

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.

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 data 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