Oracle SQL Developer: PL/SQL Support and Unit Testing
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Agenda

- SQL Developer 2.1 New Features
- Working with PL/SQL
- Remote Debugging
- Unit Testing
- Other PL/SQL Related Features
SQL Developer 2.1 – New Feature Overview

- PL/SQL Unit Testing
- Data Modeler Viewer
- Migration support for IBM DB2 UDB and Teradata
- Updated Data Grids
  - Manage columns, filter on data
- New SQL Worksheet
  - Dockable dbms_output, multiple worksheets
- Increased Connections navigator support for
  - Jobs, Editions (for 11gR2), XML DB Repository
- Updated display editors
  - PL/SQL edit mode, subpartitions
- Version Control support for Serena Dimensions, Perforce
- Updated filtering mechanism
  - Schema level, generated objects
Working with PL/SQL
Creating and Editing PL/SQL

- Code editor
  - Syntax highlighting
  - Code formatter
  - Code insight (auto complete)
  - Code folding
  - Query Builder

- Code snippets
  - Drag and drop code snippets
  - Add and customize snippets

- Code templates
Preparing Code Skeletons with Dialogs

- Use dialog to create
  - Procedures & Functions
  - Triggers
  - Package spec & body
- Create Trigger
  - Table
  - View
  - Schema
  - Database
Compiling and Running PL/SQL

• Compiling
  – Inline error reporting
• Run procedures, functions, and packages
  – Use DBMS_OUTPUT
  – Function return values
  – OUT parameters
• Run PL/SQL dialog
  – Specifies run targets
  – Shows parameter detail
  – Generates editable PL/SQL block
    • For parameter values
    • For output parameters
    • Works with records
Debugging PL/SQL

- Set breakpoints
  - Configure conditions
- Compile for Debug
- Control program execution (Step into, over…)
- Run to Cursor
- Inspect and modify variables
- Review
  - Smart data
  - Data
- Watches expressions
- View debug log
Remote Debugging

**Problem:** Test a procedure being executed in a separate application

- **In SQL Developer**
  - Select Remote Debug
  - Set up remote debug detail; machine, port
  - Browse to procedure
  - Set a breakpoint
- **In remote session**
  - execute `DBMS_DEBUG_JDWP.CONNECT_TCP ('127.0.0.1', 4000)`
  - Execute procedure
- **In SQL Developer**
  - Debug as normal

Use the environment variable

```bash
SET ORA_DEBUG_JDWP=host=127.0.0.1;port=4000
```
Working with PL/SQL Unit Testing
Unit Testing – Overview

- Tests
- Suites
- Reports
- Library
- Static and dynamic lookups
- Multi user repository based
- Code coverage
- Command line use
- Target any database
Unit Testing - Tests

• Input/Return
  – Static or Dynamic Values

• Startups/TearDown
  – Table Copy/Restore
  – Row Copy/Restore
  – Custom

• Code coverage

• Success or failure testing

• Validation
  – Custom
Unit Testing - Suites

- Startups/TearDown
  - Table Copy/Restore
  - Row Copy/Restore
  - Custom
- Code Coverage
- Tests are run sequentially
- Startup and teardowns for tests can be turned off
Unit Testing - Library

- Stores reusable items
  - Dynamic Values
  - Startups
  - Teardowns
  - Validations
- Referenced or copied to local tests
Unit Testing - Reports

- Includes Standard reports
  - Suites
  - Tests
  - Code Coverage
- Reports against the repository
- Users can query the repository directly
Unit Testing – Multi User

- Use database users
- Control
  - admin vs. user
- Managed with roles
Unit Testing – Running Suites/Tests

- Inside SQL Developer simply change the Combo List
- Command line by passing arguments
- Results are stored in the repository
Refactor, Review, Search, Tune and Monitor

SQL Developer provides a PL/SQL related utilities

- PL/SQL Hierarchical Profiler
- Extended Search using PL/SQL
- SQL Monitor
- SQL Developer PL/SQL Reports
- General refactoring
- APEX refactoring
Hierarchical Profiler
Searching

- Find (and replace) in all editors
- Find DB Objects
  - Across schemas
  - Navigate to object
- Extended search Across schemas
  - For object types
  - For usages
  - PLScope support (Oracle Database 11g)
Real-Time SQL Monitoring

- Real time view of SQL
- Use /*+MONITOR*/
- Drill to view details
- Visual indicators for current step
- Queries over 5 seconds monitored
- DBMS_SQLTUNE.REPORT_SQL_MONITOR
SQL Monitor and PL/SQL Reports

- Shipped PL/SQL Reports
  - SQL Monitor
  - Search Source Code
  - Program Unit Arguments
- User Defined Reports
  - Using plsql-dbms_output
  - Formatting code
Refactoring

- Extract a procedure
- Surround blocks with
  - For
  - While
  - Begin block
- Variable renames
- Extract anonymous PL/SQL blocks from APEX apps
Integrating with Oracle APEX

Providing integration points to Oracle APEX

- Remote debugging
- Tuning SQL
- Refactoring PL/SQL code
Finding More Detail
www.oracle.com/technology/products/database/sql_developer

• SQL Developer on OTN
  – White papers, Oracle by Example (OBE) and online demos
  – Team Blogs: Blogs, Magazine Articles & Podcasts

• SQL Developer Exchange
  – Share reports, snippets, code, and add feature requests
  – http://sqldeveloper.oracle.com

• Forums
  – SQL Developer
    forums.oracle.com/forums/forum.jspa?forumID=260
Summary

- **PL/SQL**
  - Creating, editing, compiling and debugging
- **Unit Testing**
  - Creating, Running, Reporting
  - Batch processing
- **Creating SQL Developer extensions**
- **Real-Time SQL Monitoring**
  - Watch SQL as it runs
- **Refactoring**
  - Convert APEX anonymous blocks into a Package
For More Information

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SQL Developer

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