

Oracle Database 10g: SQL Fundamentals I

Duration: 3 Days

What you will learn

This course offers students an introduction to Oracle Database 10g database technology. In this class, students 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, create database objects, and query meta data.

Demonstrations and hands-on practices reinforce the fundamental concepts.

Learn to:

Use SQL Statements to retrieve data from tables

Create and Manage Tables

Employ SQL functions to generate and retrieve customized data

Run data manipulation statements (DML) to update data in the Oracle Database 10g

Audience

Application Developers

Business Intelligence Developer

Database Administrators

Database Designers

End Users

Forms Developer

PL/SQL Developer

Portal Developer

Prerequisites

Suggested Prerequisites

Familiarity with Data Processing Concepts and Techniques

Ability to use a graphical user interface (GUI)

Course Objectives

Identify the major structural components of Oracle Database 10g

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

Create reports of aggregated data

Write SELECT statements that include queries

Use the SET operators to create subsets of data

Run data manipulation statements (DML) to update data in the Oracle Database 10g

Create tables to store data

Utilize views to display and retrieve data

Create sequences to generate numbers

Obtain meta data by querying the dictionary views.

Course Topics

Introduction

- List the Oracle Database 10g Main Features
- An Overview of: components, internet platform, app server and developer suite
- Describe Relational and Object Relational Database Designs
- Review the System Development Life Cycle
- Define the term Data Models
- Describe different means of Sorting Data
- Show how Multiple Tables can be related
- Describe how SQL Communicates to the Database

Writing SQL SELECT statements

- Define projection, selection, and join terminology
- Review the basic SQL SELECT statement syntax
- Select all columns using a wildcard notation from a table
- State simple rules and guidelines for writing SQL statements
- Write a query containing the arithmetic operators
- Use aliases to customize column headings
- Create a character expression with the concatenation operator
- Use the quote operator q to control text strings containing the quote character

Using the iSQL*Plus Environment

- SQL statements versus iSQL*Plus commands
- Explaining the iSQL*Plus interface
- Interacting with script files
- Setting iSQL*Plus Preferences

Restricting Data

- Limit Rows Using a Selection
- Use the WHERE Clause
- List the main Comparison Conditions
- Use the LIKE Condition to Compare Literal Values
- List the Logical Conditions AND, OR, NOT
- Use Multiple Conditions in the WHERE clause
- Describe the Rules of Precedence

Sorting Data

- Sort Rows with the ORDER BY Clause
- Use the && Substitution Variable
- Use the iSQL*Plus DEFINE Command
- Use the VERIFY Command

SQL Functions

- Differentiate between Single Row and Multiple Row SQL Functions
- Categorize the Character Functions into Case Manipulation and Character Manipulation types
- Explain the Numeric Functions ROUND, TRUNC, and MOD
- List the Rules for Applying the Arithmetic Operators on Dates
- Use the Arithmetic Operators with Dates in the SELECT Clause
- Explain the DATE functions MONTHS_BETWEEN, ADD_MONTHS, NEXT_DAY, LAST_DAY, ROUND, and TRUNC
- Explain Implicit and Explicit conversion
- Nest Functions to Perform Multiple Tasks in One Statement

Conditional Expressions

Use the CASE Expression

Explain the DECODE Expression

Aggregating Data Using Group Functions

Categorize the Types of Group Functions

Use the AVG, SUM, MAX, MIN, and COUNT Functions in a Query

Utilize the DISTINCT Keyword with the Group Functions

Describe how Nulls are handled with the Group Functions

Create Groups of Data with the GROUP BY Clause

Group Data by more than one column

Avoid Illegal Queries with the Group Functions

Exclude Groups of Data with the HAVING Clause

Displaying Data from Multiple Tables

Identify Types of Joins

Retrieve Records with Natural Joins

Use Table Aliases to write shorter code and explicitly identify columns from multiple tables

Create a Join with the USING clause to identify specific columns between tables

Use the ON clause to specify arbitrary conditions or specify columns to Join

Create a Three-way join with the ON clause to retrieve information from 3 tables

List the Types of Outer Joins LEFT, RIGHT, and FULL

Generating a Cartesian Product

Using Subqueries

Use a sub query to solve a problem

Identify where sub queries can be placed in a SELECT statement

Describe the types of sub queries (single row, multiple row)

Show the single row sub query operators

Use the group functions in a sub query

Identify illegal statements with sub queries

Show the multiple row sub query operators

Explain how null values are handled in sub queries

Using the Set Operators

Use the UNION operator to return all rows from multiple tables and eliminate any duplicate rows

Use the UNION ALL operator to return all rows from multiple tables (with duplicates)

Describe the INTERSECT operator

Use the INTERSECT operator

Explain the MINUS operator

Use the MINUS operator

List the SET operator guidelines

Order results when using the UNION operator

Inserting and Updating Data

Write INSERT statements to add rows to a table

Insert Special Values

Copy Rows from Another Table

Update Rows in a Table

Deleting Data

Use DELETE statements to remove rows from a table

Delete Rows Based on Another Table

Describe the TRUNCATE Statement

Database Transactions

Save and Discard Changes to a Table through Transaction Processing (COMMIT, ROLLBACK, and SAVEPOINT)

Show how Read Consistency works

Using DDL Statements

List the main database objects

Identify the Naming Rules

Display the basic Syntax for Creating a Table

Show the DEFAULT option

List the Data Types that are available for Columns

Managing Tables

Explain the different types of constraints

Show resulting exceptions when constraints are violated with DML statements

Create a table with a sub query

Describe the ALTER TABLE functionality

Remove a table with the DROP statement

Creating Other Schema Objects

Categorize simple and complex views and compare them

Create a view

Retrieve data from a view

Explain a read-only view

List the rules for performing DML on complex views

Create a sequence

List the basic rules for when to create and not create an index

Create a synonym

Managing Objects with Data Dictionary Views

Describe the structure of each of the dictionary views

List the purpose of each of the dictionary views

Write queries that retrieve information from the dictionary views on the schema objects

Use the COMMENT command to document objects

Appendices

Oracle Join Syntax

Using SQL*Plus

Using SQL Developer

Additional Practices