



20761C - Version: 1

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Querying Data with Transact-SQL



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 **5 days Course**

Description:

This course is designed to introduce students to Transact-SQL.

Intended audience:

The main purpose of the course is to give students a good understanding of the Transact-SQL language which is used by all SQL Server-related disciplines; namely, Database Administration, Database Development and Business Intelligence. As such, the primary target audience for this course is: Database Administrators, Database Developers and BI professionals.

Prerequisites:

Basic knowledge of the Microsoft Windows operating system and its core functionality.

Working knowledge of relational databases.

Objectives:

Describe key capabilities and components of SQL Server.

Describe T-SQL, sets, and predicate logic.

Write a single table SELECT statement.

Write a multi-table SELECT statement.

Write SELECT statements with filtering and sorting.

Describe how SQL Server uses data types.

Write DML statements.

Write queries that use built-in functions.

Write queries that aggregate data.

Write subqueries.

Create and implement views and table-valued functions.

Use set operators to combine query results.

Write queries that use window ranking, offset, and aggregate functions.

Transform data by implementing pivot, unpivot, rollup and cube.

Create and implement stored procedures.

Add programming constructs such as variables, conditions, and loops to T-SQL code.

Topics:

Module 1: Introduction to Microsoft SQL Server

- The Basic Architecture of SQL Server
- SQL Server Editions and Versions
- Getting Started with SQL Server Management Studio
- Lab : Working with SQL Server Tools

Module 2: Introduction to T-SQL Querying

- Introducing T-SQL
- Understanding Sets
- Understanding Predicate Logic
- Understanding the Logical Order of Operations in SELECT statements
- Lab : Introduction to T-SQL Querying

Module 3: Writing SELECT Queries

- Writing Simple SELECT Statements
- Eliminating Duplicates with DISTINCT
- Using Column and Table Aliases
- Writing Simple CASE Expressions
- Lab : Writing Basic SELECT Statements

Module 4: Querying Multiple Tables

- Understanding Joins

- Querying with Inner Joins
- Querying with Outer Joins
- Querying with Cross Joins and Self Joins
- Lab : Querying Multiple Tables

Module 5: Sorting and Filtering Data

- Sorting Data
- Filtering Data with Predicates
- Filtering Data with TOP and OFFSET-FETCH
- Working with Unknown Values
- Lab : Sorting and Filtering Data

Module 6: Working with SQL Server Data Types

- Introducing SQL Server Data Types
- Working with Character Data
- Working with Date and Time Data
- Lab : Working with SQL Server Data Types

Module 7: Using DML to Modify Data

- Adding Data to Tables
- Modifying and Removing Data
- Generating automatic column values
- Lab : Using DML to Modify Data

Module 8: Using Built-In Functions

- Writing Queries with Built-In Functions
- Using Conversion Functions
- Using Logical Functions
- Using Functions to Work with NULL
- Lab : Using Built-In Functions

Module 9: Grouping and Aggregating Data

- Using Aggregate Functions
- Using the GROUP BY Clause
- Filtering Groups with HAVING
- Lab : Grouping and Aggregating Data

Module 10: Using Subqueries

- Writing Self-Contained Subqueries
- Writing Correlated Subqueries
- Using the EXISTS Predicate with Subqueries
- Lab : Using Subqueries

Module 11: Using Table Expressions

- Using Views
- Using Inline Table-Valued Functions
- Using Derived Tables
- Using Common Table Expressions
- Lab : Using Table Expressions

Module 12: Using Set Operators

- Writing Queries with the UNION operator
- Using EXCEPT and INTERSECT
- Using APPLY
- Lab : Using Set Operators

Module 13: Using Windows Ranking, Offset, and Aggregate Functions

- Creating Windows with OVER
- Exploring Window Functions
- Lab : Using Windows Ranking, Offset, and Aggregate Functions

Module 14: Pivoting and Grouping Sets

- Writing Queries with PIVOT and UNPIVOT
- Working with Grouping Sets
- Lab : Pivoting and Grouping Sets

Module 15: Executing Stored Procedures

- Querying Data with Stored Procedures
- Passing Parameters to Stored procedures
- Creating Simple Stored Procedures
- Working with Dynamic SQL
- Lab : Executing Stored Procedures

Module 16: Programming with T-SQL

- T-SQL Programming Elements
- Controlling Program Flow
- Lab : Programming with T-SQL

Module 17: Implementing Error Handling

- Implementing T-SQL error handling
- Implementing structured exception handling
- Lab : Implementing Error Handling

Module 18: Implementing Transactions

- Transactions and the database engines
- Controlling transactions
- Lab : Implementing Transactions