

SQL

Duration: 40 Hours

Introduction to SQL constructs

- Review of Basic SQL statements
- Select, Project, Join
- Describing Oracle tables
- Restricting row returns

Retrieving Data Using the SQL SELECT Statement

- List the capabilities of SQL SELECT statements
- Execute a basic SELECT statement

Restricting and Sorting Data

- Limit the rows that are retrieved by a query
- Sort the rows that are retrieved by a query
- Use ampersand substitution to restrict and sort output at runtime

Using Single-Row Functions to Customize Output

- Describe various types of functions available in SQL
- Use character, number, and date functions in SELECT statements

Using Conversion Functions and Conditional Expressions

- Describe various types of functions available in SQL
- Use character, number, and date functions in SELECT statements

Reporting Aggregated Data Using the Group Functions

- Identify the available group functions
- Describe the use of group functions
- Group data by using the GROUP BY clause
- Include or exclude grouped rows by using the HAVING clause

Displaying Data from Multiple Tables

- Write SELECT statements to access data from more than one table using equijoins and nonequijoins
- Join a table to itself by using a self-join
- View data that generally does not meet a join condition by using outer joins
- Generate a Cartesian product of all rows from two or more tables

Using Subqueries to Solve Queries

- Define subqueries
- Describe the types of problems that the subqueries can solve
- List the types of subqueries
- Write single-row and multiple-row subqueries

Using the Set Operators

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

Manipulating Data

- Describe each data manipulation language (DML) statement
- Insert rows into a table
- Update rows in a table
- Delete rows from a table
- Control transactions

Using DDL Statements to Create and Manage Tables

- Categorize the main database objects
- Review the table structure
- List the data types that are available for columns
- Create a simple table
- Explain how constraints are created at the time of table creation
- Describe how schema objects work

Creating Other Schema Objects

- Create simple and complex views
- Retrieve data from views
- Create, maintain, and use sequences
- Create and maintain indexes
- Create private and public synonyms

Using SQL*Plus

- Creating basic reports
- Using the set commands
- Column wrapping
- Creating breaks and summaries
- Adding prompts to queries

Joining Oracle tables

- Equi-join
- Outer join
- Hiding joins by creating views
- Using IN, NOT IN, EXISTS and NOTEXISTS
- Subqueries
- Exercise – write a subquery
- Correlated subquery
- Non-correlated subqueries

Advanced SQL operators

- Between operator
- IN and NOT In operators
- Sub-queries
- EXISTS clause
- Using wildcards in queries (LIKEoperator)

Aggregation in SQL

- Count(*)
- Sum
- Avg
- Min and max
- Using the group by clause

SQL access methods

- Review of Basic joining methods
- Merge join
- Hash Join
- Nested Loop join
- Advanced SQL operators
- Between operator

SQL Tuning

- Introduction to rule-based optimization
- Introduction to cost-based optimization
- Collecting table and index statistics
- Using column histograms
- Changing the default optimizer modes
- Using TKPROF
- Using SQL*Trace
- SQL reusability within the library cache
- Table high-water mark
- Table striping and table partitions
- Using EXPLAIN PLAN
- Interpreting EXPLAIN PLAN Output
- Using indexes to improve performance
- Identifying full-table scans
- Re-writing SQL queries
- Using hints to improve SQL performance
- Using parallel query to improve performance
- Tuning sub-queries