MOC 20461C: Querying Microsoft SQL Server

Course Overview

This course provides students with the knowledge and skills to query Microsoft SQL Server. Students will learn about T-SQL querying, SQL Server 2014 data types, using built-in functions, executing stored procedures, and more.

Course Introduction

Module 01 - Introduction to Microsoft SQL Server 2014
Lesson 1: The Basic Architecture of SQL Server
  - Relational Databases
  - About the Course Sample Database
  - Client Server Databases
  - Queries
Lesson 2: SQL Server Editions and Versions
  - SQL Server Versions
  - SQL Server Editions
  - SQL Server in the Cloud
Lesson 3: Getting Started with SQL Server Management Studio
  - Starting SSMS
  - Connecting to SQL Server
  - Working with Object Explorer
  - Working with Script Files and Projects
  - Executing Queries
  - Using Books Online
  - Demo - Introducing Microsoft SQL Server 2014
Module 01 Review

Module 02 - Introduction to T-SQL Querying
Lesson 1: Introducing T-SQL
  - About T-SQL
  - Categories of T-SQL Statements
  - T-SQL Language Elements
  - T-SQL Language Elements: Predicates and Operators
  - T-SQL Language Elements: Functions
  - T-SQL Language Elements: Variables
  - T-SQL Language Elements: Expressions
  - T-SQL Language Elements: Control of Flow, Errors, and Transactions
  - T-SQL Language Elements: Comments
  - T-SQL Language Elements: Batch Separators
  - Demo - T-SQL Language Elements
Lesson 2: Understanding Sets
  - Set Theory and SQL Server
  - Set Theory Applied to SQL Server Queries
Lesson 3: Understanding Predicate Logic
  - Predicate Logic and SQL Server
  - Predicate Logic Applied to SQL Server Queries
Lesson 4: Understanding the Logical Order of Operations in SELECT Statements
  - Elements of a SELECT Statement
Logical Query Processing
Applying the Logical Order of Operations to Writing SELECT Statements
Demo - Logical Query Processing
Module 02 Review

Module 03 - Writing SELECT Queries 40m
Lesson 1: Writing Simple SELECT Statements
Elements of the SELECT Statement
Retrieving Columns from a Table or View
Displaying Columns
Using Calculations in the SELECT Clause
Demo - Writing Simple SELECT Statements
Lesson 2: Eliminating Duplicates with DISTINCT
SQL Sets and Duplicate Rows
Understanding DISTINCT
SELECT DISTINCT Syntax
Demo - Eliminating Duplicates with DISTINCT
Lesson 3: Using Column and Table Aliases
Using Aliases to Refer to Columns
Using Aliases to Refer to Tables
The Impact of Logical Processing Order on Aliases
Demo - Using Column and Table Aliases
Lesson 4: Writing Simple CASE Expressions
Using CASE Expressions in SELECT Clauses
Forms of CASE Expressions
Demo - Using a Simple CASE Expression
Module 03 Review

Module 04 - Querying Multiple Tables 53m
Lesson 1: Understanding Joins
The FROM Clause and Virtual Tables
Join Terminology: Cartesian Product
Overview of Join Types
T-SQL Syntax Choices
Demo - Understanding Joins
Lesson 2: Querying with Inner Joins
Understanding Inner Joins
Inner Join Syntax
Inner Join Examples
Demo - Querying with Inner Joins
Lesson 3: Querying with Outer Joins
Understanding Outer Joins
Outer Join Syntax
Outer Join Examples
Demo - Querying with Outer Joins
Lesson 4: Querying with Cross Joins and Self Joins
Understanding Cross Joins
Cross Join Syntax
Cross Join Examples
Understanding Self Joins
Self Join Examples
Demo - Querying with Cross Joins and Self Joins
Module 04 Review
Module 05 - Sorting and Filtering Data
Lesson 1: Sorting Data
Using the ORDER BY Clause
ORDER BY Clause Syntax
ORDER BY Clause Examples
Demo - Sorting Data
Lesson 2: Filtering Data with Predicates
Filtering Data in the WHERE Clause with Predicates
WHERE Clause Syntax
Demo - Filtering Data with Predicates
Lesson 3: Filtering Data with TOP and OFFSET-FETCH
Filtering in the SELECT Clause Using the TOP Option
Filtering in the ORDER BY Clause Using OFFSET-FETCH
OFFSET-FETCH Syntax
Demo - Filtering Data with TOP and OFFSET-FETCH
Lesson 4: Working with Unknown Values
Three-Valued Logic
Handling NULL in Queries
Demo - Working with NULL
Module 05 Review

Module 06 - Working with SQL Server 2014 Data Types
Lesson 1: Introducing SQL Server 2014 Data Types
SQL Server Data Types
Numeric Data Types
Binary String Data Types
Other Data Types
Data Type Precedence
When Are Data Types Converted?
Demo - SQL Server Data Types
Lesson 2: Working with Character Data
Character Data Types
Collation
String Concatenation
Character String Functions
The LIKE Predicate
Demo - Working with Character Data
Lesson 3: Working with Date and Time Data
Date and Time Data Types
Date and Time Data Types: Literals
Working with Date and Time Separately
Querying Date and Time Values
Date and Time Functions
Demo - Working with Date and Time Data
Module 06 Review

Module 07 - Using DML to Modify Data
Lesson 1: Adding Data to Tables
Using INSERT to Add Data
Using INSERT with DEFAULT Constraints
Using INSERT with SELECT and EXEC
Using SELECT INTO
Demo - Inserting Data Into Tables
Lesson 2: Modifying and Removing Data
Using UPDATE to Modify Data
Module 08 - Using Built-In Functions
Lesson 1: Writing Queries with Built-In Functions
SQL Server Built-In Function Types
Scalar Functions
Aggregate Functions
Window Functions
Rowset Functions
Demo - Writing Queries Using Built-In Functions
Lesson 2: Using Conversion Functions
Implicit and Explicit Data Type Conversions
Converting with CAST
Converting with CONVERT
Converting Strings with PARSE
Converting with TRY_PARSE and TRY_CONVERT
Demo - Using Conversion Functions
Lesson 3: Using Logical Functions
Writing Logical Tests with Functions
Performing Conditional Tests with IIF
Selecting Items from a List with CHOOSE
Demo - Using Logical Functions
Lesson 4: Using Functions to Work with NULL
Converting NULL with ISNULL
Using COALESCE to Return Non-NULL Values
Using NULLIF to Return NULL If Values Match
Demo - Using Functions to Work with NULL
Module 08 Review

Module 09 - Grouping and Aggregating Data
Lesson 1: Using Aggregate Functions
Working with Aggregate Functions
Built-In Aggregate Functions
Using DISTINCT with Aggregate Functions
Using Aggregate Functions with NULL
Demo - Using Aggregate Functions
Lesson 2: Using the GROUP BY Clause
Using the GROUP BY Clause
GROUP BY and the Logical Order of Operations
GROUP BY Workflow
Using GROUP BY with Aggregate Functions
Demo - Using GROUP BY
Lesson 3: Filtering Groups with HAVING
Filtering Grouped Data Using the HAVING Clause
Compare HAVING to WHERE
Demo - Filtering Groups with HAVING
Module 09 Review
Module 13 - Using Window Ranking, Offset, and Aggregate Functions
Lesson 1: Creating Windows with OVER
SQL Windowing
Windowing Components
Using OVER
Partitioning Windows
Ordering and Framing
Demo - Using OVER and Partitioning
Lesson 2: Exploring Window Functions
Defining Window Functions
Window Aggregate Functions
Window Ranking Functions
Window Distribution Functions
Window Offset Functions
Demo - Exploring Windows Functions
Module 13 Review

Module 14 - Pivoting and Grouping Sets
Lesson 1: Writing Queries with PIVOT and UNPIVOT
What Is Pivoting?
Elements of PIVOT
Writing Queries with UNPIVOT
Demo - Writing Queries with PIVOT and UNPIVOT
Lesson 2: Working with Grouping Sets
Writing Queries with Grouping Sets
CUBE and ROLLUP
GROUPING_ID
Demo - Using Grouping Sets
Module 14 Review

Module 15 - Executing Stored Procedures
Lesson 1: Querying Data with Stored Procedures
Examining Stored Procedures
Executing Stored Procedures
Demo - Querying Data with Stored Procedures
Lesson 2: Passing Parameters to Stored Procedures
Passing Input Parameters to Stored Procedures
Working with OUTPUT Parameters
Demo - Passing Parameters to Stored Procedures
Lesson 3: Creating Simple Stored Procedures
Creating Procedures to Return Rows
Creating Procedures That Accept Parameters
Demo - Creating Simple Stored Procedures
Lesson 4: Working with Dynamic SQL
Constructing Dynamic SQL
Writing Queries with Dynamic SQL
Demo - Working with Dynamic SQL
Module 15 Review
Module 20 - Querying SQL Server Metadata

Lesson 1: Querying System Catalog Views and Functions
- System Catalog Views
- Information Schema Views
- System Metadata Functions

Demo - Querying System Catalog Views and Functions

Lesson 2: Executing System Stored Procedures
- Executing Stored Procedures
- Executing System Stored Procedures
- Common System Stored Procedures

Demo - Executing System Stored Procedures

Lesson 3: Querying Dynamic Management Objects
- About Dynamic Management Objects
- Categorizing DMVs
- Querying Dynamic Management Views and Functions

Demo - Querying Dynamic Management Objects

Module 20 Review

Course Closure

Total Duration: 14h 37m