

Oracle Database: SQL Fundamentals I

Duration: 3 Days

What you will learn

This course introduces participants to the fundamentals of SQL using Oracle Database technology. In this course participants learn the concepts of relational databases and the powerful SQL programming language. This course provides the essential SQL skills that allow developers to write queries against single and multiple tables, manipulate data in tables, and create database objects.

The participants also learn to use single row functions to customize output, use conversion functions and conditional expressions. In addition, the usage of group functions to report aggregated data is also dealt with. Demonstrations and hands-on practice reinforce the fundamental concepts.

In this course, participants use Oracle SQL Developer as the main tool and SQL*Plus is available as an optional tool.

This is appropriate for a 10g and 11g audience. There are minor changes between 10g and 11g features in SQL.

Audience

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

Related Training

Required Prerequisites

Familiarity with data processing concepts and techniques.

Course Objectives

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

Employ SQL functions to generate customized data.

Create reports of aggregated data.

Use the SET operators to create subsets of data.

Run data manipulation statements (DML) in Oracle Database 11g.

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

Identify the major structural components of Oracle Database 11g.

Retrieve data from tables.

Create reports of sorted and restricted data.

Course Topics

Introduction

- Overview of Oracle Database 11g 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
- Usage of arithmetic expressions and NULL values
- Implement Column aliases
- Describe the concatenation operator, literal character strings, alternative quote operator, and the DISTINCT keyword
- Display the table structure using the DESCRIBE command

Restrict and Sort Data

- Write queries with a WHERE clause to limit the output retrieved
- Use the comparison operators and logical operators
- Identify 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 output in descending and ascending order
- Substitution Variables

Use Single-Row Functions to Customize Output

- Differentiate 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 TO_CHAR, TO_NUMBER, and TO_DATE conversion functions
- Nesting multiple functions
- Apply the NVL, NULLIF, and COALESCE functions to data
- Use conditional IF THEN ELSE logic

Aggregated Data Using Group Functions

- How aggregation functions help to produce meaningful reports?
- Use 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 Using Joins

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

Use Sub-queries to Solve Queries

Use a Subquery to Solve a Problem

Execute Single-Row Sub-queries

Deploy Group Functions in a Sub-query

Multiple-Row Subqueries

Use ANY and ALL Operator in Multiple-Row Sub-queries

Use EXISTS Operator

SET Operators

What are SET operators?

Use a SET operator to combine multiple queries into a single query

Use UNION, UNION ALL, INTERSECT, and MINUS Operator

Use ORDER BY Clause in Set Operations

Data Manipulation

Add New Rows to a Table

Change the Data in a Table

Use DELETE and TRUNCATE Statements

Save and discard changes with the COMMIT and ROLLBACK statements

Implement Read Consistency

Describe the FOR UPDATE Clause

Use DDL Statements to Create and Manage Tables

Categorize Database Objects

Create Tables using the CREATE TABLE Statement

Identify the data types

Describe Constraints

Create a table using a subquery

How to alter a table?

Drop a table

Other Schema Objects

Create, modify, and retrieve data from a view

Perform Data manipulation language (DML) operations on a view

Drop a view

Create, use, and modify a sequence

Create and maintain indexes

Create and drop synonyms