



Administering a SQL Database

Course Duration: 5 Days

Exam Reference: 55316

Course Overview

This five-day instructor-led course provides students who manage SQL Server and Azure SQL databases with the knowledge and skills needed to administer a SQL server database infrastructure. The material will also be useful to individuals who develop applications that deliver content from SQL Server databases.

Prerequisites

- Experience using applications on Windows Servers
- Experience working with SQL Server or another Relational Database Management System (RDBMS)

Course Objectives

Students will learn to:

- Authenticate and authorize users and assign server and database roles.
- Use encryption and auditing features to protect data.
- Describe recovery models and backup strategies.
- Backup and Restore SQL Server databases, including point-in-time recovery.
- Automate database management using SQL Server Agent and PowerShell.
- Trace and monitor a SQL Server infrastructure for performance and troubleshooting.
- Import and export data using native tools.



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Course Outline

Module 1: SQL Server Security

- Authenticating Connections to SQL Server
- Authorizing Logins to Connect to databases
- Authorization Across Servers
- Partially Contained Databases
- Lab: SQL Server Security

Module 2: Assigning Server and Database Roles

- Working with Server Roles
- Working with Fixed Database Roles
- User-Defined Database Roles
- Lab: Assigning Server and Database Roles

Module 3: Authorizing Users to Access Resources

- Authorizing User Access to Objects
- Authorizing Users to Execute Code
- Configuring Permissions at the Schema Level
- Lab: Authorizing Users to Access Resources

Module 4: Protecting Data with Encryption and Auditing

- Options for auditing data access in SQL Server
- Implementing and Managing SQL Server Audit
- Protecting Data with Encryption
- Lab: Using Auditing and Encryption

Module 5: Recovery Models and Backup Strategies

- Understanding Backup Strategies
- SQL Server Transaction Logs
- Planning Backup Strategies
- Lab: Understanding SQL Server Recovery Models

Module 6: Backing Up SQL Server Databases

- Backing Up Databases and Transaction Logs
- Managing Database Backups
- Advanced Database Options
- Lab: Backing Up Databases

Module 7: Restoring SQL Server Databases

- Understanding the Restore Process
- Restoring Databases and Advanced Restore Scenarios
- Point-in-Time Recovery
- Lab: Restoring SQL Server Databases

Module 8: Automating SQL Server Management

- Automating SQL Server management
- Working with SQL Server Agent
- Managing SQL Server Agent Jobs
- Multi-server Management
- Lab: Automating SQL Server Management

Module 9: Configuring Security for SQL Server Agent

- Understanding SQL Server Agent Security
- Configuring Credentials
- Configuring Proxy Accounts
- Lab: Configuring SQL Server Agent

Module 10: Monitoring SQL Server with Alerts and Notifications

- Monitoring SQL Server Errors
- Configuring Database Mail
- Operators, Alerts, and Notifications
- Alerts in Azure SQL Database
- Lab: Monitoring SQL Server with Alerts and Notifications

Module 11: Introduction to Managing SQL Server by using PowerShell

- Getting Started with Windows PowerShell
- Configure, Administer, and Maintain SQL Server using PowerShell
- Managing Azure SQL Databases using PowerShell
- Lab: Using PowerShell to Manage SQL Server

Module 12: Tracing Access to SQL Server with Extended Events

- Extended Events Core Concepts
- Working with Extended Events
- Lab: Using SQL Server Extended Events

Module 13: Monitoring SQL Server

- Monitoring activity
- Capturing and Managing Performance Data
- Analyzing Collected Performance Data
- Lab: Monitoring SQL Server (using Performance Monitor, Data Collection, and Reports)

Module 14: Monitoring SQL Server (Troubleshooting Focus)

- Monitor current activity.
- Capture and manage performance data.
- Analyze collected performance data.
- Configure SQL Server Utility.
- Lab: Troubleshooting SQL Server (This lab content is covered in the Troubleshooting Module 15.)

Module 15: Troubleshooting SQL Server

- Applying a Troubleshooting Methodology
- Resolving Service-Related Issues
- Resolving Connectivity and Login issues
- Lab: Troubleshooting SQL Server

Module 16: Importing and Exporting Data

- Transferring Data to and from SQL Server
- Importing and Exporting Table Data
- Using bcp and BULK INSERT to Import Data
- Deploying Data-Tier Applications
- Lab: Importing and Exporting data