



Querying Data with Transact-SQL

This course is designed to introduce participants to Transact-SQL. It is designed in such a way that the first three (3) days can be taught as a course to participants requiring the knowledge for other courses in the SQL Server curriculum.

Days 4 & 5 teach the remaining skills required to take exam 70-761.

Who Should Attend:

This course is intended for Database Administrators, Database Developers, and Business Intelligence professionals

Course Prerequisites:

Before attending this course, participants must have, in addition to their professional experience:

- A working knowledge of relational databases
- Basic knowledge of the Microsoft Windows operating system and its core functionality

Course Code: 20761B

Course Duration: 5 Days

Course Summary

Module 1: Introduction to SQL Server 2016

Module 2: Introduction to T-SQL Querying

Module 3: Writing SELECT Queries

Module 4: Querying Multiple Tables

Module 5: Sorting & Filtering Data

Module 6: Working with SQL Server 2016 Data Types

Module 7: Using DML to Modify Data

Module 8: Using Built-In Functions

Module 9: Grouping & Aggregating Data

Module 10: Using Subqueries

Module 11: Using Table Expressions

Module 12: Using Set Operators

Module 13: Using Window Ranking, Offset, & Aggregate Functions

Module 14: Pivoting & Grouping Sets

Module 15: Executing Stored Procedures

Module 16: Programming with T-SQL

Module 17: Implementing Error Handling

Module 18: Implementing Transactions

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Course Outline

Module 1: Introduction to Microsoft SQL Server 2016

This module introduces SQL Server, the versions of SQL Server, including cloud versions, and how to connect to SQL Server using SQL Server Management Studio.

Lessons

- The Basic Architecture of SQL Server
- SQL Server Editions and Versions
- Getting Started with SQL Server Management Studio

Lab

- Working with SQL Server 2016 Tools

Module 2: Introduction to T-SQL Querying

This module introduces the elements of T-SQL and their role in writing queries, describes the use of sets in SQL Server, describes the use of predicate logic in SQL Server, and describes the logical order of operations in SELECT statements.

Lessons

- Introducing T-SQL
- Understanding Sets
- Understanding Predicate Logic
- Understanding the Logical Order of Operations in SELECT statements

Lab

- Introduction to Transact-SQL Querying

Module 3: Writing SELECT Queries

This module introduces the fundamentals of the SELECT statement, focusing on queries against a single table.

Lessons

- 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

This module explains how to write queries which combine data from multiple sources in SQL Server. The module introduces the use of JOINS in T-SQL queries as a mechanism for retrieving data from multiple tables.

Module 4: Lessons

- 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

This module explains how to enhance queries to limit the rows they return, and to control the order in which the rows are displayed. The module also discusses how to resolve missing and unknown results.

Lessons

- Sorting Data
- Filtering Data with Predicates
- Filtering with the TOP and OFFSET-FETCH Options
- Working with Unknown Values

Lab

- Sorting and Filtering Data

Module 6: Working with SQL Server 2016 Data Types

This module explains the data types SQL Server uses to store data. It introduces the many types of numeric and special-use data types. It also explains conversions between data types, and the importance of type precedence.

Lessons

- Introducing SQL Server 2016 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

This module describes the use of Transact-SQL Data Manipulation Language to perform inserts, updates, and deletes to your data

Lessons

- Inserting Data
- Modifying and Deleting Data

Lab

- Using DML to Modify Data



Module 8: Using Built-In Functions

This module introduces the use of functions that are built in to SQL Server Denali, and will discuss some common usages including data type conversion, testing for logical results and nullability.

Lessons

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

- Using Built-In Functions

Module 9: Grouping and Aggregating Data

This module introduces methods for grouping data within a query, aggregating the grouped data and filtering groups with HAVING. The module is designed to help the student grasp why a SELECT clause has restrictions placed upon column naming in the GROUP BY clause as well as which columns may be listed in the SELECT clause.

Lessons

- Using Aggregate Functions
- Using the GROUP BY Clause
- Filtering Groups with HAVING

Lab

- Grouping and Aggregating Data

Module 10: Using Subqueries

This module will introduce the use of subqueries in various parts of a SELECT statement. It will include the use of scalar and multi-result subqueries, and the use of the IN and EXISTS operators.

Lessons

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

Lab

- Using Subqueries

Module 11: Using Table Expressions

Previously in this course, you learned about using subqueries as an expression that returned results to an outer calling query.

Like subqueries, table expressions are query expressions, but table expressions extend this idea by allowing you to name them and to work with their results as you would work with data in any valid relational table.

Microsoft SQL Server 2016 supports four types of table expressions: derived tables, common table expression (CTEs), views, and inline table-valued functions (TVFs). In this module, you will learn to work with these forms of table expressions and learn how to use them to help create a modular approach to writing queries.

Lessons

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

Lab

- Using Table Expressions

Module 12: Using Set Operators

This module introduces how to use the set operators UNION, INTERSECT, and EXCEPT to compare rows between two input sets.

Lessons

- 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

This module describes the benefits to using window functions. Restrict window functions to rows defined in an OVER clause, including partitions and frames. Write queries that use window functions to operate on a window of rows and return ranking, aggregation, and offset comparison results.

Lessons

- Creating Windows with OVER
- Exploring Windows Functions

Lab

- Using Windows Ranking, Offset, And Aggregate Functions

Module 14: Pivoting and Grouping Sets

This module describes write queries that pivot and unpivot result sets. Write queries that specify multiple groupings with grouping sets.

Lessons

- Writing Queries with PIVOT and UNPIVOT
- Working with Grouping Sets

Lab

- Pivoting and Grouping Sets

Module 15: Executing Stored Procedures

This module describes how to return results by executing stored procedures. Pass parameters to procedures. Create simple stored procedures that encapsulate a SELECT statement. Construct and execute dynamic SQL with EXEC and sp_executesql

Lessons

- 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

This module describes how to enhance your T-SQL code with programming elements.

Lessons

- T-SQL Programming Elements
- Controlling Program Flow

Lab

- Programming with T-SQL

Module 17 Implementing Error Handling

This module will introduces error handling for T-SQL.

Lessons

- Implementing T-SQL error handling
- Implementing structured exception handling

Lab

- Implementing Error Handling

Module 18: Implementing Transactions

This module will describe how to implement transactions.

Lessons

- Transactions and the database engines
- Controlling transactions

Lab

- Implementing Transactions