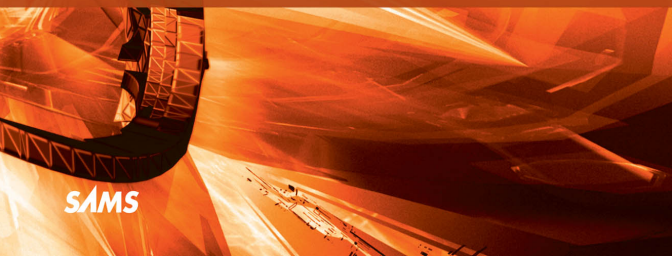
Bert Scalzo
Dan Hotka

Toad for Oracle®

UNLEASHED



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Bert Scalzo
Dan Hotka

Toad for Oracle®

UNLEASHED

SAMS | 800 East 96th Street, Indianapolis, Indiana 46240 USA

Toad for Oracle® Unleashed

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Contents at a Glance

	Introduction	xi
1	Getting Started	1
2	Fast Track	25
3	Working with SQL	43
4	Schema Browser	69
5	Working with Data	93
6	Working with PL/SQL	121
7	Miscellaneous Tools	157
8	Getting Started with Toad Automation	171
9	Database Administration	191
10	Toad as a SQL Tuning Tool	227
	Index	251

Table of Contents

Introduction ..... **xi**

Who Should Read This Book xi
Why This Book Is Unique xii
How This Book Is Organized xii

1 Getting Started **1**

Introduction to Toad 1
- Toad Release History 2
- Toad Editions and Suites 3
- Prerequisites and Installation 5

Running Toad the First Time 8
- Oracle Client Software 9
- Database Connections 10
- Introduction to Main Screens 16
- Basic Toad Customizations 18

Common Newbie Questions 21
- Can Toad Do That? 21
- Toad versus Database Security 22
- Sharing Toad Options Settings 22
- Help—Toad Running Slowly 22

Summary 23

2 Fast Track **25**

Organizing Connections 25
Toolbars and Menus 30
Keyboard Shortcut Keys 33
Startup Windows/Screens 34
Startup Files, Scripts, and Actions 36
Advanced Toad Customizations 37
Sharing Toad Settings 40
Summary 41

3 Working with SQL **43**

Editor Window 43
SQL Editor Output Area 48
Object Describe 51
Toad Insights 57
Code Snippets 58
SQL Recall 60
Auto Replace 63

Query Builder 64
Summary 68

4 Schema Browser 69

Configuring the Schema Browser 69
Creating and Editing Objects 76
Printing Data Using FastReport 79
Using the Reports Manager 85
Summary 91

5 Working with Data 93

Reviewing Data Grid Options 93
Filter/Sort the Table Data 97
View/Edit Query 99
Show/Hide Columns 100
Show Detail Dataset 100
Calculate Selected Cells 101
Export Dataset 102
Refresh Dataset 103
Cancel Query Execution or Fetch 104
Add/Delete Rows 104
Row Set Navigation Buttons 105
Edit Row Set Control Buttons 105
Commit/Rollback 105
Bookmark Navigation 105
Single Record Viewer 105
Save Data in Various Formats 106
Master Detail Browser 111
ER Diagrammer 113
HTML Documentation Generator 115
Summary 119

6 Working with PL/SQL 121

Using the Editor 121
Using Code Templates 127
Project Manager 132
Using Code Snippets 133
Code Shortcuts 135
Code Analysis 139
Using the Debugger 142
Basic Debugging 142
Advanced Debugging Techniques 148
Using the PL/SQL Profiler 153
Summary 156

7 Miscellaneous Tools 157

Code Road Map 157
External Tools 160
Compare Files 163
TNS Editor 164
Script Manager 165
UNIX Monitor 167
Summary 169

8 Getting Started with Toad Automation 171

Command Line (Legacy) 172
Automation Designer (Future) 180
Summary 190

9 Database Administration 191

Health Check 192
Session Browser 194
Database Browser 197
Simple Export 202
Data Pump Export 205
Tablespace Management 210
Generate Database Script 212
Generate Schema Script 214
Compare Databases 216
Compare Schema 218
Analyze All Objects 220
Rebuild Multiple Objects 223
Summary 224

10 Toad as a SQL Tuning Tool 227

Toad and Explain Plans 227
SQL Statistics 231
Toad and SQL Trace 233
    Toad and TKPROF 238
    Toad and Trace File Browser 241
Statspack Interface 243
AWR Browser 245
Toad and the PL/SQL Profiler 246
Toad and the SQL Optimizer 248
Summary 249

Index 251

About the Authors

Bert Scalzo is a Database Expert for HGST (a Western Digital company) and was formerly at Dell Software as a member of the Toad dev team for 15 years. He has worked with Oracle databases for more than two decades. Mr. Scalzo's work history includes time at both Oracle Education and Oracle Consulting. He holds several Oracle Masters certifications and has an extensive academic background—including a BS, MS, and PhD in Computer Science, an MBA, plus insurance industry designations. Mr. Scalzo is also an Oracle ACE.

Mr. Scalzo is an accomplished speaker and has presented at numerous Oracle conferences and user groups, including OOW, ODTUG, IOUG, OAUG, RMOUG, and many others.

He has written several books and numerous articles, papers, and blogs for the Oracle Technology Network (OTN), *Oracle Magazine*, *Oracle Informant*, *PC Week* (eWeek), *Dell Power Solutions Magazine*, *The LINUX Journal*, LINUX.com, Oracle FAQ, and Toad World.

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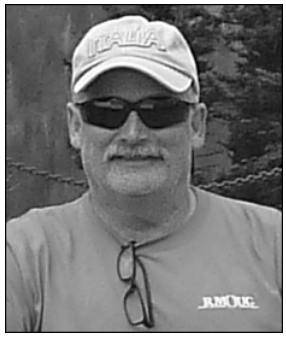

Dan Hotka is a Training Specialist and an Oracle ACE Director who has more than 37 years in the computer industry, and more than 31 years of experience with Oracle products. His experience with the Oracle RDBMS dates back to the Oracle V4.0 days. Dan enjoys sharing his knowledge of the Oracle RDBMS. Dan is well published with 12 Oracle books and well over 200 published articles. He is frequently published in Oracle trade journals, regularly blogs, and speaks at Oracle conferences and user groups around the world.

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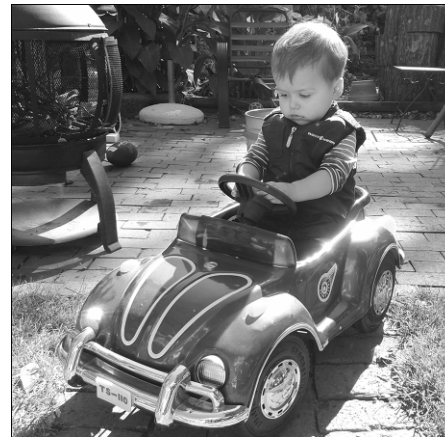
Dedication

To my past and present miniature schnauzers Ziggy, Max, and Dexter—the three most wonderful four-legged kids that any parent could ever have. ☺

And to my wife Susan who's always jealous of my many book dedications solely to the dogs…

Bert Scalzo, PhD



This book is dedicated to my grandson Riggs, without whom my family would not be the same. Here's to the next generation!

Dan Hotka

We Want to Hear from You!

As the reader of this book, *you* are our most important critic and commentator. We value your opinion and want to know what we're doing right, what we could do better, what areas you'd like to see us publish in, and any other words of wisdom you're willing to pass our way.

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Introduction

IN THIS CHAPTER

- Who Should Read This Book
- Why This Book Is Unique
- How This Book Is Organized

A complete rewrite of the popular but dated *TOAD Handbook*, this book covers the very popular Toad for Oracle database management and development tool. It covers all the popular and key features of Toad, including many features that are new additions to Toad version 12.5. Moreover, this book offers numerous Toad tips and tricks, with ample expert advice and techniques—without focusing on any particular version of the Oracle database. Readers should be able to identify and readily adapt these "best practices" to their daily use of Toad.

Who Should Read This Book

This book should benefit all Toad users. It is ideal for a wide range of users, from those who are new to both Oracle and Toad, to very sophisticated or experienced users of Toad. Furthermore, this book attempts to address the specialized needs for three key database personas: database administrators, database application developers, and data/business analysts. In truth, Toad has so many features and offers so many benefits that no one book can realistically hope to fully cover them all. Thus, each chapter focuses on a particular functional or task-related area, covering it in depth with illustrations, tips, and techniques from Oracle and Toad experts.

This book is ideal for the following types of readers:

- The power user who wants easy access to data, help with SQL, and help with occasional coding assignments
- The user who wants to increase his or her productivity while using the Oracle RDBMS

- The IT professional who is already familiar with Toad but needs help with its extended features
- The developer who wants to do something specific but cannot remember how
- Any Toad user who wants to learn how to take advantage of Toad's newly introduced features

Why This Book Is Unique

This book doesn't make assumptions about readers' prior Toad or Oracle administrative or development background, so it presents the full range of tips and techniques applicable to these tools. The main goal of this book is to illustrate the use of Toad and to serve as a handy reference for anyone using the Toad database tool. To this end, the book is liberally illustrated with working examples of all topics covered.

This book is intended to be a complete, single source of information, usage, tips, and techniques for the Toad tool. It focuses on the following topics:

- Toad installation and setup
- Development of PL/SQL and SQL statements and scripts in an easy-to-use and intuitive environment
- Tuning SQL and debugging PL/SQL
- Modeling any user's schema
- Routine and advanced DBA tasks
- Exporting of data into various formats
- Additional features such as ER diagrams, trace file analysis, tablespace management, object management, and the ability to add your own favorite editors and programs. This book includes a chapter on Toad as a SQL tuning tool, something Toad is very good at.

How This Book Is Organized

The chapters are organized as follows:

- Chapter 1, "Getting Started," discusses the various versions and editions of Toad, and how it is packaged and sold. This chapter also details the installation and prerequisites for the computing environment that will run Toad. This chapter has a nice section on using Toad for the first time. The goal of this chapter is to jumpstart your learning process and make you productive with Toad ASAP.
- Chapter 2, "Fast Track," is a fast track to customizing Toad at startup, navigating the menus, learning the key shortcuts, and customizing Toad for your personal preferences.

- Chapter 3, "Working with SQL," is all about the SQL Editor and working with SQL. This chapter shows a number of ways of creating SQL without doing much typing at all. This chapter shows how to set up your own personal code shortcuts, and illustrates how to use the SQL Recall (SQL history). This chapter concludes with how to create SQL via mouse operations using Query Builder.
- Chapter 4, "Schema Browser," covers saving, formatting, and reporting on data from about any data grid. The focus of this chapter is the Schema Browser and how to best configure it for your personal preferences, as well as how to work with the data in any data grid. This chapter concludes with a nice walkthrough of the FastReport feature built into Toad, a nice report writer.
- Chapter 5, "Working with Data," finishes the discussion on working with data grids, showing the data relationships and how to see them, generating SQL from the relationships, and more.
- Chapter 6, "Working with PL/SQL," is for the PL/SQL developer. Toad is rich with development features such as code templates, code snippets, and more. This chapter covers the PL/SQL Debugger and PL/SQL Profiler that are built into Toad.
- Chapter 7, "Miscellaneous Tools," illustrates the team-building features built into Toad.
- Chapter 8, "Getting Started with Toad Automation," explores using the Automation Designer or Toad's own programming language to automate repetitive tasks.
- Chapter 9, "Database Administration," is for the DBAs using Toad. This chapter covers the database health check, how to monitor sessions and databases, tablespace maintenance, reporting, and more. Toad is an excellent Oracle administration tool.
- Chapter 10, "Toad as a SQL Tuning Tool," covers how to set up and use explain plans in Toad, illustrates useful hints, and reviews how to turn SQL Trace on/off via a number of mechanisms (for a session or for an individual SQL), and explores both the TKProf interface (the old and true character-mode trace analyzer) and Toad's own trace file browser that allows you to quickly find the problem SQL.

We hope you enjoy using this book as much as we have enjoyed writing it.

Bert Scalzo

Dan Hotka

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CHAPTER 3

Working with SQL

IN THIS CHAPTER

- Editor Window
- SQL Editor Output Area
- Object Describe
- Toad Insights
- Code Snippets
- SQL Recall
- Auto Replace
- Query Builder

This chapter covers various aspects of the SQL Editor window, such as

- Various modes to compile and execute code
- Using Toad history for past SQL
- Enhancing the interface to best fit your needs
- Using little-known items within the SQL Editor
- Code templates
- Building SQL without typing

Editor Window

Dell Software has a single editor now for all types of code, including SQL and PL/SQL. This editor is the main interface to Toad and enables the execution of SQL and SQL scripts, viewing data, saving data into various formats, and more. The SQL is saved in a history. Toad saves on keystrokes in a variety of ways; you can develop working SQL with a minimal amount of key entry. Toad also makes it easy for you to rerun recent work (using the Rerun menu button; see Figure 3.1).

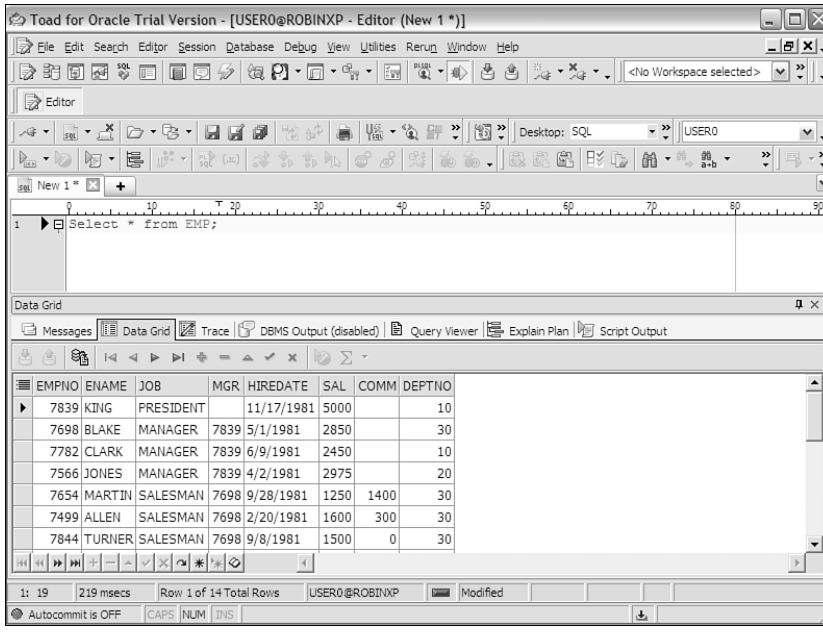


FIGURE 3.1 Toad SQL Editor panel

The SQL Editor is the main interface to Toad. Simply type in a SQL statement and click the green triangle execute button . You can also press F9. This sends the SQL statement that the cursor is on (or the highlighted SQL) to the Oracle database. If the query is successful, then the data or success of the statement will be returned and displayed.

The Editor button makes opening additional Editor windows possible. This version of Toad enables you to open additional tabs in the Editor window. Simply right-click the tab just above the selected statement and select SQL or PL/SQL tab type. This opens another Editor window using the same database connection. Use the Editor button in the top-left row of buttons to open another Editor window, perhaps using a different connect string.

NOTE

Hover the mouse over any button to see a brief description of what it does.

TIP

You typically have three ways to do most any function in Toad:

- Menu item
- Keystroke
- Function key

Activating a menu item shows whether there is a button (it will appear) and any keystrokes that you can also use to activate the feature.

The top toolbar (refer to Figure 3.1), called the standard toolbar, provides access to various Toad browsers, features, commit/rollback, and initiating additional connections. Right-click on any of these top toolbars and you can select the ones you wish to have visible. By closing the ones you don't use, Toad can perhaps have a larger Editor window. The window toolbar shows the active Toad windows. There are also toolbars for team coding, desktops, connection, jump search, and workspaces. You can change the color border per your needs. Dan uses red borders for SYS and SYSTEM accounts, and then a different color for each different Oracle database to which he connects. The next toolbar enables you to open code from the file system or from the database and also offers access to other features. You can right-click on these toolbars to show or hide the ones you don't work with. The bottom toolbar has the Execute, Execute as Script, Clear, and Halt buttons. The Execute button will run all code in the Editor window. You can also just put the cursor on a SQL statement (if there are multiple SQL statements in the Editor window) and click this button. Toad will just execute the one SQL statement. Some people highlight the SQL they wish to execute. After execution, the Data Grid output tab will be populated. This technique works fine as well. The Execute as a script button runs the contents of the Editor window as if it were using a SQL*Plus character-mode interface. There is a separate Script Output tab for the result of this type of execution.

The Halt button stops the current SQL execution. It will un-gray as SQL is executing in Toad. This feature is also dependent upon Toad Options ➔ Oracle ➔ Transactions Run in Threads selected.

The Clear button (see Figure 3.2 at the cursor position) clears the contents of the SQL Editor window. One of the authors likes to simply open a new tab (right-click the tab, and select New Tab) and put each individual unit of work in its own tab. Use the + next to the existing open tab to open others. These tabs are associated with a single connection to the Oracle database. This approach makes it easy to rerun prior SQL statements, particularly when testing. This technique is also useful for PL/SQL code such as packages. Putting the package specifications in one tab and the package body in another tab keeps the two separate. The package body won't compile correctly if any issue exists with the specifications, as shown in Figure 3.3. Dan likes to work with package specifications and the body in separate tabs for this reason. This is a good technique to follow. Toad automatically puts the package spec and body in separate tabs when opening a package either from a file or from the database. This feature is controlled by Toad Options ➔ Editor ➔ Open/Save Packages/Types settings. You can choose this behavior or turn this feature off.

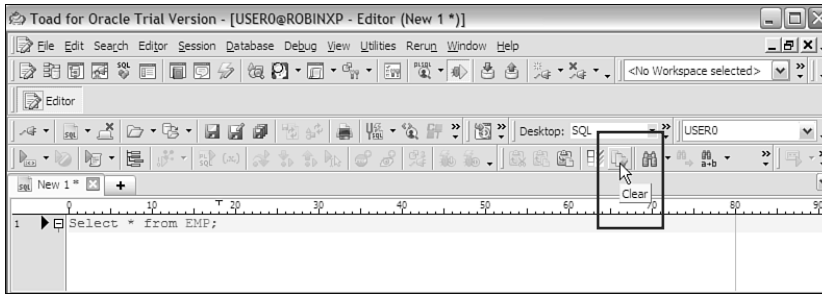


FIGURE 3.2 Clear button

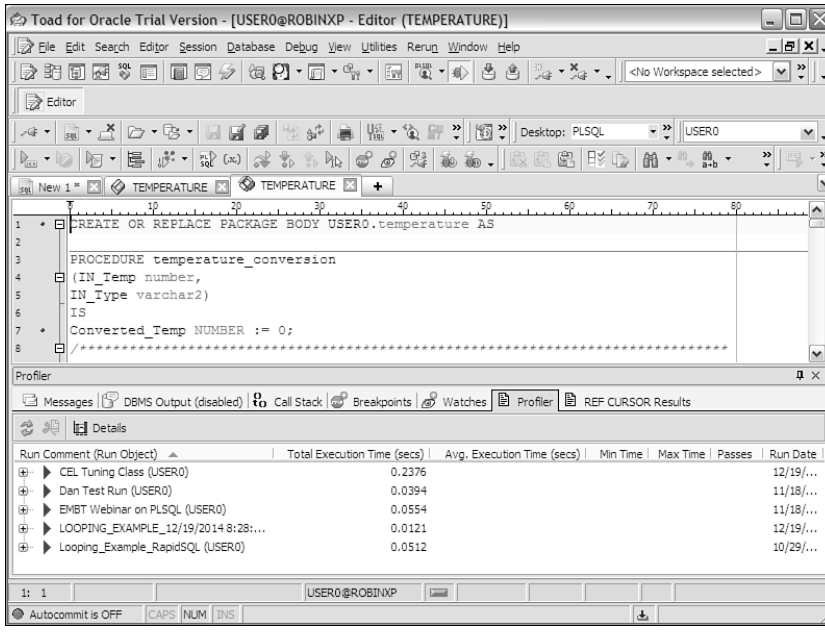


FIGURE 3.3 Toad with separate tabs for the package specification and body

TIP

You can also initiate multiple logins instead of using multiple tabs. Multiple logins can make moving data/objects between instances of Oracle a snap. Multiple tabs share the same database connection.

The toolbars are easy to configure. Right-click one to see the pop-up menu shown in Figure 3.4.

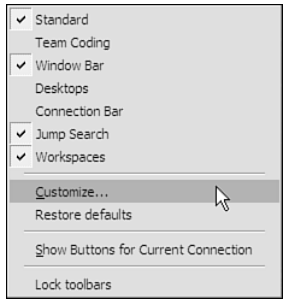


FIGURE 3.4 Configuring the toolbars

Notice the menu enables you to turn on and off the various toolbars. You can also configure the individual toolbars from here. You can delete unused buttons you find cluttering the toolbars, move buttons around, and add additional buttons. Figure 3.5 shows the toolbar configuration menu. The Toolbars tab enables you to turn toolbars on or off. The Commands tab enables you to add or delete buttons from each particular area of Toad. Drag and drop to move the buttons, remove the buttons, or add additional buttons. The Options tab enables you to turn on or off the mouse hover tips, change the size of the icons, and adjust how Toad stores your executed commands.

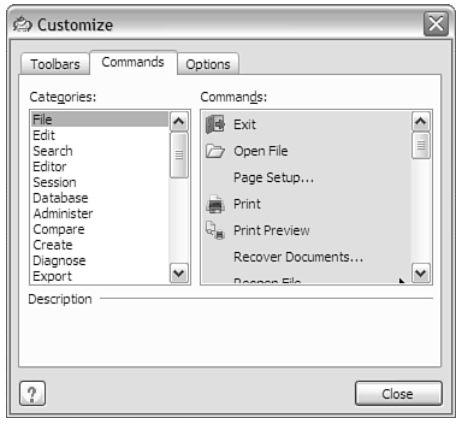


FIGURE 3.5 Configuring the toolbar buttons

Notice in Figure 3.4 that you can easily reset these options back to the Toad defaults.

TIP

One of the authors typically closes the Windows menu, and the Team Coding and Connections toolbars to give additional space to the editor windows.

SQL Editor Output Area

The data grid has a tool palette that enables the user to scroll up or down the returned rows, add rows, and delete rows (see Figure 3.6). Notice the light at the cursor along the bottom of the SQL Editor screen (see the cursor position in Figure 3.7). If this is red, then the data in this data grid cannot be changed and the commit/rollback/add/delete rows buttons will be grayed out. If the pseudo column ROWID was selected in the SQL, then this light will be green and the commit/rollback/add/delete rows palette will not be grayed out and the data can be changed.

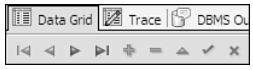


FIGURE 3.6 Data Tool palette

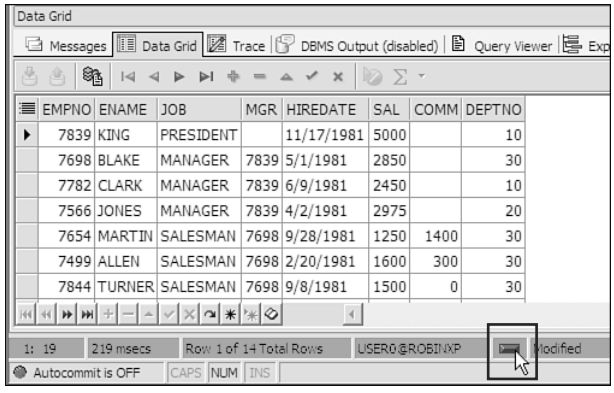


FIGURE 3.7 Toad data grid

WARNING

Toad only retrieves 500 rows at a time. In Toad11+, moving the scroll bar retrieves the next 500 rows. In older Toad versions, if you move the data scroll bar on the right-hand side, Toad will retrieve all the remaining rows. Be careful!

Many output tabs are available in Toad. These tabs usually automatically display when a request occurs for the data contained to be displayed, such as when you execute the PL/SQL profiler. In that case the Profiler tab should automatically appear. Figure 3.8 shows this list.

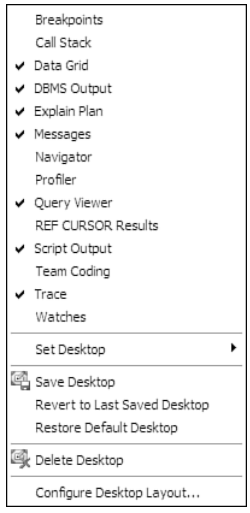


FIGURE 3.8 Available output tabs

You can easily display or hide these tabs. Right-click the tab line to see all the tabs available. Simply adjust per your needs. You can also right-click the editor panel and select Desktop from that pop-up menu to get the same list.

The Breakpoints, Call Stack, and Watches tabs are all associated with the PL/SQL Debugger (covered in Chapter 6, "Working with PL/SQL"). The Data Grid tab is associated with any SQL select statement execution. Data grids appear throughout Toad, and the options that are available for this data grid are also available for any data grid. The DBMS Output tab shows any DBMS_OUTPUT.Put_Line output from a PL/SQL routine. The Explain Plan tab (discussed later this chapter and again in Chapter 10, "Toad as a SQL Tuning Tool") shows the SQL execution plan; it also has many display options. To populate this tab, click the Explain Plan button. The Messages tab shows any output from the executed SQL, including error messages (its real value). The Navigator tab displays the Navigator panel to the left of the Editor window. The Profiler tab is associated with the PL/SQL Profiler discussed in Chapter 6. The Query Viewer tab shows SQL and PL/SQL that was executed in the SQL window and some interesting statistics such as how long it took to execute. This information is useful for either rerunning that exact same SQL or when doing performance tuning (to easily compare one SQL execution with another). The REF CURSOR Results tab is also associated with PL/SQL execution. The Script Output tab shows character-mode output when the Run as Script button is clicked for execution. Team Coding illustrates others' participation in coding of particular PL/SQL code and is covered in Chapter 7, "Miscellaneous Tools." The Trace tab enables SQL statistics and/or SQL Trace files to be generated and displayed for this particular SQL statement. Notice that you can enable both Auto Trace and SQL Trace from this tab (see Figure 3.9). The

Trace tab is discussed in detail in Chapter 10. The remaining items on this menu deal with these tabs themselves—which ones appear when Toad starts up, where they appear—and this includes saving the changes for the next time Toad is started, as well as restoring the default settings from when Toad was originally installed.

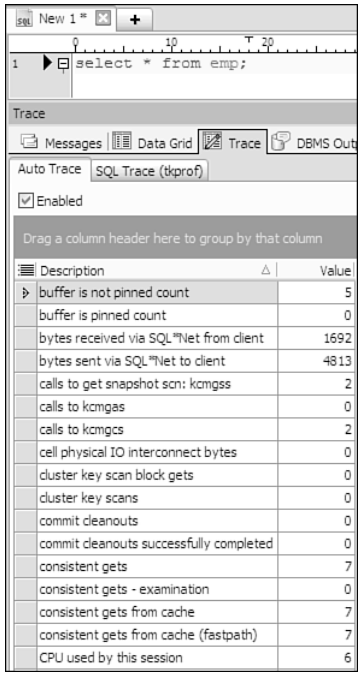


FIGURE 3.9 Toad Auto Trace

Clicking the Explain Plan button on the lower-left SQL Editor toolbar shows the Oracle explain plan for the SQL just executed. Right-clicking in this window enables the display to be adjusted.

The Auto Trace tab provides a variety of SQL runtime statistics. You can enable this feature using the check box or right-click in the editor window and select Auto Trace to enable, and then re-execute the SQL to populate the Auto Trace panel. Notice that you can also run a SQL trace on this particular SQL from the SQL Trace sub-tab. This feature needs the ALTER SESSION privilege; SQL trace is covered in detail in Chapter 10. Toad will run the SQL trace and either bring up the output using the TKProf Wizard or the Trace File browser, depending on which feature of Toad you have purchased.

NOTE

The Auto Trace, SQL Trace, and Explain Plan tabs are covered in detail in Chapter 10.

Object Describe

The F4, or Describe Object button, is one of the most versatile features of Toad. Simply put the cursor on a function, table, or other object in the editor window and press the F4 key, and detail about the object appears. The F4 or Describe window is useful for displaying object information and table information including data, syntax, and statistics. You can also access this screen by entering DESC <object *name*> in the SQL Editor.

Figure 3.10 shows a Describe Objects panel. You can call one up by pressing F4 with the cursor on the EMP table in the editor window. Notice the tabs across the center of the screen. Using those tabs you can easily access the other related objects, constraints, statistics, code, privileges, and more.

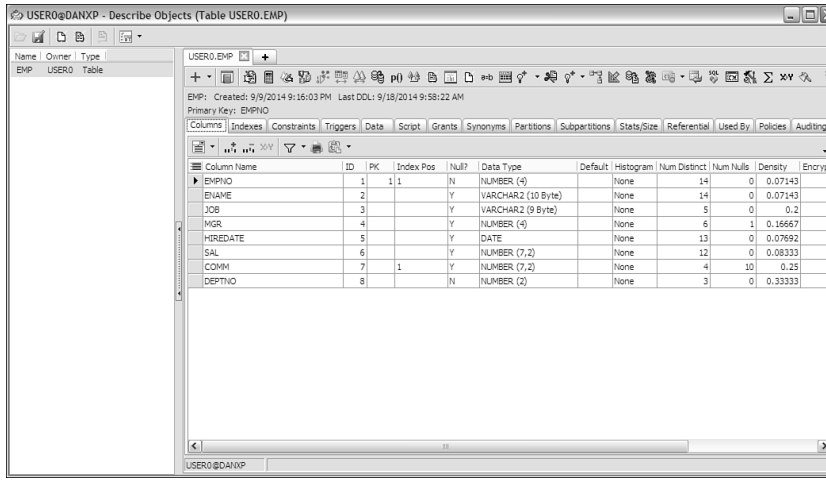


FIGURE 3.10 Describe Objects panel

You can drag and drop column names on the Columns tab onto the SQL window and show other information such as available indexes, constraints, triggers, and so on from this interface as well. This section covers the more important tabs individually.

TIP

You can drag and drop columns displayed in the Columns tab into the SQL window—SQL coding without typing!

The location of the Describe Objects panel can be adjusted. Figure 3.11 shows the buttons that control how the panel appears on the screen.

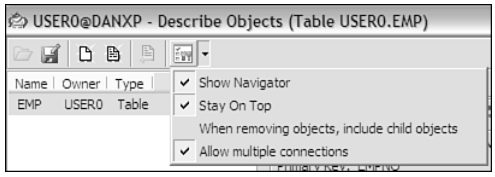


FIGURE 3.11 EMP Table Describe Objects panel buttons

NOTE

Toad 11 and newer put a new tab in this Describe Objects panel for each additional object being described. Older Toads open a new Describe Objects panel for each.

Buttons across the top of this panel (see Figure 3.12) control many items surrounding the object. Use the mouse and hover over any button to display a short description of its function. These buttons include:

- Add objects to this object
- Add to project manager (discussed later in this book)
- Alter/analyze/audit
- Compare
- Create another similar
- Create a script
- Show in various diagrammers
- Generate SQL (generates a select/insert/update/delete and puts it on the clipboard)
- Count/truncate

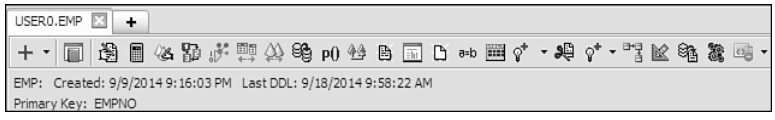


FIGURE 3.12 EMP Table Describe Tab buttons

WARNING

Toad is *not* one of those tools in which you should just click the button to see what it does. For example, if you have permissions to delete rows, the Truncate button will delete *all* the rows! Be careful out there!

The Script tab, shown in Figure 3.13, creates a script that could be saved and used to re-create the object. You can copy this script into a file and use it when creating a test environment for your application. Figure 3.14 shows the options available when you click the Options button on this script panel. Notice the adjustments you can make to the scripts. You can include the data, include drop statements, exclude schema owners (useful when setting up tables/objects for other users), and make other adjustments. Figure 3.15 illustrates the other content that you can include in the script output as well.

TIP

The author finds the ability to create scripts from this Scripts tab incredibly useful when creating a test environment for an application change.

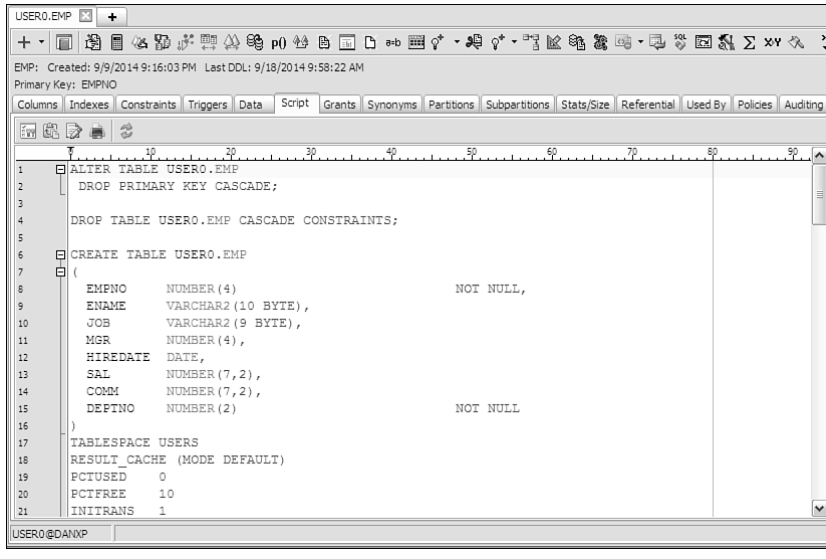


FIGURE 3.13 EMP Table Describe Object panel showing Script tab

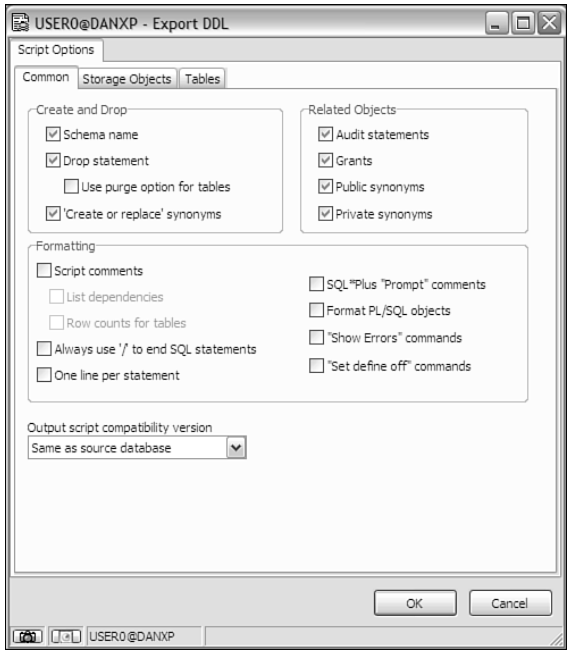


FIGURE 3.14 Script Tab Options panel

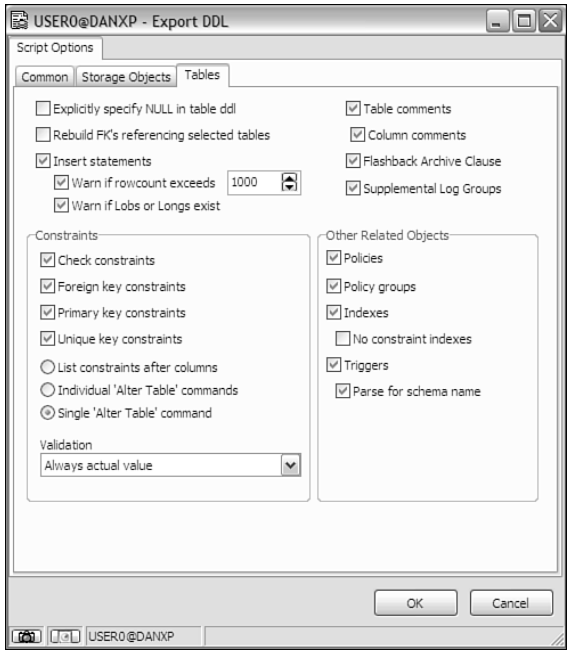


FIGURE 3.15 Script Tab Tables Option tab

The Export DDL button (shown in Figure 3.16) enables easy DDL syntax generation. Notice all the options available for optional syntax in the panel in Figure 3.17.

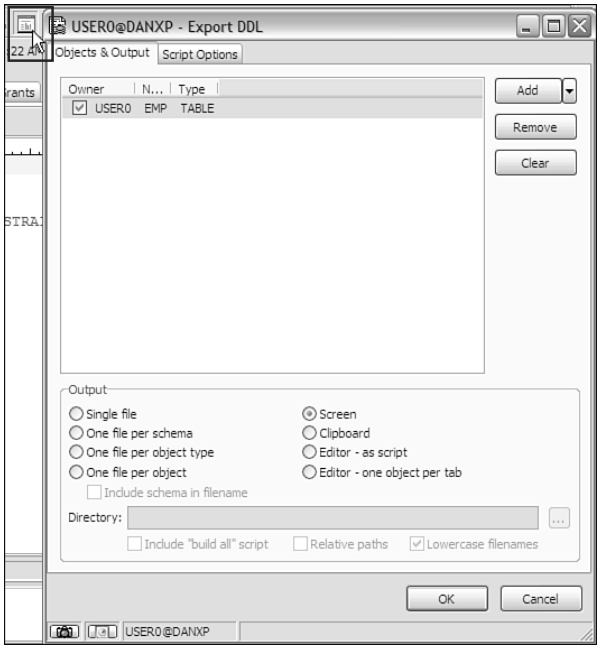


FIGURE 3.16 Export DDL panel

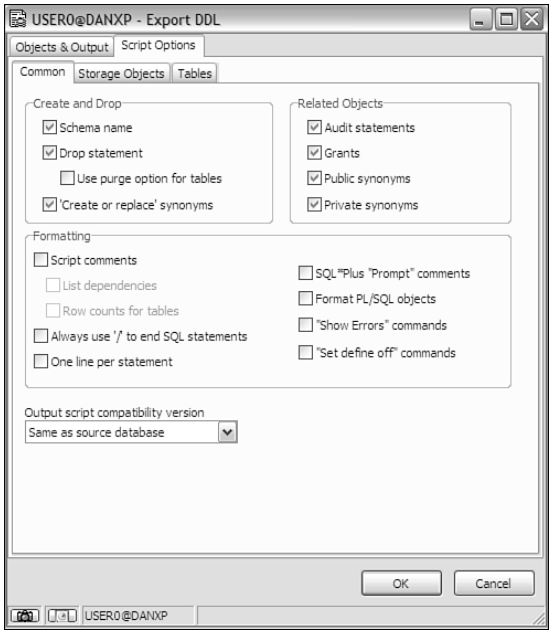
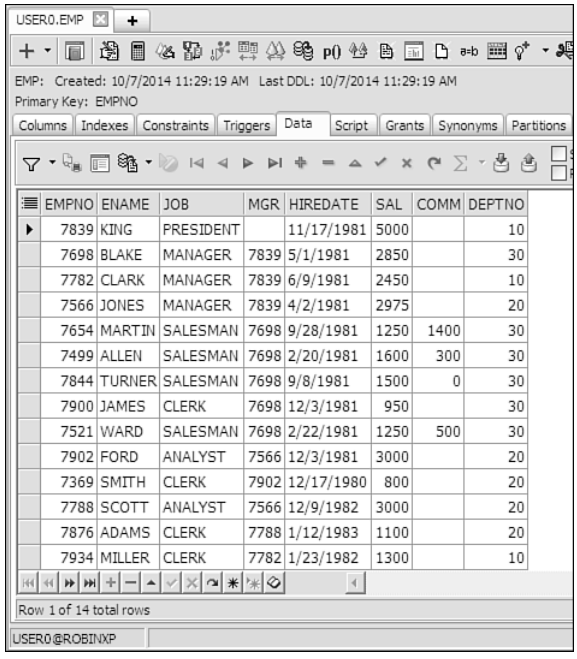


FIGURE 3.17 Export DDL Options panel

Figure 3.18 shows another data grid but just for the object selected. You can see the same navigation and data control buttons as discussed earlier for the SQL Editor Data Grid tab. Many features are common to all data grids and these are covered in detail in Chapter 5, "Working with Data."



EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
7839	KING	PRESIDENT		11/17/1981	5000		10
7698	BLAKE	MANAGER	7839	5/1/1981	2850		30
7782	CLARK	MANAGER	7839	6/9/1981	2450		10
7566	JONES	MANAGER	7839	4/2/1981	2975		20
7654	MARTIN	SALESMAN	7698	9/28/1981	1250	1400	30
7499	ALLEN	SALESMAN	7698	2/20/1981	1600	300	30
7844	TURNER	SALESMAN	7698	9/8/1981	1500	0	30
7900	JAMES	CLERK	7698	12/3/1981	950		30
7521	WARD	SALESMAN	7698	2/22/1981	1250	500	30
7902	FORD	ANALYST	7566	12/3/1981	3000		20
7369	SMITH	CLERK	7902	12/17/1980	800		20
7788	SCOTT	ANALYST	7566	12/9/1982	3000		20
7876	ADAMS	CLERK	7788	1/12/1983	1100		20
7934	MILLER	CLERK	7782	1/23/1982	1300		10

FIGURE 3.18 Data Grid panel

TIP

Be careful with large amounts of data on this panel. Use the Esc key to cancel any long-running data retrieval.

Clicking the Generate Statement button (see Figure 3.19) enables the easy creation of an Insert, Update, or Select statement from the visible columns of this data grid. Make your selection and then *paste* into the SQL Editor.

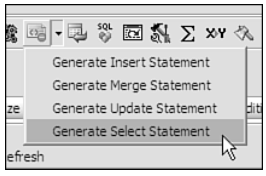


FIGURE 3.19 Generate Statement panel

Toad Insights

Toad provides easy creation of SQL. The previously mentioned Describe Objects panel enables you to drag and drop columns out of any table object into the SQL Editor. You can also enter the table name (or table alias) with a single period, the table name, another period, and partial leading column spelling, and Toad will pop up a box containing your table object columns and column attributes. Figure 3.20 shows a table with just a single period.

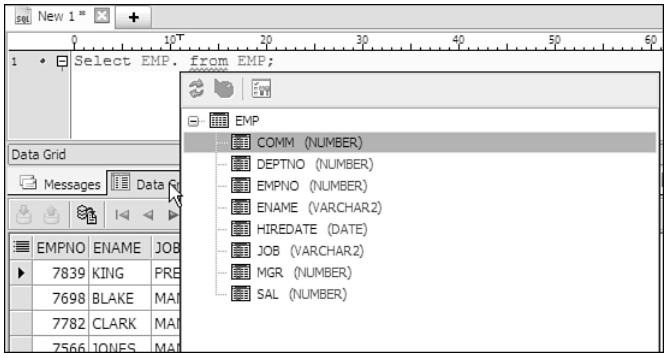


FIGURE 3.20 Toad Insights pop-up panel

You can double-click a column in this pop-up window, or multiple select using the mouse and either the Shift (list of items) or Ctrl buttons (specific items in the list) and then press the Enter or Return key to add the items to your code at the current cursor position. Notice in Figure 3.21, three columns were selected, and Toad qualified each with the table name! If you are utilizing table aliases, Toad remembers these and will qualify your code correctly.

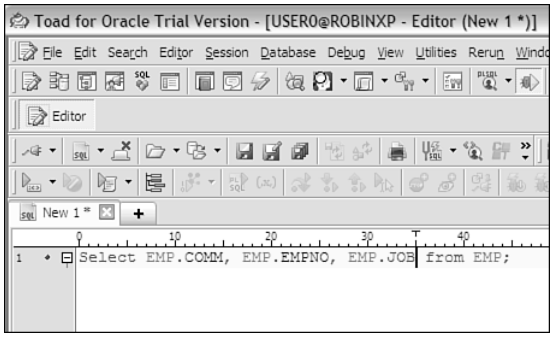


FIGURE 3.21 SQL Editor after using Insights

Notice earlier in Figure 3.20 that the items appearing in the Insights panel are in alphabetical order. One of the authors prefers the order as they appear in the object. Notice the Options button on the Insights panel. You can also access this area via the Configure Toad Options button on the top toolbar.

Figure 3.22 shows the Toad Insights configuration options. Notice that you can define the objects that this feature works on along the top. The center part of this screen allows you to

- Turn off the feature
- Cache the results (default)
- Display as text
- Sort the list (the author prefers to turn this off)
- Delay the popup (handy for those of us who type slowly...)

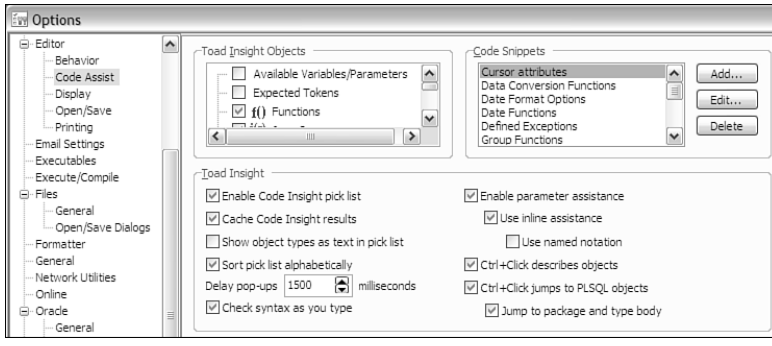


FIGURE 3.22 Insights Configuration panel

You can see some other items (discussed in Chapter 6) such as the Enable parameter assistance (sometimes the author turns this off as it can slow down PL/SQL coding), and some other built-in keystroke assistance.

Code Snippets

Toad contains bits of code called code snippets. These snippets contain most of the SQL functions, date formats, hints, and other bits of SQL and PL/SQL code that are of interest to the Oracle developer. Toad configuration options make it possible for additional items to be added or existing items to be changed.

To see the Code Snippets panel choose View ➔ Code Snippets. The panel then appears and auto hides along the right side of Toad (see Figure 3.23). The push pin button can make the panel remain visible on your desktop.

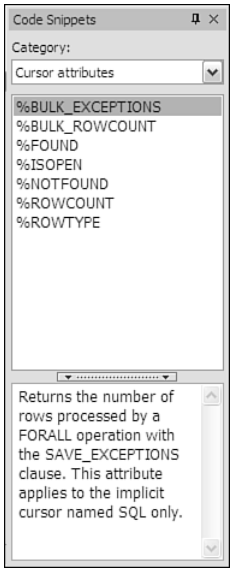


FIGURE 3.23 Code Snippets panel

You simply drag and drop the code pieces from this panel to your code.

Figure 3.24 shows the various categories for the snippets. There are snippets for date formatting, various function templates for almost anything, and even SQL Optimizer hints (discussed some in Chapter 10).

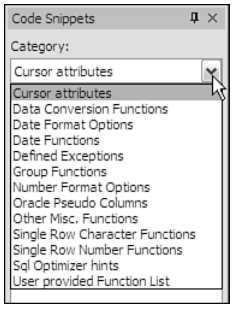


FIGURE 3.24 Code Snippets code categories

These snippets are configurable as well. Click the Configure Toad Options button (or access via the menu using View ➔ Toad Options) and visit the Editor ➔ Code Assistant panel as shown in Figure 3.25. This panel enables you to either clean up the categories you will never use, or better yet, add your own custom code snippets that you can easily add to your code via drag and drop.

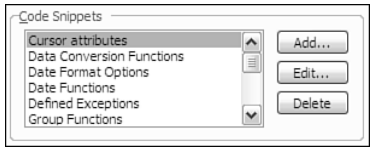


FIGURE 3.25 Configuring code snippets

SQL Recall

Toad saves all the work that was done in any of the editor windows.

ALT+Up Arrow and Alt+Down Arrow walk through this storage area. Choose View ➔ SQL Recall or press F8 (see Figure 3.26) to open the interface shown in Figure 3.27.

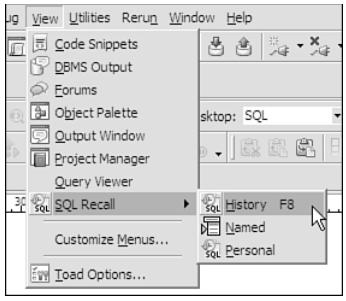


FIGURE 3.26 Accessing SQL Recall

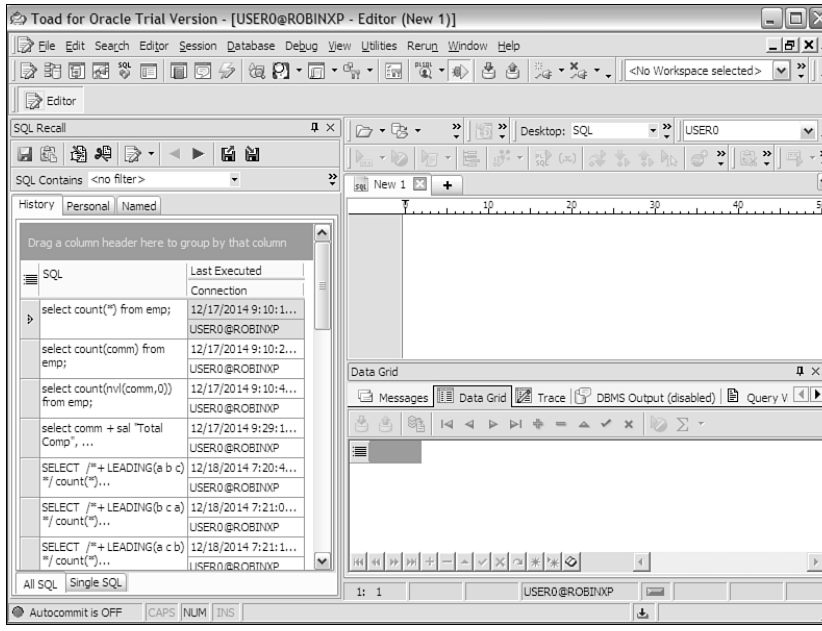


FIGURE 3.27 SQL Recall panel

Notice that the SQL Recall panel shows up as an autohide panel on the left side of Toad.

You simply double-click a SQL statement in this panel and Toad will open a new tab and put the SQL in it.

TIP

One of the authors uses this SQL Recall during SQL tuning. If a prior SQL statement worked better, then it is easy to find and revisit.

This version of Toad enables the SQL to be moved to the Personal tab or the Named tab. Simply click the Edit Selection button in the SQL Recall window, and then select the Personal or Named option from the Type drop-down menu.

The buttons on the top of this panel (see Figure 3.28) enable you to do the following:

- Save selected SQL to a file
- Copy selected SQL to the clipboard
- Edit the selected SQL (allows for the SQL to be added to the Personal or Named tabs, which makes finding SQL easier, perhaps)

- Delete from the SQL Recall
- Load into the SQL Editor (Append, New Tab, or Replace into current tab)
- Navigation buttons
- Export/Import all the SQL (useful when updating Toad or moving to a new computer)

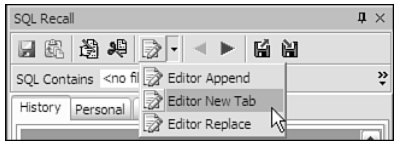


FIGURE 3.28 SQL Recall panel buttons

The Configure Toad Option ➔ Editor ➔ Code Assist SQL Recall settings (see Figure 3.29) control how many SQL statements are saved (max is virtually unlimited) and which SQL will be saved (all, or just valid ones). The Save Only Valid Statements option saves only the successful SQL, enabling more SQL to be saved. Typically, programmers are only interested in the SQL statements that didn't have syntax errors.

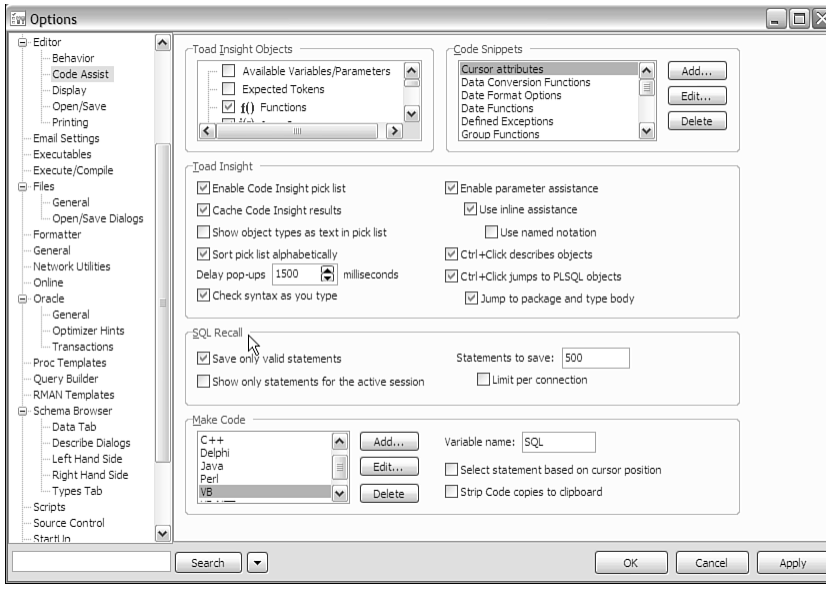


FIGURE 3.29 SQL Recall options

Auto Replace

Auto replace is like a spell checker; in fact, this feature actually does correct some spelling errors as well as correct obsolete code. This feature is activated via the space bar. It takes the last item entered since the prior space bar and compares it to a list. If the text is found in the list, the auto replace item is automatically substituted.

This feature is nice for long column names perhaps (although Toad Insights is a better mechanism for this), but it is used more for commonly entered items such as sf for SELECT * FROM or pl for DBMS_OUTPUT.PUTLINE( );.

Chapter 6 discusses a way to use existing code templates and how to add your own.

In an editor window, type in "teh" and when you press the space bar, it will be corrected quickly to "the." The space bar activates the check. If an item is in the Auto Replace panel, it is substituted.

To remove some auto correct items or to add your own (a good place to add any coding shortcut!), choose View ➔ Toad Options, visit Editor ➔ Behavior, and click the Auto Replace button on the lower-right part of the Behavior panel.

NOTE

Notice all the items that you can control in an editor window from this Behavior panel.

TIP

Dan uses this feature to code his own coding shortcuts.

This button opens the dialog in Figure 3.30. Notice the "teh" in the left side and the "the" in the right column.

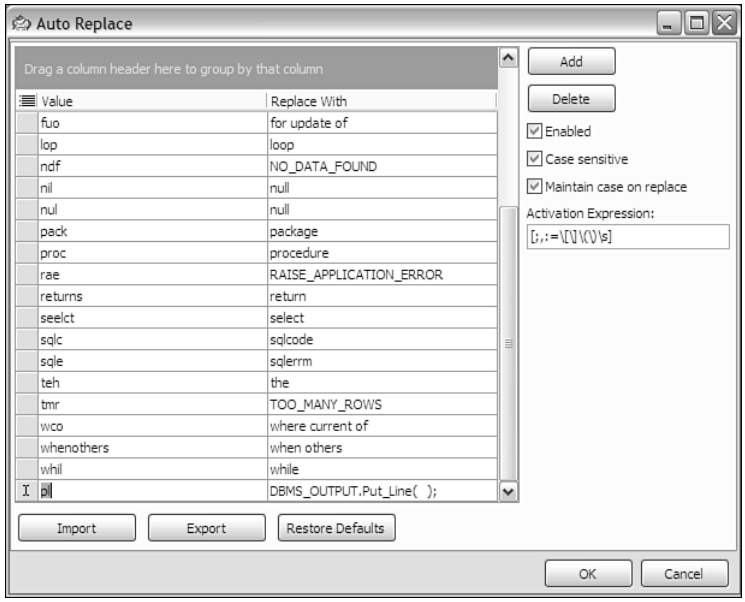


FIGURE 3.30 Adding an Auto Replace correct item

To add your own code assistants, click the Add button and fill in the grid as shown in Figure 3.30. One of the authors uses DBMS_OUTPUT.Put_Line frequently, so he wants a pl shortcut for it. Figure 3.31 shows the output when pl is entered and the space bar is tapped.

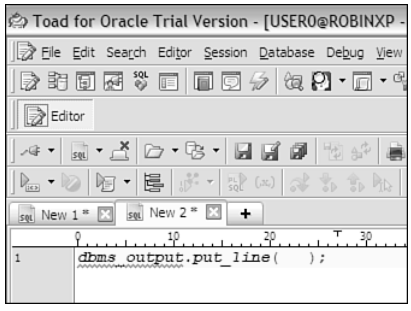


FIGURE 3.31 Auto Replace used for coding shortcuts

Query Builder

Toad has a nice Query Builder feature. This feature enables SQL code to be built using mouse operations. This feature is excellent for power users, analysts, and managers using Toad to create reports and access data but who have little knowledge of the SQL language.

The Query Modeler button is on the standard toolbar (the top menu bar, see Figure 3.32). You can also access it via Database ➔ Report ➔ Query Builder, and the button also appears on the ER Diagrammer panel.

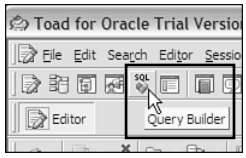


FIGURE 3.32 Query Builder button

The object palette appears on the right (if it doesn't automatically appear, click View ➔ Object Palette). The various items that can be included in a select statement appear on the left. Figure 3.33 shows the canvas with both the EMP table and the DEPT table. These were added using either a double-click operation on each in the object palette or a drag and drop mouse operation from the object palette to the canvas. Notice how Toad built the SQL in the bottom Generated Query tab. As you click on the column names, Query Builder will adjust the SQL! The query can be executed from here, saved, and even moved to a tab in the SQL Editor!

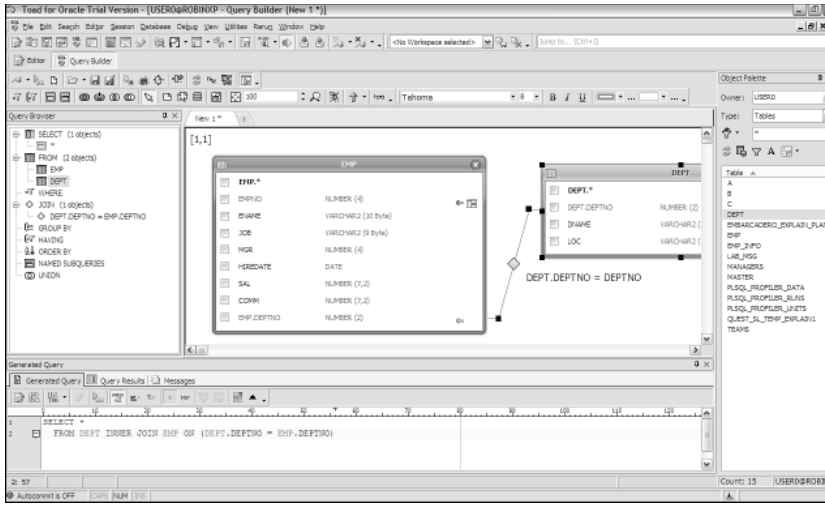


FIGURE 3.33 Query Builder in action

To add WHERE, GROUP BY, HAVING, UNION, and the other clauses, simply double-click the syntax item of interest and use mouse operations to draw in the options you desire. Figure 3.34 shows the Where Conditions clause panel, accessed by double-clicking the Where in the left Query Builder panel (titled Query Browser). Buttons on the toolbar control and bring up these same wizards. You can also build WHERE clauses by simply

dragging a column of interest from the canvas object and drop it on the WHERE clause. This feature works for the other items in the left panel as well. If the operation is a valid request, a wizard will appear to finish the syntax.

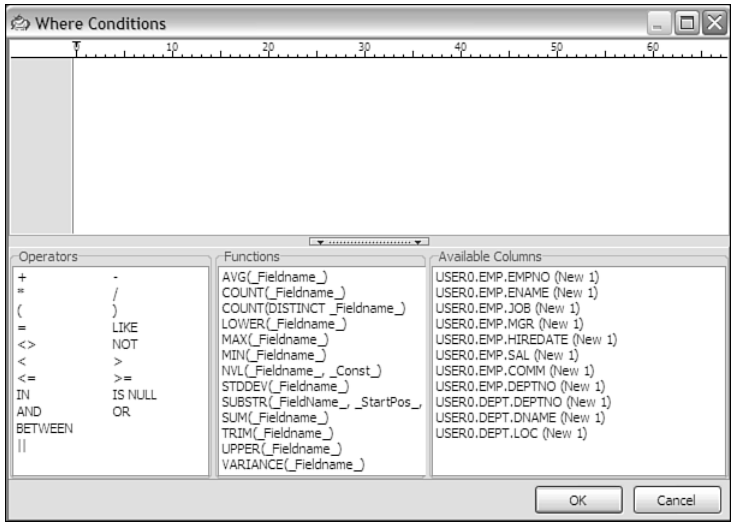


FIGURE 3.34 Query Builder using the Where item

Notice in Figure 3.35 that some columns were selected in the EMP and DEPT tables in the canvas and that the syntax was adjusted automatically. Also notice that the SQL syntax is using ANSI joins. Query Builder is an excellent tool for converting from either ANSI SQL to standard Oracle SQL or vice versa! Click the Ansi Join Syntax button, shown by the cursor in Figure 3.35, and you get the SQL in Figure 3.36!

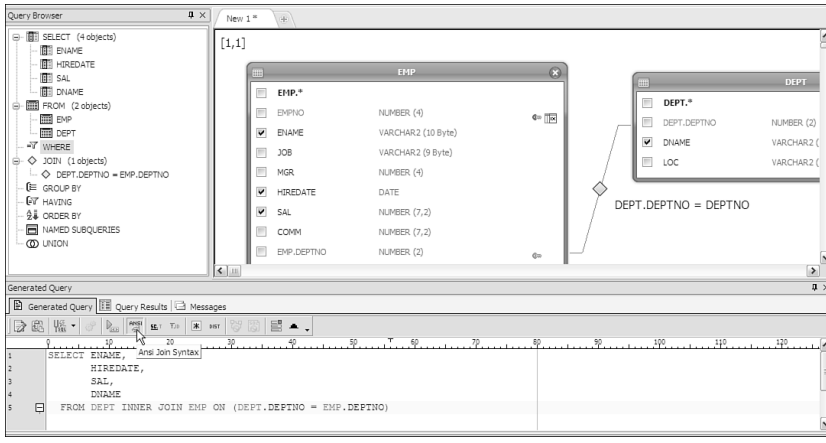


FIGURE 3.35 Query Builder ANSI SQL

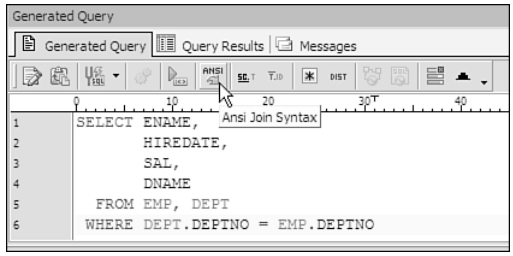


FIGURE 3.36 Query Builder Oracle SQL

Figure 3.37 shows the Generated Query panel control buttons. The first two buttons enable the generated SQL to be copied to either the editor (a new tab) or to the clipboard. The SQL Optimize button is a purchased feature of Toad (it enables the SQL to be automatically tuned). The Execute Query button will run the SQL from the Query Builder interface and populate the other two tabs present. The Add Table name button enables all the columns to be qualified. The next two buttons make it possible for either an * or the distinct clause to be added to the generated SQL.

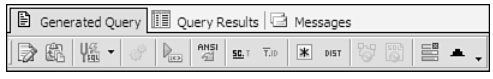


FIGURE 3.37 Generated Query Panel control buttons

The Update Diagram and Update SQL can be useful buttons. You can make changes to the SQL via typing or you can paste a SQL statement into this generated SQL area and click the Update Diagram button, and the diagram in the canvas will be updated. Likewise, you can make changes to the diagram in the canvas and click the Update SQL button, and the changes will be made to your generated SQL. The Ansi button is a toggle; it will rewrite your SQL using ANSI join syntax if clicked. The Add Schema Name to Tables and Add Table Names to Column buttons are also toggle buttons. If clicked down, the SQL text will be adjusted accordingly. The final two buttons (Run Query in Threads and Allow Modify Query Results) pertain to how you would like to execute the SQL and possibly have the ability to change results from within the Query Builder environment.

You can add your own subqueries and calculations. There are right-click options under each object on the canvas, different options when right-clicking the object header on the canvas, and others. Calculations are easy to add by either

- Right-clicking the select line on the left Query Builder panel and selecting Add New Expression Column as shown in Figure 3.38.
- Adjusting the text in the Generated Query and clicking the Update Diagram button.

Options for each of the other items appear in this left panel as well. Just right-click and check out the various options. Right-clicking the columns on the canvas enables column aliases to be added. Right-clicking the table name enables an alias to be defined. Remember that a button on the Generated Query panel can add the table name or alias to all the columns in the SQL (a good idea).

There isn't any SQL that cannot be built using Query Builder. Figure 3.38 shows a calculated column, sal * 1.1, being added to the query.

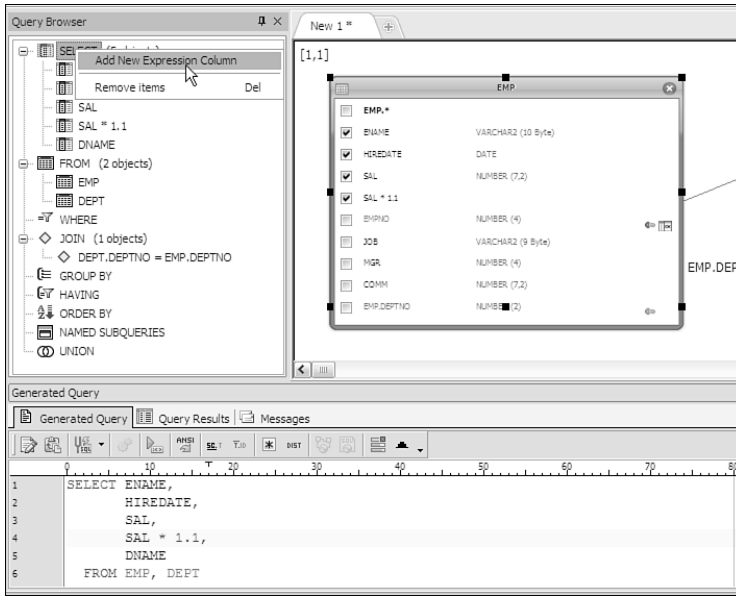


FIGURE 3.38 Adding calculations using Query Builder

Summary

This chapter covered various aspects of the main SQL Editor window. It is easy to build SQL, using the describe function and code snippets. You can enhance Toad for your own coding style using Auto Replace. Toad remembers the SQL that it has worked with. This chapter also covered the Query Builder, a useful tool for those new to Oracle but who have a need to access data within the Oracle RDBMS.

Index

A

About screen, 5

Access file format, saving data in, 106

action code (Automation Designer), 183-187

Action Console, 171

Action toolbar (Editor), 126

Add Schema Name to Tables button (SQL Editor Query Builder), 67

Add Table Names to Column button (SQL Editor Query Builder), 67

Add/Delete Rows buttons (data grids), 104-105

Analyze All Objects screen, 220-222

Ansi button (SQL Editor Query Builder), 67

ANSI SQL, Query Builder (SQL Editor), 66

apps, launching from External Tools, 162

ASH reports, 245-246

Auto Add button (External Tools), 161

Auto Replace panel (SQL Editor), 63-64

Auto Trace tab (SQL Editor Output area), 49-50, 231-232

autocommit feature (data grids), 96

automation, 171

- Action Console, 171
- Automation Designer, 171, 180
  - action code, 183-187
  - adding action properties, 188-189
  - availability, 188
  - Command Line feature versus, 179
  - Control tab, 188-190
  - functionality, 180-181
  - launching, 181
  - main screen, 181-183
  - programmatic controls, 189

Save/Load Window Snapshot, 180-181
scheduling, 183
toolbar, 182-183
Command Line feature, 171-172
Automation Designer versus, 179
command file example, 173-178
functionality, 172-173
running command files, 178-179
Save/Load settings, 173
shortcomings of, 180
auto-opening windows at startup, 34-36
AWR browser and SQL performance tuning, 245-246

B

Base edition (Toad), 4
BEGIN/END labels (Editor), 126
Bookmark Navigation buttons (data grids), 105
breakpoints (debugging code), 145, 147
conditional breakpoints, 150-152
modifying, 149-150
Breakpoints tab (SQL Editor Output area), 49

C

Calculate Selected Cells feature (data grids), 101
calculations, Query Builder (SQL Editor), 67
Call Stack tab (SQL Editor Output area), 49
call stacks, debugging code, 147
Cancel Query Execution or Fetch button (data grids), 104
cells (data grids), Calculate Selected Cells feature, 101
Check tab (Database Health Check), 193
choosing database connections, 27
Clear button (SQL Editor), 45
Code Analysis feature (Editor), 126, 139
functionality, 139
Halstead Volume, 142
Maintainability Index, 142
McCabe's Cyclomatic Complexity, 142
Report tab, 139
Toad Code Rating, 142
uses of, 139
code folding,126
Code Road Map, 157-158, 160
General tab, 159
Options tab, 159
Code Snippets, 133-134, 231
Code Snippets panel (SQL Editor), 58-60
Code tab (FastReport), 84
code templates, 127
building, 128-131
choosing, 127
Cursor Loop template, 127
modifying, 127-128
signaling, 127
substitution variables, 127
viewing, 127
color highlighting, Toad/database connections, 13
Command Line feature, 171-172
Automation Designer versus, 179
command files
example of, 173-178
running, 178-179
functionality, 172-173
Save/Load settings, 173
shortcomings of, 180
Commit/Rollback buttons (data grids), 96, 105

Compare Databases screen, 216-217
Databases tab, 217
Options tab, 217
Results tab, 217
Sync Script tab, 218
Compare Files utility, 163
Compare Schemas screen, 218-219
Options tab, 219
Results tab, 219
Sync Script tab, 219
compiling objects for debugging, 147
conditional breakpoints (debugging code), 150-152
connection errors for bad passwords, 16
Content tab (HTML Documentation Generator), 116
Control tab (Automation Designer), 189-190
copying/pasting in Reports Manager (Schema Browser), 88
Create Table wizard (Schema Browser), 76-78
Cursor Loop template, 127
customizing
Options screen
finding new/unknown options, 37
initial options to focus on, 38-39
pop-ups in options, 39
Toad, 18
keyboard shortcuts, 33-34
menus, 19
Options screen, 19-21, 37-39
Schema Browser, 34-36
sharing options settings, 40
SQL Editor, 34-36
startup options, 36
startup windows/screens, 34-36
toolbars, 19, 30-33
user settings, 40
user settings (Toad), 40

D

Data Grid panel (SQL Editor Describe Objects panel), 56
Data Grid tab (SQL Editor Output area), 49
data grids, 93
autocommit feature, 96
Calculate Selected Cells feature, 101
Cancel Query Execution or Fetch button, 104
capabilities of, 93-95
changing data and permissions, 95-96
commit/rollback buttons, 96
Export Dataset wizard, 102-103
Dataset tab, 103
Insert Statements tab, 103
Options tab, 102, 103
saving data, 106-111
filtering/sorting data, 97-99
functionality in, 96-97
Master Detail Browser, 111-113
permissions and changing data, 95-96
pop-up menu, 95
printing via FastReport, 79-80
Code tab, 84
Report wizard, 80-83
saving reports, 84
Style tab, 82
Refresh Dataset button, 103
refreshing data, 97
rows
Add/Delete Rows buttons, 104-105
Bookmark Navigation buttons, 105
Edit Row Set Control buttons, 105
Row Set Navigation buttons, 105
saving data
Access file format, 106
Delimited Text file format, 107
Excel File format, 108

Excel Instance format, 108
Fixed Field Spacing option, 108-109
HTML Table file format, 109
Insert Statements file format, 109
Merge Statements file format, 109
ODBC Database file format, 110
SQL Loader option, 111
XML (with XLS) file format, 109
XML file format, 109
Show Detail Dataset button, 100
Show/Hide Columns menu, 100
Single Record Viewer button, 105
sorting
columns, 97
data, 97-99
SQL Editor, 95
View/Edit Query panel, 99
Data Pump Export wizard, 205-209
data tool palette (SQL Editor Output area), 48
database administration, 191
Analyze All Objects screen, 220-222
Compare Databases screen, 216-217
Databases tab, 217
Options tab, 217
Results tab, 217
Sync Script tab, 218
Compare Schemas screen, 218-219
Options tab, 219
Results tab, 219
Sync Script tab, 219
Data Pump Export wizard, 205-209
Database Browser, 197-202
Datafile IO tab, 200
Sessions tab, 199
Space Usage tab, 200-201
tablespace management, 210-212
Database Health Check, 192-193
Check tab, 193
Diffs Since Last Run tab, 194
Parameter screen, 193
Report Output tab, 194
Schemas tab, 194
Settings tab, 194
DB Admin Module, 4, 191-192, 224-226
Export Utility wizard
Data Pump Export wizard, 205-209
Generate Database Script screen, 212-214
Generate Schema Script screen, 214-215
simple exports, 202-204
Generate Database Script screen (Export Utility wizard), 212
Object Listing tab, 214
Object Types tab, 213
Script Options tab, 213
Source and Output tab, 212-213
Generate Schema Script screen (Export Utility wizard), 214
Object Types tab, 215
Script Options tab, 215
Source and Output tab, 215
SQL display, 215
Rebuild Multiple Objects screen, 223
Storage Clause Adjustments tab, 224
Thresholds and Performance Options tab, 223
Session Browser, 194-196
Locks tab, 196
tracing/killing sessions, 196
Waits tab, 197
tablespace management, 210-212
Database Browser, 197-202
Datafile IO tab, 200
Sessions tab, 199

Space Usage tab, 200-201
tablespace management, 210-212
database connections
choosing, 27
filtering, 28
grouping, 29-30
organizing, 25-30
sorting, 26
Toad operation (first time), 10
color highlighting, 13
connection errors for bad passwords, 16
Oracle Homes, 14-15
TNS tab, 10-11
TNSNAMES Editor, 11-13
database documentation
ER Diagrammer, 113-114
HTML Documentation Generator, 115-116, 118
Content tab, 116
HTML output and, 118
Object Descriptions tab, 117
Summary.html files, 116
Database Health Check, 192-193
Check tab, 193
Diffs Since Last Run tab, 194
Parameter screen, 193
Report Output tab, 194
Schemas tab, 194
Settings tab, 194
database security, common questions, 22
Databases tab (Compare Databases screen), 217
Datafile IO tab (Database Browser), 200
Dataset tab (Export Dataset Wizard), 103
datasets
Export Dataset wizard (data grids), 102-103
Dataset tab, 103
Insert Statements tab, 103
Options tab, 102, 103
saving data, 106-111
Master Detail Browser, 111-113
Refresh Dataset button, 103
DB Admin Module, 4, 191-192, 224-226
DBMS Output tab (SQL Editor Output area), 49
debugging code
adding privileges, 143
breakpoints, 145, 147
conditional breakpoints, 150-152
modifying, 149-150
call stacks, 147
changing
items “on the fly,” 148-152
variable data, 148
compiling objects for debugging, 147
Editor, PL/SQL, 123-124
JIT (Just-In-Time) debugging, 152-153
keyboard shortcuts, 143
Looping_Example, 143, 144, 147
Menu bar options, 144
modifying variable data, 148-149
PL/SQL, 123-124, 142
advanced debugging, 148-153
basic debugging, 142-148
Run to Cursor feature, 143
Step Into button, 145
stopping code, 143
symbolic debugging, 142
advanced debugging, 148-153
basic debugging, 142-148
Terminate Execution button, 144
toolbar, 143
trigger code, 152
watches, 145, 147, 148
.DEF files, 213
deleting, rows in data grids, 104-105

Delimited Text file format, saving data in, 107
Describe Objects panel (SQL Editor), 51
  changing panel location, 52
  Data Grid panel, 56
  dragging/dropping columns, 51
  EMP Table Describe Panel buttons, 52
  Export DDL panel, 55
  Generate Statement panel, 56
  Script tab, 53
  viewing button functionality, 52-53
development of Toad, 2-3
  editions/suites, 3-5
  Oracle compatibility, 3
diagramming objects via Code Road Map, 157-158, 160
  General tab, 159
  Options tab, 159
Diffs Since Last Run tab (Database Health Check), 194
dragging/dropping columns in Describe Objects panel (SQL Editor), 51

E

Edit Row Set Control buttons (data grids), 105
editing
  objects in Schema Browser, 76
  reports in Reports Manager (Schema Browser), 88
  View/Edit Query panel (data grids), 99
Editor, 121
  Action toolbar, 126
  autohiding output tabs, 124
  BEGIN/END labels, 126
  Code Analysis feature, 126, 139
    functionality, 139
    Halstead Volume, 142
    Maintainability Index, 142
    McCabe's Cyclomatic Complexity, 142
    Report tab, 139
    Toad Code Rating, 142
    uses of, 139
  code folding, 126
  code templates, modifying, 127-128
  debugging code, 123-124
  Execute PL/SQL button, 123-124, 146-147
  Execute/Compile button, 123
  formatting code, 127
  full screen mode, 124
  highlighting code, 126
  IF/END IF labels, 126
  keyboard shortcuts, 135-137
  Load Database Object wizard, 122-123
  opening files in, 122
  saving code, 123
  Schema Browser, loading files from, 123
Editor button (SQL Editor), 44
EMP Table Describe Panel buttons, Describe Objects panel (SQL Editor), 52
ER Diagrammer, 113-114
Excel File format, saving data in, 108
Excel Instance format, saving data in, 108
Execute PL/SQL button (Editor), 123-124, 146-147
Execute/Compile button (Editor), 123
execution plans and SQL performance tuning, 229-231
Explain Plan tab (SQL Editor Output area), 49, 50
explain plans (SQL performance tuning), 227-229
  code snippets, 231
  execution plans, 229-231
Export Dataset wizard (data grids), 102-103
  Dataset tab, 103
  Insert Statements tab, 103

Options tab, 102-103
saving data, 106
Access file format, 106
Delimited Text file format, 107
Excel File format, 108
Excel Instance format, 108
Fixed Field Spacing option, 108-109
HTML Table file format, 109
Insert Statements file format, 109
Merge Statements file format, 109
ODBC Database file format, 110
SQL Loader option, 111
XML (with XLS) file format, 109
XML file format, 109
Export DDL panel (SQL Editor Describe Objects panel), 55
Export Utility wizard
Data Pump Export wizard, 205-209
Generate Database Script screen, 212
simple exports, 202-204
External Tools program launcher, 160
Auto Add button, 161
configuration screen, 161
launching apps from, 162
Manual Add button, 162

F

FastReport data printing, 79-80
Code tab, 84
Report wizard, 80-83
saving reports, 84
Style tab, 82
Favorites list (Schema Browser), 73-74
filtering
data grid data, 97-99
database connections, 28
objects, Schema Browser, 72
Fixed Field Spacing option, saving data in, 108-109
folding code in Editor, 126
formatting code in Editor, 127
full screen mode (Editor), 124

G

General tab (Code Road Map), 159
Generate Database Script screen (Export Utility wizard), 212-213
Object Listing tab, 214
Object Types tab, 213
Script Options tab, 213
Source and Output tab, 212-213
Generate Schema Script screen (Export Utility wizard), 214
Object Types tab, 215
Script Options tab, 215
Source and Output tab, 215
SQL display, 215
Generate Statement panel (SQL Editor Describe Objects panel), 56
Generated Query panel (SQL Editor Query Builder), 66-67
grouping database connections, 29-30

H

Halstead Volume (Code Analysis reports), 142
Halt button (SQL Editor), 45

Health Check, 192-193
  Check tab, 193
  Diffs Since Last Run tab, 194
  Parameter screen, 193
  Report Output tab, 194
  Schemas tab, 194
  Settings tab, 194
hiding/displaying
  output tabs in Editor, 124
  Show/Hide Columns menu (data grids), 100
  tabs in Output area (SQL Editor), 48-49
highlighting
  code in Editor, 126
  Toad/database connections, 13
HTML Documentation Generator, 115-118
  Content tab, 116
  HTML output and, 118
  Object Descriptions tab, 117
  Summary.html files, 116
    installer files, 6
    Windows prerequisites, 5-6
HTML Table file format, saving data in, 109

I

IF/END IF labels (Editor), 126
Insert Statements file format, saving data in, 109
Insert Statements tab (Export Dataset Wizard), 103
Insights panel (SQL Editor), 57-58
installing Toad, 6-8

J

JIT (Just-In-Time) debugging, 152-153

K

keyboard shortcuts
  debugging code, 143
  Editor, 135-137
  Toad shortcuts, 33-34
killing/tracing sessions (Session Browser), 196

L

launching programs. *See* External Tools
licensing Toad, installer license screen, 7
Load Database Object wizard, 122-123
Locks tab (Session Browser), 196
logins (multiple) in SQL Editor, 46
Looping_Example
  debugging code, 143, 144, 147
  profiling code, 154-156

M

Maintainability Index (Code Analysis reports), 142
Manual Add button (External Tools), 162
Master Detail Browser, 111-113
McCabe's Cyclomatic Complexity (Code Analysis reports), 142

Menu bar, debugging code options, 144
menus, customizing, 19
Merge Statements file format, saving data in, 109
Messages tab (SQL Editor Output area), 49

N

naming reports, Reports Manager (Schema Browser), 87
Navigator tab (SQL Editor Output area), 49
No Oracle Net Services error, 9

O

Object Descriptions tab (HTML Documentation Generator), 117
Object Listing tab (Generate Database Script screen), 214
Object Pallette, ER Diagrammer and, 113-114
Object Types tab
  Generate Database Script screen, 213
  Generate Schema Script screen, 215
objects
  Analyze All Objects screen, 220-222
  compiling objects for debugging, 147
  Describe Objects panel (SQL Editor), 51
    changing panel location, 52
    Data Grid panel, 56
    dragging/dropping columns, 51
    EMP Table Describe Panel buttons, 52
    Export DDL panel, 55
    Generate Statement panel, 56
    Script tab, 53
    viewing button functionality, 52-53
  diagramming via Code Road Map, 157-158, 160
    General tab, 159
    Options tab, 159
  ER Diagrammer, 113-114
  Rebuild Multiple Objects screen, 223
    Storage Clause Adjustments tab, 224
    Thresholds and Performance Options tab, 223
  Schema Browser
    adding objects, 73
    configuring object display, 70-72
    control buttons, 75
    Create Table wizard, 76-78
    creating objects, 76-78
    displaying objects, 70-72
    editing objects, 76-78
    enabling objects, 73
    Favorites list, 73-74
    filtering objects, 72
    grouping objects, 73
    maintaining objects, 73
    scheduling object creation, 78
    selecting objects, 73
    Show SQL button, 78
ODBC Database file format, saving data in, 110
Options screen, Toad customization, 19-21
  finding new/unknown options, 37
  initial options to focus on, 38-39
  pop-ups in options, 39
Options tab
  Analyze All Objects screen, 221-222
  Code Road Map, 159
  Compare Databases screen, 217
  Compare Schemas screen), 219
  Export Dataset Wizard, 102-103

Oracle
Oracle Net Services
No Oracle Net Services error, 9
Toad connections (first time), 9-10
sending SQL statements to, 44
Toad compatibility, 3
Oracle Homes, Toad operation (first time), 14-15
Oracle SQL, Query Builder (SQL Editor), 66
organizing
database connections, 25
choosing, 27
filtering, 28
grouping, 29-30
sorting, 26
objects via Project Manager, 132
adding objects to project folders, 132
creating project folders, 133
interface of Project Manager, 132
maintaining Project Manager via Schema Browser, 132
toolbar, 133
Output area (SQL Editor)
Auto Trace tab, 49-50, 231-232
Breakpoints tab, 49
Call Stack tab, 49
Data Grid tab, 49
DBMS Output tab, 49
Explain Plan tab, 49, 50
hiding/displaying tabs, 48-49
Messages tab, 49
Navigator tab, 49
Output area, data tool palette, 48
Profiler tab, 48-49
Query Viewer tab, 49
REF CURSOR Results tab, 49
Script Output tab, 49
SQL Trace tab, 49-50, 233-238
Trace tab, 49-50
Watches tab, 49

P

Parameter screen (Database Health Check), 193
password connection errors, Toad/database connections, 16
performance
SQL performance tuning, 227, 249-250
AWR browser, 245-246
explain plans, 227-231
PL/SQL Profiler, 246-248
SQL Optimizer, 248-249
SQL Trace tab (SQL Editor Output area), 233-242
statistics, 231-232
Statspack browser, 243-245
TKProf wizard, 238-241, 242
Trace File Browser, 241-242
Toad performance, common questions, 22
permissions, data grids, 95, 96
PL/SQL
code snippets, 133-134
code templates, 127
building, 128-131
choosing, 127
Cursor Loop template, 127
modifying, 127-128
signaling, 127
substitution variables, 127
viewing, 127
debugging code, 123-124, 142
advanced debugging, 148-153
basic debugging, 142-148

Editor
Action toolbar, 126
autohiding output tabs, 124
BEGIN/END labels, 126
Code Analysis feature, 126, 139-142
code folding, 126
debugging code, 123-124
Execute PL/SQL button, 123-124, 146-147
Execute/Compile button, 123
formatting code, 127
full screen mode, 124
highlighting code, 126
IF/END IF labels, 126
keyboard shortcuts, 135-137
Load Database Object wizard, 122-123
modifying code templates, 127-128
opening files in, 122
saving code, 123
formatting code, 127
profiling, 153-156
saving code, 123
Schema Browser, loading files from, 123
PL/SQL Profiler and SQL performance tuning, 246-248
printing FastReport, 79-80
Code tab, 84
Report wizard, 80-83
saving reports, 84
Style tab, 82
Professional edition (Toad), 4
Profiler tab (SQL Editor Output area), 48-49
profiling PL/SQL, 153-156
program launchers. *See* External Tools
Project Manager, 132
interface of, 132
maintaining via Schema Browser, 132
project folders
adding objects to, 132
creating project folders, 133
toolbar, 133

Q

queries
Cancel Query Execution or Fetch button, 104
View/Edit Query panel (data grids), 99
Query Builder (SQL Editor), 64-65
Add Schema Name to Tables button, 67
Add Table Names to Column button, 67
Ansi button, 67
ANSI SQL, 66
calculations, 67
Generated Query panel, 66-67
Oracle SQL, 66
subqueries, 67
Update Diagram button, 67
Update SQL button, 67
WHERE clauses, 66
Query Viewer tab (SQL Editor Output area), 49
Quick Scripts, 167

R

Rebuild Multiple Objects screen, 223
Storage Clause Adjustments tab, 224
Thresholds and Performance Options tab, 223
REF CURSOR Results tab (SQL Editor Output area), 49
Refresh Dataset button (data grids), 103
refreshing data in data grids, 97

release history of Toad, 2-3
editions/suites, 3-5
Oracle compatibility, 3
Report Output tab (Database Health Check), 194
Report tab (Code Analysis feature), 139
Report wizard (FastReport), 80-83
Reports Manager (Schema Browser)
adding reports to, 85-90
adding scripts to, 90
copying/pasting in, 88
editing reports, 88
naming reports, 87
running reports, 90
toolbar buttons, 86
Results tab
Compare Databases screen, 217
Compare Schemas screen, 219
Rollback/Commit buttons (data grids), 96, 105
Row Set Navigation buttons (data grids), 105
rows (data grids)
Add/Delete Rows buttons, 104-105
Bookmark Navigation buttons, 105
Edit Row Set Control buttons, 105
Row Set Navigation buttons, 105
Run to Cursor feature (Debugger), 143
running Toad (first time)
database connections, 10-16
color highlighting, 13
connection errors for bad passwords, 16
Oracle Homes, 14-15
TNS tab, 10-11
TNSNAMES Editor, 11-13
No Oracle Net Services error, 9
Oracle Net Services connections, 9-10
Schema Browser, 17-18
SQL Editor, 16
Windows bit compatibility, 10

S

Save/Load Window Snapshot (Automation Designer), 180-181
saved database connection grid (Toad)
choosing connections, 27
filtering connections, 28
grouping connections, 29-30
sorting connections, 26
saving
code in Editor, 123
data
Access file format, 106
Delimited Text file format, 107
Excel File format, 108
Excel Instance format, 108
Export Dataset wizard (data grids), 106-111
Fixed Field Spacing option, 108-109
HTML Table file format, 109
Insert Statements file format, 109
Merge Statements file format, 109
ODBC Database file format, 110
SQL Loader option, 111
XML (with XLS) file format, 109
XML file format, 109
PL/SQL code in Editor, 123
reports, FastReport data printing, 84
scheduling
Automation Designer, 183
object creation in Schema Browser, 78
Schema Browser, 17-18, 69
adding objects, 73
auto-opening at startup, 34-36
configuring, 70-72
control buttons, 75
Create Table wizard, 76-78
creating objects, 76-78

editing objects, 76-78
Editor, loading files to, 123
enabling objects, 73
FastReport data printing, 79-80
Code tab, 84
Report wizard, 80-83
saving reports, 84
Style tab, 82
Favorites list, 73-74
filtering objects, 72
grouping objects, 73
maintaining objects, 73
maintaining Project Manager, 132
opening multiple Schema Browsers, 69
PL/SQL, loading files to Editor, 123
Reports Manager
adding reports to, 85-90
adding scripts to, 90
copying/pasting in, 88
editing reports, 88
naming reports, 87
running reports, 90
toolbar buttons, 86
scheduling object creation, 78
selecting objects, 73
Show SQL button, 78
tabbed display, 70-72
Tables tab, 75
tree view, 70-72
Schemas tab (Database Health Check), 194
Script Manager, 165-166
Quick Scripts, 167
toolbar, 166-167
Script Options tab (Generate Database Script screen), 213, 215
Script Output tab (SQL Editor Output area), 49
Script tab (SQL Editor Describe Objects panel), 53
scripts
Generate Database Script screen (Export Utility wizard), 212
Object Listing tab, 214
Object Types tab, 213
Script Options tab, 213
Source and Output tab, 212-213
Generate Schema Script screen (Export Utility wizard), 214
Object Types tab, 215
Script Options tab, 215
Source and Output tab, 215
SQL display, 215
Reports Manager (Schema Browser), adding scripts to, 90
Sync Script tab
Compare Databases screen, 218
Compare Schemas screen, 219
security (database), common questions, 22
sending SQL statements to Oracle, 44
Session Browser, 194-196
Locks tab, 196
tracing/killing sessions, 196
Waits tab, 197
Sessions tab (Database Browser), 199
Settings tab (Database Health Check), 194
sharing
Toad options settings, 22, 40
user settings (Toad), 40
shortcuts
keyboard shortcuts
debugging code, 143
Editor, 135-137
Toad shortcuts, 33-34
SQL coding, Auto Replace panel (SQL Editor), 63-64
Show Detail Dataset button (data grids), 100
Show SQL button (Schema Browser), 78

Show/Hide Columns menu (data grids), 100
Single Record Viewer button (data grids), 105
snapshot (.DEF) files, 213
snippets (code). *See* Code Snippets panel (SQL Editor)
sorting
  data grids
    columns, 97
    data, 97-99
  database connections, 26
Source and Output tab
Generate Database Script screen, 212-213
Generate Schema Script screen, 215
Space Usage tab (Database Browser), 200-201
spellchecking, Auto Replace panel (SQL Editor), 63-64
SQL
  ANSI SQL, Query Builder (SQL Editor), 66
  code snippets, 133-134
  formatting code, 127
  Oracle SQL, Query Builder (SQL Editor), 66
  performance tuning, 227, 249-250
    AWR browser, 245-246
    explain plans, 227-231
    PL/SQL Profiler, 246-248
    SQL Optimizer, 248-249
    SQL Trace tab (SQL Editor Output area), 233-238
    statistics, 231-232
    Statspack browser, 243-245
    TKProf wizard, 238-241, 242
    Trace File Browser, 241-242
  shortcuts, coding in Auto Replace panel (SQL Editor), 63-64
SQL Editor, 16, 43
  Auto Replace panel, 63-64
  auto-opening at startup, 34-36
  button descriptions, viewing, 44
  Clear button, 45
  Code Snippets panel, 58-60
  data grids, 95
  data tool palette (Output area), 48
  Describe Objects panel, 51
    changing panel location, 52
    Data Grid panel, 56
    dragging/dropping columns, 51
    EMP Table Describe Panel buttons, 52
    Export DDL panel, 55
    Generate Statement panel, 56
    Script tab, 53
    viewing button functionality, 52-53
  Editor button, 44
  functionality, 45
  Halt button, 45
  input options, 45
  Insights panel, 57-58
  multiple logins, 46
  Output area
    Auto Trace tab, 49-50, 231-232
    Breakpoints tab, 49
    Call Stack tab, 49
    Data Grid tab, 49
    data tool palette, 48
    DBMS Output tab, 49
    Explain Plan tab, 49, 50
    hiding/displaying tabs, 48-49
    Messages tab, 49
    Navigator tab, 49
    Profiler tab, 48, 49
    Query Viewer tab, 49
    REF CURSOR Results tab, 49
    Script Output tab, 49
    SQL Trace tab, 49-50, 233-238
    Trace tab, 49-50
    Watches tab, 49

Query Builder, 64-65
Add Schema Name to Tables button, 67
Add Table Names to Column button, 67
Ansi button, 67
ANSI SQL, 66
calculations, 67
Generated Query panel, 66-67
Oracle SQL, 66
subqueries, 67
Update Diagram button, 67
Update SQL button, 67
WHERE clauses, 66
sending statements to Oracle, 44
SQL Recall panel, 60-62
toolbars
configuring, 46-47
resetting options, 47
standard toolbar, 45
SQL Loader option, saving data in, 111
SQL Optimizer and SQL performance tuning, 248-249
SQL Recall panel (SQL Editor), 60-62
SQL Trace tab (SQL Editor Output area), 49-50, 233-238
startup options (Toad), customizing, 36
startup windows/screens (Toad), customizing, 34-36
statements
Generate Statement panel (SQL Editor Describe Objects panel), 56
Insert Statements file format, saving data in, 109
Insert Statements tab (Export Dataset Wizard), 103
Merge Statements file format, saving data in, 109
Statspack browser and SQL performance tuning, 243-245
Step Into button (debugging code), 145
stopping code during debugging, 143
Storage Clause Adjustments tab (Rebuild Multiple Objects screen), 224
Style tab (FastReport), 82
subqueries, Query Builder (SQL Editor), 67
suites (Toad), 4-5
Summary.html files (HTML Documentation Generator), 116
symbolic debugging, 142
advanced debugging, 148-153
basic debugging, 142-148
Sync Script tab
Compare Databases screen, 218
Compare Schemas screen, 219

T

Tables tab (Schema Browser), 75
tablespace management, 210-212
templates (code), 127
building, 128-131
choosing, 127
Cursor Loop template, 127
modifying, 127-128
signaling, 127
substitution variables, 127
viewing, 127
Terminate Execution button (debugging code), 144
testing data, Show Detail Dataset button, 100
Thresholds and Performance Options tab (Rebuild Multiple Objects screen), 223
TKProf wizard and SQL performance tuning, 238-241, 242
TNS tab, Toad/database connections, 10-11
TNSNAMES Editor, 11-13, 164

Toad
About screen, 5
Base edition, 4
common questions, 21
database security, 22
functionality, 21-22
performance, 22
sharing options settings, 22
connection screen, 10
customizing, 18
keyboard shortcuts, 33-34
menus, 19
Options screen, 19-21, 37-39
Schema Browser, 34-36
sharing options settings, 40
SQL Editor, 34-36
startup options, 36
startup windows/screens, 34-36
toolbars, 19, 30-33
user settings, 40
database connections, 10
choosing, 27
color highlighting, 13
connection errors for bad passwords, 16
filtering, 28
grouping, 29-30
Oracle Homes, 14-15
organizing, 25-30
sorting, 26
TNS tab, 10-11
TNSNAMES Editor, 11-13
database security, common questions, 22
DB Admin Module, 4
.DEF files, 213
functionality, common questions, 21-22
installing, 6-8
installer files, 6
installer license screen, 7
Windows prerequisites, 5-6
licensing, installer license screen, 7
Options screen
finding new/unknown options, 37
initial options to focus on, 38-39
pop-ups in options, 39
Oracle Homes, 14-15
Oracle Net Services connections, 9-10
performance, common questions, 22
prerequisites, 5-6
Professional edition, 4
release history, 2-3
editions/suites, 3-5
Oracle compatibility, 3
running (first time)
connection screen, 10
database connections, 10-16
No Oracle Net Services error, 9
Oracle Net Services connections, 9-10
Schema Browser, 17-18
SQL Editor, 16
Windows bit compatibility, 10
saved database connection grid
choosing connections, 27
filtering connections, 28
grouping connections, 29-30
sorting connections, 26
Schema Browser, 17-18, 34-36
sharing options settings, common questions, 22
SQL Editor, 16, 34-36
suites, 4-5
Windows prerequisites, 5-6
Xpert edition, 4

Toad Code Rating (Code Analysis reports), 142
Toggle PL/SQL Profiling button (PL/SQL profiling), 153
toolbars
  Action toolbar (Editor), 126
  Automation Designer, 182-183
  customizing, 19, 30
    displayed toolbars, 30
    toolbar layouts, 31-33
  debugging code toolbar, 143
  Project Manager, 133
  Reports Manager (Schema Browser), 86
  Script Manager, 166-167
  SQL Editor
    configuring, 46-47
    resetting options, 47
    standard toolbar, 45
Trace File Browser and SQL performance tuning, 241-242
Trace tab (SQL Editor Output area), 49-50
tracing/killing sessions (Session Browser), 196
tree view (Schema Browser), 70-72
trigger code, debugging, 152
tuning SQL performance, 227, 249-250
  AWR browser, 245-246
  explain plans, 227-229
    code snippets, 231
    execution plans, 229-231
  PL/SQL Profiler, 246-248
  SQL Optimizer, 248-249
  SQL Trace tab (SQL Editor Output area), 233-238
  statistics, 231-232
  Statspack browser, 243-245
  TKProf wizard, 238-241, 242
  Trace File Browser, 241-242

U

UNIX Monitor, 167-168
Update Diagram button (SQL Editor Query Builder), 67
Update SQL button (SQL Editor Query Builder), 67
user settings (Toad), sharing, 40

V

View/Edit Query panel (data grids), 99

W

Waits tab (Session Browser), 197
watches (debugging code), 145, 147, 148
Watches tab (SQL Editor Output area), 49
WHERE clauses, Query Builder (SQL Editor), 66
Windows (Microsoft)
  bit compatibility and Toad operation, 10
  Toad prerequisites, 5-6
wizards
  Create Table wizard (Schema Browser), 76-78
  Data Pump Export wizard, 205-209
  Export Dataset wizard (data grids), 102-103
    Dataset tab, 103
    Insert Statements tab, 103
    Options tab, 102-103
    saving data, 106-111
  Export Utility wizard
    Data Pump Export wizard, 205-209
    Generate Database Script screen, 212-214

Generate Schema Script screen, 214-215
simple exports, 202-204
Load Database Object wizard, 122-123
Report wizard (FastReport), 80-83
TKProf wizard and SQL performance tuning, 238-241, 242

X - Y - Z

XML (with XLS) file format, saving data in, 108
XML file format, saving data in, 108
Xpert edition (Toad), 4