Oracle 18c PL/SQL (5 Day)

Course Summary

Description

This course provides a complete, hands-on, comprehensive introduction to PL/SQL including the use of both SQL Developer and SQL*Plus. This coverage is appropriate for both Oracle11g and higher.

Topics

- PL/SQL Program Structure
- PL/SQL Flow Control
- SQL Developer and PL/SQL
- SELECT INTO
- The PL/SQL Cursor
- Optimization
- PL/SQL Exception Handling
- Stored Procedures
- Creating Functions in PL/SQL
- Packages
- Creating DML Triggers
- Advanced Concepts
- File Operations
- Communications
- Security
- Scheduling
- Miscellaneous Packages
- Database Triggers
- Collections
- Bulk Operations
- Cursor Variables
- Dynamic SQL
- Large Objects
- Object-Oriented Programming
- Java and Other Languages

Audience

This course is appropriate for anyone needing to understand Oracle’s proprietary programming language. That would include end users, business analysts, application developers, and database administrators.

Prerequisites

Before taking this course, Oracle12c SQL or higher or equivalent experience is required.

Duration

Five days
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Course Outline

I. PL/SQL Program Structure
   A. PL/SQL vs. SQL
   B. PL/SQL Engines Available
   C. Anonymous PL/SQL Block Structure
   D. Object Naming Rules
   E. Variable Declarations
   F. Available Datatypes
      1. Scalar Datatypes
      2. Using Extended Datatypes
      3. Object Types
   G. Executable Statements
   H. Expressions
   I. PL/SQL Qualified Expressions
   J. Block Labeling
   K. Variable Scoping Rules
   L. Comments In Programs And Scripts

Lab: PL/SQL Program Structure

II. PL/SQL Flow Control
   A. Conditional Control
   B. Comparison Operators
   C. Logical Operators
      1. Truth Tables
   D. Repetition Control
      1. The Simple Loop
      2. WHILE Loop
      3. FOR Loop
      4. CONTINUE Statements In Loops
      5. Step Loops
   E. The GOTO Statement
   F. Case Expressions / Statements
   G. Bind Variables
   H. Substitution Variables

Lab: PL/SQL Flow Control

III. SQL Developer and PL/SQL
   A. SQL Developer and PL/SQL
   B. Creating And Executing Scripts

Lab: SQL Developer and PL/SQL

IV. SELECT INTO
   A. Selecting Single Rows of Data
   B. Anchoring Variables to Datatypes
   C. DML in PL/SQL
   D. RETURNING ... INTO
   E. Sequences In PL/SQL
   F. Transaction Control in PL/SQL
   G. Autonomous Transactions

Lab: SELECT INTO

V. The PL/SQL Cursor
   A. Declaring Explicit Cursors
   B. Opening and Closing Explicit Cursors
   C. Using Explicit Cursors to Retrieve Values
   D. Explicit Cursor Attributes
   E. Using a Loop with an Explicit Cursor
   F. Using %ROWTYPE with Cursors
   G. The Cursor for Loop
   H. DBMS_OUTPUT

Lab: The PL/SQL Cursor

VI. Optimization
   A. Timing PL/SQL
   B. FOR UPDATE / WHERE CURRENT OF

Lab: Optimization

VII. PL/SQL Exception Handling
   A. The Exception Section
   B. Oracle Named Exceptions
   C. PRAGMA EXCEPTION_INIT
   D. User Defined Exceptions
      1. The Scope Of User-Defined Exceptions
   E. Raising Named Exceptions
   F. Exception Propagation
   G. Raising an Exception Again
   H. Life After an Exception
   I. When Others
   J. Taking Your Ball and Going Home
   K. DBMS_ERRLOG

Lab: PL/SQL Exception Handling

VIII. Stored Procedures
   A. Procedures
   B. Benefits of Stored Procedures
      1. Database Security
      2. Performance
      3. Productivity
      4. Portability
   C. Parameters and Stored Procedures
      1. Parameter Notation
   D. Stored Object Creation
      1. Syntax for Creating A Procedure
   E. Compilation Errors
   F. Viewing Compiled Code
   G. Dropping A Procedure
   H. The Alter Command and Stored Procedures

Lab: Stored Procedures

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Course Outline (cont’d)

IX. Creating Functions IN PL/SQL
A. Functions
B. Purity Levels
C. Using White Lists
D. Optimizations
E. PARALLEL_ENABLE
F. Deterministic Functions
G. PL/SQL RESULT CACHE
H. NOCOPY
I. DBMS_OUTPUT in Functions
J. Using the WITH CLAUSE for Functions
K. PRAGMA UDF
L. PRAGMA INLINE
M. The Impact of Data-Bound Collation
N. Using SQL Developer with Stored Procedures
O. Debugging
Lab: Functions

X. Packages
A. Creating Packages
B. Package Benefits
  1. Security
  2. Persistent State
  3. I/O Efficiency
C. A Simple Package
D. Overloading
E. Bodiless Packages
F. Source Code Encryption
G. Creating Packages from Procedures And Functions
Lab: Packages

XI. Creating DML Triggers
A. DML Triggers
B. DML Trigger Structure
C. Conditional Triggering Predicates
D. Triggers For Business Rules Enforcement
E. Mutating and Constraining Tables
F. Compound Triggers
G. Controlling Firing Order
H. DDL for Triggers
I. Viewing Trigger Source
J. INSTEAD OF Triggers
Lab: DML Triggers

XII. Advanced Concepts
A. Embedded Procedures
B. The Optimizing Compiler
C. PL/SQL Compiler Warnings
D. Compiling For Debugging
E. Conditional Compilation / Inquiry Directives
  1. Error Directives
  2. Inquiry Directives
  3. Using Static Constants
F. DBMS_DB_VERSION
G. Native Compilation
  1. Recompiling All Database Objects
Lab: Advanced Concepts

XIII. File Operations
A. Moving Files Between Databases
B. Directory Access
C. File Manipulation
  1. FCLOSE Procedure
  2. FCLOSE_ALL Procedure
  3. FCOPY Procedure
  4. FFLUSH Procedure
  5. FGETATTR Procedure
  6. FGETPOS Function
  7. FOPEN Function
  8. FREMOVE Procedure
  9. FRENAM Procedure
  10. FSEEK Procedure
  11. GET_LINE Procedure
  12. GET_RAW Procedure
Lab: File Operations

XIV. Communications
A. DBMS_ALERT
  1. REGISTER Procedure
  2. REMOVE Procedure
  3. REMOVEALL Procedure
  4. SET_DEFAULTS Procedure
  5. SIGNAL Procedure
  6. WAITANY Procedure
  7. WAITONE Procedure
  8. Security
  9. DBMS_ALERT Example
B. DBMS_PIPE
  1. CREATE_PIPE Function
  2. NEXT_ITEM_TYPE Function
  3. PACK_MESSAGE Procedure
  4. PURGE Procedure
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Course Outline (cont’d)

5. RECEIVE_MESSAGE Function
6. RESET_BUFFER Procedure
7. REMOVE_PIPE Function
8. SEND_MESSAGE Function
9. UNIQUE_SESSION_NAME Function
10. UNPACK_MESSAGE Procedure
11. DBMS_PIPE Example

C. DBMS_SCHEDULER
   1. Evaluating Calendaring Expressions
   2. DBMS_SCHEDULER Capabilities

Lab: Scheduling

XVII. Miscellaneous Packages
A. DBMS_OUTPUT
B. DBMS_RANDOM
   1. STRING Function
   2. VALUE Function
C. DBMS_STATS
   1. GATHER_SCHEMA_STATS
   2. GATHER_TABLE_STATS
D. DBMS_WM
E. DBMS_METADATA
F. DBMS_REDEFINITION
G. Other Notable Packages / Procedures
H. Miscellaneous Changes In 12CR2

Lab: Miscellaneous Packages

XVIII. Database Triggers
A. Permissions Needed
B. DDL Triggers
C. SERVERERROR Triggers
D. LOGON / LOGOFF Triggers
E. STARTUP / SHUTDOWN Triggers
F. SUSPEND Triggers

Lab: Database Triggers

XIX. Collections
A. Defining Records
B. Collections
   1. Associative Arrays
   2. Nested Tables
   3. VARRAYs / VARYING ARRAYs
   4. Assignments
   5. Comparing Collections
C. Collection Methods
   1. EXISTS
   2. FIRST
   3. LAST
   4. COUNT
   5. LIMIT
   6. PRIOR
   7. NEXT
   8. DELETE
   9. TRIM
D. Set Theory and Nested Tables

Lab: Collections

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