



Microsoft SQL Server-2016

About this course

This 84 Hours instructor led course provides students with the technical skills required to write basic Querying Data with Transact-SQL, Developing SQL Databases, Administering a SQL Database Infrastructure for Microsoft SQL Server 2016. This course is the foundation for all SQL Server-related disciplines; namely, Database Administration, Database Development and Business Intelligence. The main purpose of the course is to prepare people for the exam 70-761: Querying Data with Transact-SQL, 70-762: Developing SQL Databases, 70-764: Administering a SQL Database Infrastructure. This exam will be the underlying exam for 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.

Exam Cover

Exam 70-761: Querying Data with Transact-SQL

Exam 70-762: Developing SQL Databases

Exam 70-764: Administering a SQL Database Infrastructure

Prerequisites

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

Course Duration

84 Hours

Details Course Outline

Querying Data with Transact-SQL (Exam 70-761)

<p>Module 1: Introduction to Microsoft SQL Server Lessons</p> <ul style="list-style-type: none"> • The Basic Architecture of SQL Server • SQL Server Editions and Versions • Getting Started with SQL Server Management Studio <p>Module 2: Introduction to T-SQL Querying Lessons</p> <ul style="list-style-type: none"> • Introducing T-SQL • Understanding Sets • Understanding Predicate Logic • Understanding the Logical Order of Operations in SELECT statements <p>Module 3: Writing SELECT Queries Lessons</p> <ul style="list-style-type: none"> • Writing Simple SELECT Statements • Eliminating Duplicates with DISTINCT • Using Column and Table Aliases • Writing Simple CASE Expressions <p>Module 4: Querying Multiple Tables Lessons</p>	<p>Module 10: Using Subqueries Lessons</p> <ul style="list-style-type: none"> • Writing Self-Contained Subqueries • Writing Correlated Subqueries • Using the EXISTS Predicate with Subqueries <p>Module 11: Using Table Expressions Lessons</p> <ul style="list-style-type: none"> • Using Views • Using Inline Table-Valued Functions • Using Derived Tables • Using Common Table Expressions <p>Module 12: Using Set Operators Lessons</p> <ul style="list-style-type: none"> • Writing Queries with the UNION operator • Using EXCEPT and INTERSECT • Using APPLY <p>Module 13: Using Windows Ranking, Offset, and Aggregate Functions Lessons</p> <ul style="list-style-type: none"> • Creating Windows with OVER • Exploring Window Functions
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<ul style="list-style-type: none"> • Understanding Joins • Querying with Inner Joins • Querying with Outer Joins • Querying with Cross Joins and Self Joins <p>Module 5: Sorting and Filtering Data</p> <p>Lessons</p> <ul style="list-style-type: none"> • Sorting Data • Filtering Data with Predicates • Filtering Data with TOP and OFFSET-FETCH • Working with Unknown Values <p>Module 6: Working with SQL Server Data Types</p> <p>Lessons</p> <ul style="list-style-type: none"> • Introducing SQL Server Data Types • Working with Character Data • Working with Date and Time Data <p>Module 7: Using DML to Modify Data</p> <p>Lessons</p> <ul style="list-style-type: none"> • Adding Data to Tables • Modifying and Removing Data • Generating automatic column values <p>Module 8: Using Built-In Functions</p> <p>Lessons</p> <ul style="list-style-type: none"> • Writing Queries with Built-In Functions • Using Conversion Functions • Using Logical Functions • Using Functions to Work with NULL <p>Module 9: Grouping and Aggregating Data</p> <p>Lessons</p> <ul style="list-style-type: none"> • Using Aggregate Functions • Using the GROUP BY Clause • Filtering Groups with HAVING 	<p>Module 14: Pivoting and Grouping Sets</p> <p>Lessons</p> <ul style="list-style-type: none"> • Writing Queries with PIVOT and UNPIVOT • Working with Grouping Sets <p>Module 15: Executing Stored Procedures</p> <p>Lessons</p> <ul style="list-style-type: none"> • Querying Data with Stored Procedures • Passing Parameters to Stored procedures • Creating Simple Stored Procedures • Working with Dynamic SQL <p>Module 16: Programming with T-SQL</p> <p>Lessons</p> <ul style="list-style-type: none"> • T-SQL Programming Elements • Controlling Program Flow <p>Module 17: Implementing Error Handling</p> <p>Lessons</p> <ul style="list-style-type: none"> • Implementing T-SQL error handling • Implementing structured exception handling <p>Module 18: Implementing Transactions</p> <p>Lessons</p> <ul style="list-style-type: none"> • Transactions and the database engines <p>Controlling transaction</p>
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Developing SQL Databases (Exam 70-762)

<p>Module 1: Introduction to Database Development</p> <p>Lessons</p> <ul style="list-style-type: none"> • Introduction to the SQL Server Platform • SQL Server Database Development Tasks <p>Module 2: Designing and Implementing Tables</p> <p>Lessons</p> <ul style="list-style-type: none"> • Designing Tables • Data Types • Working with Schemas • Creating and Altering Tables <p>Module 3: Advanced Table Designs</p> <p>Lessons</p> <ul style="list-style-type: none"> • Partitioning Data • Compressing Data • Temporal Tables <p>Module 4: Ensuring Data Integrity</p>	<p>Module 10: Designing and Implementing User-Defined Functions</p> <p>Lessons</p> <ul style="list-style-type: none"> • Overview of Functions • Designing and Implementing Scalar Functions • Designing and Implementing Table-Valued Functions • Considerations for Implementing Functions • Alternatives to Functions <p>Module 11: Responding to Data Manipulation via Triggers</p> <p>Lessons</p> <ul style="list-style-type: none"> • Designing DML Triggers • Implementing DML Triggers • Advanced Trigger Concepts <p>Module 12: Using In-Memory Tables</p> <p>Lessons</p>
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<p>through Constraints</p> <p>Lessons</p> <ul style="list-style-type: none"> • Enforcing Data Integrity • Implementing Data Domain Integrity • Implementing Entity and Referential Integrity <p>Module 5: Introduction to Indexes</p> <p>Lessons</p> <ul style="list-style-type: none"> • Core Indexing Concepts • Data Types and Indexes • Heaps, Clustered, and Nonclustered Indexes • Single Column and Composite Indexes <p>Module 6: Designing Optimized Index Strategies</p> <p>Lessons</p> <ul style="list-style-type: none"> • Index Strategies • Managing Indexes • Execution Plans • The Database Engine Tuning Advisor • Query Store <p>Module 7: Columnstore Indexes</p> <p>Lessons</p> <ul style="list-style-type: none"> • Introduction to Columnstore Indexes • Creating Columnstore Indexes • Working with Columnstore Indexes <p>Module 8: Designing and Implementing Views</p> <p>Lessons</p> <ul style="list-style-type: none"> • Introduction to Views • Creating and Managing Views • Performance Considerations for Views <p>Module 9: Designing and Implementing Stored Procedures</p> <p>Lessons</p> <ul style="list-style-type: none"> • Introduction to Stored Procedures • Working with Stored Procedures • Implementing Parameterized Stored Procedures • Controlling Execution Context 	<ul style="list-style-type: none"> • Memory-Optimized Tables • Natively Compiled Stored Procedures <p>Module 13: Implementing Managed Code in SQL Server</p> <p>Lessons</p> <ul style="list-style-type: none"> • Introduction to CLR Integration in SQL Server • Implementing and Publishing CLR Assemblies <p>Module 14: Storing and Querying XML Data in SQL Server</p> <p>Lessons</p> <ul style="list-style-type: none"> • Introduction to XML and XML Schemas • Storing XML Data and Schemas in SQL Server • Implementing the XML Data Type • Using the Transact-SQL FOR XML Statement • Getting Started with XQuery • Shredding XML <p>Module 15: Storing and Querying Spatial Data in SQL Server</p> <p>Lessons</p> <ul style="list-style-type: none"> • Introduction to Spatial Data • Working with SQL Server Spatial Data Types • Using Spatial Data in Applications <p>Module 16: Storing and Querying BLOBs and Text Documents in SQL Server</p> <p>Lessons</p> <ul style="list-style-type: none"> • Considerations for BLOB Data • Working with FILESTREAM • Using Full-Text Search <p>Module 17: SQL Server Concurrency</p> <p>Lessons</p> <ul style="list-style-type: none"> • Concurrency and Transactions • Locking Internals <p>Module 18: Performance and Monitoring</p> <p>Lessons</p> <ul style="list-style-type: none"> • Extended Events • Working with extended Events • Live Query Statistics • Optimize Database File Configuration • Metrics
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Administering a SQL Database Infrastructure (Exam 70-764)

<p>Module 1: SQL Server Security</p> <p>Lessons</p> <ul style="list-style-type: none"> • Authenticating Connections to SQL Server • Authorizing Logins to Connect to databases • Authorization Across Servers 	<p>Module 8: Automating SQL Server Management</p> <p>Lessons</p> <ul style="list-style-type: none"> • Automating SQL Server management • Working with SQL Server Agent • Managing SQL Server Agent Jobs • Multi-server Management <p>Module 9: Configuring Security for SQL Server</p>
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<ul style="list-style-type: none"> • Partially Contained Databases <p>Module 2: Assigning Server and Database Roles</p> <p>Lessons</p> <ul style="list-style-type: none"> • Working with server roles • Working with Fixed Database Roles • Assigning User-Defined Database Roles <p>Module 3: Authorizing Users to Access Resources</p> <p>Lessons</p> <ul style="list-style-type: none"> • Authorizing User Access to Objects • Authorizing Users to Execute Code • Configuring Permissions at the Schema Level <p>Module 4: Protecting Data with Encryption and Auditing</p> <p>Lessons</p> <ul style="list-style-type: none"> • Options for auditing data access in SQL Server • Implementing SQL Server Audit • Managing SQL Server Audit • Protecting Data with Encryption <p>Module 5: Recovery Models and Backup Strategies</p> <p>Lessons</p> <ul style="list-style-type: none"> • Understanding Backup Strategies • SQL Server Transaction Logs • Planning Backup Strategies <p>Module 6: Backing Up SQL Server Databases</p> <p>Lessons</p> <ul style="list-style-type: none"> • Backing Up Databases and Transaction Logs • Managing Database Backups • Advanced Database Options <p>Module 7: Restoring SQL Server 2016 Databases</p> <p>Lessons</p> <ul style="list-style-type: none"> • Understanding the Restore Process • Restoring Databases • Advanced Restore Scenarios • Point-in-Time Recovery 	<p>Agent</p> <p>Lessons</p> <ul style="list-style-type: none"> • Understanding SQL Server Agent Security • Configuring Credentials • Configuring Proxy Accounts <p>Module 10: Monitoring SQL Server with Alerts and Notifications</p> <p>Lessons</p> <ul style="list-style-type: none"> • Monitoring SQL Server Errors • Configuring Database Mail • Operators, Alerts, and Notifications • Alerts in Azure SQL Database <p>Module 11: Introduction to Managing SQL Server by using PowerShell</p> <p>Lessons</p> <ul style="list-style-type: none"> • Getting Started with Windows PowerShell • Configure SQL Server using PowerShell • Administer and Maintain SQL Server with PowerShell • Managing Azure SQL Databases using PowerShell <p>Module 12: Tracing Access to SQL Server with Extended events</p> <p>Lessons</p> <ul style="list-style-type: none"> • Extended Events Core Concepts • Working with Extended Events <p>Module 13: Monitoring SQL Server</p> <p>Lessons</p> <ul style="list-style-type: none"> • Monitoring activity • Capturing and Managing Performance Data • Analyzing Collected Performance Data • SQL Server Utility <p>Module 14: Troubleshooting SQL Server</p> <p>Lessons</p> <ul style="list-style-type: none"> • A Trouble Shooting Methodology for SQL Server • Resolving Service Related Issues • Resolving Connectivity and Log-in issues <p>Module 15: Importing and Exporting Data</p> <p>Lessons</p> <ul style="list-style-type: none"> • Transferring Data to and from SQL Server • Importing and Exporting Table Data • Using bcp and BULK INSERT to Import Data • Deploying and Upgrading Data-Tier Application
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