

20461 - Querying Microsoft SQL Server

Duration: 5 days

Overview:

This 5-day Microsoft 20461 training course provides students with the technical skills required to write basic Transact-SQL queries for Microsoft SQL Server 2014. This Microsoft 20461 training course is the foundation for all SQL Server-related disciplines; namely, Database Administration, Database Development and Business Intelligence. This is a Microsoft Official Course (MOC) and help helps people prepare for exam 70-461.

Target Audience:

This Microsoft 20461 training course is intended for Database Administrators, Database Developers, and Business Intelligence professionals. The course will very likely be well attended by SQL power users who aren't necessarily database-focused or plan on taking the exam; namely, report writers, business analysts and client application developers.

Pre-requisites:

Before attending this Microsoft 20461 training course, students must have:

- Working knowledge of relational databases.
- Basic knowledge of the Microsoft Windows operating system and its core functionality.

Module 1: Introduction to Microsoft SQL Server 2014

Lessons

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

Lab : Working with SQL Server 2014 Tools

- Working with SQL Server Management Studio
- Creating and Organising T-SQL scripts
- Using Books Online

Module 2: Introduction to T-SQL Querying

Lessons

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

Lab : Introduction to Transact-SQL Querying

- Executing Basic SELECT Statements
- Executing queries which filter data using predicates
- Executing queries which sort data using ORDER BY

Module 3: Writing SELECT Queries

Lessons

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

Lab : Writing Basic SELECT Statements

- Write simple SELECT Statements
- Eliminate Duplicates Using Distinct
- Use Table and Column Aliases
- Use a Simple CASE Expression

Module 4: Querying Multiple Tables

Lessons

- Understanding Joins
- Querying with Inner Joins
- Querying with Outer Joins
- Querying with Cross Joins and Self Joins

Lab : Querying Multiple Tables

- Writing Queries That Use Inner Joins
- Writing Queries That Use Multiple-Table Inner Join
- Writing Queries That Use Self Joins
- Writing Queries That Use Outer Joins
- Writing Queries That Use Cross Joins

Module 5: Sorting and Filtering Data

Lessons

- Sorting Data
- Filtering Data with a WHERE Clause
- Filtering with the TOP and OFFSET-FETCH Options
- Working with Unknown and Missing Values

Lab : Sorting and Filtering Data

- Writing Queries That Filter Data Using a WHERE Clause
- Writing Queries That Filter Data Using an ORDER BY Clause
- Writing Queries That Filter Data Using the TOP Option
- Writing Queries That Filter Data Using the OFFSET-FETCH Clause

Module 6: Working with SQL Server 2014 Data Types

Lessons

- Introducing SQL Server 2014 Data Types
- Working with Character Data
- Working with Date and Time Data

Lab : Working with SQL Server 2014 Data Types

- Writing Queries That Return Date and Time Data
- Writing Queries That Use Date and Time Functions
- Writing Queries That Return Character Data
- Writing Queries That Use Character Functions

Module 7: Using DML to Modify Data

Lessons

- Inserting Data
- Modifying and Deleting Data

Lab : Using DML to Modify Data

- Inserting Data
- Updating and Deleting Data

Module 8: Using Built-In Functions

Lessons

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

Lab : Using Built-In Functions

- Write queries which use conversion functions
- Write queries which use logical functions
- Write queries which test for nullability

At Course Completion:

After completing this course, students will be able to:

- Write SELECT queries
- Query multiple tables
- Sort and filter data
- Describe the use of data types in SQL Server
- Modify data using Transact-SQL
- Use built-in functions
- Group and aggregate data
- Use subqueries
- Use table expressions
- Use set operators
- Use window ranking, offset and aggregate functions
- Implement pivoting and grouping sets
- Execute stored procedures
- Program with T-SQL
- Implement error handling
- Implement transactions

Module 9: Grouping and Aggregating Data

Lessons

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

Lab : Grouping and Aggregating Data

- Write queries which use the GROUP BY clause
- Write queries which use aggregate functions
- Write queries which use distinct aggregate functions
- Write queries which filter groups with the HAVING clause

Module 10: Using Subqueries

Lessons

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

Lab : Using Subqueries

- Write queries which use self-contained subqueries
- Write queries which use scalar and multi-result subqueries
- Write queries which use correlated subqueries and EXISTS predicate

Module 11: Using Table Expressions

Lessons

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

Lab : Using Table Expressions

- Write Queries Which Use Views
- Write Queries Which Use Derived Tables
- Write Queries Which Use Common Table Expressions
- Write Queries Which Use Inline Table-Valued Functions

Module 12: Using Set Operators

Lessons

- Writing Queries with the UNION Operator
- Using EXCEPT and INTERSECT
- Using APPLY

Lab : Using Set Operators

- Write queries which use UNION set operators and UNION ALL multi-set operators
- Write queries which use CROSS APPLY and OUTER APPLY operators
- Write queries which use EXCEPT and INTERSECT operators

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

Lessons

- Creating Windows with OVER
- Exploring Window Functions

Lab : Using Window Ranking, Offset and Aggregate Functions

- Write queries which use ranking functions
- Write queries which use offset functions
- Write queries which use window aggregate functions

Module 14: Pivoting and Grouping Sets

Lessons

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

Lab : Pivoting and Grouping Sets

- Write queries which use the PIVOT operator
- Write queries which use the UNPIVOT operator
- Write queries which use the GROUPING SETS subclause

Module 15: Executing Stored Procedures

Lessons

- Querying Data with Stored Procedures
- Passing Parameters to Stored Procedures
- Creating Simple Stored Procedures
- Working with Dynamic SQL

Lab : Executing Stored Procedures

- Use the EXECUTE statement to invoke stored procedures
- Pass parameters to stored procedures
- Execute system stored procedures

Module 16: Programming with T-SQL

Lessons

- T-SQL Programming Elements
- Controlling Program Flow

Lab : Programming with T-SQL

- Declaring Variables and Delimiting Batches
- Using Control-of-Flow Elements
- Generating Dynamic SQL
- Using Synonyms

Module 17: Implementing Error Handling

Lessons

- Using TRY / CATCH Blocks
- Working with Error Information

Lab : Implementing Error Handling

- Redirecting Errors with TRY / CATCH
- Using THROW to Pass an Error Message Back to a Client

Module 18: Implementing Transactions

Lessons

- Transactions and the Database Engine
- Controlling Transactions
- Isolation Levels

Lab : Implementing Transactions

- Controlling transactions with BEGIN, COMMIT, and ROLLBACK
- Adding error handling to a CATCH block

Module 19: Improving Query Performance

Lessons

- Factors in Query Performance
- Displaying Query Performance Data

Lab : Improving Query Performance

- Viewing Query Execution Plans
- Viewing Index Usage and Using SET STATISTICS Statements

Module 20: Querying SQL Server Metadata

Lessons

- Querying System Catalog Views and Functions
- Executing System Stored Procedures
- Querying Dynamic Management Objects

Lab : Querying SQL Server Metadata

- Querying System Catalog Views
- Querying System Functions
- Querying System Dynamic Management Views