Oracle Database: SQL and PL/SQL Fundamentals Ed 2

Duration: 5 Days

What you will learn

This Oracle Database: SQL and PL/SQL Fundamentals training delivers the fundamentals of SQL and PL/SQL along with the benefits of the programming languages using Oracle Database technology. You'll explore the concepts of relational databases.

Learn To:

Write queries against single and multiple tables, manipulate data in tables and create database objects. Use single row functions to customize output. Invoke conversion functions and conditional expressions.
Use group functions to report aggregated data. Create PL/SQL blocks of application code that can be shared by multiple forms, reports and data management applications.
Develop anonymous PL/SQL blocks, stored procedures and functions.
Declare identifiers and trap exceptions.
Use DML statements to manage data.
Use DDL statements to manage database objects. Declare PL/SQL Variables.
Conditionally control code flow (loops, control structures).
Describe stored procedures and functions. Retrieve row and column data from tables.

Benefits to You

Ensure fast, reliable, secure and easy to manage performance. Optimize database workloads, lower IT costs and deliver a higher quality of service by enabling consolidation onto database clouds.

Hands-On Practices

Demonstrations and hands-on practice reinforce the fundamental concepts that you'll learn in this course. By enrolling in this course, you'll begin using Oracle SQL Developer to develop these program units. SQL*Plus is available as optional tools.

Course Bundle

Note: This course is a combination of Oracle Database: SQL Workshop I and Oracle Database: PL/SQL Fundamentals courses.
A Live Virtual Class (LVC) is exclusively for registered students; unregistered individuals may not view an LVC at any time. Registered students must view the class from the country listed in the registration form. Unauthorized recording, copying, or transmission of LVC content may not be made.

Related Training

Required Prerequisites

Familiarity with data processing concepts and techniques

Familiarity with programming concepts

Course Objectives

Run data manipulation statements (DML) to update data in the Oracle Database.

Design PL/SQL anonymous block that execute efficiently.

Describe the features and syntax of PL/SQL.

Handle runtime errors.

Describe stored procedures and functions.

Use PL/SQL programming constructs and conditionally control code flow (loops

control structures

and explicit cursors).

Use cursors to process rows.

Identify the major structural components of the Oracle Database 11g.

Retrieve row and column data from tables with the SELECT statement.

Create reports of sorted and restricted data.

Employ SQL functions to generate and retrieve customized data.

Display data from multiple tables using the ANSI SQL 99 JOIN syntax.

Create reports of aggregated data.

Run data definition language (DDL) statements to create and manage schema objects.

Course Topics

Introduction
Overview of Oracle Database 12c and related products
Overview of relational database management concepts and terminologies
Introduction to SQL and its development environments
The HR schema and the tables used in this course
Oracle Database documentation and additional resources

Working with Oracle Cloud Exadata Express Cloud Service
Introduction to Oracle Database Exadata Express Cloud Service
Accessing Cloud Database using SQL Workshop
Connecting to Exadata Express using Database Clients

Retrieve Data using the SQL SELECT Statement
List the capabilities of SQL SELECT statements
Generate a report of data from the output of a basic SELECT statement
Use arithmetic expressions and NULL values in the SELECT statement
Invoke Column aliases
Concatenation operator, literal character strings, alternative quote operator, and the DISTINCT keyword
Display the table structure using the DESCRIBE command

Restricted and Sorted Data
Write queries with a WHERE clause to limit the output retrieved
Describe the comparison operators and logical operators
Describe the rules of precedence for comparison and logical operators
Usage of character string literals in the WHERE clause
Write queries with an ORDER BY clause
Sort the output in descending and ascending order
Substitution Variables

Usage of Single-Row Functions to Customize Output
List the differences between single row and multiple row functions
Manipulate strings using character functions
Manipulate numbers with the ROUND, TRUNC, and MOD functions
Perform arithmetic with date data
Manipulate dates with the DATE functions

Conversion Functions and Conditional Expressions
Describe implicit and explicit data type conversion
Describe the TO_CHAR, TO_NUMBER, and TO_DATE conversion functions
Nesting multiple functions

Apply the NVL, NULLIF, and COALESCE functions to data
Usage of conditional IF THEN ELSE logic in a SELECT statement

Aggregated Data Using the Group Functions
Usage of the aggregation functions in SELECT statements to produce meaningful reports
Describe the AVG, SUM, MIN, and MAX function
How to handle Null Values in a group function?
Divide the data in groups by using the GROUP BY clause
Exclude groups of date by using the HAVING clause

Display Data From Multiple Tables
Write SELECT statements to access data from more than one table
Join Tables Using SQL:1999 Syntax
View data that does not meet a join condition by using outer joins
Join a table to itself by using a self join
Create Cross Joins

Usage of Subqueries to Solve Queries
Use a Subquery to Solve a Problem
Single-Row Subqueries
Group Functions in a Subquery
Multiple-Row Subqueries
Use the ANY and ALL Operator in Multiple-Row Subqueries
Use the EXISTS Operator

SET Operators
Describe the SET operators
Use a SET operator to combine multiple queries into a single query
Describe the UNION, UNION ALL, INTERSECT, and MINUS Operators
Use the ORDER BY Clause in Set Operations

Data Manipulation
Add New Rows to a Table
Change the Data in a Table
Use the DELETE and TRUNCATE Statements
How to save and discard changes with the COMMIT and ROLLBACK statements
Implement Read Consistency
Describe the FOR UPDATE Clause

DDL Statements to Create and Manage Tables
Categorize Database Objects
Create Tables
Describe the data types
Understand Constraints
Create a table using a subquery
How to alter a table?
How to drop a table?

Other Schema Objects
Create, modify, and retrieve data from a view
Perform Data manipulation language (DML) operations on a view
How to drop a view?

Create, use, and modify a sequence
Create and drop indexes
Create and drop synonyms

Introduction to PL/SQL
PL/SQL Overview
List the benefits of PL/SQL Subprograms
Overview of the Types of PL/SQL blocks
Create a Simple Anonymous Block
Generate the Output from a PL/SQL Block

PL/SQL Identifiers
List the different Types of Identifiers in a PL/SQL subprogram
Usage of the Declarative Section to Define Identifiers
Use of variables to store data
Scalar Data Types
%TYPE Attribute
Bind Variables
Sequences in PL/SQL Expressions

Write Anonymous PL/SQL blocks
Basic PL/SQL Block Syntax Guidelines
How to comment code?
SQL Functions in PL/SQL
Data Type Conversion
Nested Blocks
Operators in PL/SQL

SQL statements in PL/SQL block
SELECT Statements in PL/SQL to Retrieve data
Data Manipulation in the Server Using PL/SQL
The SQL Cursor concept
Learn to use SQL Cursor Attributes to Obtain Feedback on DML
How to save and discard transactions?

Control Structures
Conditional processing Using IF Statements
Conditional processing Using CASE Statements
Simple Loop Statement
While Loop Statement
For Loop Statement
The Continue Statement

Composite Data Types
PL/SQL Records
The %ROWTYPE Attribute
Insert and Update with PL/SQL Records
Associative Arrays (INDEX BY Tables)
INDEX BY Table Methods
INDEX BY Table of Records

Explicit Cursors

Understand Explicit Cursors
Declare the Cursor
How to open the Cursor?
Fetching data from the Cursor
How to close the Cursor?
Cursor FOR loop
Explicit Cursor Attributes
FOR UPDATE Clause and WHERE CURRENT Clause

Exception Handling
What are Exceptions?
Handle Exceptions with PL/SQL
Trap Predefined Oracle Server Errors
Trap Non-Predefined Oracle Server Errors
Trap User-Defined Exceptions
Propagate Exceptions
RAISE_APPLICATION_ERROR Procedure

Stored Procedures and Functions
What are Stored Procedures and Functions?
Differentiate between anonymous blocks and subprograms
Create a Simple Procedure
Create a Simple Procedure with IN parameter
Create a Simple Function
Execute a Simple Procedure
Execute a Simple Function