

Oracle Database: SQL and PL/SQL Fundamentals

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 and JDeveloper are 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.

Audience

Application Developers, Forms Developer, Functional Implementer, PL/SQL Developer, Portal Developer, Reports Developer, Technical Consultant

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

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 Executable Statements

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

Interaction with the Oracle Server

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

Usage of 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