Introduction to SQL Course

Module 1: SQL Overview

- Outlining SQL as the cornerstone of database activity
- Applying the ANSI/ISO standards
- Describing the fundamental building blocks: tables, columns, primary keys, and foreign keys

Module 2: Building the Database Schema

Creating tables and columns
- Building tables with CREATE TABLE
- Modifying table structure with ALTER TABLE
- Adding columns to an existing table
- Removing tables with DROP TABLE

Protecting data integrity with constraints
- Guaranteeing uniqueness with primary key constraints
- Enforcing integrity with foreign key constraints
- Imposing business rules with check constraints

Improving performance with indexes
- Expediting data retrieval with indexes
- Recommending guidelines for index creation

Module 3: Manipulating Data

Modifying table contents
- Adding table rows with INSERT
- Changing row content with UPDATE
- Removing rows with DELETE

Applying transactions

- Controlling transactions with COMMIT and ROLLBACK
- Deploying BEGIN TRANSACTION in SQL Server

Module 4: Working with the SELECT Statement

Writing Single Table queries

- Retrieving data with SELECT
- Specifying column expressions
- Sorting the result with ORDER BY
- Handling NULL values in expressions

Restricting rows with the WHERE filter

- Testing for equality or inequality
- Applying wildcard characters
- Avoiding NULL value pitfalls

Module 5: Querying Multiple Tables

Applying the ANSI/ISO standard join syntax

- Matching related rows with INNER JOIN
- Including nonmatched rows with OUTER JOIN
- Creating a Cartesian product with CROSS JOIN

Combining results with set operators

- Stacking results with UNION
- Identifying matching rows with INTERSECT
- Utilising EXCEPT to find nonmatching rows

Module 6: Employing Functions in Data Retrieval

Processing data with row functions

- Conditional formatting with the CASE expression
- Utilising the CASE expression to simulate IF tests
- Dealing with NULL values

Performing analysis with aggregate functions

- Summarising data using SUM, AVG and COUNT
- Finding the highest/lowest values with MAX and MIN
- Defining the summary level with GROUP BY
- Applying filter conditions with HAVING

Module 7: Constructed Nested Queries

Applying subqueries in filter conditions

- Creating correlated vs. noncorrelated subqueries
- Testing the existence of rows

Including subqueries in expressions

- Placing subqueries in the column list
- Creating complex expressions containing subqueries
- Handling subqueries that return no rows

Module 8: Developing In-Line and Stored Views

Breaking down complex problems

- Selecting data from a query result set
- Using subqueries in the FROM clause

Creating views in a database

- Building reusable code
- Creating updateable vs. non-updateable views