

## Oracle Database: Introduction to SQL

**Duration:** 5 Days

### What you will learn

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This Oracle Database: Introduction to SQL training helps you write subqueries, combine multiple queries into a single query using SET operators and report aggregated data using group functions. Learn this and more through hands-on exercises.

### Learn To:

Understand the basic concepts of relational databases ensure refined code by developers.

Create reports of sorted and restricted data.

Run data manipulation statements (DML).

Control database access to specific objects.

Manage schema objects.

Manage objects with data dictionary views.

Retrieve row and column data from tables.

Control privileges at the object and system level.

Create indexes and constraints; alter existing schema objects.

Create and query external tables.

### Benefits to You

Gain expertise in relational database data management as you learn how to effectively use SQL commands against your business data. These features will help you query and manipulate data within the database, use the dictionary views to retrieve metadata and create reports about their schema objects.

### Learn Advanced Features of SQL

In order to query and manipulate data within the database, use the dictionary views to retrieve metadata and create reports about their schema objects, you'll learn to understand the advanced features of SQL. Some of the date-time functions available in the Oracle Database are also covered. This course also discusses how to use the regular expression support in SQL.

### Development Tools

In this course, the main development tool used is Oracle SQL Developer. SQL\*Plus is available as an optional development tool. This is appropriate for a 10g and 11g audience. There are minor changes between 10g and 11g features in SQL.

This course is a combination of Oracle Database: SQL Fundamentals I and Oracle Database: SQL Fundamentals II courses.

## **Audience**

Application Developers  
Business Analysts  
Data Warehouse Administrator  
Developer  
Forms Developer  
PL/SQL Developer  
System Analysts

## **Related Training**

### *Required Prerequisites*

Data processing

Familiarity with data processing concepts and techniques

## **Course Objectives**

Manage schema objects.

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

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

Create reports of aggregated data.

Write SELECT statements that include queries.

Retrieve row and column data from tables.

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

Create tables to store data.

Utilize views to display data.

Control database access to specific objects.

Manage objects with data dictionary views.

Write multiple-column sub-queries.

Employ SQL functions to retrieve customized data.

Use scalar and correlated sub-queries.

Use the regular expression support in SQL.

Create reports of sorted and restricted data.

## Course Topics

### Introduction to Oracle Database

- List the features of Oracle Database 11g
- Discuss the basic design, theoretical, and physical aspects of a relational database
- Categorize the different types of SQL statements
- Describe the data set used by the course
- Log on to the database using SQL Developer environment
- Save queries to files and use script files in SQL Developer

### 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
- Select All Columns
- Select Specific Columns
- Use Column Heading Defaults
- Use Arithmetic Operators
- Understand Operator Precedence
- Learn the DESCRIBE command to display the table structure

### Learn to Restrict and Sort Data

- Write queries that contain a WHERE clause to limit the output retrieved
- List the comparison operators and logical operators that are used in a WHERE clause
- Describe the rules of precedence for comparison and logical operators
- Use character string literals in the WHERE clause
- Write queries that contain an ORDER BY clause to sort the output of a SELECT statement
- Sort output in descending and ascending order

### Usage of Single-Row Functions to Customize Output

- Describe the differences between single row and multiple row functions
- Manipulate strings with character function in the SELECT and WHERE clauses
- Manipulate numbers with the ROUND, TRUNC, and MOD functions
- Perform arithmetic with date data
- Manipulate dates with the DATE functions

### Invoke Conversion Functions and Conditional Expressions

- Describe implicit and explicit data type conversion
- Use the TO\_CHAR, TO\_NUMBER, and TO\_DATE conversion functions
- Nest multiple functions
- Apply the NVL, NULLIF, and COALESCE functions to data
- Use conditional IF THEN ELSE logic in a SELECT statement

### Aggregate Data Using the Group Functions

- Use the aggregation functions to produce meaningful reports
- Divide the retrieved 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
- View data that generally does not meet a join condition by using outer joins
- Join a table to itself by using a self join

## **Use Sub-queries to Solve Queries**

Describe the types of problem that sub-queries can solve

Define sub-queries

List the types of sub-queries

Write single-row and multiple-row sub-queries

## **The SET Operators**

Describe the SET operators

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

Control the order of rows returned

## **Data Manipulation Statements**

Describe each DML statement

Insert rows into a table

Change rows in a table by the UPDATE statement

Delete rows from a table with the DELETE statement

Save and discard changes with the COMMIT and ROLLBACK statements

Explain read consistency

## **Use of DDL Statements to Create and Manage Tables**

Categorize the main database objects

Review the table structure

List the data types available for columns

Create a simple table

Decipher how constraints can be created at table creation

Describe how schema objects work

## **Other Schema Objects**

Create a simple and complex view

Retrieve data from views

Create, maintain, and use sequences

Create and maintain indexes

Create private and public synonyms

## **Control User Access**

Differentiate system privileges from object privileges

Create Users

Grant System Privileges

Create and Grant Privileges to a Role

Change Your Password

Grant Object Privileges

How to pass on privileges?

Revoke Object Privileges

## **Management of Schema Objects**

Add, Modify, and Drop a Column

Add, Drop, and Defer a Constraint

How to enable and Disable a Constraint?

Create and Remove Indexes

Create a Function-Based Index

Perform Flashback Operations

Create an External Table by Using ORACLE\_LOADER and by Using ORACLE\_DATAPUMP

Query External Tables

### **Manage Objects with Data Dictionary Views**

Explain the data dictionary

Use the Dictionary Views

USER\_OBJECTS and ALL\_OBJECTS Views

Table and Column Information

Query the dictionary views for constraint information

Query the dictionary views for view, sequence, index and synonym information

Add a comment to a table

Query the dictionary views for comment information

### **Manipulate Large Data Sets**

Use Subqueries to Manipulate Data

Retrieve Data Using a Subquery as Source

Insert Using a Subquery as a Target

Usage of the WITH CHECK OPTION Keyword on DML Statements

List the types of Multitable INSERT Statements

Use Multitable INSERT Statements

Merge rows in a table

Track Changes in Data over a period of time

### **Data Management in different Time Zones**

Time Zones

CURRENT\_DATE, CURRENT\_TIMESTAMP, and LOCALTIMESTAMP

Compare Date and Time in a Session's Time Zone

DBTIMEZONE and SESSIONTIMEZONE

Difference between DATE and TIMESTAMP

INTERVAL Data Types

Use EXTRACT, TZ\_OFFSET and FROM\_TZ

Invoke TO\_TIMESTAMP, TO\_YMINTERVAL and TO\_DSINTERVAL

### **Retrieve Data Using Sub-queries**

Multiple-Column Subqueries

Pairwise and Nonpairwise Comparison

Scalar Subquery Expressions

Solve problems with Correlated Subqueries

Update and Delete Rows Using Correlated Subqueries

The EXISTS and NOT EXISTS operators

Invoke the WITH clause

The Recursive WITH clause

### **Regular Expression Support**

Use the Regular Expressions Functions and Conditions in SQL

Use Meta Characters with Regular Expressions

Perform a Basic Search using the REGEXP\_LIKE function

Find patterns using the REGEXP\_INSTR function

Extract Substrings using the REGEXP\_SUBSTR function

Replace Patterns Using the REGEXP\_REPLACE function

Usage of Sub-Expressions with Regular Expression Support

Implement the REGEXP\_COUNT function