

## Introduction to SQL

**Length:** 3 Days

**Summary:** The ability to write the SQL language, the cornerstone of all relational database operations, is essential for anyone who develops database applications. The SQL Language is an ANSI/ISO standard language used by all relational database products. In this training, you learn how to optimize the accessibility and maintenance of data with the SQL programming language, and gain a solid foundation for building, querying, and manipulating databases. This course describes the standard language and identifies deviations from the standard in two widely-used database products: Oracle and Microsoft SQL Server.

**Key Features/What You Will Learn:**

- Write SQL code based on ANSI/ISO standards to build database structures
- Update database content with SQL and transaction handling
- Retrieve data with filter conditions and from multiple tables using various types of join
- Process data with row and aggregate functions

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## COURSE CONTENT

### 1: COMPREHENSIVE INTRODUCTION TO STRUCTURED QUERY LANGUAGE

- What is Data Control Language (DCL)?
- What is Data Definition Language (DDL)?
- What is Data Manipulation Language (DML)?
- What is Transaction Control Language (TCL)?

### 2: DDL

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

### 3: DML

- Insert, update, delete, & select clauses
- Constraints
- Expediting data retrieval with indexes
- Recommending guidelines for index creation
- Writing Single Table queries
- Retrieving data with SELECT & sorting the result with ORDER BY

- Querying Multiple Tables
- Modifying table contents

### 4: TCL

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

### 5: RETRIEVING DATA

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

### 6: SET OPERATIONS

- Combining results with set operators
- Stacking results with UNION
- Identifying matching rows with INTERSECT
- Utilizing EXCEPT to find nonmatching rows
- Employing Functions in Data Retrieval
- Processing data with row functions
- Conditional formatting with the CASE expression
- Utilizing the CASE expression to simulate IF tests

- Performing analysis with aggregate functions

## 7: AGGREGATING RESULTS

- Summarizing 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
- Constructing Nested Queries

## 8: OPTIMIZING DATA OUTPUT

- Applying subqueries in filter conditions
- Correlated vs. non-correlated 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
- Developing In-Line and Stored Views
- Breaking down complex problems
- Selecting data from a query result set
- Subqueries in the FROM clause