an uploaded script or enter an ad hoc query on the Query tab, such as:
      ```
      select * from all_users;
      ```

    - Click **Execute**

    - Click **Results**. (The number of scripts executed will display next to **Results** when complete.)
      Optionally, you can enter your email address and/or mobile phone number to be notified of results.

To execute scripts remotely, your client Toad does not have to be running, but MyToadMonitor.exe does.

MyToad for mobile-device users

You can execute scripts using your mobile device.

In Toad:

  - ○ Select **Enable MyToad** in **Options | Online** as described above.

- On your mobile device:

  - ○ Go to mytoad.toadworld.com.

  - ○ Sign in or register for Dropbox.

  - ○ Allow access to Toad for Oracle.

Users with an iOS device such as iPhone or iPad will be able to add MyToad to their Home screens via Safari.

Proxy Server

Proxy settings are available online from Toad World when you create a new account, and from Toad's toolbar:

View | Toad Options | Online | Proxy Settings *or*

Help | Toad World | Sign In or Register | Proxy Settings

Script Repository

You can use the Toad World Script Repository to share your scripts and see other Toad users' scripts in this worldwide script library.

To access the Repository, port 3306 on your network must be open.

You can also set up a private script repository.

Note: You can toggle between the Private and Toad World Repositories in **Options | Online | Script Repository**.

To access scripts in the Toad World Script Repository:

- Go to **Options | Online** and select **Toad World** under Script Repository. Click **OK**.

- On the Editor toolbar, click the 'Open file' button and click **Repository (Public)**.

- Agree to the terms of use and then sign in or register in the Toad World Sign In dialog.

  The Open dialog contains existing files.

- Select a file and see related tabs for Details, Preview, and Comments.

- Right-click a file to like or dislike (under Ratings), bookmark, mark it as inappropriate, and see user details.
  You can also:

    ○ Search for files in the repository by author, contents, description, keywords, and tags

    ○ Create collections to store frequently-used scripts. Add and remove files to collections by right-clicking the files and selecting **Add to Collection**.

    ○ Export repository scripts to your local machine: right-click and select **Save files to**.

- Double-click an item or click **Open** to open the file in Toad's Editor.

To add your script to the Toad World Script Repository:

- Open a script in your Editor.

- Click the 'Save as' button on the Editor toolbar.

- In the Save As dialog, click **Repository (Public)**, and:

    ○ Type your file name and description.

    ○ Choose the **Type** (Script, Document, or Other).

    ○ Select a **Collection** to add it to (or create a new one); optional.

○ Click the ellipsis button next to **File Tags** to select related tags and click **OK**.

○ Enter a **Description**.

○ Click **Save** to upload your file to the Toad World Script Repository.

To install a private repository:

- Go to **Options | Online** and select **Private** under Script Repository.
  The set-up wizard opens.

    ○ Select **Connect to an existing private repository** if one is already installed, enter the password that was established and click **OK**.

    ○ Or select **Create a new private repository in <database name>** and click **Next**.
    Note: You must be logged in as SYS.

    ○ If you pass the checklist (see below), click **Next**.

    ○ Complete the wizard - establish passwords for the specified schemas, and a "from" email address.

    ○ Click **Execute**.
    The repository is now ready to use.

    ○ Share the password for TOADCLOUD_USER and TNSNAMES information with everyone who is to connect to the repository.

- Reset your password as prompted after you receive the initial email.

To add your script to the Private Script Repository:

- On the Editor toolbar, click the 'Save file' or 'Save as' button and click **Repository (Private)**.

- You will be prompted to create a user the first time you access this repository.

To change the 'Save As' or 'Open File' selection to **Repository (Public)**, go to **Options | Online | Script Repository** and select **Toad World**.

Refer to these additional details.

Set-up wizard option	Description
Change email settings...	Allows you to update email server settings.

Drop existing private repository...	Completely removes the repository from the database.
The following must be true...	You must pass these validations: • Oracle version must be 10g or newer ○ The repository makes use of dbms_crypto and some SQL constructs that were not available until 10g. • Must be logged in as SYS ○ Installation of the repository will create: ○ a profile ○ a scheduler job ○ a job class ○ four schemas ○ a variety of objects in some of those schemas ○ It will also grant privileges on DBMS_CRYPTO and either UTL_SMTP or UTL_MAIL (depending on Oracle version) to some of these schemas. • SYS.UTL_SMTP or SYS.UTL_MAIL must be installed ○ The database will send emails containing temporary passwords to users. ○ For Oracle 10g and 10gR2, this is performed via UTL_SMTP. For Oracle 11g, UTL_MAIL is used instead. • CTXSYS schema must be installed ○ Toad can search for files in the repository that contain certain keywords. ○ Files are stored as CLOBs in the repository. The use of the CTXSYS.CONTEXT index type makes these searches much more efficient. • Repository is not already installed ○ This confirms a repository is not accidentally installed when one is already in place.

	If a requirement is not met, Toad will indicate which one. Rectify that item and restart the set-up process.
Temporary and Default tablespace	Specify default and temporary tablespaces for the four schemas installed, listed below.

Schemas & passwords	Create passwords for the schemas that are created automatically:
	
	• TOADCLOUD_BG_USER
	
	    ○ This schema has a scheduler job to check in the TOADCLOUD_DATA schema for emails that need to be sent, and it sends them.
	
	• TOADCLOUD_CODE
	
	    ○ This schema is locked
	
	    ○ It only has DML privileges on the tables in the TOADCLOUD_DATA schema.
	
	• TOADCLOUD_DATA
	
	    ○ This schema is locked
	
	• TOADCLOUD_USER
	
	    ○ This schema can do nothing more than connect to the database and execute the procedures in the TOADCLOUD_CODE schema.

Email / SMTP Server	Toad sends emails with temporary passwords when users are created.

Enable user files syncing

You can sync files with a Dropbox account.

To sync user files

Go to **View | Toad Options | Online | Enable user files syncing**

Benefits:

- Each copy of Toad you have can be set up to use a single set of application data files.

    - **Backup** - Dropbox provides a secure, online storage mechanism.

- **Versioning** - Dropbox automatically versions every file stored in it. You can roll back to an earlier version of a data file.

Manage Objects

You can set the Schema Browser to automatically refresh the data grid while you are working with a specific object. This setting only lasts for your active dataset, and turns itself off if you select another object or close the Schema Browser.

To automatically refresh the data grid

» Select **Auto Refresh** in the Data tab toolbar (right-hand side of the Schema Browser).

The Privileges window allows you to view, grant, and revoke privileges on a database object. You can view all users and their privileges. If you are not the object owner, you can only grant privileges if you have been given the "grant option."

To access the Privileges window

1. Click ▣ on the Standard toolbar to open the Schema Browser.

2. Select a table, view, sequence, or procedure on the left-hand side.

3. Click ☆ on the left-hand side toolbar. Grants are highlighted in blue and admin grants in yellow.

   Tip: If you do not see all users, make sure **Hide privileges granted by other users** or **Hide users/roles with no privileges assigned** is not selected.

From the System Privileges window you can grant or revoke selected privileges to/from a selected user. In addition, you can do the same to a selected role or roles.

To grant or revoke a privilege

1. Click ▣ on the Standard toolbar to open the Schema Browser.

2. Select a privilege (listed under Sys Privs) and click ▣.

3. Check or clear the appropriate boxes to grant or revoke privileges to users or roles.

Many objects can be dropped directly from the Schema Browser. **Once you confirm the drop, it cannot be reversed.**

Note: If you accidentally drop a table on Oracle 10g or later, you may be able to recover it from the recycle bin.

To drop objects

» Select an object in the left-hand side and click in the toolbar or press DELETE. Tables have additional options:

Cascade Constraints	Deletes all foreign keys that reference the table.
Purge	Bypasses the recycle bin and completely drops the table. Purged tables cannot be recovered.

Flashback Tables (Recover Dropped Tables)

In Oracle version 10g and later, a recycle bin is available to retrieve tables and associated objects (such as indexes, constraints, and triggers) you have dropped from the database. From the Schema Browser's Recycle Bin page you can access this bin and retrieve dropped tables if necessary.

To flashback a table

1. Click on the Standard toolbar to open the Schema Browser.

2. Select the Recycle Bin in the left-hand side.

3. Select the table you want to recover from the list and click .

4. Restore the table with the original name or a new one.

You can quickly copy data from one or multiple tables to the same table or tables in another schema or database. Toad builds insert statements that use array binding in the variables to copy the data. If you set the array size to 500, then 500 rows are inserted with a single insert statement. The array size is adjustable.

Note: Toad copies data from one schema to another between tables that have the same table name. The tables must exist prior to running this command.

To copy data to another schema

1. Select and right-click one or more tables in the Schema Browser.

2. Choose **Copy data to another schema** from the menu.

3. Click the **Source/Dest and Options** tab to select destination connection, schema, and options.

4. To add a WHERE clause, select the Where Clauses tab and define Where clauses.

> **Tip:** You can check your query by clicking **Test Query**.

5. Click ▷ to execute, or save or schedule the selections as a Toad action.

Rebuild Objects

Use the Rebuild Multiple Objects window to identify objects that need to be rebuilt, and then set criteria to rebuild them simultaneously.

You can also rebuild one index or table at a time from the Schema Browser, with a simpler interface.

The Rebuild Multiple Objects feature allows you to simultaneously rebuild multiple indexes, tables, or LOB segments.

To rebuild multiple objects

1. Select **Database | Optimize | Rebuild Multiple Objects**.

2. Select the Indexes, Tables, or LOB Segments tab.

3. Click the arrow beside 🗃 to load objects.

4. To quickly eliminate objects that do not need to be rebuilt:

    a. Select the Thresholds and Performance Options tab, and complete the **Consider objects for rebuild only if** fields.

    b. Select the tab where you the loaded objects.

    c. Click the arrow beside ⛁ and select **Delete rows for items that fail consideration thresholds**.

5. To have Toad recommend indexes to rebuild:

    a. Select the checkbox beside indexes you want to examine.

    b. Select the Thresholds and Performance Options tab and complete the **Mark indexes for rebuild only if** fields.

    c. Select the Indexes tab and click 🔍 .

    > **Tip:** You can click 🗒 to automatically rebuild the recommended indexes, or click 🗒 to generate a rebuild script for the recommended indexes (the script is copied to the clipboard and you can paste it into the Editor).

6. Complete the other tabs as necessary. Review the following for additional information:

Thresholds and Performance Options	Use the following option to...
Use 'Online' option	Have Toad rebuild or move the table or index while it is in use.
Storage Clause Adjustments - Extents Tab	Use the following option to...
Change Extent Sizes to the Following	Change the extent sizes, which overrides any options set in the top part of the window. If you opt to use this feature, make sure you examine the index before you use it. Because the percent used is a factor, this value can only be obtained by examining the indexes. Note that this is not the PCTUSED storage parameter. This refers to the actual percentage of allocated storage space for the index being used.
Adjust Extent Sizes to Minimize # of Extents	Minimize the number of extents. When this option is selected, the new extent size for each index is calculated as follows: working size equals the total size multiplied by the percent used. This working size is then passed through the **Make extent this size** or **Round All Extent Sizes to the Nearest Power of...** algorithm, as selected. The resulting value is the new initial_extent size. It is also the new next_extent size. Pctincrease is set to zero. **Caution:** If some indexed tables are used as large temporary tables but are usually empty, Toad may recommend that you rebuild them because they have zero percent used. If you use **Adjust Extent Sizes** during the rebuild, Toad would build the index with small extents that may not hold all of your data later. Avoid this by either using global temporary tables, or do not rebuild indexes with a percent used of zero.
Storage Clause	Select options to move all objects to different tablespaces, or selectively dependent upon their size.

Adjustments - Tablespaces Tab	• If you choose to move indexes to a tablespace based upon the size of the index, and have chosen **By Index Size** on the Extents tab, size is based on the total size of the index. • If you choose to move indexes to a tablespace based upon the size of the index, and you have chosen **By Extent Size** on the Extents tab, then the size is based on the INITIAL extent size, as opposed to the NEXT extent size.
Email Notifications	Select whether to send email notifications after completion. The email is sent to the recipients defined on the Email Settings options page. See "Email Settings" in the online help for more information.

7. Select the checkboxes for objects to rebuild and click ▷ to rebuild them immediately or
   ▶ to create a rebuild script (the script is copied to the clipboard and you can paste it
   into the Editor).

This procedure explains how to rebuild a single index or table, but you can rebuild multiple indexes and tables at the same time.

To rebuild an index or table

1. Click ⊞ on the Standard toolbar to open the Schema Browser.

2. Right-click the index in the left-hand side and select **Rebuild Index**.

3. Select parameters as necessary.

   Note: The parameters in this window are defined by Oracle. See Oracle's documentation for more information. You can also find detailed information about parameters in Knowledge Xpert. Knowledge Xpert is an extensive Oracle technical resource which you can search in the Jump search.

4. To view the ALTER statement, select the SQL tab.

5. Click **Execute**.

Use this function to rebuild a table, including dropping and renaming columns.

Notes:

• You can simultaneously rebuild multiple tables with the Rebuild Multiple Objects feature.

• You must own the schema in order to rebuild a table from it.

To rebuild a table

1. Click on the Standard toolbar to open the Schema Browser.

2. Right-click the table in the left-hand side and select **Rebuild Table**.

   Tip: You can also select **Database | Optimize | Rebuild Table**.

3. Select settings as necessary on the Options tab.

4. Select parameters as necessary on the Table Storage and Index Options tabs.

5. To drop a column, double-click a column on the Columns tab.

   Note: To rename a column, click to select it, wait until after the mouse double-click time, then click it again. Enter the new name for the column.

6. To view the ALTER statement, select the SQL tab.

7. Click .

Use the Master Detail Browser

Use the Master/Detail browser to view or edit data from multiple tables, snapshots, views or queries linked by foreign keys or a user-defined master-detail relationship. This is typical of a database setup from an Entity/Relationship diagram, where one table's objects are related to another table's objects by a linking field or fields.

For example, you could start with the DEPARTMENT table, and display details. Select a department record in the Master grid, and the detail grid will display employee records for that department only. If multiple tables are linked by foreign keys, you can add additional details beneath the first.

To access the Master/Detail Browser

» From the Database menu, select **Report | Master/Detail Browser**.

Navigator

To the left of the Master Detail Browser is the Master Detail Navigator. As you add detail tables, they are added to the navigator under the original table. Using the navigator can make it much easier to control very detailed sets of master/details.

Within the navigator, you can hide or display the schema name and delete detail nodes.

You can use the navigator to find the grid for a specific detail table.

To find a detail

> » In the Navigator, click on the node for the detail you want to view.
>
> **Note:** In the Master Detail browser, the grid for that detail flashes in the lower grid pane.

Single Grid Mode

You can set Toad to display only one grid at a time by checking the Single Grid Mode box on the Master/Detail toolbar. Use the navigator to select which grid you want to see.

You can generate XML output from a master-detail relationship. From the master-detail grids, you can send a query to the Editor that will generate the output. Output will be created in XML Form, one XML document per row.

This feature is available only in Oracle 9iR2 and newer, and when the Master-Detail relationship consists of one master and one detail.

To generate XML output

1. From the Master Detail browser, open or create a relationship that consists of one Master and one detail.

2. Right-click on the master grid, and select **Send XMLGEN Query to Editor**.

3. Switch to the **Editor** window in Toad.

4. Execute the query to generate XML output.

   Toad creates an XML document for each row in the master dataset, with each XML document containing all corresponding detail rows.

To save XML output to disk

1. Right-click on the **Editor grid** and choose **Export BLOBs (longs, raws)**.

2. Select the **XMLDATA column** from the **Export this Column** drop down.

3. Enter or select a **directory** where you want the files stored in the **Export Path** box.

4. Select the method of naming your files:

   - Use sequentially numbered files

   - Export to files named for the value in this column (select the column)

5. Click **OK**.

Before you can add details, you first need to select the master object for the relationship view.

To select a master object

1. From the Database | Report menu, select **Master Detail Browser**.

2. In the Type box, select the type of object you want to use.

3. In the owner box, select the schema that contains the object.

4. In the Name box, select the name of the object.

    The grid populates with the contents of your selected object.

You can easily add detail datasets to a master grid, or to a detail grid.

If you choose Other as the dataset type, (not Table(FK)), then the ▤ drop down will include Reverse Foreign Keys. This lets you define the master-detail relationship by going through a foreign key in reverse.

To add a dataset

1. From the Master/Detail Browser, open a master object.

2. On the master toolbar, click ▤.

3. Behavior is determined by number of foreign keys:

One foreign-key defined detail	Added automatically.
Multiple foreign-key defined details	Choose from a list of available tables and click OK.
No constraints defined	Define a relationship in the Define Master-Detail Relationship dialog.

If there is no foreign key specified, you can create a Master/Detail relationship by hand.

To define a master/detail relationship

1. From the Master/Detail browser, select a master object.

2. Click ▤.

    - If there is no defined detail dataset, the Master/Detail Define Relationship dialog displays. Continue with **step 3**.

    - If there is only one defined detail dataset, it is displayed. In the Type drop-down, select **Other**, and then click ⋯ .

3. In the Master area, select the columns you want to link and click the > arrow to move them to the Key Columns list.

4. Select any columns you do not want to link from the Key Columns grid and click the < arrow to remove them.

5. In the detail area, select the Object type containing the dataset you want to link.

6. Select the schema containing the dataset.

7. Select the Object Name containing the dataset.

8. In the Available Columns grid, select the column you want to link to the selected column in the Master Table.

    Note: These must be in the same order as the Key columns in the Master area.

9. Click **OK**.

To close without making changes

» Click **Cancel**.

To delete the master-detail relationship

» Click **Clear and Close**.

Import and Export Data

Export a Dataset

You can export the dataset to the clipboard or a file. Toad preserves your sorting and filtering settings in the exported file. In addition, you can set your choices here and then run the actual export of the results from the command line later.

Notes:

- You can export to a flat file, which is a file that does not contain TAB or comma characters between values.

- CLOBs and BLOBs are automatically excluded, but LONG columns are not excluded using this method.

To export a dataset

1. Right-click the data grid and select **Export Dataset**.

2. Select in the output file format in the **Export format** field.

    Notes:

- You can use a variable to create dynamic filenames, such as including a date or a timestamp (right-click in the File Name field in the Export Dataset window and choose **Variables**).

- For the Fixed Field Spacing format, the widths come from the definition of the table in the database, not the way it looks in the grid.

- If your table contains columns with XML data, you may experience issues exporting to the SQL Loader and XML formats.

3. Select options as necessary.

Data Substitution	Click the **Data Substitution** button to specify a constant value or expression to save into a column, instead of the actual value. For example, use this when you want to put SEQ.NEXTVAL in the INSERT statements in place of an ID column, instead of actual ID's, or to cover up a value in a column when you save the data to HTML.
Columns to exclude	Click the drop-down and select the object types or columns to exclude from the export.
Commit Interval	A commit interval of 0 produces one insert statement after all of the SQL statements. A commit interval of -1 omits the commit entirely. This field is only available for the Merge and Insert Statements export formats. **Note:** You can generate these statements from any version of Oracle, but can only run them in Oracle 9i and newer.

You can export to a flat file, which is a file that does not contain TAB or comma characters between values.

Note: The SQL*Loader tab in this feature is only available in the commercial version of Toad with the optional DB Admin Module.

- The SQL*Loader tab in this feature is only available in the commercial version of Toad with the optional DB Admin Module.

To export data to a flat file

1. Right-click the grid and select **Export to Flat File**.

   or

Select **Database | Export | Table as Flat File**.

2. Click **Load Spec File** and select the specifications file.

    Note: You need to set up the Specifications File.

    See "Example Specifications File" in the online help for more information.

3. Complete the fields as necessary.

4. Click **Execute**.

Data Pump is an import/export utility added in Oracle 10g. When you use Toad to perform a Data Pump import or export, Toad creates a parameter file and passes it to Oracle. You can save your selections in Data Pump as a Toad Action, which you can save and run on a schedule.

Notes:

- The parameters in Data Pump are defined by Oracle.

- This feature is available in the Professional Edition and higher, or with the optional DB Admin Module.

- This topic focuses on information that may be unfamiliar to you. It does not include all step and field descriptions.

To export with Data Pump

1. Select **Database | Export | Data Pump Export**.

2. Select one of the following options:

New Export	Select to create a new export parameter file. Complete the rest of this procedure.
Use Existing File	Select to use an existing export parameter file. Select the parameter file in the File tab and then proceed to the final step in this procedure.

3. Select one of the following export modes:

    - Tables

    - Schemas

    - Database

- Tablespaces

- Transportable Tablespace

4. Complete the following tabs as necessary:

Items	Select the items to export by listing them individually or through a query. To list items individually, click **Add** and select the item in the Object Search window.
	
	Table queries must return at least two columns. The first column must be the schema name and the second column must be the table name. If you are also exporting partitions, the partitions must be the third column. For example:
	
	`SELECT 'user', 'table', 'partition' FROM dual`
	Queries for schemas, tablespaces, or transportable tablespace mode must return at least one column. For example:
	
	`SELECT tablespace FROM DBA_tablespaces`
	This tab is not available for databases.

Queries	Enter queries to filter the data. This tab is not available in transport tablespace mode.
Filters	Add a filter to include or exclude specific objects types.
Files	Use these fields to...
Parameter file name	Enter a name for the parameter file that will be passed to the Data Pump utility (expdp.exe).
Execution mode	Select one of the following options: • Perform Export—Immediately perform the export when Data Pump is run. • Generate Parameter File Only—Generate the parameter file, but do not execute the Data Pump export. This option is helpful if you want to review the parameter file before executing it or if you need to share it.

5. Click ▶ to execute, or save or schedule the selections as a Toad action.

To import with Data Pump

1. Select **Database | Import | Data Pump Import**.

2. Select one of the following options:

New Import	Select to create a new import parameter file. Complete the rest of this procedure.
Use Existing File	Select to use an existing import parameter file. Select the parameter file in the File tab and then proceed to the final step in this procedure.

3. Select one of the following import modes:

    -   Entire dump file

    -   Tables

    -   Schemas

    -   Tablespaces

    -   Transportable Tablespace

4. Complete the following tabs as necessary:

Items	List items to import or select a file that contains the items to import. **Tip:** If you save the import as a Toad Action, selecting a file can be a superior way of importing objects. Another Action or process can create the file prior to executing the import Action, thereby making the entire process dynamic. This tab is not available if you are importing the entire dump file.
Queries	Enter queries to filter the data. This tab is not available with transportable tablespace mode.
Filters	Add a filter to include or exclude specific objects types. This tab is not available with transportable tablespace mode.
Remappings	Select schemas, tablespaces, or datafiles to remap these objects to different names.
Files	Use these fields to...

Parameter file name	Enter a name for the parameter file that will be passed to the Data Pump utility (impdp.exe).
Execution mode	Select one of the following options: • Perform Import—Immediately perform the import when Data Pump is run. • Generate Parameter File Only—Generate the parameter file, but do not execute the Data Pump import. This option is helpful if you want to review the parameter file before executing it or if you need to share it. • Generate SQL DDL File Only—Generate a SQL DDL file, but do not execute the Data Pump import.

5. Click ▷ to execute, or save or schedule the selections as a Toad action.

The Data Pump Job Manager provides a way of tracking your Data Pump jobs. Because the Data Pump is not limited to a connection, the windows can be closed after starting a job. The job manager gives you the ability to manage these jobs and start, stop, and kill them after the Data Pump Watch window has been closed.

To open the Data Pump Job Manager

» Select **Database | Import | Data Pump Job Manager**.

Export DDL

Use this dialog box to export selected DDL to a file, the clipboard, or the Editor.

To export DDL

1. Select **Database | Export | DDL**.

2. Click **Add** on the Objects and Output tab to select objects to export.

   Note: You can also click the arrow by the button and select **Advanced** for an advanced object search. Toad remembers your search preference and defaults to it when you click **Add**.

3. Set the output options in the bottom pane.

4. Select the **Script Options** tab and set the script options. Review the following for

additional information:

Common Tab	Description
Schema name	Include the schema name in the DDL.
Drop statement	Include a drop statement as well as the create statement.
Related Objects	Select the related objects you want to include.

5. Click ▷ to execute, or save or schedule the selections as a Toad action.

Use the Export File browser to view the contents of an export file before you import it.

> **Caution:** While the scripts produced by the Export File Browser are very good for giving you a glimpse into the objects contained in the export file, Oracle meant for these scripts to run only in the context of Oracle's IMP utility. Many extracted DDLs will run as standard SQL, and some will not. Please examine scripts produced by the Export File Browser very carefully before running them.

To open an export file

1. From the Database menu, select **Export | Export File Browser**.

2. On the Export File Browser toolbar, click 📂.

3. Select a file from the Open Export File window.

4. Click **OK**.

    Note: If the file has not been parsed before, it may take a few minutes to process it. Processing progress will be displayed in the status area at the bottom of the window.

Finding Information in an Export File

Use the right hand side tree view of the Export File Browser to select a portion of the export file to view. Nodes are organized by:

-   Schema

-   Storage

-   Security

-   Code

-   Tuning and Configuration

Object nodes are displayed with the number of objects of that type in parentheses beside it. For example, Schemas (6). If you expand the Schemas node, you will find six schemas beneath it.

In the left hand side, you can click the DDL tab to view the code. If the selected object has data, such as a table, click the Data tab to view the data within that object.

Filtering Data

You can use the QuickFilter in the same way as it works in the Schema Browser.

Reading the Treeview

With NO filter applied (* in the QuickFilter box), you will see a node like `Tables (42)` if there are 42 tables in a certain schema, for example.

If a filter is applied that only makes 10 of these tables visible, that node displays one of the following: `Tables (? of 42)` or `Tables (10 of 42)`.

- `?` indicates that the you have not expanded the node yet, so how many pass the filter is not known.

- `(10 of 42)` indicates that the node has been expanded (or is currently expanded)

You will never see `Tables (0 of 42)` because if all tables are filtered out, then the Tables node is hidden too. Schema-level nodes are never hidden, even if everything under them is hidden.

To find something quickly

1. Open the export file in the Export File Browser.

2. Type its name or an appropriate filter in the **QuickFilter** box.

3. Click the **Expand All** button.

The Export File Browser window is more than just a file selection screen. It provides you with information about the export files, including basic file information, who created them, and whether or not they have been parsed.

To open an export file

» Click 📂 on the Export File Browser toolbar.

The left hand side of the Open Export File window is the directory tree. Use this to find the file you want to open. It works in the same manner as the Windows Explorer.

When you have selected a directory the files are listed on the right hand side. By default Toad displays only the .dmp files in a directory.

To see all files in a directory

» Select **All Files** from the File Type box.

If you have selected all files, the info grid will be more sparsely populated for the files that are not export (extension .dmp) files. Non-export files display only File Name, File Size, and File Date.

Parsed File color

Toad keeps track of files you have previously parsed by changing their color.

By default, all unparsed files are displayed in black. Parsed files are displayed in Green.

To change the color of parsed files

1. Click the **Settings** button in the lower left of the screen.

2. Select **Set pre-parsed color**.

3. Select the color you want to use and click **OK**.

To remove parsing information for the selected file

1. Click the **Settings** button in the lower left of the screen.

2. Select **Remove pre-parsed information**.

To remove parsing information entirely

» In the Toad Directory | ParsedExportFiles directory, remove all files.

You can use the Export File Browser to compare an export file with the objects in a database. This is a cursory compare and will not indicate deep, data-level differences.

To compare a file to a database

1. Open a data export file in the browser.

2. Click   .

3. In the right hand side compare screen, select a connection from the connection drop down to compare to the file.

    Note: If the connection you want to use is not listed in the drop-down, you can either:

    • Click the connection drill down and then click **New** and open a new connection.

    • From the Session menu | New Connection, open a new connection.

4. In the left hand side, select one or more nodes to compare to the selected database.

The compare mode grid in the Export File Browser provides basic information for both the database and the selected nodes. You can print or export the compare grid from the Export Dataset menu item.

Troubleshooting

Because of the way Toad parses .dmp files, some items will be listed as in the database but not in the file. These include:

- Constraints that were created inline with the table DDL, as follows:

  ```
  CREATE TABLE WK$DOC_RELEVANCE

  (

    URL_ID NUMBER NOT NULL ENABLE,

    TERM VARCHAR2(500) NOT NULL ENABLE,

    SCORE NUMBER NOT NULL ENABLE,

   CONSTRAINT WK$DOC_RELEVANCE_PK PRIMARY KEY ("TERM", "URL_ID") ENABLE

  );
  ```

- `System` named constraints.

- Indexes created by Oracle when a user created a constraint.

- Many objects in the SYS, MDSYS, etc, schemas. Certain objects are created automatically when you create a database do not go into export files even when you do a "full database export."

- System named hash partitions and subpartitions.

You can freeze the compare grid in the Export File browser so that you can view other items without losing the data from the compare you are doing.

This will hold the Compare Grid steady while you toggle Compare mode off, and view DDL or data in Browser mode. When you return to Compare DB mode, the last compare you performed will be active in the grid regardless of what is selected in the left hand side.

To freeze the compare grid

1. In the Export File Browser, compare a node or nodes to a database connection.
2. Select the **Freeze Grid** checkbox to freeze the grid.

You can copy DDL from the right hand side of the Export File Browser to the clipboard and then paste it wherever you need it, including other editors.

To copy DDL from the right hand side to the clipboard

1. Select an object from the left hand tree view and click the DDL tab on the right hand side.

2. Select any or all of the DDL.

   Press **CTRL+C**.

   Note: Scripts for a few objects will look wrong. The reason for this is that the export files we are browsing were meant only to be used by Oracle's IMP utility. Things that may look wrong in script form because of this include:

   - Materialized views and materialized view logs.

   - Queue tables

   - Any object that has storage (tables, indexes, etc) when the export was done in "Transportable tablespace" mode.

From the Export File Browser, you can save the DDL in the right hand side to a file for later use.

To save DDL from the right hand side to a file

1. Select an object from the left hand tree view of the Export File browser and click the DDL tab on the right hand side.

2. Right-click and select "**Save to File**."

3. Name the file and click **Save**.

Note: This method saves all of the DDL for an object to a file. You cannot be selective as you can with the copy method.

You can extract DDL from multiple nodes of the Export File browser to the clipboard and then paste it wherever you need it, including other editors.

To extract DDL from multiple nodes

1. Select one or more nodes from the left hand tree view. These can be objects, or groups of objects.

2. Right click on the tree and select "**Extract DDL For Selected Nodes and SubNodes**."

3. Select your options.

4. Click **OK**.

Export Utility Wizard

This wizard helps you to transfer data objects between databases using Oracle's legacy export utility. If you have Oracle 10g or later, it may be beneficial for you to use Data Pump instead.

To export data

1. Select **Database | Export | Export Utility Wizard**.

2. Review the following for additional information:

For all Exports	Information
Objects to export	Triggers are only available if you have Oracle 8.1 or above.
Watch Progress	If you select Watch Progress (Feedback = 1000) on the last screen of the wizard, the Export Watch window displays and you can immediately view the results of the export. In addition, the Log tab on the Watches window, will let you send the log directly to the printer.

3. Complete the wizard.

Troubleshooting

The Export Utility wizard is an interface to Oracle's utility, usually named Exp.exe, Exp73.exe, or Exp80.exe and located in your Oracle home's bin folder.

If Toad cannot find this executable, the error "The Oracle Export Utility executable must be specified" displays.

To specify the location of the Oracle Export Utility

1. Select **View | Toad Options | Executables**.

2. Enter the path in the **Export** box.

   Note: If you do not know where this executable resides, or it is not on your computer, you may need to install the **Database Utilities** from the Oracle CD.

Data Subset Wizard

This window lets you copy a portion of data from one schema to another while maintaining referential integrity, so that you can work with a smaller set of data.

The wizard creates a script that will copy a specified percentage of data beginning with all parent tables or from all tables with no constraints. You can specify a minimum number of rows.

The wizard then continues with tables that have foreign key constraints, the rows copied are those whose parent rows have been copied into the parent tables.

The data is then inserted into the destination tables with INSERT SELECT statements. Because of this, tables containing columns of datatype LONG will not be inserted.

If the destination schema is in a different database, the script is designed to run in the destination database. A database link must exist to the source schema, and there must be select privileges on the source data through that link.

To use the Data Subset wizard

1. Select **Database | Export | Data Subset Wizard**.

2. Refer to the following for more information:

Define Source and Target Databases	Information
Target Connection	The target schema name will be included in the object DDL and data inserts. The target connection will add a connection string at the beginning of the script if the **Include a Connect Command** option is checked on .
Select Objects to Create in the Script	**Information**
Create these objects and copy the data	This option assumes the objects are not in the target schema, and the script creates the selected objects and insert data.
	In the Create Objects mode, clusters are excluded. If you want to subset a schema containing clusters, you will have to create the objects first, and then run the wizard with the **Do not create any objects, Just truncate tables and copy data** option selected.
	Note: This feature is only available with the DB Admin Module, which is included in several Toad Editions or can be purchased separately. The DBA module is required because this creates a schema script with embedded insert statements.
How much data do you	**Information**

want to copy?	
Percentage of Data to move to target	The percentage or minimum number of rows will be accurate on the parent tables and tables with no foreign key relationships (except for situations with long columns). Data integrity is preserved in the child tables of foreign key relationships based on the rows which were inserted in the parent tables. So, the percentage of rows copied in the child tables will vary based on the data distribution of the individual tables.
Min # of Rows in Lookup Tables	Specify a minimum number of rows that you want moved to your target in case the percentage selected yields a lower number than the minimum desired.
Control Options	**Information**
No Logging	If checked, this option adds an ALTER TABLE statement before the data inserts for each object, to specify No Logging. If checked, the wizard will run faster, but the actions of the script (the insert statements) will be unrecoverable.
Use Parallel DML	If checked, this option adds optimizer hints to the insert statements. It also adds an ALTER SESSION statement before the data inserts for each object to enable Parallel DML. If checked, the script produced by the wizard will run faster, but you may end up with a few more extents.
Script Options	**Information**
Include a Spool command	If checked, the script includes a SPOOL command. A SET ECHO ON command is issued after the SPOOL command. At the end of the script a SPOOL OFF command is included.
Include a Connect command	If checked, adds a CONNECT command to the beginning of the script and uses a connection string that is based on the target connection specified on the first wizard screen.
Make	This option displays only if you have chosen to create Constraints

individual Constraint commands	on the **Create Objects** page. If checked, constraints are created as individual alter table commands. This serves to circumvent an Oracle bug that can create the following error when constraints are not created individually: "ORA-01948 Identifiers name length exceeds max."
Adjustments to Extents and Tablespaces	**Information**
Extents tab	The Extents tab lets you specify extents for objects created by the generated script. You can specify PCTINCREASE parameters, make Next Extent=Initial Extent, and scale extent sizes to apply to all objects created that allow storage parameters. The lower part of the screen lets you change extent sizes using IF-THEN statements. **Note:** The options in the Extents/Tablespaces tabs are enabled when the wizard is set to create objects (when you select the **Create these objects and copy the data** option in the **Select Objects to create in the script** of the wizard).
Tablespaces tab	The Tablespaces tab lets you specify the tablespaces to create indexes, tables, and their partitions. You can place all of an object type (tables. table partitions, indexes, index partitions) into one tablespace or distribute them across different tablespaces based on their size.

3. Complete the wizard.

Import Table Data

You can import table data without importing table structure. This must be imported into an existing table, although you can use the Create Table feature to create a new table for the import.

In addition, you can import table data directly into a data grid from the clipboard. To do this the data grid must be editable.

To import table data

1. Select **Database | Import | Import Table Data**.

2. Complete the wizard. Review the following for additional information:

Select Destination	Description
Truncate table	Click 🔨 to truncate table before importing.
Enable/disable constraints and triggers	Click 📇 to disable or enable constraints before importing. Click 📇 to disable or enable triggers before importing.
Preview File and Define Files	**Description**
AutoMap	Instructs Toad to map columns from the source file to the table in the database.
Mapping Manually	You can also map columns manually. Click on a column header and then select the column where you want to map the column of data to go.
Field Mapping Dialog	If you are importing an XLS file, and have elected to begin on row 2 in the previous screen, then Toad displays the Field Mapping dialog. Select one of the following options: - Map fields by matching field names—The default. Toad looks in the first row of the spreadsheet to find the column names, and uses those for the field names. - Map fields sequentially—The columns of the spreadsheet are imported into the table in the same order as they display. Column 1 maps to the first table column and so on.

Import Utility Wizard

This wizard helps you to transfer data objects between Oracle databases using Oracle's legacy import utility. If you have Oracle 10g or later, it may be beneficial for you to use Data Pump instead.

Notes:

- You can set the utility's path from **View | Toad Options | Executables**.

- This topic focuses on information that may be unfamiliar to you. It does not include all step and field descriptions.

To import data

1. Select **Database | Import | Import Utility**.

2. Complete the wizard. Review the following for additional information:

Import Tables	Information
Select Show only users who own objects to limit your schema selection to schemas that have objects.	This will limit selections for both the from and to user areas.
File Record Length	If left blank this value defaults to use the platform's BUFSIZ value.
Import Users	Information
Select Show only users who own objects to limit your schema selection to schemas that have objects.	This will limit selections for both the from and to user areas.
File Record Length	If left blank this value defaults to use the platform's BUFSIZ value.
Watching Progress	If you select Watch Progress (Feedback = 1000) on the last screen of the wizard, the Import Watch window displays and you can immediately view the results of the import. In addition, the Log tab on the Watches window, will let you send the log directly to the printer.

Compare Data, Objects, and MoreContents

Data Duplicates

Use this dialog box to view record duplicates based on user input.

To view record duplicates

1. Select **Database | Compare | Data Duplicates**

2. Select the **Owner, Object Type** and **Object** from the drop-down lists. A list of columns is displayed below. Now, you can either:

Find duplicates on all columns	Check the Find duplicates on all columns option button. Do not select any columns in the list.
Find duplicates on just selected columns	Check the Find dupes of selected columns option button. Select one or more columns in the column list.
On the Duplicate Data tabs, an additional column called **Occurences** is added to the end of the grid to display the number of resulting duplicates.	

To edit duplicate data

1. From the Table Data Duplicates window, select **Owner** and **Table** from the drop-down lists.

2. Click the **Duplicate Data (Editable)** tab.

3. Click the cell you want to edit and make your changes.

4. Click on the toolbar.

You can compare single objects from the Schema Browser. All objects accessible from the Schema Browser can be compared.

To compare objects

1. In the Schema Browser, right-click on an object.

2. Select **Compare with another object**.

   Note: Reference source information will be filled in for you.

3. Enter comparison source information (a text file or an object in a live schema).

   Select options to apply:

Compare columns only	Applies only to tables, views,

	and materialized views.
Alphabetical	Arranges columns alphabetically *before* comparing.
Format before comparing	Formats both files consistently so that cosmetic differences do not impact your results.

4. If you are using Toad with the optional DB Admin Module, you can choose to view your results in one of two ways:

Results as File Compare	Use the Differences Viewer to compare the two selected objects.
Results as Sync Script	Only available if the objects chosen have the same name, and are in different schemas, this option the objects and creates a sync script.

You can compare database-level objects such as tablespaces, roles, users, and so on between databases or Database Definition Files

This feature is only available with the DB Admin Module, which is included in several Toad Editions or can be purchased separately.

To compare databases

1. Select **Database | Compare | Databases**.

2. Complete the fields as necessary.

Databases Tab	Description
Reference Source	Select a live database or database definition file to use as the basis for comparison. If you execute the sync script, the target database is updated to match the reference source. **Tip:** If you select **Create Database Definition File**, you can use variables in the filename. By default, Toad includes the

	%DATEFILE% and %TIMEFILE% variables, which inserts the current date and time into the filename when it creates the definition file.
Targets and Output	Click ⊞ in the **Live Databases** or **Def Files** field to add a target database for comparison. You can repeat this step to compare multiple target databases to the source. **Tip:** Right-click a target to edit it, delete it, or switch it with the reference source.
Options Tab	**Description**
Database Object Types	Select the object types you want to compare. Reducing the object types reduces the amount of time it takes to complete the comparison. **Tip:** Right-click to select or clear all fields.
"Safe Drop" on users, tablespaces, and profiles	Select to only drop a user or tablespace if it does not own any objects, or a profile if no users are assigned to it.
Object Set Tab	**Description**
Specify Object Set	Select to determine specific object sets to compare. This lets you limit your comparison even more than the Options tab. Click **+** to add an object set. If you already have objects loaded, a confirmation dialog ask you if you want to clear the grid before loading the new objects. Click **Yes** to start over, or **No** to append the new objects into the grid.

3. Click ▷ to execute, or save or schedule the selections as a Toad action.

4. Review the differences on the Results tab. Review the following for additional information:

If you want to...	Complete the following:
Show the sync script for selected objects.	Select the objects and click 🖶.

If you want to...	Complete the following:
View the differences for one object	Select the objects and click ⊞.
View the differences for another target	Select the target in the **Target Database** field (only applicable if you selected more than one target for comparison).

5. To sync the databases, select the Sync Script tab and click ⚡ to execute immediately from the Editor or 🕑 to schedule its execution.

> **Caution:** Review this script thoroughly before executing it to prevent unintentional data loss.

Note: You can compare schemas in the Base Edition, but definition files and sync scripts are only available with the DB Admin Module or Toad for Oracle Xpert Edition.

To compare schemas

1. Select **Database | Compare | Schemas**.

2. Complete the fields as necessary.

Schemas Tab	Description
Reference Schema (Source)	Select a schema connection or schema definition file to use as the basis for comparison. If you execute the sync script, the target schema is updated to match the reference source.
	Tip: If you select **Create Schema Definition File**, you can use variables in the filename. By default, Toad includes the %DATEFILE% and %TIMEFILE% variables, which inserts the current date and time into the filename when it creates the definition file.
Targets and Output	Click ⊞ in the **Live Schemas** or **Def Files** field to add a target schema for comparison. You can repeat this step to compare multiple target schemas to the source.
	Tip: Right-click a target to edit it, delete it, or switch it with the reference source.

Options Tab	Description
Object Types to Compare	Select the object types you want to compare. Reducing the object types reduces the amount of time it takes to complete the comparison. **Tip:** Right-click to select or clear all fields.

Object Set Tab	Description
Specify Object Set	Select to determine specific object sets to compare. This lets you limit your comparison even more than the Options tab. Click **+** to add an object set. If you already have objects loaded, a confirmation dialog ask you if you want to clear the grid before loading the new objects. Click **Yes** to start over, or **No** to append the new objects into the grid.

3. Click ▶ to execute, or save or schedule the selections as a Toad action.

4. Review the differences on the Results tab.

If you want to...	Complete the following:
Show the sync script for selected objects.	Select the objects and click 📇.
View the differences for one object	Select the objects and click 🗄.
View the differences for another target	Select the target in the **Target Schema** field (only applicable if you selected more than one target for comparison).

5. To sync the schemas, select the Sync Script tab and click ⚡ to execute immediately from the Editor or 🖥 to schedule its execution.

> **Caution:** Review this script thoroughly before executing it to prevent unintentional data loss.

You can quickly compare multiple schemas in one database to the same schemas in another database.

Note: You can compare schemas in the Base Edition, but definition files and sync scripts are only available with the DB Admin Module or Toad for Oracle Xpert Edition.

Compare schema-level objects (tables, indexes, views, etc.) in every schema across two databases, without individually identifying each source and target schema.

To compare multiple schemas

1. Go to **Database** | **Compare** | **Multiple Schemas**.

2. Select your source and target databases (these can be the same database).

3. Click the Schemas tab and specify your selection criteria:
   See the table below for more detail.

4. Click **Load**. You can select/deselect listed schemas if you have chosen **Manually...** in step 3 above.

5. Click the Options tab; the options are the same as the basic schema compare window.

   ○ Select the items you want to compare; you can right-click to check/uncheck all.

6. Click the Output tab to specify:

   ○ Your output folder (files are named based on the schema name).

   ○ Create difference summary files

   ○ Create difference detail files

   ○ Create sync script files

   ○ **Note**: Sync script files are created in Toad's Base Editions; running them is available with the DBA Admin Module.

7. Click the run button, labeled 'Begin Comparison.'
   The Results tab appears, with your selected outputs displayed.

8. Review differences on the results tabs, depending on the outputs you selected in step 6 above.

Using the Schemas tab

In step 3 above, you can ask Toad to automatically match schema names, or manually specify the matching criteria.

When to match up schemas:	Choose: **Automatically, at time of comparison**
	• You cannot then select or deselect schemas listed after you click **Load**.

	• Built-in schemas like SYS, SYSTEM, etc, are automatically excluded, and this list of automatically excluded schemas is configurable Choose: **Manually, before comparison** • Click in the Target column to change the target schema. (A drop-down arrow appears.) • Use alternately-named schemas, as described below under **Manipulate source schema...**.
How to match up schemas:	Choose: **Match schema names exactly** • Once listed, if **Automatically...** is selected as described above, you can select or deselect schemas to compare. Choose: **Manipulate source schema name to find target schema name** • **Prepend text** - For instance, if your source and target schema names are "Dev_Employees" and "Employees." • **Append text** - For instance, if your source and target schema names are "Employees_Test" and "Employees." • **Search for/Replace with** - For instance, if you search for "Dev" and replace with "Prod" if your source and target schema names are "Dev_Employees" and "Prod_Employees."

On the Results tab, you can:

- Re-compare selected schemas
- Send selected or all sync scripts to the Editor (with the DB Admin Module or Toad for Oracle Xpert Edition)

Depending on the outputs you selected in step 6 above, you can also view these tabs:

- Difference Details (tree view)
- Difference Summary
- Sync Script

The list of schemas that are automatically ignored is in Toad.ini.

If you want to adjust it, find this line and make your changes:

```
MultipleSchemasToIgnore='ANONYMOUS', 'APPQOSSYS', 'CTXSYS', 'DIP', 'DBSNMP',
'EXFSYS', 'FLOWS_FILES', 'MDDATA', 'MDSYS', 'MGMT_VIEW', 'OLAPSYS', 'ORACLE_
OCM', 'ORDDATA', 'ORDPLUGINS', 'ORDSYS', 'OUTLN', 'OWBSYS', 'OWBSYS_AUDIT',
'SI_INFORMTN_SCHEMA', 'SPATIAL_CSW_ADMIN_USR', 'SPATIAL_WFS_ADMIN_USR',
'SYS', 'SYSMAN', 'SYSTEM', 'WMSYS', 'XDB', 'XS$NULL'
```

The APEX schemas are also automatically ignored. If you don't want that, find this line and change the '1' to a '0':

```
MultipleSchemasIgnoreApex=1
```

You can use Toad's Compare Data wizard to compare data between tables within different schemas, or different databases. This can be useful for comparing the data in a production and test environment, for example.

Note: This topic focuses on information that may be unfamiliar to you. It does not include all step and field descriptions.

To access the Compare Data wizard

> »   From the Database menu, select **Compare | Data.**

Select Data Sources page	Description
Use DB Link	If your first data source is remote, select an existing DB Link. If your first data source is local, leave this box blank.
Object Type	Tables, Views and Snapshots are supported.
Performance Options Output page	**Description**
Sort Area Size	This only affects queries going through a Database Link. When selected: ○ The default area size is 10 MB ○ You can select to set another sort area size when the first window closes. The default for this is also 10MB.
Optimizer Hints -	*Default: Cleared*

Use parallel hint	When selected, you can set the amount of parallelism you want. The default amount when selected is 4.
Select Columns page	**Description**
Column colors	Black - Columns display in both sources and can be compared. Red - Columns cannot be compared. Purple - Columns display only in Source 1. Teal - Columns display only in Source 2.
Specify columns to uniquely identify each row...	**Description**
Columns and Key Columns	If a table has a primary key, Toad will find it automatically and put the primary key columns in the RHS. If no primary key is found, you can specify the field that can be used as a primary key.

With the primary key identified (automatically or manually), Toad will use the primary columns to identify if a row is "in both tables but with differences."

If no primary key is identified, Toad has no way of identifying a row except by using all columns, so no 'differences' tab is shown, and rows are either matches, or in one table, or the other.

(Final Step)	**Description**

Page title	Your page will be labeled with one of these titles:
	
	    ○ Server Side Data Comparison Using Primary Key
	
	    ○ Client Side Data Comparison Using Primary Key
	
	    ○ Server Side Data Comparison Using All

	Fields (No Matching Primary or Unique Index is Available) **Caution**: There is a risk that client-side comparisons for very large tables could exceed memory capacity.
Source Only and Target Only tabs	These tabs have the same format. You can choose to migrate selected rows only: ○ For the Source Only Rows tab, it means you insert them into target ○ For the Target Only Rows tab, it means you delete them from the target
Differing Rows tab	You can choose to: ○ Update from source to target This tab displays: ○ Rows from the source dataset in gray ○ Rows from the Target dataset in white ○ Column values that differ between source and target are highlighted in yellow.

When you click **Perform Comparison**, the row count is performed first. The number in parenthesis on each tab indicates how many rows are in each grid. The + means Toad hasn't fetched all the rows yet.

Scroll down in the grid to update that number.

The Row Counts tab will either say "Row Counts Differ" or "Row Counts Match."

DML:

If you choose to update via Array DML, every column has to be updated, even if the value didn't change. It may also fire triggers that might not otherwise fire. The non-array DML option will update each row with only the data that has changed.

Reviewing Differences

From the last three windows of the Compare Data wizard you are now ready to view the differences between your data sources.

- The first window reviews rows in Source 1 that are not in Source 2.

- The second window reviews rows in Source 2 that are not in Source 1.

- The last window reviews all differences.

You must run the SQL code for each window as described below.

Editable Datasets

You can edit the dataset from within the grid. In some editions of Toad, you can delete rows from one table, and insert them into the other directly in the grid.

To make dataset editable

» On the Review Differences page, select the **Editable Dataset** checkbox.

To review rows

1. Perform any desired optional steps:

   - Click the **View/Edit SQL** button to view or edit the SQL used to compare differences. You can make changes in the Edit SQL dialog box.

   - Click **Check** to verify that the query parses correctly.

   - Click **OK** to apply changes to your query.

   - Click **Execute** to find differences in the columns you want to compare.

To delete selected rows

1. Select the rows you want to delete.

2. Right-click and select **Delete Selected Rows**.

To delete all rows

» Right-click and select **Delete All Rows**.

You can use the File Differences Viewer to compare the contents of two files from a disk, or an object to a file or to another object.

To compare tabs in the Editor

» Press and hold **CTRL** while dragging one tab onto the other tab.

To compare two files on disk

1. From the Utilities menu, select **Compare Files**.

2. Select one or two files.

3. Click **OK**.

To compare objects in the Schema Browser

» From either the Procedures or Views page, right-click on an object and select **Compare with another object.**

To compare differing objects from a schema compare

» From the Schemas | Results (Interactive) tab, right-click an object listed as differing between schemas and select **Show Difference Details** to compare the scripts of the two objects.

When you have specified the objects you want to compare, whether they are files, database objects, or scripts, you can use the Differences Viewer.

The Differences Viewer lets you compare database objects in a split window. Differences between the objects are highlighted and the toolbar gives you access to controls for customizing the view and creating reports.

File Comparison Rules and Options let you specify the way Toad displays the similarities and differences between two files, or two versions of a file.

Thumbnail view

This lets you quickly change sections of the file. The thumbnail view (to the left of the viewing window) is a visual summary of differences. Colored lines show the relative position of line mismatches. A white rectangle represents the part of the text currently visible in the Differences Viewer window. You can click the thumbnail view to position the viewer at that point in the documents.

To access file comparison rules

» Click on the difference viewer toolbar.

Available Rules

General Tab	Description
Synchronization Settings	Synchronization Settings control the comparison engine that reports differences and similarities between files. Unless you are experienced in manipulating comparison synchronization algorithms, you will probably find that the default settings work well enough for most situations. In general, the following principles apply: • Set the synchronization parameters low - Allows more efficient

	searches for small differences.
	• Set the synchronization parameters higher - Handle larger files or files with large differences.
	• Initial Match Requirement - The minimum number of lines that need to match in order for text synchronization to occur.
	• Skew Tolerance - The number of lines the Differences Viewer will search forward or backward when searching for matches. Smaller numbers improve performance.
	• Suppress Recursion - Refers to the method used to scan for matches. Recursion improves the ability to match up larger as well as smaller sections of text, but it can take longer.
Minor Differences	Use the Ignore Minor Differences checkbox to activate or deactivate the highlighting of minor differences in the Differences Viewer window. (As explained below, you specify what constitutes minor differences in the Rules options under Define Minor Differences.)
Define Minor tab	You can have the comparison engine either highlight or ignore minor differences—such as comments, or spacing characters and tabs. This gives you the option of focusing only on significant differences, or, alternatively, reviewing even minor differences between versions. Place a checkmark next to the items that you want to classify as minor differences. Then, under the General category, you can select or clear the Ignore Minor Differences checkbox.
Line Weights tab	The Line Weights tab lets you assign synchronization priorities to the lines that match. You can use the values listed in the tab, or you can create your own.
Miscellaneous tab	Use the Miscellaneous tab to make choices about line termination. You can also limit comparisons to specific columns by entering a column range in the comparison boxes.

Difference Viewer Options

To access options

» Click ☑ in the Differences Viewer.

From this dialog box, you can set the colors and other visual characteristics used to highlight the following elements in the Differences Viewer:

- Matching text

- Similar text

- Different text

- Missing text

- Horizontal lines between mismatches

You can also set Find Next difference to use position only (so as not to obscure color coding), or normal line selection.

You can use Toad's Automation Designer to schedule tasks and processes on a regular basis, so the work occurs automatically.You can use the Project Manager to plan and accomplish your work involving components inside of and outside of Toad.

Automation Designer Overview

Tip: You can easily re-execute actions from the Rerun menu. The menu displays windows that were recently executed via a Toad action. Select **More** on the menu to see all available actions.

Automation Designer Components

The Automation Designer makes use of several categories to control Toad. These include:

- Action -The basic unit of a Toad App. It consists of the settings used to control one command, such as import table data, FTP a file, or ping a server.

- App -One or more actions designed to work together as a mini-Toad application.

- Scheduled Item -An app or action that has been scheduled using the Windows Task Manager.

- Execution Log - A log file containing the execution status of recently-run apps. It is automatically generated as you run actions, and contains data up to 7MB. When it reaches 7MB, old data is trimmed back to 5MB, and then it continues accruing. In this way it remains a current log of the most recent action execution.

The Automation Designer is the central location for running and creating Actions and Apps. While actions can be created from and loaded to many of the other windows within Toad, the power of actions is located in the Automation Designer.

Within the Automation Designer you can:

- Create new actions

- Organize actions into sets (apps)

- Run actions and apps

- Store actions and apps

- Schedule actions and apps

- Copy actions and apps to and from the clipboard

Tip: You can add Toad apps and actions to the Project Manager.

Action Recall

In addition, as with SQL Recall, actions are saved automatically when you perform a task that is action-enabled.

Recalling an app gives you the ability to perform a distinct operation or sequence of operations in Toad on demand. Actions that can be used in the Automation Designer are listed in the Action Catalog.

You can add Toad Apps and actions to your toolbar so you can execute them with one click.

To add actions to the toolbar

1. Right-click on the main toolbar and select **Customize**.

2. Click the **Actions** tab.

3. Click on an app in the left hand side to display the actions contained in it.

4. Drag and drop the action on the toolbar.

To add apps to the toolbar

1. Right-click on the main toolbar and select **Customize**.

2. Click the **Actions** tab.

3. Click **[All Apps]** in the left hand side.

4. Drag and drop the appropriate app onto the toolbar.

You can search the Automation Designer to find apps or actions that you have created. This panel supports both standard searches and regular expressions

To search the Automation Designer

1. In the Automation Designer's left hand panel, click **Search** panel.

2. In the Text to find box, enter the text you want to find.

3. To search with regular expressions, select the **Regular expressions** field.

1. Select or clear the **Search for apps** box as desired. Choose a filter from the **Look In** field if you want to limit the search to a specific folder.

2. Select or clear the **Search for actions** box as desired. Choose a filter from the **Look In** field if you want to limit the search to a specific app.

3. Click **Search**.

You can create new actions from many locations within Toad. You can create them directly from the feature you are using, or from the Automation Designer.

To create a new action from the Automation Designer

1. From the Utilities menu, select **Automation Designer**.

2. In the Navigation Tree, select **Apps** and then click the **Toad App** node where you want to create the action.

3. Click the tab that contains the action button and then click the button for the action you want to create.

   Click in the app where you want the action to reside.

   For example, click the **Import/Export** tab, and then click and then click in the app where you want the import table data action (this includes as a child node). A new action is created at the location where you click.

4. Double-click the new action and set up required.

5. Click one of the following:

   • Run - apply changes to properties and run the action

   • Apply - apply changes to properties

   • Cancel - cancel the changes to properties, but leave action in Automation Designer

6. Right-click the new action, select **Rename**, and enter a name for the action in the **Name** box.

7. Run the action:

Create Actions from a Toad Window

Toad windows that support actions include a camera button in the status bar of the window. Simply using these features will create an action automatically for you and store it in the action recall area

To create or load an action from a Toad window

1. In the status bar of the feature you want to make an action, click 📷 .

2. Select the appropriate option.

Toad automatically creates an action for you when you use a window that supports them. Toad stores these actions for you in the vault, so that when you need them they can be retrieved.

You can use the Action Recall node the same way you would use the other apps, except that it cannot be deleted. You can, however, clear it.

By default, Toad stores 10 actions per action type (for example, 10 export DDLs, 10 export dataset actions, and so on). However, this number can be changed easily.

To change the default number of actions automatically created per action type

» Select **Toad Options | General** and change the number in the Toad Actions per action type box.

You can easily clear out all the actions that have been saved in the vault so that it is easier to navigate.

To clear the action recall node

1. Click the **Action Recall** node.

2. Select the actions you want to remove. (**CTRL+A** to select all.)

3. Right-click and select **Delete.**

4. Click **Yes**.

Some actions can accept parameter files. These parameter files are saved in an INI format.

You can use the parameter file to override some settings in an action so that you can run various permutations without creating multiple actions.

An action parameter INI file contains property=value pairs for the settings that can be overridden. When originally created, these will correspond to the properties saved within the actions.

To create an action parameter file

1. In the **Automation Designer**, right-click on an Action or an App and select **Create Parameter file**.

> **Note**: If an action does not support a parameter file, then this option will not be available on the popup menu.

2. Name the parameter file and save it to a folder. You do not need to save it in the default folder.

3. Modify the parameter file if necessary. You can save multiple versions of the same file with slightly different names.

Example

The Execute Script action is enabled for parameter files. An ExecuteScript.ini file created as a parameter file might look like the following:

Content of ini File Line	Meaning
[47]	Internal identifier. There will be one of these identifiers for each action within a selected App.
Name=Execute Script1	This is the name you have given the action so you can find it within a longer App file.
Type=Execute Script	This is the type of action.
ItemCount=2	Number of items to execute.
Item0=c:\try1.sql	First item to execute.
Item1=c:\try2.sql	Second item to execute.
Output=1{1=SingleFile, 2=SeparateFile, 3=Clipboard, 4=Discard}	Output type. **Note:** In some cases, explanatory information will be included in braces within the line itself.
Output Location= C:\somefolder\output.txt	Output destination.
Connection=user@database	Connection associated with this action. When a connection is specified in the parameters file, it will override the bound connection of the Action. If this line is not included, then the bound connection is used.

Parameter files for Toad Apps will contain multiple [Key] sections: one for each action within the app. These can be removed as needed to use a particular action's default properties.

Parameter files can be used from within the Automation Designer or from the command line.

If connections are included in a parameter file and/or the command line, Toad will use connections in the following order:

1. Connections specified on the command-line always override everything else.

2. If a connection is not present on the command line, then those specified in a parameter (ini) file are used.

3. If there are no connections on the command-line or defined from the Automation Designer's **Run with connections** option, then the connection bound to the action is used.

To run an action/parameter file set from the Automation Designer

1. In the Automation Designer, right-click on the action you want to run and select **Run with parameter file**.

2. Select the parameter file you want to use and click **OK**.

To run an action/parameter file set from the command line

» Enter the command line as you would normally, and then use a pipe to separate the Action/App name from the parameter filename. For example:

```
toad.exe -a "App->Execute Script1 | c:\data
files\ExecuteScript1.ini"
```

One of the advantages to using actions and apps to manage your processes is that they can be shared easily with others.

Sending Actions by email

Sending an action from the clipboard

1. From the window you want to share (such as Export Dataset) click in the status bar.

2. Select **Save to Clipboard**.

3. In your email, select **Paste**.

4. Send your email.

Sending actions from the Automation Designer

1. In the Automation Designer, select the actions you want to send.

   Note: If you want to send the entire Toad App, select all the actions in that App tab.

2. Right-click and select **Copy** (CTRL+C).

3. In the email body, press **CTRL+V**.

4. Complete and send the email.

Receiving Actions by email

Receiving actions - clipboard to Toad feature window

1. From the email you receive, copy the action code to your clipboard.

2. Open the window where the settings reside (such as Export Dataset, or other)

3. Click the camera button in the status bar.

4. Select **Load from Clipboard** and click **OK**.

5. Settings are now loaded in your window and you can complete the action as you would
   normally.

Receiving an action - clipboard to Automation Designer

1. From the email you receive, copy the action code to your clipboard.

2. If it is not already open, open the Automation Designer.

3. Create a **Toad App** or click the tab for the App where you want the actions to reside.

4. Right-click in the Automation Designer and select **Paste** (CTRL+V).

5. Rename the pasted action to something descriptive.

6. Run the action at will.

You can run one or more actions from the same Toad App in the the Automation Designer.
Multiple actions are run in the order they display in list view.

To run actions

1. Select the action you want to run or multi-select several actions within the same
   Toad App.

2. Right-click and select **Run Selected Actions**.

To run a series of actions (partial App)

1. Open the Toad App containing the series.

2. Select the first action you want to run.

3. On the toolbar, click .

To run an entire App

»   Select the app you want to run and click .

Note: You can also right-click on the app you want to run and select **Run**.

To run actions with connections

Note: In this case, the connection you assigned to the action will not be used. The action will be executed once, for each connection you select, using that connection.

1. Select the actions you want to run.

2. Right-click and select **Run with Connections**.

3. Select the connections you want to use. These can be multi-selected using **SHIFT** or **CTRL**.

4. Click **OK**.

Schedule a Task

To schedule a task

1. Go to **Utilities** | **Task Scheduler**.

2. Click the 'Add Task' button on the scheduler toolbar.

3. Complete the Scheduled Task Wizard.

To edit an existing task schedule

1. Go to **Utilities** | **Task Scheduler**.

2. Select the task you want to edit in the Task grid and click the 'View Properties' button on the scheduler toolbar.

3. On the Action tab, select the specific Action and click **Edit** and make your changes.
   You can take those same steps on the Triggers tab.
   On the Conditions and Settings tabs, simply make your changes.

4. Click **OK** again to save your changes.

Schedule Actions and Apps

Use the Automation Designer to schedule actions using Toad's Task Scheduler. You can schedule actions or apps. In addition, you can use the scheduler button directly from some Toad windows.

To schedule actions

1. In the Automation Designer, select the **actions** you want to schedule.

2. Right-click and select .

3. Complete the wizard.

To schedule a Toad App

1. In the Automation Designer, select the **App** you want to schedule.

2. Click .

3. Complete the wizard.

When you have finished scheduling an action in this way, you can view them from the Task Scheduler window, or the Scheduled Items area of the Automation Designer.

To schedule an action

1. In the status bar of the feature you want to make an action, click .

2. Complete the **Schedule Action** wizard.

You can run Toad Apps and actions from the command line with or without Toad active.

To execute actions from the command line

» Use the **–a** parameter and specify the action, the Toad App, or a series of both.

If you specify only the action, the action name must be unique across all Toad Apps. Otherwise an entry will be made in the Action Log about more than one action found, and the *action will not run*.

If there may be more than one action with the same name, fully qualify an action within an Toad App: use `ActionSet->ActionName`.

Separate more than one action or Toad App with a space and surround each item with double-quotes.

Parameters in Command Line Syntax

You can use the parameter file to override some settings in an action so that you can run various permutations without creating multiple actions.

An action parameter INI file contains property=value pairs for the settings that can be overridden. When originally created, these will correspond to the properties saved within the actions.

Connections in the Command Line Syntax

Connection information is stored with the action, and passwords are retrieved from the connectionpwds.ini file if you have selected the **Save passwords** option.

However, the connection information stored in an action is overridden if you use a connection string (`-c schema/password@dbname`) in the command line.

If connections are included in a parameter file and/or the command line, Toad will use connections in the following order:

1. Connections specified on the command-line always override everything else.

2. If a connection is not present on the command line, then those specified in a parameter (ini) file are used.

3. If there are no connections on the command-line or defined from the Automation Designer's **Run with connections** option, then the connection bound to the action is used.

Note: Connection syntax does not require a password if a save password command exists for that connection within Toad.

Examples of Command Line Syntax:

Command line	Notes
`Toad.exe –a "MondayQueries"`	Runs a Toad App called "MondayQueries" and executes all actions within the Toad App.
`Toad.exe –a "Email Report"`	Runs an action called "Email Report". Only one action by that name in the entire datafile can exist.
`Toad.exe –a "CommonQueries->EmpQuery"`	Runs a fully qualified action, since there may be more than one action by the name "EmpQuery", the Toad App containing the action is included
`Toad.exe -a "App->Export Dataset1	c:\data files\ExportDataset1.ini`	Runs a qualified action with a parameter file.
`Toad.exe –a "CommonQueries" "EmailSet->Email Report" "SalesReports->MondayReport"`	Runs a series of actions and Toad Apps.
`Toad.exe –c stiger@ora10gr2.world –a "SalesReports->MondayReport"`	Overrides the connection assigned to the MondayReport Action and uses the mlerch connection instead.
`Toad.exe –c mlerch@ora10gr2.world akrotzer@utf11gr2.world -a "SalesReports->MondayReport"`	Runs the MondayReport action twice, once for each of the connections specified. The connection assigned to the action within the Automation Designer will not be used. **Note**: Using more than one connection executes the action against all the connections.

The Action Catalog and Apps

Toad Features that can be used in the Automation Designer are included in the tabs at the top of the Automation Designer right hand side Designer pane.

Refer to the online help for instructions on automating tasks and actions on the Import Export tab, the DB Misc tab, the Utilities tab, the File Management tab, and the Control tab.

Go to **Help | Contents | Manage Projects | Automate Tasks and Processes | Action Catalog.**
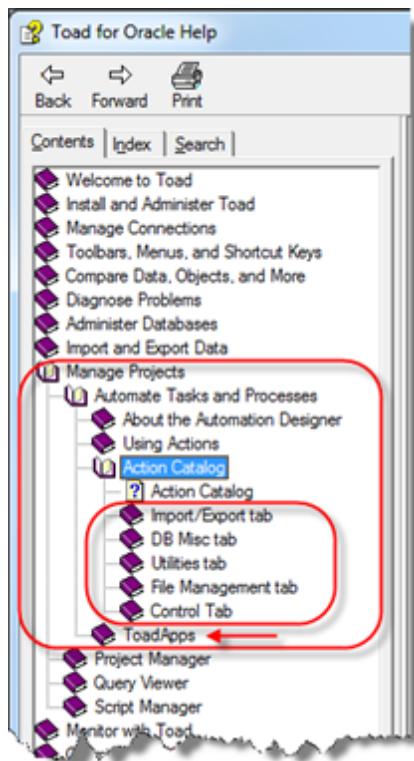
The help topic just below the Action Catalog topics describes Toad Apps.

These are central to the efficient use of actions. You can use apps to store and manage actions you have created.

By ordering the actions within an app, you can run the actions in them from the command line, or use the Windows Scheduler to schedule them to run at a particular time. The order in which they are specified will be the order in which they are run.

Project Manager Overview

You can use the Project Manager to easily organize your work area. The window is organized in a tree structure, with every item in the tree being a node that points to a different object. You

can combine several different Oracle connections and FTP connections into one project to make it easy to upload, download, and work with your databases. You can add subproject folders to your projects to further organize your work.

If you have recently upgraded Toad and you want to view newly available Project Manager actions, such as right-click menus, select the Configuration screen.

Unless you have a highly configured Project Manager environment you may want to consider performing a **Reset all defaults** to see all the new actions within the window itself.

To access the Project Manager

> » From the **View** menu, select **Project Manager**.

The Project Manager has the following panes:

- Connections—The connection pane (tab) is an area to work with various connections. You can create new connections, end connections, run scripts from a particular connection, and so on from this area.

- Projects—The Project Manager (tab) uses the following types of nodes and tabs to let you arrange your work:

Project Folder	The overlaying organizational unit is the Project Folder tab. This can contain other project folders, other types of folder, or other content. Multiple project folders can be created and arranged to suit your work style. The connections tab cannot be moved. The order of tabs is preserved when you close and reopen the Project Manager. Hovering your pointer over a project tab will display the full path to the project file.
File Folder	Use a File Folder node to represent a folder on a local or network disk.
File	Use a folder item node to represent a file on a local or network disk. These can include .sql files, .html files, .doc files, and so on. This node is located beneath a file folder node.
FTP Folder	Use an FTP folder node to represent a folder on an external FTP server. Contains FTP files.
FTP File	Use an FTP file node to represent a file on an external FTP server. This node will always be beneath an FTP folder.

DB Schema	You can add a Database Schema node to represent a connection to a schema on a database. Can contain database objects.
DB Object	Within schema nodes, you can include database object nodes. These represent objects residing on a database. Must be contained in a DB Schema node.
Task	Use the Project Manager to schedule tasks using the Windows Task Scheduler.
To Do List	Represents an user-created checklist. To do items are added beneath it.
URL	Represents an URL and can act like a shortcut to that site.

The Project Manager is highly configurable, letting you easily work with various objects simultaneously.

The Project Manager can be configured to work in the way you work. You can specify the command Toad executes when you drag a file onto another file, or onto a node.

Double-clicking is also customizable, as are the menu items that display in the right-click (pop up) menu.

To configure the Project Manager

1. Click on the Project Manager toolbar.

2. Select or clear the options you want to configure.

   Note: You can also choose to Reset all Defaults or Use defaults for a particular tab.

3. Click **OK**.

Clicking Reset all Defaults at the bottom of this dialog box will reset defaults on ALL tabs.

Click the Use Defaults button on an individual tab to return to the default settings for that tab only.

Adding Objects to Project Manager

You can add objects to your Project Manager simply by dragging them to the node where you want them to reside. This way you can have your Project Manager set up however you like it, and the Nodes named by you.

You must drag the object to a node designed for it. (In other words, tables need to go to a tables node under the correct connection, and so on.) Toad will not let you drag an object to an unacceptable node.
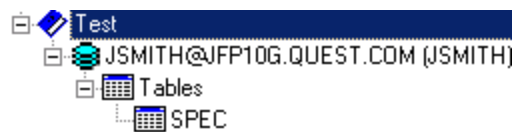
To add objects by dragging and dropping

1. Select an object, or multi-select several objects in the Object list in the Schema Browser.

2. Drag to the node in the Project Manager where you want it to reside.

Using the right-click menu to add objects has both advantages and disadvantages. Chief among its advantages is that you can create a new project on the fly.

All nodes beneath the new project are created and named for you.

For example, if you add a table called "SPEC" to a new project that you call "Test," you will have the following nodes created for you:

To add objects using the menu

1. Select an object, or multi-select several objects in the Object list in the Schema Browser.

2. Right-click and select **Add to Project Manager.**

3. From the Select Project dialog box, either select a project name from the drop down menu, or enter a new project name.

Working with Server Directories and Files

Another of the many strengths of the Project Manager is its ability to easily work with FTP server directories and files.

After you have created an FTP folder and added server information to it you can create additional nodes and servers quickly by using the copy nodes feature. You can also right-click and select **Rename** to rename the node for a more logical representation of what the directory contains, such as **Toad UNIX Scheduler log files**.

From here you can:

- Select one or more server nodes, right-click and select **Refresh server links**. This builds shortcuts to all the files underneath the selected server directories. Whenever you want to get an updated list of the server directory contents simply select refresh to rebuild the nodes.

- Drag-and-drop server file links to local directories to download the files.

- Drag-and-drop local file links to server directories to upload the files to the server.

- Drag files into the trash can to move them to the Recycle Bin.

Working with Local Files and Directories

Use **Windows Explorer** to drag-and-drop folders onto Projects to create links to local folders and files in the Project Manager. You can also right-click a **Project** and select **Add | Folder** and **Add | Folder Items**.

Once you have shortcuts to local folders and files you can:

- Right-click folders and select **Refresh folder links** to automatically build a list of shortcuts to all files in that folder

- Drag files onto one another to perform Toad's file compare.

- Drag files and folders onto server directories to upload them. Dragging a folder onto a server folder will upload all the underlying files.

- Drag files into the trash can to move them to the Recycle Bin.

Format Files

You can format your files from within the Project Manager, or as an Action in the Toad Automation Designer. This lets you more easily convert scripts, procedures, functions, and so on to fit your company's formatting requirements.

The files are automatically formatted and the results of the formatting process are displayed in the Output window, Formatting Results tab. If there are syntax errors within the code that prevent proper formatting, Toad will list these as well.

Files to be formatted must be included in the Project Manager as nodes.

To format one file from the Project Manager

1. In the Project Manager, select the file you want to format.

2. Right-click and select **Format Files**.

To format multiple files from the Project Manager

1. Do one of the following:

    - In the Project Manager, select the files you want to format.

    - Select the folder or project nodes that directly contain the files you want to format.

2. Right-click and select **Format Files**.

To create a Format Files action

1. From the Automation Designer, click the **Utilities** tab.

2. In the navigation panel, select the App where you want formatting to occur.

3. Click and then click in the app.

You can check the syntax of your files from the Project Manager tree. You can check multiple files, or check them one at a time.

Results display in the Output window, on the Syntax Check Results tab.

To check files for syntax errors

1. Do one of the following:

    - Select one or more files from the Project Manager tree.

    - Select the folder or project nodes containing the files you want to check.

2. Right-click and select **Check Syntax**.

You can upload a file directly from the Editor to FTP using the Project Manager.

To move a file from Editor to FTP

»   From the Editor, click and drag the tab of a loaded file from the Editor to an **FTP** node in the Project Manager.

Chapter 3: Toad and Your Code

Toad is the premier Oracle tool for working with SQL and PL/SQL. This chapter is for the more seasoned Oracle user and for the Toad user ready to learn more.

Note: Please review Chapter 1,Chapter 1: Getting Started and Chapter 2,Chapter 2: Toad Without Code, for information that will benefit even some seasoned Toad users.

This chapter is a subset of the online help topics, arranged in a logical sequence for learning and implementation. When you are ready to learn more about a topic, consult online help.

Navigate Toad's Editor

The left pane of the Editor contains the Navigator, which lists statements, objects or package contents contained in the Editor.
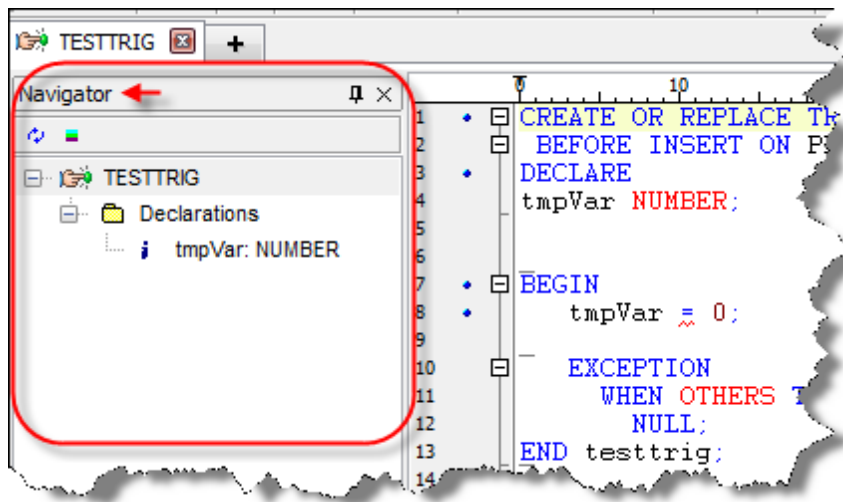
To access or hide the Navigator

» Right-click the Editor and select **Desktop | Navigator**.

The list is displayed in a hierarchy, with each element broken out separately.

If you want to hide some of these elements, you can right-click the hierarchy and select **Navigator Options**.

The reload object options give you an easy way to synch your PL/SQL source with objects also existing on the database.

You can reload objects in one of several ways.

To reload an object from the Navigator

1. In the Navigator, select the object you want to reload.

2. Right-click and select **Reload Object**.

To reload all objects from the Navigator

1. In the **Navigator**, select the object you want to reload.

2. Right-click and select **Reload All Objects**.

To reload from the Toolbar

1. Place your cursor in the object in the Editor that you want to reload.

2. Click ↻ on the toolbar.

Using the Navigator Panel

To display the entire statement

» Hover the pointer over an item in the Navigator. Information about it is displayed as a tooltip.

To jump to the statement

» Click on the statement in the Navigator and the cursor jumps to that point in the Editor.

To refresh the navigator panel

» Do one of the following:

   • Save the current file

   • Click the **Refresh** ↻ button.

To sort statements

» Select **Sort** to sort the tree alphabetically.

In the Editor, you can configure the Navigator panel to only display declarations that you want to see. In addition, you can change the look of the panel to suit the way you work.

To access the Configure Navigator Panel

» From the Navigation Panel, right-click and select **Navigator Options.**

On the General tab:

   • Initial Node Expansion - In this area you can choose how the hierarchy is expanded when first opened. You can choose to expand to one level, all levels, or no levels.

- Lower-case text - With this option selected, declarations display in lowercase. If it is not selected, they display in uppercase. Lowercase takes up less screen space. *Default: Selected*

- Sort - When this option is selected, declarations are sorted alphabetically within the hierarchy. Unselected, declarations display in the same order they are declared in the code. *Default: Cleared*

- Font - Click the **Font** button to select the font you want to use in the Navigator tree.

On the Statements tab:

- In the Statements area, you can select the items you want to display in the navigator. By default, all statement types are included. These include packages, package bodies, functions, SQL*Plus, anonymous blocks, and so on. In addition, you can rearrange the order in which they are displayed in the tree structure.

- To rearrange the tree structure:

  - Click the item you want to move.

  - Click the Up or Down button to move it up or down in the display.

On the PL/SWL Components tab:

- In the PL/SQL Components area, you can select the PL/SQL items you want to display in the navigator. By default, all types are included. These include constants, exceptions, subtypes, cursors, ref cursors, local subprograms and so on. In addition, you can rearrange the order in which they are displayed in the tree structure.

  - Click the item you want to move.

  - Click the Up or Down button to move it up or down in the display.

Beside the tree structure area are several other options you can use to configure your Navigator Panel.

Include parameter direction	Declarations displays differently if the parameter is an input or output parameter. If this is selected, labels on the tree will take up a bit more room. The default is selected.
Include Datatype	When this option is selected, the datatype is displayed beside the declaration.

Use bookmarks to help you manage files. They mark a position within the Editor so that you can easily jump back to that line. You can set up to ten separate bookmarks within one Editor.

Note: All keystrokes assume you have not altered the default Editor keys.

To set a bookmark

» Right-click and select **Toggle Bookmark | Bookmark#** (CTRL+SHIFT+# where # is a number between 0 and 9).

The bookmark number displays in the Editor gutter.

To clear all bookmarks

» Right-click and select **Clear All Bookmarks.**

To clear one bookmark

» Right-click and select **Toggle Bookmark | Bookmark#** (CTRL+SHIFT+# where # is a previously defined bookmark between 0 and 9).

To jump back to a bookmark

» Right-click and select **Go to Bookmark** (CTRL+# where # is a previously defined bookmark between 0 and 9).

   Note: The # must be called from the number row on the keyboard. Using the Number pad will not call the bookmark.

There are several ways to move between tabs in the Editor.

To move between tabs:

» Do one of the following:

- Click the tab you want to open.

- Press **ALT+PageUp** or **ALT+PageDown** to cycle through them.

- If you have opened them using the **CTRL+Click** functionality within the Editor, click the navigation buttons in the Editor toolbar and select either scroll forward and back through them in the order they were opened, or select from a drop-down order.

Work with Statements and Scripts

Some of the most basic Toad features for executing scripts and statements, and formatting code are provided in Chapter 1.

C:\Users\<user>\AppData\Roaming\Quest Software\Toad for Oracle\<version>\User Files\CodeSnippets.dat

To use Code Snippets

1. From the View menu, select **Code Snippets**.

2. Select a **category of code** from the box at the top of the window.

3. Select the code from the list. You can:

4. View a description of the code in the area below the code list

5. Double-click the code to insert it into the active editor tab

6. Drag and drop code into the editor

To Edit Code Snippets

1. From the Toad Options window, select **Editor | Code Assist**.

2. In the Code Snippets area, select the category of snippets you want to edit and then click **Edit**.

3. Select the snippet you want to edit, and click **Edit**.

4. Edit the Oracle Function or the description and click **OK**.

To Add Code Snippets to an existing category

1. From the Toad Options window, select **Editor | Code Assist**.

2. In the Code Snippets area, select the category of snippets and then click **Edit**.

3. Click **Add**.

4. Enter the code in the **Oracle function** box.

5. Enter a description in the **Description** box.

6. Click **OK**.

To Add Code Snippets to a new category.

1. From the Toad Options window, select **Editor | Code Assist**.

2. In the Code Snippets area, click **Add**.

3. Enter a category name in the **Category** box.

4. Enter the code in the **Oracle function** box.

5. Enter a description in the **Description** box.

6. Click **OK**.

To highlight a snippet

1. Place your code in the snippet you want to highlight.

2. From the Editor menu, select **Highlight Snippet** (CTRL+H).

Code Completion Templates use a manual keystroke (CTRL+SPACE) to perform the substitution. Code templates are more than a single phrase and can contain line feeds, substitution variables and a cursor position indicator.

You can edit the Code Completion templates directly in the Language Management, **Code Templates** tab. See Code Templates Tab for more information.

Example

One of the code templates defined in Language Management is:

```
entire cursor block (crbl)

DECLARE

CURSOR c1 IS

SELECT | FROM WHERE;

c1rec IS c1%ROWTYPE;

BEGIN

OPEN c1;

LOOP

FETCH c1 INTO c1rec;

EXIT WHEN c1%NOTFOUND;

END LOOP;

CLOSE c1;

END;
```

Where:

- "crbl" is the macro for the template (the text YOU type)

- "entire cursor block" is the description of the template

- everything following until the next template is the body of the template

Note: Do not leave spaces between the end of the template description and the final right bracket! NT4.0 API calls to manage profile strings have a bug that will cause reading of the templates file to fail.

Keyboard Shortcuts

The default keyboard shortcut for Code Completion templates is **CTRL+SPACE**. Enter the template name (such as crbl) and press the shortcut to expand it.

Using a Template

When you enter the name of a template and press the shortcut key, Toad follows the following procedures:

- If the name you have entered does not match any of the names on the code template list, a drop-down listing of available code templates displays so you can choose the correct template.

- A dialog box displays listing the substitution variables and prompting you to enter values.

- Expands the code and replaces variables.

- Removes the cursor placement marker, and places the cursor there.

To use the code template

» Type the macro (for example, **crbl**) and then press **CTRL+SPACE** to load the body of the template and place the cursor at the position of the vertical pipe character. If the word or phrase under the cursor does not match an existing macro exactly, a drop-down list of all macros is displayed.

Cursor Placement:

If Toad finds a single pipe (|) in the template body, then when the substitution of the template is complete, the cursor is positioned at that point in the code. The pipe is removed, as it is used only as a marker for the cursor position. Only one pipe can be used this way in a code template.

Substitution Variables:

The Code Completion templates also support substitution variables. Enter the substitution variable in the form of an ampersand followed by a valid simple Oracle identifier. For example, &1 is not a substitution variable, but &a is.

When a template containing substitution variables is selected, you will be prompted to enter values. Any occurrence of the substitution variable is then replaced with the entered value.

Editing the Code Template List

Toad provides a list of default templates. As you use this feature, however, you will create templates that work better for your purposes, and you will want to edit the default templates.

You can edit and add templates to suit your needs in the Language Management window.

A substitution is a text phrase that corresponds to replacement text. For example:

- If you specify a substitution pair of ACT = ACTIVITY_CENTERS, when you type ACT and press space (or other word delimiters), ACT is automatically replaced by ACTIVITY_CENTERS

- If you specify a substitution pair of NDF = NO_DATA_FOUND and you type NDF and press a delimiter, NDF is automatically replaced by NO_DATA_FOUND

Auto Replace Substitutions are different from aliases in that you can use any group of characters to define and complete the replacement. Aliases do not change the text in the SQL. They are a method of referring to a table by a different name. Substitutions will actually change the text within your code to match the target keystrokes.

To edit Auto Replace entries

1. From the **Toad Options | Editor - Behavior** page, click **Auto Replace**.

2. Make changes in the **Auto Replace** grid.

Using Substitutions

When auto-replace is active, Toad uses several characters as auto replace activation keys. Toad will automatically replace an activation key with the substitution value when it reaches a terminator, for example the space key. For example, "teh" is by default set to replace with "the" in the Editor. Or, you can enter "pack" and Toad will expand it to "package".

An activation key will cause a matched "replace" string immediately before the cursor to be replaced by the "with" substitution value. For example, if you have dept = DEPARTMENT in your auto replace file, you can enter the following:

dept`[space]` and the Editor will expand to DEPARTMENT .

Or, you can enter **dept:** and the Editor will expand to DEPARTMENT:.

Or you can enter **dept;** and the Editor will expand to DEPARTMENT;.

Note: The activation key is always included in the expanded substitution.

You can edit this list of keys in the box if you have other needs.

Importing and Exporting Files

Also from the Editing options window, you can import and export auto substitution files.

Toad comes with a handful of substitution pairs. You can edit and add to the list from the Auto Replace dialog. You can then export the settings to a text file. Alternately, you can create or edit a substitutions file manually and then import it.

Export: Saves the auto replace settings to a separate text file. If you make many changes to your auto replace settings, it is recommended that you export them regularly for back up.

Note: If you do not export your settings to a file before you import a file, they will be lost.

Import: You can import a text file into Toad. This file can be created independently or by exporting the settings you have created in Toad.

Importing a file overwrites the current settings.

Editing a substitutions file

Because it can be tedious to add large amounts of information to the substitution file directly from the interface, you may want to edit or create a text file directly.

Use the format of string=replacement string. For example:

```
aax=AAX_ACCESSGROUP_APPLICATION

aca=ACA_ACTIVITY_ACTION

acc=ACC_ACTIVITY_CATEGORY

acd=ACD_ACTION_DESCRIPTION

acp=ACP_ACTIVITY_CONTACT_PARTIC
```

Code Folding

Code folding lets you collapse portions of your code so that you can see more of the code you need to see. Then you can expand it when you need to work with the folded code.

Language management is the basis of code folding. Although some standards settings for code folding are included with Toad, the strength of this feature is found in the ease of configuration. You can set Toad to fold code where you want it to fold.

To enable code folding

» From Toad Options | Editors | Behavior, select Enable code folding.

To fold code selection

1. In the **Editor**, select the code you want to fold or unfold.

2. Right-click and select **Fold Selection**.

To fold (or unfold) all code in the Editor

» In the Editor window, right-click and select **Fold all** (or **Unfold all**).

You can create new areas for Toad to fold code by creating new ranges within the Language Management area. When code folding is enabled, you can then fold the code within that range.

To set a code folding range

1. In Toad Options | Editors | Behavior | Language Management, select the type of code you want to fold, and then click ⋯ .

2. Click the **Rules** tab.

3. Add a new Rule. When you name the rule, you may want to include Start in it, as in If start. Create another rule that will define where you want the range to end, such as If end.

4. Click the **Conditions** tab, and then select the starting condition you have just created.

5. Set up the conditions you want to use to define the start of your range. For example, Identifier = one or more tokens.

6. Click the **Properties** tab.

7. Select **Range start** in the rule type box.

8. Set the range end condition to the rule where you want to end the condition.

9. Set the style you want to display when the range is selected. In the case of If start, the default style is **Current block**.

10. Select any other options you want to activate. Make changes to the Advanced tab if you wish.

1. Set the **Range end condition** in the ending rule you have created in the same manner, only selecting Range End as the rule type.

2. Click **Apply** or **OK**.

Wrap Code

Toad's Wrap Utility provides an easy way to access Oracle's Wrap Code utility. The utility encrypts PL/SQL code. This window is connection independent so you do not need an open database session to use it.

Note: You must use valid PL/SQL for the utility to wrap the code. If the contents of the Input Text and Wrapped Text tabs are the same, there is probably an issue with your code.

To use the Wrap Utility

1. Select **Utilities | Wrap Utility**.

2. Enter code in the Input Text tab or click 📂 to open a file.

3. Click ▶.

4. Click 💾 to save the wrapped text or 🖼 to send it to the Editor.

Troubleshooting

To use Toad's Wrap Utility interface, it must be able to find the Oracle Wrap Code utility. To assure that Toad can find the utility, check to see that one of the following is true:

- The Wrap Utility is in a recognized Windows path.

- You have added the path to Toad's list from the **View | Toad Options | Executables** page.

Results Grids

At the bottom of the Editor are tabs that display results of your actions within the edit window.

Depending on your Toad Edition, any of these may display results:

- Data Grid

- DBMS Output area

- Script Output area

- Script Debugging area

The data grid displays fetched data. The results panel contains tabs for Data, Explain Plan, Auto Trace, DBMS Output, Code Statistics, and Script Output. If you have the debugger module, you may also have the Script Debugger displayed.

A horizontal splitter between the Editor and results panel lets you size each component.

The data grid is user configurable. It includes:

- optional movable columns

- support for LONG and LONG RAW columns by popup windows

- support for exporting data to disk

- printing

- editing data

The grid also has a right click menu for quick access to grid configuration options. If the resulting dataset is editable, several of the buttons on the grid navigator will become enabled (insert, delete, post updates, and so on).

Describe (Parse) Selected Query

Use this function to see what columns would be returned IF the query were executed. This is useful for tuning a LONG query before it is executed.

To describe a query

» Select **Editor | Describe (Parse) Select Query** (CTRL+F9).

Strip Code Statement and Make Code Statement Functions

The Editor window contains two functions that simplify copying SQL statements from Toad to code development tools such as Delphi, VB, C++, Java, or Perl, and from those code development tools back to Toad. The functions

- Strip Code Statement (CTRL+P)

- Make Code Statement (CTRL+M)

are available from the **Editor** menu.

Strip Code Statement: Strips off the code development tool syntax from the SQL statement, ready to execute in Toad.

For example, taking this VB code from the VB development tool, copying it, pasting it into Toad, and running Strip Code Statement, changes the SQL statement from this:

```
Sql = " select count(*) as cnt"

Sql = Sql & " from all_tables"

Sql = Sql & " where owner = 'DEMO'"

Sql = Sql & " and table_name = 'EMPLOYEE'"
```

to this:

```
select count(*) as cnt

from all_tables

where owner = 'DEMO'

and table_name = 'EMPLOYEE'
```

Now the SQL is ready to execute in Toad.

If you have multiple SQL statements in the Editor, highlight the statement you want to strip before executing the Strip Code Statement function.

Make Code Statement: Adds the code development tool syntax to the SQL statement in the Editor and makes it ready to paste into the appropriate development tool.

When making code statements, rather than changing the code in the Editor window as the Strip Code Statement function does, the Make Code Statement function takes the currently highlighted SQL statement, translates it into the code development tool syntax, and copies it to the clipboard. You can now switch to the code development tool and paste in the results. A message displays in the status panel such as "VB statement was copied to the clipboard".

If you have multiple SQL statements in the Editor, highlight the statement you want to make before executing the Make Code Statement function.

Selecting the Code Development Tool

The default selection is VB. Click the arrow beside ▤ or ▤ on the Editor toolbar to change the default selection.

You can also select the code development tool in the **View | Toad Options | Editor | Code Assist | Make Code Format** box.

The Make Code Format box lets you select a language syntax for Toad to convert a SQL statement into (Make Code Statement function) and out of (Strip Code Statement function). Currently, Delphi, VB, C++, Java and Perl are supported. You can also create your own language templates.

You can create your own Make Code Templates.

To create a Make Code template

1. From the Toad Options window, select **Editor | Code Assist**.

2. In the **Make Code** area, click **Add**.

3. Use the following variables to create your own language template:

   - %SqlVar% - this is the MakeCode variable entered in the Toad Options | Editor | Code Assist | MakeCodeVariable box. Using a variable here is optional.

   - %SqlLength% - This will be replaced by the number of characters in all selected SQL, on one or multiple lines.

   - %SqlText% - This is replaced by the first line of SQL you have selected.

- %SqlTextNext% - This will be replaced by any subsequent lines of SQL you have selected. This is cumulative and includes ALL subsequent lines of SQL.

Note: For the best output result, it is recommended that the %SqlTextNext% variable be included on a separate line. Use the left and right brace for comments.

Remarks (such as template name) should be included in brackets.

4. Click **OK**.

Examples:

Using the following SQL:

```
Select *

from

Employees
```

and using the following code templates, you will get the results below.

Template	Result
{C# Language Template} string %SqlVar%& = "%SqlText% " + "%SqlTextNext% "	string SQL = "Select * " + "from " + "employees " ;

{C++ Language Template}
 	
char %SqlVar% [%SqlLength%];
 	
strcpy(%SqlVar%, "%SqlText%");
 	
strcat(%SqlVar%, "%SqlTextNext%");
	char SQL[23];
	
	strcpy(SQL,"Select * ");
	
	strcat(SQL,"from ");
	
	strcat(SQL,"employees");

{ Java Language Template } "%SqlText% " + "%SqlTextNext% "	"Select * " + "from " + "employees "

Change Text to Upper or Lower Case

Capitalization Effects that you have set up in the Toad Options can override your Upper Case and Lower Case conversions.

To change the selection to Upper Case

> » Select **Edit | Upper Case** (CTRL+U).

To change the selection to Lower Case

> » Select **Edit | Lower Case** (CTRL+L).

View Code Statistics

Toad can provide you with some basic statistics about your code.

Note: Because of the way the parser counts lines, the number of lines of code and blank or comment lines may vary. Use these statistics as an estimate rather than an exact count.

To view formatting statistics

1. Open the code in the Editor.

2. Right-click and select **Formatting Tools | Profile Code**.

Edit: Swap This/Prev Lines

The **Edit | Swap This/Prev Lines** menu item switches the line your cursor is on in the SQL script with the previous line.

For example, if the cursor is on Line 8, then when you swap, what was on line 8 would now be on line 7 and what was on line 7 would now be on line 8.

Find Closing Block

Closing blocks are controlled by the Language Management options. You can turn the staples (brackets) on and off to mark them.

Variables Window

The Variables window displays when you execute a statement from the Editor window, if you have specified parameters in your SQL query. For example, execute the following:

```
SELECT * FROM EMPLOYEE WHERE EMPLOYEE_ID =:EMPID
```

Select each bound variable, select the data type, and enter the value. Click **OK** to complete running the resulting SQL statement.

Note: Bound parameter substitution is NOT supported in anonymous PL/SQL blocks.

To delete a bound variable

   »   Select it and click **Delete**.

To add a deleted bound variable

   »   Click **Scan SQL**. Toad re-scans the SQL and enters the variables.

Using Aliases

Setting up table aliases lets you create shortcuts to columns of a query. You can then use the alias in a SQL statement instead of a long column name or path.

Toad Table Aliases should not be confused with Oracle RDBMS table aliases. RDBMS table aliases are used to qualify columns in a multi-table SQL statement.

You can set up and edit Toad aliases with a text editor. Aliases are stored in the **aliases.txt** file. See "ALIASES.TXT file" (page 154) for more information.

No ini changes are required to use aliases. Use them in the Editor by entering the alias instead of the full table name, for example:

```
SELECT DEPT.
```

and a column list will pop up for the correct Oracle table (in this case, DEPARTMENT).

If you set up these table aliases in ALIASES.TXT they will be presented on the Query Builder dialog box when you select that table to build your query.

To complete the SELECT SQL statement above, use Auto Replace Substitutions names similarly to the table aliases.

These are accessible through the **View | Editing Options | Auto Replace tab.**

ALIASES.TXT file

Because aliases.txt is a text file, you can edit it manually using a text editor.

> **Caution:** Do this when **Toad** is not running. Otherwise the file will be overwritten at shutdown, or whenever you save options.

You might want to manually edit the file to pre-build a list of aliases. Alternatively, you may want to edit it manually to perform maintenance on it and remove extraneous or multiple entries. Currently there is no way to do this from within Toad.

The text file that controls the alias list is found in /Toad/User Files/aliases.txt. The format of aliases.txt is as follows:

```
table_name=alias
```

>for example:

```
AAX_ACCESSGROUP_APPLICATION=aax
```

```
ADD_ADDENDUM=add
```

```
ADT_ADDRESS_TYPE=adt
```

```
AFP_ACTIVITY_FIRM_PARTIC=afp
```

```
AGX_APPLICATION_GROUP_ITEM=agx
```

```
DEPARTMENT=dept
```

There may be times when you have an object name that also happens to be an alias for another table. If you try to use the normal Columns Select methods, Toad returns the columns for the table to which the Alias refers. You can skip the alias and open the columns list for the object, rather than the alias.

To skip an alias

» Select **Edit | Picklist drop-down no alias** (CTRL+SHIFT+T).

Toad will keep track of aliases for you as you create them using SQL. Toad scans the FROM clause of a select statement to check for tables and aliases.

Note: Toad only finds the first FROM clause in any one statement. So extra tables and aliases in complex statements such as unions or subqueries will not be found.

If a table alias is found in the FROM clause of a current SQL statement, Toad will do the following:

- For aliases already on the list, you do not need an alias defined in the FROM clause for Toad to use the columns drop-down feature.

- If an alias is identified in the SQL statement, and a Columns Select is used on the alias, it is automatically added to aliases.txt.

- If there is already an entry for that alias in aliases.txt, the pair defined in the current FROM clause replaces the old entry.

Work with Results

The SQL Results Grid is found in the Data tab in the lower portion of the Editor, and the Data tab in the right hand detail panel of the Schema Browser. Results are displayed in the Editor Data grid. There are many things you can do with the results of a query.

Auto Trace

Auto Trace is a mini version of SQL Trace that displays quick results directly on the client. In Toad, the results are displayed beneath the Editor or the Query Builder window. From the Auto Trace results area you can sort columns, print the grid, and copy the results to the clipboard.

Auto Trace is one of many optimization features Toad provides.

Notes:

- Auto Trace forces a read of all data from the result of the query. This can take some time. If a query may return a large number of rows and time is a factor, you should not use Auto Trace.

- This feature requires access to some V$ tables.

To enable/disable Auto Trace and SQL Trace

» Right-click in the **Editor** and select the **Auto Trace** menu option. A checkmark indicates it is enabled. Or, in the **Editor** results area, click the **Trace** tab and then the **Auto Trace** or **SQL Trace** tab and select or clear the **Enabled** checkbox.

To view Auto Trace results

» In the **Editor** results area, click the **Trace** tab. If the Trace tab is not visible, right-click and then select **Desktop | Trace**.

Optimization

Toad offers several features to help you optimize queries or view the performance statistics for the server. Although Toad provides access to these statistics and/or Oracle utilities, this section describes only how to use the features within Toad, not how to interpret the results.

For an excellent guide on SQL tuning, we suggest *Oracle SQL - High Performance Tuning* by Guy Harrison available from Prentice Hall Press.

Feature	Description
Optimize Current SQL	Use Auto Optimize SQL to quickly optimize a single SQL statement. Toad searches for faster alternatives and allows you to compare them to the original statement and each other.
SQL Optimizer	If you have a Toad Edition that includes the SQL Optimizer package, you can use it to help you optimize your code.
Explain Plan	Explain Plan shows the path and order in which Oracle will process your statement. By processing Explain Plan on variations of a statement, you can see how the adjustments will affect the execution.

Feature	Description
SQL Trace	SQL Trace is a server-side trace utility that displays CPU, IO requirements, and resource usage for a statement. SQL Trace is a much more complete utility than Auto Trace; however, viewing the results can be difficult because the output file is created on the server.
Auto Trace	Auto Trace is a mini version of SQL Trace that displays quick results directly on the client. In Toad, the results are displayed beneath the Editor window.
Optimizer Mode	You can set the optimizer mode for the current session. This will affect all queries (including Toad's own) for the duration of the session or optimizer setting. **Note:** Optimizer mode is not available in Oracle 10g databases. Therefore Toad disables this option when it is connected to a 10g database.

Row Numbers

Toad will display row numbers in the Editor data grid if the option to do so is enabled.

Make sure the **View | Options | Data Grids tab | Show row numbers in all grids** (applies to data grid on Browser also) checkbox is selected.

The total number of rows returned in the resultset will display in the status bar at the bottom of the window only after you have scrolled to the end of the resultset. This is because the resultset is fetched only as required, to improve overall performance. When the last row is fetched, Toad will display the total count.

To return the Oracle pseudo-column ROWNUM in the SQL Results grid, add "ROWNUM" to the query:

```
select rownum, emp.* from employee emp
```

Remember that rownum is an Oracle pseudo-column, not stored with the table definition or data, but derived when queried.

To return the ROWID in the query, specify the column and the datatype:

```
select rowidtochar(rowid), emp.* from employee emp
```

Note: You can also enable "Show ROWID in data grids" from **View | Options | Data Grids** tab by clicking in the checkbox. This will accomplish the same thing without resorting to coding.

Saving Toad Query Results

Any of Toad's window query results can be saved to the Windows Clipboard or to a file by the procedure below. Some dialog boxes do NOT have a "Copy to Clipboard" or "Save to Disk" function. This duplicates that functionality.

To save query results

1. Turn on spooled output to disk file: **Database | Spool SQL | Spool SQL To File**.

2. Run the desired Toad window (for example, the Schema Differences window) select each desired tab.

3. From the User Files folder, open **DEBUG.SQL**.

4. Copy each **SQL** into the Editor window.

5. Run each **SQL** in the Editor window, substituting hard coded values for the bind parameter variables, or just enter them when prompted in the Variables dialog box.

6. Save the grid contents to clipboard or disk file, using **right-click, Export Dataset**.

Time Values

When displaying times with dates, Delphi, and thus, Toad, will suppress the time values if they are 12:00:00 AM (midnight). The time portion of the date fraction is zero, so Toad adds no value to the display of the date.

Remember that Oracle stores dates as a big fraction number offset from January 1, 4712 B.C. It is then converted to a complete date and time. It is also good well past Y2K.

Performing the query "Select sysdate from dual" will display the time, and similarly, queries of DATE datatype columns will display the time if it is not midnight.

The time drop-down in **View | Toad Options | Data Grids** does not affect this output of time.

Code Analysis

Code Analysis is an automated code review and analysis tool. It enables individual developers, team leads, and managers to ensure that the quality, performance, maintainability, and reliability of their code meets and exceeds their best practice standards.

Code Analysis is available in the Editor, which ensures code quality from the beginning of the development cycle. In the Editor, Code Analysis evaluates how well a developer's code adheres to project coding standards and best practices by automatically highlighting errors and suggesting smarter ways to build and test the code.

Toad also provides a dedicated Code Analysis window, where you can perform more detailed analysis, evaluate multiple scripts at the same time, and view a detailed report of the analysis.

Notes:

- This feature is available in the Professional Edition and higher.

- This feature was named CodeXpert prior to Toad 11.

Rules and Rule Sets

Code Analysis compares code against a set of rules for best practices. These rules are stored in rule sets.

The Code Analysis rules and rule sets can be adjusted to suit the requirements of different projects. Regardless of whether developers are responsible for their own code quality or if this needs to be managed centrally, Code Analysis can be adapted to fit either need.

Code Analysis Metrics

Code Analysis uses a variety of metrics to evaluate code, including the following:

- Computational Complexity (Halstead Volume)—Measures a program module's complexity directly from source code, with emphasis on computational complexity. The measures were developed by the late Maurice Halstead as a means of determining a quantitative measure of complexity directly from the operators and operands in the module. Among the earliest software metrics, they are strong indicators of code complexity. Because they are applied to code, they are most often used as a maintenance metric.

- Cyclomatic Complexity (McCabe's)—Cyclomatic complexity is the most widely used member of a class of static software metrics. It measures the number of linearly-independent paths through a program module. This measure provides a single ordinal number that can be compared to the complexity of other programs. It is independent of language and language format.

- Maintainability Index (MI)—Quantitative measurement of an operational system's maintainability is desirable both as an instantaneous measure and as a predictor of maintainability over time. This measurement helps reduce or reverse a system's tendency toward "code entropy" or degraded integrity, and to indicate when it becomes cheaper and/or less risky to rewrite the code than to change it. Applying the MI measurement during software development can help reduce lifecycle costs.

The Code Analysis Report includes detailed descriptions of the code metrics and how they work.

Analyze Code in the Editor

By default, Code Analysis automatically checks the code in the Editor for rule violations. Toad underlines violations with a wavy blue line.

The default rule set is "Top 20," which is a key set of rules compiled by Steven Feuerstein and Bert Scalzo, Toad experts and authors of Toad and Oracle-related books, articles, and blogs.

Note: To turn off automatic Code Analysis in the Editor, clear the **Check Code Analysis rules as you type**field in the Code Analysis options.
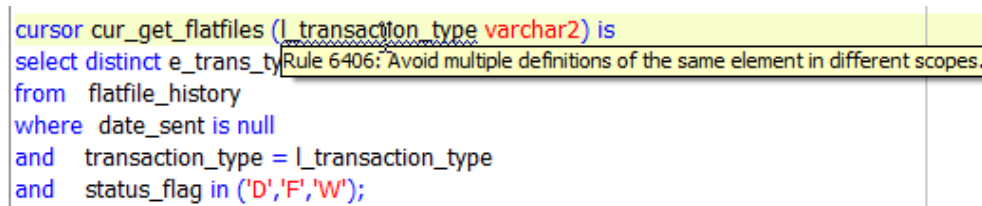
To analyze code in the Editor

» Click ![icon] in the Code Analysis toolbar, or right-click the Editor and select **Analyze | Analyze Code**.

The Code Analysis Statistics window displays, and CRUD (create, read, update and delete) information and rule violations display in the tabs below the Editor.

Note: You can also click ![icon] in the Code Analysis toolbar send code to the Code Analysis window.

To describe rule violations

1. To view a brief description of the violation, hover over the blue line.


```
cursor cur_get_flatfiles (l_transaction_type varchar2) is
select distinct e_trans_ty|Rule 6406: Avoid multiple definitions of the same element in different scopes.
from   flatfile_history
where  date_sent is null
and    transaction_type = l_transaction_type
and    status_flag in ('D','F','W');
```

2. To view a detailed description of the violation, right-click the blue line and select **Code Analysis Violations | Explain Rule**.

To change the rule set

» Select a different rule set in the Code Analysis toolbar.

Perform Detailed Code Analysis

The Code Analysis window provides detailed analysis, including a results dashboard, report, and tree view with violations and code properties. You can also simultaneously analyze multiple files from this window.

To perform detailed code analysis

1. Select **Database | Diagnose | Code Analysis**.

2. Load files or objects to analyze:

   - Click to open files.

   - Click to load objects from the database. You can click the drop-down arrow beside this button to load all objects or choose a group of objects to load.

3. Select the rule set you want to use in the Code Analysis toolbar (the default is Top 20).

4. To evaluate statements' complexity and validity, select **Run SQL Scan** in the **Run Review** list on the Code Analysis toolbar.

   Note: SQL Scanning is a Quest SQL Optimizer feature which is included in Code Analysis. For more information on SQL Scanning, see Quest SQL Optimizer's documentation. This feature is available in the Xpert Edition and higher.

5. Select items to analyze in the grid. You can multi-select by pressing the SHIFT or CTRL key.

6. With **Run Review** selected, press F9, or click 'Analyze Code for all selected items' on the toolbar , or to apply your selection to all items, press F5.

7. Review the Code Analysis results.

8. To send code back to the Editor, select a file or object in the grid and click in the Code Analysis toolbar. Toad displays the Code Analysis errors and violations in the tabs below the Editor..

Additional details:

Grid Dashboard - The right side of the grid displays a dashboard of violations and statistics. The dashboard includes the item's Toad Code Rating (TCR), which is a composite of several rating criteria. The score ranges from 1 (best) to 4 (worst). It provides a quick reference for how your code has performed in the analysis.

Result tab - The Results tab displays the analysis results in a tree view. Expand each node for details on the violations. If you select a violation in the tree view, the preview on the right displays the corresponding code.

The Result tab displays the results for the item selected in the grid. If you analyzed multiple items and select them in the grid, the tab displays the results for all of the selected items.

Report - The Reports tab summarizes the analysis results and includes rule definitions. Items in the table of contents are hyperlinked so you can easily navigate the report.

Note: By default, the Report tab only displays the analysis for one item. However, you can select **Display all selected results on Report tab** to include multiple items in the report.

- To save the Result or Report tab. select the appropriate tab and click [icon] in the Code Analysis toolbar.

  - Click [icon] to open the Reports Manager to Code Analysis Reports.

  - Click [icon] to write results to the database while performing analyses, and then click [icon]. Results are returned in a grid so you can filter and export the data.

Create or Edit Rule Sets

A rule set is a collection of rules that Code Analysis uses to evaluate code. You can create your own rule set and determine which rules to include.

You can also import existing rule sets from outside Toad, and export user-defined rule sets.

Notes: You cannot edit Toad's standard rule sets.

To create or edit a rule set

1. Select **Database | Diagnose | Code Analysis**, and then click [icon] on the Code Analysis toolbar.

   Note: You can also select **View | Toad Options | Code Analysis | General**, and then click **Edit Rule Sets**.

2. Select one of the following options:

   - Click [icon] to edit a rule set.

   - Click [icon] to create a rule set.

   - Select the rule set and click [icon] to use an existing rule set as your template.

3. Select the checkbox for rules to include in the rule set. To exclude a rule, clear the checkbox.

Create, Clone, or Edit Code Analysis Rules

You can use existing Code Analysis rules or clone them and customize them to confirm your code meets your code review requirements.

To create or clone a rule

1. Select **Database | Diagnose | Code Analysis**, and then click 🖊 on the Code Analysis toolbar.

    Note: You can also select **View | Toad Options | Code Analysis | General**, and then click **Edit Rules**.

2. Click 🗋 to create a new rule, or select a rule to clone and click 📋 .

    The Code Analysis Rule Builder opens. Rule IDs are automatically generated sequentially from 7000 to 9000.

3. Enter the **Description** and specify the **Rule Tip**.

    a. Specify **Rule Severity**, **Rule Objective**, and **Rule Category**.

    b. Click 🔲 to display the XML that Toad generates. This is helpful for use in an external XPath parser such as SketchPath to refine the XPath expression.

    c. Create the XPath Expression. To test the rule, click ✅ .

4. Click **OK**

    Note: A checked box in the User Defined column will be displayed for the rule you created.

To edit a rule

1. Select **Database | Diagnose | Code Analysis**, and then click 🖊 on the Code Analysis toolbar.

2. Select a rule to edit.

3. Edit the fields as necessary. Review the following for additional information:

Code Preview	Enter code to use for testing the rule.
XPath Expression	Edit the XPath. If this field is blank, then you cannot edit the XPath for the rule. To test the rule, click ✅ .
Note: To restore a rule or all rules, you can select the rule and click the 'Restore Original Rule Value' button, or the double-arrow 'Restore All Original Rule Values' button. ↩ 🔁	

Archive Code Analysis Results for Reporting

You can save all of your Code Analysis results to a database. This allows you to keep an archive which you can use for reports from the Reports Manager.

To archive Code Analysis results, you must install tables on the database first.

Note:

- This feature is available in the Professional Edition and higher.

- This topic focuses on information that may be unfamiliar to you. It does not include all step and field descriptions.

To archive Code Analysis results

1. Select **Database | Diagnose | Code Analysis**.

2. Click 'Save results to DB' 🔵 on the Code Analysis toolbar.

   If the Code Analysis tables are not already installed, Toad prompts you to create them. Complete the wizard to install the tables.

   Archiving is now enabled. Toad automatically saves all Code Analysis results to the database.

3. To run reports on the Code Analysis results, use the Report Manager.

   - Click 'Open Reports Manager to CA Reports' 📊 on the Code Analysis toolbar.

There are two additional ways to access Code Analysis Metrics History:

- On the Code Analysis toolbar, click 'Retrieve Metrics History from the DB.' 📋
- On the main Toad toolbar, go to **Database | Report | Code Analysis Metrics History.**

Ignore Code Analysis Rules

If you are using Code Analysis, there may be certain times when you want to ignore specific rules.

To ignore a rule

1. In the Editor, right-click on an underlined rule violation.

2. In the right-click menu, point to **Code Analysis Violations** and then point to the rule description.

3. Select the instances in which you want to ignore the rule.

You can also access the "Ignore Rules" option by right-clicking on rule violations in the Messages tab at the bottom of the Editor window.

To return rules to full service

1. Go to **View | Toad Options | Code Analysis | General**

2. In the Rules section, click the new **Ignored Rules** button.
   In the Code Analysis Ignored Rules window:

3. Click a row to select it.

4. Click **X** on the toolbar or press DELETE on your keyboard.

Code Analysis Action

Notes:

- If you run a CodeXpert ini file on the command line, Toad automatically converts it to a Code Analysis action. Toad saves the action in the CXCommandLineConversion action set, and it is named CX_CONVERSION_FILENAME.

- You can use a CodeXpert ini file in a Code Analysis action. Click ![icon] on the Code Analysis Action toolbar and select the ini file.

- This feature is available in the Professional Edition and higher.

To create a Code Analysis action

1. From the Automation Designer window (**Utilities | Automation Designer**), select the app you want to contain the Code Analysis action.

2. Double-click ![icon] on the DB Misc tab and then click in the app.

3. Double-click the new action to edit its settings.

   The Code Analysis action options are generally the same as those in the Code Analysis window.

4. Load files or objects to analyze:

   - Click ![icon] to open files.

   - Click ![icon] to load objects from the database. You can click the drop-down arrow beside this button to load all objects or choose a group of objects to load.

5. Complete the fields as necessary. Review the following for additional information:

Output Directory	Enter or select the location to save the output.
Output File Names	Enter a file name in these fields to output the following: • HTML Report—Includes the content of the Report tab in the main Code Analysis window. • XLS Summary—Retrieves Code Analysis results in an Excel file. • XMLReport—Includes the content of the Results tab in the main Code Analysis window. • DB Inserts—Saves the Code Analysis results to the database. • Metrics History XLS—(This becomes available when 'Save results to DB' is checked.) Retrieves the metrics history in a spreadsheet, one object or file per worksheet. HTML Report is populated by default.

6. Click **Apply** to save the action. Then, run or schedule it.

Work with PL/SQL

Executing SQL statements within PL/SQL in the Editor is covered in Chapter 1.

Create New PL/SQL Object

Use this dialog box to use a template for your new procedure, function, package, or trigger.

To create a new PL/SQL Object in the Editor

1. Click on the Editor toolbar. (If this button does not display, you may need to add it.

2. Select the type of object you want to create.

3. Enter the name of your new object in the New Object Name box, or leave this blank for now and enter a name when you save the object.

4. Select a default template.

To create a new PL/SQL Object from the Schema Browser

>> From the schema browser object pane for the object type you want to create (package, procedure, function, and so on), click 🗋.

Default Templates

Default templates are read from the Toad for Oracle\User Files folder. If you want to use a template you have created other than the default, choose it from the drop down menu. The following default templates are located in the Toad for Oracle\User Files folder:

NEWPROC.SQL	Create a Procedure
NEWFUNC.SQL	Create a Function
NEWPackage.SQL	Create a Package spec
NEWPackageBody.SQL	Create a Package body
NEWType.SQL	Create a Type spec
NEWTypeBody.SQL	Create a Type body
NEWTrigger.SQL	Create a Trigger spec

Note: In addition to the above templates, there are two others stored in the Toad/User Files folder and editable as described below. These are useable within a created package and include both Package Procedures and Package Functions.

Templates can be edited using any text editor, or select the file from the Toad Options |Proc Templates page and click **Edit**.Delete, change, or add new files as desired. See Proc Templates for more information.

You can load new templates from any network path. Specify where the files are located when you add them to the list. To change the path, you will need to add the new path and delete the old entry.

Auto Replace Keywords

There are several keywords in the templates for which Toad will automatically substitute in values when you open the templates. In addition to these, you can also specify custom keywords from Proc Templates.

KEYWORD RESULT REPLACEMENT

```
%YourObjectName% Object Name
```

```
%SYSDATE% Workstation date, for example, mm/dd/yyyy

%DATETIME% Workstation date and time, for example, mm/dd/yyyy hh:mm:ss am

%DATE% Workstation date, for example, mm/dd/yyyy

%TIME% Workstation time, for example, hh:mm:ss am

%USERNAME% Username specified in Toad Options, Editor node

%TRIGGEROPTS% Trigger Options for triggers only, for example, "Before insert
on, for each row"
```

Note:

- "*YourObjectName*" is also supported for backwards compatibility.

- The keywords ARE NOT case sensitive.

- The date and time formats come from the Windows Control Panel settings.

- This feature is only in the Commercial version of Toad, not the freeware Toad.

There are two template types that you can use only within packages. These are Package Function and Package Procedure. You can create and edit these templates from the **Toad Options | Editor | Proc Templates** page.

When you choose to create a package from the Create PL/SQL Object window, Toad automatically creates the one procedure and one function to the body using the default templates. You can add additional procedures and functions fusing the following procedure:

To use a package function or package procedure template within an existing package

1. In the Editor, load a **package spec** or create a new one.

2. Enter a new declaration for a package procedure or function into the spec.

   Press **Ctrl+Shift+C**. The default package procedure or package function template is used to create a new procedure in the package body.

   Note: If you have created multiple templates, the template you want to use MUST be designated the default. Any other template will not be used.

Load Database Object

Use this dialog box to load an existing object into the Stored Edit/Compile window for further editing.

To load an object from the database

1. Click in the Editor window.
2. From the Schemas/Owners drop-down:

- Enter the first letter of the schema to perform an incremental search of the list.

- Select the **Schema/Owner** of the object you want to load

- Select the **type of object** you want to load from the drop-down list.

    - For databases with few objects, just select **All**.

    - For databases with many objects, select a **type of object** and then **filter** to show a manageable list in the left hand panel below.

3. From the left hand panel, you can do one of the following:

    - Click an object to select it.

    - Enter the first few letters of the object you want to perform an incremental search.

        Note: You can turn the preview off by using the **Show Source** checkbox.

SQL Tuning

About the Profilers

You can use the DBMS Profiler with Oracle 8i and later, or the hierarchical profiler with Oracle 11g and later.

Hierarchical Profiler

The PL/SQL hierarchical profiler organizes data by subprogram calls, and stores the results in database tables letting you create custom reports.

See Oracle's documentation on this topic for more information.

Information provided includes:

- Number of calls to the subprogram

- Time spent in the subprogram

- Time spent in the subprogram and descendent subprograms

- Detailed parent-child information

DBMS Profiler

Oracle 8i provides a Probe Profiler API to profile existing PL/SQL applications and to identify performance bottlenecks. The collected profiler (performance) data can be used for performance improvement efforts or for determining code coverage for PL/SQL applications. Application developers can use code coverage data to focus their incremental testing efforts.

The profiler API is implemented as a PL/SQL package, DBMS_PROFILER, that provides services for collecting and persistently storing PL/SQL profiler data.

> **Caution:** Statistics may not be collected properly if you are running the profiler on an Oracle server on a Tru64 platform.

Improving application performance is an iterative process. Every iteration involves the following:

- Exercising the application with one or more benchmark tests, with profiler data collection enabled.

- Analyzing the profiler data, and identifying performance problems.

- Fixing the problems.

To support this process, the PL/SQL profiler supports the notion of a run. A run involves executing specified SQL commands through benchmark tests with profiler data collection enabled.

Collected Data

With the Probe Profiler API, you can generate profiling information for all named library units that are executed in a session. The profiler gathers information at the PL/SQL virtual machine level that includes the total number of times each line has been executed, the total amount of time that has been spent executing that line, and the minimum and maximum times that have been spent on a particular execution of that line.

The profiling information is stored in database tables. This enables the ad-hoc querying on the data: It lets you build customizable reports (summary reports, hottest lines, code coverage data, and so on) and analysis capabilities.

Set Up the Profiler

This feature requires that certain objects exist on the server before you can use it. If they do not already exist, Toad prompts you to create them when you click ⏱.

You can use the DBMS Profiler with Oracle 8i and later, or the hierarchical profiler with Oracle 11g and later.

Note: To remove the profiler objects, click the arrow by ▣ and select **Remove Profiler**.

Additional DBMS Profiler Requirements

You must have the SYS.DBMS_PROFILER package to use the DBMS profiler.

To install the package

1. Login to an Oracle database through **Toad** as **SYS**.

2. Load the **Oracle home>\RDBMS\ADMIN\PROFLOAD.SQL** script into the Editor.

3. Click on the Execute toolbar (F5).

4. Make sure that **GRANT EXECUTE** on the **DBMS_PROFILER** package has been granted to **PUBLIC** or to the users that will use the profiling feature.

Additional Hierarchical Profiler Requirements

To use the hierarchical profiler, you must enable it in the Toad options. Select **View | Toad Options | Execute/Compile** and then select **Use hierarchical profiler on Oracle 11g and newer**.

You must also have the DBMS_HPROF package to use the hierarchical profiler, which is available in Oracle 11g and later.

To verify the package is installed

1. Login to Oracle through **Toad** as **SYS**.

2. Make sure that **GRANT EXECUTE** on the **DBMS_HPROF** package has been granted to **PUBLIC** or to the users that will use the profiling feature.

Profile PL/SQL

You can use the DBMS Profiler with Oracle 8i and later, or the hierarchical profiler with Oracle 11g and later.

Important: To use the hierarchical profiler, you must enable it in the Toad options. Select **View | Toad Options | Execute/Compile** and then select **Use hierarchical profiler on Oracle 11g and newer**.

To use the profiler

1. Click on the main Toad toolbar to turn on profiling.

   Note: If the profiler is not set up, Toad notifies you.

2. Open the procedure in the Editor and click on the Execute toolbar. The Set Parameters and Execute window displays.

3. Complete the parameters and profiler settings.

   Notes:

   - The profiler options are described by Oracle.

- For the hierarchical profiler, you must select a directory on the Profiler tab. If you do not, Toad displays an error. It is recommended that you consult your DBA on the appropriate directory to select.

4. Click ![plsql icon] again to turn off profiling.

   Note: Be careful to not leave the profiler toggled on when you switch to other Toad windows. Otherwise, Toad collects profiler data from the queries performed to populate those windows.

5. Review the profiler information. Select one of the following options:

   - Select **Database | Optimize | Profiler Analysis**. The Profiler Analysis window displays.

   - Click the Profiler tab beneath the Editor.

   Notes:

   - If the Profiler tab is not visible, you can display it by right-clicking in the tab area and selecting **Desktop Panels | Profiler**.

   - By default, anonymous blocks and lines not executed are not displayed. You can display them by right-clicking the tree-view and selecting them from the menu.

View Profiler Results

The Profiler Analysis window provides data on profiler runs that is consistent with the data displayed in the Profiler tab of the Editor.

The top half of the window is a graph of the showing the percent of time required to run each component of the procedure.

Note: If you can see the pie chart labels but not the pie chart itself, resize the window horizontally to give it more space to draw.

To access the Profiler Analysis window

   » Select **Database | Optimize | Profiler Analysis**.

Run Details

Opening a run: Selecting this displays the graph for all units within that run. Expanding a run in the tree view will list the details of the run including Unit Type, Owner, Unit Name, and Total Time to execute.

Opening a unit: You can also select a specific unit of the selected run.

When drilling down on a unit, we see the lines of code executed and profiled. The column headers include Line Number, Passes (how many times each line of code was executed), Total Time to execute the line, Min Time, Max Time, and the line of Code itself. The graph changes to display the information within that unit.

Hiding Profiler Data: If you right-click the list, you can temporarily hide some data so that a better analysis of the remaining data can be performed. For example, if a particular statement takes 95% of the overall execution time, hide it, and the remaining statements, which were under 1% each will blow up to a larger relative percentage on the graph.

Displaying in Editor: If you select a valid unit in the tree view, right-click and select display in Editor, the Editor displays the selected unit.

Editor Profiler Tab

Within the Editor, the Profiler tab displays profiler runs, as root nodes, and profiler units as child nodes. The latter are the actual code units that were executed during a profiler run. They can include anonymous blocks, procedures, functions, and packages executed while the profiler run data was being collected. In the line item profiler, child nodes contain the actual line data. In the hierarchical profiler, child nodes contain sub program calls.

This tab provides an overview of the data, but does not offer the graphs that the Profiler Analysis window does.

Selecting a line item within the nodes automatically opens the referenced SQL source and displays the line referenced by the profiler.

Note: Because each Editor tab is associated with a separate Profiler instance, navigating through your code this way may reset the node display in the Profiler tab.

To display the Profiler Analysis window for the current data

 » Click **Details**.

Executable Line Indicators

When you open a profiler run or unit into the Editor and have the option **show executable line indicators in gutters** selected, executable line indicators display as follows:

Indicator	Meaning
Blue dot with green square	Line was executed
Blue dot with red circle	Line was not executed

If Toad cannot determine when the unit was last executed, then the standard blue dot line indicators will display.

Hierarchical Profiler Filters

You can filter the results of your hierarchical profiling session. This can be useful in making sure that you only see the results that are useful for you.

Toad will automatically filter out the system information that is added when the profiler is active. You can manually turn these on if you want to see that information.

To create a filter

1. From the Profiler tab at the bottom of the Editor, right click the grid and select **Filter**.

   Note: If you do not see the filter option, make sure you are actually using the hierarchical profiler.

2. Click **Add** to add a new filter to the filter grid. Enter the criteria you want to use to hide data. You may use the % wildcard within the filter.

3. Enable or disable any filters desired by selecting or clearing the **Enable** box.

4. Repeat steps 2 and 3 if necessary.

5. Click **OK**.

Query Builder

The Query Builder window provides a fast means for creating the framework of a Select, Insert, Update, or Delete statement. You can select Tables, Views, or Synonyms, join columns, select columns, and create the desired type of statement.

Note: The Query Builder supports the reverse engineering of queries. Although it was heavily tested throughout its development lifecycle, due to the vast array of possible queries there may be some queries it can create but cannot reverse. Please contact the Toad development team if you discover any such queries at ToadforOracle.com.

To access the Query Builder

» Click ![SQL] on the main toolbar. .

   Note: You can also select **Database | Report| Query Builder**.

Area	Description
Query Builder workspace tabs	Use the Query Builder workspace tabs (the Model Area) to graphically lay out a query.
Tree View	Current query in tree view.
Generated Query	Automatically generated SQL as a result of the diagram displayed in the Query Builder workspace. The Query Results tab displays the results of the created query. The Messages tab displays warnings regarding the query. Click on the error to highlight the related object.
	The Generated Query content is editable.
	When the diagram and the generated query no longer match, these buttons become available on the Query Results toolbar:
	- Update Diagram
	- Update SQL
	Text also indicates, "Diagram and SQL Code are Not Synchronized. Click Here or Press Ctrl +SHIFT +D to Synchronize.

Navigating the Query Builder

Click on items or use the keyboard:

- Up and down arrow keys move you around in lists

- SPACE checks and clears boxes

- TAB moves forward one area (table, menu, list, etc)

- SHIFT+TAB moves back one area.

Many Query Builder options can be set or changed in the Toad Options window. From this window you can:

- Set general options, including color of join lines.

- Add or remove Functions usable in the Query Builder.

- Control behavior of the Query Builder.

To access Query Builder options

1. From the View menu, select **Toad Options**.

2. In the left hand side, click **Query Builder**.

3. Change options as desired, and then click **OK**.

As you model your code, you may need to remove columns from the model.

To remove columns from the tree

»   Drag the column you want to the trash can in the tree structure.

Start Using the Query Builder

Follow this procedure to quickly get started using the Query Builder.

To use the Query Builder

1. Drag-and-drop **Tables**, **Views**, or **Synonyms** from the Schema Browser, Project Manager, Object Palette, or the Object Search window to the Query Builder workspace tab.

    Click in the checkbox by a column to add it or remove it from the active query's SELECT clause.

2. Drag-and-drop columns from one table to another to create joins between the tables.

3. Add any WHERE, GROUP BY, HAVING, or ORDER BY clauses by right-clicking on the column in the tree view node and selecting **Include in** *n* clause. Right-click and adjust properties for clauses where necessary.

4. To create a new clause, drag-and-drop columns from a table to WHERE, GROUP BY, HAVING or ORDER BY in the Query Browser tree node.

5. Click 💾 on the toolbar to save the model to disk.

6. Click the **Generated Query** tab to view or edit the generated query.

    a. If you update the diagram and the SQL code is not synchronized, click 🔲 in the Generated Query toolbar to update the code.

    b. If you update the code, click 🔲 in the Generated Query toolbar to updated the diagram.

7. Click 📝 to copy the query to the Editor.

The model area of the Query Builder has been enhanced in 11.5 to provide Query Builder workspace tabs.

On the Query Builder tab, click ✚ to open an INLINEVIEW tab.

Pages are numbered with column/row combinations:

[1,1]	[2,1]
[1,2]	[2,2]

Nested and in-select subquery links are represented as follows:

- Subqueries by a dashed line.

- Union queries by a symbol that represents the type of union. Double-click the line to change the type of union.

Use the Query Builder workspace to visually join or manipulate the Tables, Views, or Synonyms. You can click in a table header and drag the table to anywhere in the model area.

To establish your own joins

» Drag a column from one table to another table column. When the line is drawn, you can double-click the line to adjust its properties such as Inner Join vs. Outer Join, or Join Test. For example, equal (=), less than (<), greater than (>), and so on.

To specify columns for the query

» Click in the checkbox for each desired column. A checkmark will be displayed in the box. The selected column's information will display in the navigation tree, and the column will be included in the query.

Note: If no table columns are selected, then all columns will be included in the query.

F4 Describe

You can use the F4 key to describe a selected table, as explained in the Describe topic. If a table is not selected when you press **F4**, the last selected table will be described.

To view joins

» Click [icon] on the toolbar, or double-click a **join line** in the **Modeler** itself.

There are two ways to populate the WHERE clause in SQL generated by the Query Builder: as an individual WHERE, or as a global WHERE.

To populate the where clause

1. Do one of the following:

   - Right-click on the column under the SELECT node and select **Include in Where Clause**.

- Drag a column from the select node to the WHERE node.

Add conditions and select or clear any outer joins you want to apply.

Note: To build a more advanced query, click the Expert tab and enter your code by typing it in the top box or double clicking on functions and data fields to enter them.

2. Click **OK**.

Repeat until all conditions are added.

Note: When you add multiple columns to a WHERE clause, they are automatically placed

3. If a condition should be an OR condition, rather than an AND, right-click on it and select OR.

To create a global WHERE clause

1. Right-click in the Table Model area.

2. Select SQL | Global Where Clauses.

3. Click ➕.

4. Enter or build your condition.

5. Click **OK** to close the definition window.

6. Click **OK**.

Example

To construct the following query:

```
SELECT DEPT.DEPTNO, DEPT.DNAME, DEPT.LOC

FROM DEPT

WHERE (((UPPER (RTRIM (DNAME)) = 'SALES') AND (DEPT.DEPTNO < 40)) AND
((DEPT.LOC = 'CHICAGO')OR ((DEPT.LOC IS NULL = '')))
```

Do the following:

1. Open the **Query Builder**.

2. In the **Object Palette**, select the Scott schema and double-click the DEPT table to add it to the model.

3. Right-click **DEPT** and choose **Select All**.

4. Drag the **DEPTNO** column to the **WHERE** node.

5. Select **<** in the operator box, click **Constant**, and enter **40** in the condition box.

6. Click **OK**.

7. Drag the **LOC** column to the **WHERE** node.

8. In the WHERE definition dialog, click the **Expert** tab. Click **OK** to confirm.

9. Double-click **IS NULL** in the SQL Operators area and then click **OK**.

10. Drag the **DEPTNO** above **LOC** in the tree view.

11. Right-click the **LOC** column and select **OR**.

12. Right-click on **OR | LOC** and select **Properties**. Select = in the operator box, click **Constant**, and enter **CHICAGO** in the condition box.

13. Click **OK**.

14. In the table model area (the area around the table images), right-click and choose **SQL | Global Where.** Click ➕.

15. In the top edit box, enter **(UPPER (RTRIM (DNAME))) = 'SALES'**.

16. Click **OK** and then click **OK** again.

View the generated query. It should display as described above.

You can automatically populate the Having clause in the SQL generated by the Query Builder in one of two ways.

Note: To create a HAVING clause, you must have added columns to the GROUP BY node.

HAVING entries should be in the form of <expression1> <operator> <expression2>.

To populate the HAVING clause

1. Do one of the following:

    - Right-click the desired column in the tree, and then select **Include in Having Clause**.

    - Drag a column from a table in the Table Model area to the HAVING clause.

2. Enter or build the condition.

3. Click **OK**.

4. Repeat until complete.

Global HAVING clauses

In order to include a global HAVING clause, there must be a GROUP BY clause as well.

To create a global HAVING clause

1. Right-click in the Table Model area.

2. Select **SQL | Global Having**.

3. Click the **Add** button.

4. Enter or build your condition.

5. Click **OK** to close the definition window.

6. Click **OK**.

Example

To construct the following query:

```
SELECT emp.empno, emp.ename, emp.job, emp.mgr, emp.sal,

emp.comm, emp.deptno

FROM emp

GROUP BY emp.deptno, emp.comm, emp.sal, emp.mgr, emp.job,

emp.ename, emp.empno

HAVING ((emp.sal + NVL (emp.comm, 0)> 4000))
```

Do the following:

1. Open the **Query Builder**.

2. In the Object Palette, select the Scott schema.

3. Double-click the **EMP** table to add it to the model.

4. Right-click **EMP** and choose **Select All**, then clear **Hiredate.**

5. Drag DEPTNO, COMM, SAL, MGR, JOB, ENAME and EMPNO to the **Group by** node.

6. Right-click in the Table model area and select SQL | **Global Having**. Click **+** to add a new Global Having clause.

   Enter the Having clause to say:

   EMP.SAL + NVL(EMP.COMM, 0) > 4000

7. Click **OK** twice.

View the generated query. It should display as described above. This query selects all the employees whose salary plus commission is greater than 4000.

The NVL command substitutes a null value in the specified column with the specified value, in this case, 0.

You can easily create a subquery or nested subquery. Subqueries can be created from the FROM clause or the WHERE clause.

Columns must be dragged directly from the table area to be placed in subqueries, or from the current statement.

After initiating the subquery using one of the methods below, create the subquery as you would a normal query.

To create a subquery in the WHERE clause

1. Drag a column into the **WHERE** node.

2. In the Condition dialog, use the simple or complex mode.

   If you click **Nested Subquery**, the new subquery is created in the workspace.

To create an EXISTS subquery

1. Right-click the **WHERE** clause in the tree view.

2. Select **Add EXISTS Subquery** or **Add NOT EXISTS Subquery**.

To create a subquery in the FROM node

1. Right-click the **FROM** clause in the tree view.

2. Select **Add** | **New Named Subquery** (or **New Inline View**).

Reverse Engineer a Query

The Query Builder can reverse nested subqueries and calculated fields. You can reverse engineer queries that were not created in the Query Builder.

To reverse engineer a query, do one of the following

» In the Query Builder, enter a query directly into the Generated Query tab and click in the Generated Query toolbar to update the diagram in the workspace.

» From the Editor, right-click in the query and click **Send to Query Builder**.

The Query Builder supports these types of statements:

- SELECT

- INSERT

- UPDATE

- DELETE

There is complex support of SELECT and DELETE statements and limited support of INSERT and UPDATE statements:

- Constant values cannot be used in a VALUES clause.

  For example, INSERT INTO "TABLE" VALUES ('a', 'b') will be changed to bind variables when reversed, with the column names used as variable names, e.g., INSERT INTO "TABLE" VALUES (:col1, :col2).

- INSERT statements with a subquery cannot be reversed.

  For example, INSERT INTO "TABLE" SELECT * FROM "TABLE1".

  Nor can UPDATE statements with a subquery in a SET clause.

  For example, UPDATE "TABLE" SET COLUMN1 = (SELECT COLUMN1 FROM "TABLE1").

The Generated Query Tab

This tab lists the automatically generated SQL statement. Any changes made to the model or column Criteria will automatically regenerate this SQL statement.

To copy the query to the clipboard

» Do one of the following:

- Select a query and press **CTRL+C**

- Click the **Send text to clipboard** button

- Select the query, right-click and select **Copy**

To send the query to the Editor

» Click 📝 in the Generated Query toolbar.

Generating ANSI Syntax

You can convert a SQL statement from the generated query tab, or you can set the Query Builder to create ANSI syntax automatically from Toad Options | Query Builder.

To convert a SQL statement in the Query Builder

» In the Generated Query tab, select the query to convert and click the **ANSI join syntax** button.

To tune the query

1. From the Generated Query tab, click the ⬇ drop-down.

2. Select either:

   - SQL Optimizer

   - Oracle Tuning Advisor

Query Results

This grid displays the results of executing the generated query. Insert, Update, and Delete queries can only be executed in the Editor window.

To access the Query Results grid

» From the Query Builder, click the **Query Results** tab.

Making changes to the Tables or Columns, then clicking on the Query Results tab will prompt you whether or not to requery the data.