

# Oracle Database 11g Advanced Programming with PL/SQL



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## Course Duration: 3 days

### Overview:

You will design and fine-tune PL/SQL to interface with the database and other applications using advance PL/SQL programming.

### Target Student:

IT Professional with programming experience for Oracle and experience with PL/SQL.

### Prerequisites:

Recommend: SQL Fundamentals I & II

Require: Oracle Database 11g: Programming with PL/SQL or equivalent knowledge.

### Course Objectives:

Upon successful completion of this course, students will be able to:

- Summarise the fundamental concepts of PL/SQL.
- Design PL/SQL code to develop procedures that are easier to use and maintain.
- Use collections to access, retrieve, and manipulate a set of similar data types.
- Use advanced interface methods.
- Implement Fine Grained Access Control to enforce security and control access to a database.
- Manipulate large objects using PL/SQL.
- Implement SecureFile LOBs.
- Compile and tune PL/SQL programs to improve performance.
- Use caching to improve performance.
- Analyse PL/SQL code.
- Profile and trace PL/SQL code.
- Identify the methods for safeguarding PL/SQL code against SQL injection attacks.

## Course Content

### Lesson 1: Fundamentals of PL/SQL

**Topic 1A:** PL/SQL Development Environments

**Topic 1B:** Listing restrictions on calling functions from SQL expressions

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## Lesson 2: Designing PL/SQL Code

**Topic 2A:** Get Started with Cursor Design

**Topic 2B:** Use Cursor Variables

**Topic 2C:** Create Subtypes Based on Existing Data Types

## Lesson 3: Using Collections

**Topic 3A:** Create Collections

**Topic 3B:** Manipulate Collections Using Collection Methods

## Lesson 4: Using Advanced Interface Methods

**Topic 4A:** Execute Procedures Overview

**Topic 4B:** Execute External C Programs from PL/SQL

**Topic 4C:** Execute Java Programs from PL/SQL

## Lesson 5: Implementing VPD with Fine Grained Access Control

**Topic 5A:** Overview of Fine Grained Access Control

**Topic 5B:** Implement FGAC

## Lesson 6: Manipulating Larger Objects

**Topic 6A:** Use LOB Data Types

**Topic 6B:** Use DBMS\_LOB PL/SQL Package

**Topic 6C:** Use Temporary LOBs

**Topic 6D:** Manage LOB Data Type

## Lesson 7: Implement SecureFile LOBs

**Topic 7A:** Migrate BasicFile LOB to the SecureFile LOB Format

**Topic 7B:** Enable SecureFile LOB Deduplication, Compression, and Encryption

## Lesson 8: Compiling and Tuning to Improve Performance

**Topic 8A:** Use Native and Interpreted Compilation Methods

**Topic 8B:** Tune PL/SQL Codes

**Topic 8C:** Enable IntraUnit Inlining

## Lesson 9: Using Cache to Improve Performance

**Topic 9A:** Describe New Result Cache Features in Oracle 11g

**Topic 9B:** Write Queries Using Result Cache Hint

**Topic 9C:** Set up PL/SQL Functions to Use PL/SQL Result Caching

## Lesson 10: Analyzing PL/SQL Code

**Topic 10A:** Run Reports on Source Code

**Topic 10B:** Use DBMS\_METADATA to Retrieve Object Definitions

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## **Lesson 11: Profiling and Tracing PL/SQL Codes**

**Topic 11A:** Profile PL/SQL Applications

**Topic 11B:** Trace PL/SQL Program Execution

## **Lesson 12: Identifying Methods for Safeguarding PL/SQL Code Against SQL Injection Attacks**

**Topic 12A:** Describe SQL Injection

**Topic 12B:** List Methods to Reduce the Attack Surface

**Topic 12C:** Discuss Methods to Filter Input with DBMS\_ASSERT

**Topic 12D:** Identify Methods for Designing Code Immune to SQL Injections

**Topic 12E:** List Methods for Testing Code for SQL Injection Flaws