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