

Oracle Database 12c R2: Advanced PL/SQL Ed 2

Duration: 3 Days

What you will learn

In the Oracle Database 12c R2: Advanced PL/SQL course, students learn how to use the advanced features of PL/SQL in order to design and tune PL/SQL to interface with the database and integrate with the other applications in the most efficient manner. They learn to write powerful PL/SQL programs using external C/Java routines, fine-grained access packages, cursors, extended interfaces and collections.

Learn To:

Apply PL/SQL designing best practices.

Create PL/SQL applications that use collections.

Work with JSON data in the database.

Implement a virtual private database with fine-grained access control.

Write code to interface with external C and Java applications.

Write code to interface with large objects and use SecureFile LOBs.

Write and tune PL/SQL code effectively to maximize performance.

Benefits To You

Students will benefit from using advanced features of program design, packages, cursors, extended interface methods, and collections and students learn how to write powerful PL/SQL programs.

Programming efficiency, use of external C and Java routines, PL/SQL server pages, and fine-grained access are covered. Students learn how to write PL/SQL routines that analyze the PL/SQL applications and caching techniques that can improve performance.

Students are introduced to the Virtual Private Database (VPD) to implement security policies and they learn techniques and tools to strengthen their applications against SQL injection attacks.

Audience

Application Developers

Database Administrators

Support Engineer

Technical Consultant

Related Training

Required Prerequisites

Basic Knowledge of SQL, PL/SQL

Familiarity with programming languages

Knowledge of PL/SQL Program Units

Oracle Database: Develop PL/SQL Program Units Ed 2

Oracle Database: SQL Workshop I Ed 2

Course Objectives

Design PL/SQL packages and program units that execute efficiently

Write code to interface with external applications and the operating system

Create PL/SQL applications that use collections

Learn to work with JSON data in relational database

Write and tune PL/SQL code effectively to maximize performance

Implement a virtual private database with fine-grained access control

Write code to interface with large objects and use SecureFile LOBs

Course Topics

Introduction

Course Objectives

Course Agenda

Describe the full Human Resources (HR) Schema

Identify the Appendices Used in this Course

Review the online Oracle Database 12c SQL and PL/SQL documentation and the additional available resources

List the PL/SQL development environments Available in this course

Start SQL Developer and Create a Database Connection

Use the SQL Worksheet

Oracle Database Exadata Express Cloud Service

Overview of Oracle Database Exadata Express Cloud Service

Accessing Cloud Database using SQL Workshop

Connecting to Exadata Express Database using Database Clients

Using SQL Developer to work with Exadata Express Database

Overview of Collections

Overview of Collections

Use Associative arrays

Use Nested tables

Use Varrays

Using Collections in PL/SQL

Write PL/SQL programs that use collections

Use Collections effectively

Enhancements to PL/SQL Type Binds

Binding PL/SQL only datatypes to SQL statements using DBMS_SQL

Manipulating Large Objects

Working with LOBs

Overview of SecureFile LOBs

Working with JSON Data

JSON Data

JSON data columns in tables

Generation of JSON data with SQL/JSON generation function

Querying JSON columns

PL/SQL object types for JSON

Using Advanced Interface Methods

Calling External Procedures from PL/SQL

Benefits of External Procedures

Understand how an external routine is called from PL/SQL

C advanced interface methods

Java advanced interface methods

Access PL/SQL blocks from from Java classes using JDBC

Performance and Tuning

Understand and influence the compiler

Tune PL/SQL code

Enable intra unit inlining

Identify and tune memory issues

Recognize network issues

Designing Applications for Real World Performance

Improving Performance with Caching

Describe result caching

Use PL/SQL function cache

Review PL/SQL function cache considerations

Analyzing PL/SQL Code

Finding Coding Information

PL/Scope Concepts

DBMS_METADATA Package

PL/SQL Enhancements

PL/SQL Pragma to mark an item deprecated

Profiling and Tracing PL/SQL Code

What is Tracing and Profiling

Tracing PL/SQL Execution

Tracing PL/SQL: Steps

Securing application through PL/SQL

Controlling Access to Program Units

Managing Access to data using PL/SQL

Creating Secure Application roles to control access to applications

Safeguarding Your Code Against SQL Injection Attacks

SQL Injection Overview

Reducing the Attack Surface

Filtering Input with DBMS_ASSERT

Security Features implemented through PL/SQL

Brief introduction to Security implementation

Fine Grained Access Control

Application Context

List the DBMS_RLS procedures

Implement a policy

Query the dictionary views holding information on fine-grained access