



# Oracle Database 11g SQL

AO3 - Version: 2

 3 days Course

## Description:

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. Students learn to execute queries, inserts, updates, and deletes against a database and create database tables, constraints, sequences, indexes, views, and users. Students learn to control privileges at the object and system level. Students learn to use the advanced features of SQL in order to query and manipulate data within the database and use the dictionary views to retrieve metadata. Students also learn about Oracle database's built-in functions including date-time functions and the regular expression support in SQL.

## Intended audience:

The course is targeted for those interested in mastering the SQL language in Oracle environment

## Prerequisites:

Familiarity with information systems.

## Objectives:

Learning ways of implementing design on a database system

Getting familiar with database features

## Topics:

Introducing Oracle Database 11g

- 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 onto the database using the SQL Developer environment
- Save queries to files and use script files in SQL Developer

## Retrieving 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

## Restricting and Sorting 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 sort the output of a SELECT statement
- Sort output in descending and ascending order

## Using 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

## Using 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

## Reporting Aggregated Data Using the Group Functions

- Use the aggregation functions in SELECT statements to produce meaningful reports
- Create queries that divide the data in groups by using the GROUP BY clause
- Create queries that exclude groups of data by using the HAVING clause

## Displaying 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 by using a self join

## Using 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

## Analytic Functions

- Describe the types of problem that analytic functions can solve
- Useful Analytic functions
- How to use Analytic functions
- Using window clause

## Using the SET Operators (UNION ALL, UNION, MINUS, INTERSECT)

- Describe the SET operators
- Use a SET operator to combine multiple queries into a single query
- Control the order of rows returned when using the SET operators

## Manipulating Data

- Describe each DML statement
- Insert rows into a table with the INSERT statement
- Use the UPDATE statement to change rows in a table
- Delete rows from a table with the DELETE statement
- Save and discard changes with the COMMIT and ROLLBACK statements
- Explain read consistency and Row Locks

## Using 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

## Creating 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

## Controlling User Access

- Differentiate system privileges from object privileges
- Creating Users
- Granting System Privileges
- Creating and Granting Privileges to a Role
- Changing Your Password
- Granting Object Privileges
- Passing On Your Privileges
- Revoking Object Privileges

## Managing Schema Objects

- Adding, Modifying and Dropping a Column
- Adding, Dropping and Deferring a Constraint
- Enabling and Disabling a Constraint
- Creating and Removing Indexes
- Creating a Function-Based Index
- Performing Flashback Operations

## Managing Objects with Data Dictionary Views

- Explain the data dictionary
- Using the Dictionary Views
- USER\_OBJECTS and ALL\_OBJECTS Views
- Table and Column Information
- Querying the dictionary views for constraint information
- Querying the dictionary views for view, sequence, index and synonym information
- Querying the dictionary views for comment information

## Retrieving Data Using Sub-queries

- Multiple-Column Subqueries
- Pairwise and Nonpairwise Comparison
- Using Scalar Subquery Expressions
- Updating and Deleting Rows Using Correlated Subqueries
- Using the EXISTS and NOT EXISTS operators
- Using the WITH clause (and Recursive WITH)

## Regular Expression Support

- Using the Regular Expressions Functions and Conditions in SQL
- Using Meta Characters with Regular Expressions
- Performing a Basic Search using the REGEXP\_LIKE function
- Finding patterns using the REGEXP\_INSTR function
- Extracting Substrings using the REGEXP\_SUBSTR function
- Replacing Patterns Using the REGEXP\_REPLACE function
- Using Sub-Expressions with Regular Expression Support
- Using the REGEXP\_COUNT function