Oracle SQL Developer 3.0: Overview and New Features

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Agenda

• Overview
• SQL Developer 2.1
• SQL Developer 3.0
• Focus Areas
• Finding out more
Overview and History
Oracle SQL Developer Feature Overview

- Database connections
- Browse, query, update objects
- SQL Worksheet
- Query Builder
- Data import and export
- Object export
- PL/SQL edit and debug
- Database and user-defined reports
- User-defined extensions
- Files and source code control
- Unit Testing
- Third-party databases
- Database migration
- Oracle APEX integration
- TimesTen In-memory database integration
- Oracle Data Miner integration
Release History

- **SQL Developer 3.0 – 2011 (Production Release)**
  - Introduces wide spectrum of new features
- **SQL Developer 2.0 – 2009/2010**
  - Introduced PL/SQL Unit Testing, Data Modeler viewer
  - **SQL Developer 2.1.1 – March 2010**
- **SQL Developer 1.5.x – 2008/2009**
  - Introduced version control and file management
  - **SQL Developer 1.5.4 – Full translation supporting 9 languages**
  - **SQL Developer 1.5.5 – Shipped with Oracle Database 11g Release 2**
  - **SQL Developer 1.5.6 – Bundled with Oracle JDeveloper 11g**
- **SQL Developer 1.2.x – 2007**
  - Introduced database migration
- **SQL Developer 1.x – 2006/2007**
  - **SQL Developer 1.1.3 – Oracle Database 11g Release 1**
  - Initial production release – March 2006
SQL Developer 2.1

- 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 Database 11g Release 2), 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
PL/SQL Unit Testing

- Create tests with one or more implementations
- Build up suites of tests
- Run test reports
- Store reusable components in a library
- Build static and dynamic lookups
- Support multiple users through a repository
- Build up code coverage stats
- Run tests from the command line
- Target any database
PL/SQL Unit Testing

PROCEDURE HR1.AWARD_BONUS(EMP_ID IN NUMBER, SALES_AMT IN NUMBER)

Dynamic Value Query: select EMP_ID, SALES_AMT from AWARD_BONUS_DYN_QUERY

Expected Result: Success, ANY

Select * from EMPLOYEES where SALARY > 200000 AND COMMISSION_PCT IS NOT NULL
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
Oracle SQL Developer 3.0
Oracle SQL Developer 3.0
Production Release – March 2011

- Schema browser
- Query Builder
- PL/SQL updates
- Import and Export updates
- PDF file support
- Extended Unit Testing
- DBA Navigator
- Extended Tuning Support
- DBMS Scheduler
- Database migration
- Integrated spatial support
- Data Miner
Schema Browser

- Alternate view of object browser
- Select and filter object type
- Select and filter users
- Additional client-side filter
Query Builder

- Drag and drop query building
- Integrated with Worksheet
- Supports
  - Multiple object selection
  - Switch from Query Builder and Worksheet
  - Aggregates, Alias, Order By, Group By, Where clauses
  - Repeated tables
  - Union, intersect, minus and subqueries
PL/SQL Updates

- Debugging PL/SQL tagged file
- Run and debug procedures with ref cursors
  - Display ref cursor data
Exporting Data

- Export metadata and data for a schema, selected object types or selected objects
- Customizable user interface
- Configurable metadata and data format options
- Target options to send output to single or multiple files and directories
- Preferences manage
  - Delimiters
  - Enclosures
  - Record terminators
  - Encoding
  - Headers
Exporting to PDF

- New data format support for PDF
- Configure PDF file format using preferences
- Customizable Layouts
- Provides security to encrypt and password-protect
- Provides option to include BLOBs including
  - Images
  - Video
  - Spreadsheets
Importing Data

- Various import methods
  - Insert and insert script
  - External table, staging external table,
  - SQL*Loader

- Customizable user interface

- Delimited file support for specifying delimiters, enclosures, record terminators, encoding and header

- Dynamic data preview provides view of file as changes to the definition are made
Unit Test Updates

• Enhanced multi-user support
• Support added for abstract data types
  – PL/SQL VARRAY
  – PL/SQL Nested Table
  – PL/SQL Associative Array
  – Ref Cursors
• Multiple startups and teardowns
• Purge run results
  – All results
  – Set of results
DBA Navigator

- Browse and maintain database configuration
- Review and manage database using the resource manager
- Browse, update and create security options
- Update and review storage objects
- Create users and roles
Extended Tuning Support

- Current Tuning support includes
  - Monitor SQL
  - PL/SQL Hierarchical Profiler
  - Explain Plan
  - Autotrace
- SQL Developer 3.0
  - SQL Tuning Advisor
  - Diff tool for explain plans
SQL Tuning Advisor

- Requires *advisor* and *administer SQL Tuning set* privileges
- Review all advice or select individual components
  - Stale or missing statistics
  - Generation of SQL Profiles with in depth detail
  - Manual restructuring of SQL
  - Use of indexes
Compare Explain Plan and Autotrace Results

- Compare results of two queries
  - Gather Explain Plan/Autotrace results for first query
  - Pin results
  - Modify query
  - Gather second set of plan results
  - Compare plans
DBMS Scheduler

- DBMS Scheduler allows you to control when and where various tasks take place
- Scheduler node provides
  - Chains
  - Credentials
  - Jobs & Job Classes
  - Programs
  - Schedules
- Design Editor view for graphical representation
Management Pack Preference Setting

- SQL Developer supports Oracle Database Management packs
  - Oracle Diagnostic Pack (ASH and AWR Reports)
  - Oracle Change Management Pack (Database Diff)
  - Oracle Tuning Pack (SQL Tuning Advisor, Monitor SQL)
Feature Focus Areas
SQL Developer Migrations

• Logical equivalence
• Least Privilege Migration
  – Users can migrate any object they can access
• Simple and expert modes using repository
• Sync Mode
  – Capture a snapshot of 3rd party database metadata
  – Static target used in the migration
  – Visual correlation of derived database objects
• All existing functionality supported
  – Offline data migration using generated scripts
  – Offline metadata load using SQL scripts
• Multiple projects, concurrent users, customizable
Database Migration Projects

- Migration navigator for 3rd party database migration
- Copy to Oracle
  - Right click and copy to a connection
- Server Capture for multi-database
- Migration Wizard
  - Drives all phases of migration
- Command line support
  - All migration features
- Migration Reports
  - Project Estimation/Server Analysis
  - Conversion Issues
  - Data Quality metrics
  - Target objects verification
- Client application scanning
  - Identifies 3rd party database calls in applications

** Updated in Oracle SQL Developer 3.0
Integrated Data Modeling

- Create, update and save models
- Open existing models
- Import to create models
- Drag and drop tables to create relational model
- Work with Design Rules
- Generate DDL
- Browse with thumbnail view

** New to Oracle SQL Developer 3.0**
Oracle Data Miner in SQL Developer 3.0

- Graphical User Interface for data analysts
- Build and evaluate data mining models
- Apply predictive models
- Share analytical workflows
- Deploy SQL, apply code and scripts
- Predict customer behavior
- Identify key factors
- Predict next-likely product
- Customer profiling
- Detect fraud and anomalies
- Mine “text” and unstructured data
Managing Oracle Spatial Information

- **Data Management**
  - Maintain spatial metadata and indexes
  - Support for spatial validation

- **Data Querying**
  - Create spatial queries
  - Generate spatial shapes
  - Display query results in map view

- **Map support**
  - Display layers in a map based on map queries
  - Drag and drop spatial tables onto map view for quick display
  - Use spatial snippets
TimesTen Support in SQL Developer 3.0

- Browse, edit, create, modify TimesTen database objects including users
- In-Memory Database Cache
  - Create/drop/alter cache groups
  - Load/unload, flush, refresh cache data
- PL/SQL support
  - Create/Replace/Drop, Edit, Compile, Run, and Export procedures/functions/packages
- Show SQL execution plans and update table and column statistics
- Access SQL Worksheet for ad-hoc SQL queries, execute TimesTen built-in procedures and ttIsql commands
- Run pre-defined database and objects reports
- Manipulate cached data in both TimesTen and Oracle at the same time
SQL Developer’s Extensible Framework

• Easily extended
  – Based on the Fusion Client Platform
• Oracle custom extensions:
  – Migration Workbench
  – TimesTen
  – Data Miner
  – Rdb (under development)
  – Oracle Spatial
• Third Party extensions
  – Various third party available
More Information
Finding More Detail
Finding More Detail
www.oracle.com/technetwork/developer-tools/sqldeveloper/

• SQL Developer on OTN
  – White papers, Oracle by Example (OBE), online demos, models and scripts

• SQL Developer Exchange
  – Add feature requests: sqldeveloper.oracle.com

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

• Book
  – Oracle SQL Developer 2.1

• Webcasts
Summary

- Connects, Reports, Files DBA navigators
  - Browse, query, update objects

- **SQL Worksheet**
  - Query Builder

- Data export and import

- SQL Tuning
  - SQL query adviser, Explain, Diff

- PL/SQL
  - Create, edit debug, Unit Testing

- Extensible framework
  - User defined extensions
  - Database migration projects
    - Oracle TimesTen, Oracle Data Miner, Oracle Spatial Management

- Oracle APEX integration
Hardware and Software

Engineered to Work Together