



## **Oracle Database: Program with PL/SQL:**

### **1. Introduction**

- 1.1. Course Objectives
- 1.2. Course Agenda
- 1.3. Describe the Human Resources (HR) Schema
- 1.4. PL/SQL development environments available in this course
- 1.5. Introduction to SQL Developer

### **2 Introduction to PL/SQL**

- 2.1. Overview of PL/SQL
- 2.2. Identify the benefits of PL/SQL Subprograms
- 2.3. Overview of the types of PL/SQL blocks
- 2.4. Create a Simple Anonymous Block
- 2.5. How to generate output from a PL/SQL Block?

### **3 Declare PL/SQL Identifiers**

- 3.1. List the different Types of Identifiers in a PL/SQL subprogram
- 3.2. Usage of the Declarative Section to Define Identifiers
- 3.3. Use variables to store data
- 3.4. Identify Scalar Data Types
- 3.5. The %TYPE Attribute
- 3.6. What are Bind Variables?
- 3.7. Sequences in PL/SQL Expressions

### **4 Write Executable Statements**

- 4.1. Describe Basic PL/SQL Block Syntax Guidelines
- 4.2. Learn to Comment the Code
- 4.3. Deployment of SQL Functions in PL/SQL
- 4.4. How to convert Data Types?
- 4.5. Describe Nested Blocks
- 4.6. Identify the Operators in PL/SQL

### **5 Interaction with the Oracle Server**

- 5.1. Invoke SELECT Statements in PL/SQL
- 5.2. Retrieve Data in PL/SQL
- 5.3. SQL Cursor concept
- 5.4. Avoid Errors by using Naming Conventions when using Retrieval and DML Statements
- 5.5. Data Manipulation in the Server using PL/SQL
- 5.6. Understand the SQL Cursor concept
- 5.7. Use SQL Cursor Attributes to Obtain Feedback on DML
- 5.8. Save and Discard Transactions

### **6 Control Structures**

- 6.1. Conditional processing using IF Statements
- 6.2. Conditional processing using CASE Statements
- 6.3. Describe simple Loop Statement
- 6.4. Describe While Loop Statement
- 6.5. Describe For Loop Statement
- 6.6. Use the Continue Statement



## 7 Composite Data Types

- 7.1. Use PL/SQL Records
- 7.2. The %ROWTYPE Attribute
- 7.3. Insert and Update with PL/SQL Records
- 7.4. INDEX BY Tables
- 7.5. Examine INDEX BY Table Methods
- 7.6. Use INDEX BY Table of Records

## 8 Explicit Cursors

- 8.1. What are Explicit Cursors?
- 8.2. Declare the Cursor
- 8.3. Open the Cursor
- 8.4. Fetch data from the Cursor
- 8.5. Close the Cursor
- 8.6. Cursor FOR loop
- 8.7. The %NOTFOUND and %ROWCOUNT Attributes
- 8.8. Describe the FOR UPDATE Clause and WHERE CURRENT Clause

## 9 Exception Handling

- 9.1. Understand Exceptions
- 9.2. Handle Exceptions with PL/SQL
- 9.3. Trap Predefined Oracle Server Errors
- 9.4. Trap Non-Predefined Oracle Server Errors
- 9.5. Trap User-Defined Exceptions
- 9.6. Propagate Exceptions
- 9.7. RAISE\_APPLICATION\_ERROR Procedure

## 10 Stored Procedures

- 10.1. Create a Modularized and Layered Subprogram Design
- 10.2. Modularize Development With PL/SQL Blocks
- 10.3. Understand the PL/SQL Execution Environment
- 10.4. List the benefits of using PL/SQL Subprograms
- 10.5. List the differences between Anonymous Blocks and Subprograms
- 10.6. Create, Call, and Remove Stored Procedures
- 10.7. Implement Procedures Parameters and Parameters Modes
- 10.8. View Procedure Information

## 11 Stored Functions and Debugging Subprograms

- 11.1. Create, Call, and Remove a Stored Function
- 11.2. Identify the advantages of using Stored Functions
- 11.3. Identify the steps to create a stored function
- 11.4. Invoke User-Defined Functions in SQL Statements
- 11.5. Restrictions when calling Functions
- 11.6. Control side effects when calling Functions
- 11.7. View Functions Information
- 11.8. How to debug Functions and Procedures?

## 12 Packages

- 12.1. Listing the advantages of Packages
- 12.2. Describe Packages
- 12.3. What are the components of a Package?
- 12.4. Develop a Package
- 12.5. How to enable visibility of a Package's Components?



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- 12.6. Create the Package Specification and Body
- 12.7. Invoke the Package Constructs
- 12.8. View the PL/SQL Source Code using the Data Dictionary

### **13 Deploying Packages**

- 13.1. Overloading Subprograms in PL/SQL
- 13.2. Use the STANDARD Package
- 13.3. Use Forward Declarations to solve Illegal Procedure Reference
- 13.4. Implement Package Functions in SQL and Restrictions
- 13.5. Persistent State of Packages
- 13.6. Persistent State of a Package Cursor
- 13.7. Control side effects of PL/SQL Subprograms
- 13.8. Invoke PL/SQL Tables of Records in Packages

### **14 Triggers**

- 14.1. Describe Triggers
- 14.2. Identify the Trigger Event Types and Body
- 14.3. Business Application Scenarios for Implementing Triggers
- 14.4. Create DML Triggers using the CREATE TRIGGER Statement and SQL Developer
- 14.5. Identify the Trigger Event Types, Body, and Firing (Timing)
- 14.6. Differences between Statement Level Triggers and Row Level Triggers
- 14.7. Create Instead of and Disabled Triggers
- 14.8. How to Manage, Test and Remove Triggers?

### **15 Manage Dependencies**

- 15.1. Overview of Schema Object Dependencies
- 15.2. Query Direct Object Dependencies using the USER\_DEPENDENCIES View
- 15.3. Query an Object's Status
- 15.4. Invalidation of Dependent Objects
- 15.5. Display the Direct and Indirect Dependencies
- 15.6. Understand Remote Dependencies
- 15.7. Recompile a PL/SQL Program Unit

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