Oracle12c Release 2 PL/SQL (3 Days)

Course 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 users of Oracle12c and Oracle11g.

Target 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

Oracle12c SQL or equivalent experience is required.

Course Content

CHAPTER 1 – PL/SQL PROGRAM STRUCTURE

PL/SQL VS. SQL
PL/SQL ENGINES AVAILABLE
ANONYMOUS PL/SQL BLOCK STRUCTURE
OBJECT NAMING RULES
VARIABLE DECLARATIONS
AVAILABLE DATATYPES

- Scalar Datatypes
- Using Extended Datatypes
- Object Types

EXECUTABLE STATEMENTS
EXPRESSIONS
BLOCK LABELING
VARIABLE SCOPING RULES
COMMENTS IN PROGRAMS AND SCRIPTS
BASIC CODING STANDARDS
LAB 1: PL/SQL PROGRAM STRUCTURE
LAB 1 SOLUTIONS: PL/SQL PROGRAM STRUCTURE

CHAPTER 2 – PL/SQL FLOW CONTROL

CONDITIONAL CONTROL
COMPARISON OPERATORS
LOGICAL OPERATORS

- Truth Tables

REPETITION CONTROL
- The Simple Loop
- WHILE Loop
- FOR Loop
- CONTINUE Statements In Loops
- Step Loops

THE GOTO STATEMENT
CASE EXPRESSIONS / STATEMENTS
BIND VARIABLES
SUBSTITUTION VARIABLES
LAB 2: PL/SQL FLOW CONTROL
LAB 2 SOLUTIONS: PL/SQL FLOW CONTROL

CHAPTER 3 – SQL DEVELOPER AND PL/SQL
SQL DEVELOPER AND PL/SQL
CREATING AND EXECUTING SCRIPTS
LAB 3: SQL DEVELOPER AND PL/SQL
LAB 3 SOLUTIONS: SQL DEVELOPER AND PL/SQL

CHAPTER 4 – SELECT INTO
SELECTING SINGLE ROWS OF DATA
ANCHORING VARIABLES TO DATATYPES
DML IN PL/SQL
RETURNING … INTO
SEQUENCES IN PL/SQL
TRANSACTION CONTROL IN PL/SQL
AUTONOMOUS TRANSACTIONS
LAB 4: SELECT INTO
LAB 4 SOLUTIONS: SELECT INTO

CHAPTER 5 – THE PL/SQL CURSOR
DECLARING EXPLICIT CURSORS
OPENING AND CLOSING EXPLICIT CURSORS
USING EXPLICIT CURSORS TO RETRIEVE VALUES
EXPLICIT CURSOR ATTRIBUTES
USING A LOOP WITH AN EXPLICIT CURSOR
USING %ROWTYPE WITH CURSORS
THE CURSOR FOR LOOP
DBMS_OUTPUT
LAB 5: THE PL/SQL CURSOR
LAB 5 SOLUTIONS: THE PL/SQL CURSOR

CHAPTER 6 – OPTIMIZATION
TIMING PL/SQL
FOR UPDATE / WHERE CURRENT OF
LAB 6: OPTIMIZATION

LAB 6 SOLUTIONS: OPTIMIZATION

CHAPTER 7 – PL/SQL EXCEPTION HANDLING

THE EXCEPTION SECTION
ORACLE NAMED EXCEPTIONS
PRAGMA EXCEPTION_INIT
USER DEFINED EXCEPTIONS

- The Scope Of User-Defined Exceptions

RAISING NAMED EXCEPTIONS
EXCEPTION PROPAGATION
RAISING AN EXCEPTION AGAIN
LIFE AFTER AN EXCEPTION
WHEN OTHERS
TAKING YOUR BALL AND GOING HOME
DBMS_ERRLOG
LAB 7: PL/SQL EXCEPTION HANDLING
LAB 7 SOLUTIONS: PL/SQL EXCEPTION HANDLING

CHAPTER 8 – STORED PROCEDURES

PROCEDURES
BENEFITS OF STORED PROCEDURES

- Database Security
- Performance
- Productivity
- Portability

PARAMETERS AND STORED PROCEDURES

- Parameter Notation

STORED OBJECT CREATION

- Syntax For Creating A Procedure

COMPILATION ERRORS
VIEWING COMPILED CODE
DROPPING A PROCEDURE
THE ALTER COMMAND AND STORED PROCEDURES
LAB 8: STORED PROCEDURES
LAB 8 SOLUTIONS: STORED PROCEDURES

CHAPTER 9 – CREATING FUNCTIONS IN PL/SQL

FUNCTIONS
PURITY LEVELS
USING WHITE LISTS
OPTIMIZATIONS
PARALLEL_ENABLE

DETERMINISTIC FUNCTIONS
PL/SQL RESULT CACHE
NOCOPY
DBMS_OUTPUT IN FUNCTIONS
USING THE WITH CLAUSE FOR FUNCTIONS
PRAGMA UDF
PRAGMA INLINE
USING SQL DEVELOPER WITH STORED PROCEDURES
DEBUGGING
LAB 9: FUNCTIONS
LAB 9 SOLUTIONS: FUNCTIONS

CHAPTER 10 – PACKAGES
CREATING PACKAGES
PACKAGE BENEFITS
- Security
- Persistent State
- I/O Efficiency

A SIMPLE PACKAGE
OVERLOADING
BODILESS PACKAGES
SOURCE CODE ENCRYPTION
CREATING PACKAGES FROM PROCEDURES AND FUNCTIONS
LAB 10: PACKAGES
LAB 10 SOLUTIONS: PACKAGES

CHAPTER 11 -- CREATING DML TRIGGERS
DML TRIGGERS
DML TRIGGER STRUCTURE
CONDITIONAL TRIGGERING PREDICATES
TRIGGERS FOR BUSINESS RULES ENFORCEMENT
MUTATING AND CONSTRAINING TABLES
COMPOUND TRIGGERS
CONTROLLING FIRING ORDER
DDL FOR TRIGGERS
VIEWING TRIGGER SOURCE
INSTEAD OF TRIGGERS
LAB 11: DML TRIGGERS
LAB 11 SOLUTIONS: DML TRIGGERS

CHAPTER 12 – ADVANCED CONCEPTS
EMBEDDED PROCEDURES
THE OPTIMIZING COMPILER
PL/SQL COMPILER WARNINGS
COMPILING FOR DEBUGGING
CONDITIONAL COMPILATION / INQUIRY DIRECTIVES

DBMS_DB_VERSION
NATIVE COMPILATION

- Recompiling All Database Objects

LAB 12: ADVANCED CONCEPTS
LAB 12 SOLUTIONS: ADVANCED CONCEPTS

CHAPTER 13 – FILE OPERATIONS

MOVING FILES BETWEEN DATABASES
DIRECTORY ACCESS
FILE MANIPULATION

- FCLOSE Procedure
- FCLOSE_ALL Procedure
- FCOPY Procedure
- FFLUSH Procedure
- FGETATTR Procedure
- FGETPOS Function
- FOPEN Function
- FREMOVE Procedure
- FRENAME Procedure
- FSEEK Procedure
- GET_LINE Procedure
- GET_RAW Procedure
- IS_OPEN Function
- NEW_LINE Procedure
- PUT Procedure
- PUT_LINE Procedure
- PUTF Procedure
- PUT_RAW Procedure

LAB 13: FILE OPERATIONS
LAB 13 SOLUTIONS: FILE OPERATIONS

CHAPTER 14 – COLLECTIONS

DEFINING RECORDS
COLLECTIONS

- Associative Arrays
- Nested Tables
- VARRAYs / VARYING ARRAYs
- Assignments
- Comparing Collections

COLLECTION METHODS

- FIRST
- LAST
- COUNT
- LIMIT

- PRIOR
- NEXT
- DELETE
- TRIM

SET THEORY AND NESTED TABLES
LAB 14: COLLECTIONS
LAB 14 SOLUTIONS: COLLECTIONS

CHAPTER 15 – BULK OPERATIONS

BULK BINDING
FORALL
SQL%BULK_ROWCOUNT
SAVE EXCEPTIONS / SQL%BULK_EXCEPTIONS
BULK COLLECT

- The LIMIT Clause
- FORALL And The INDICES OF Clause
- FORALL And VALUES OF

PIPELINED TABLE FUNCTIONS
MULTIDIMENSIONAL COLLECTIONS
LAB 15: BULK OPERATIONS
LAB 15: SOLUTIONS: BULK OPERATIONS