20464: Developing Microsoft® SQL Server® 2012/2014 Database

Duration: 5 Days
Method: Instructor-Led Training (ILT) | Live Online Training

Course Description

This course introduces participants to SQL Server and describes logical table design, indexing and query plans. It also focusses on the creation of database objects including views, stored procedures, along with parameters, and functions. Other common aspects of procedure coding, such as indexes, concurrency, error handling, and triggers are also covered in this course.

Target Audience

This course is intended for:
- IT Professionals who want to become skilled on SQL Server product features and technologies for implementing a database.
- Developers from other product platforms or previous versions of SQL Server looking to become skilled in the implementation of a SQL Server database.

Prerequisites

To attend this course, attendees should have:
- Knowledge of writing T-SQL queries.
- Knowledge of basic relational database concepts.

Course Objectives

Upon successful completion of this course, attendees will be able to:
- Understand the entire SQL Server platform and its major tools.
- Understand the different SQL Server editions and versions.
- Understand the basics of network listeners and concepts of services and service accounts.
- Determine appropriate data types to be used when designing tables.
- Convert data between data types.
- Create alias data types.
- Understand what good design practices regarding SQL Server tables are.
- Create tables using T-SQL.
  NOTE: Partitioned tables are not covered.

Course Objectives *Continued*

- Implement PRIMARY KEY, FOREIGN KEY, DEFAULT, CHECK and UNIQUE constraints, and investigate cascading FOREIGN KEY constraints.
- Determine the appropriate single column and composite indexes strategies.
- Create tables as heaps and tables with clustered indexes as well as consider the design of a table and suggest an appropriate structure.
- Read and interpret details of common elements from execution plans.
- Design effective non-clustered indexes.
- Design and implement views.
- Design and implement stored procedures.
- Work with table types, table valued parameters and use the MERGE statement to create stored procedures that update data warehouses.
- Design and implement functions, both scalar and table-valued as well as describe where they can lead to performance issues).
- Perform basic investigation of a deadlock situation and learn how transaction isolation levels affect application concurrency.
- Use both traditional T-SQL error handling code and structured exception handling.
- Design and implement DML triggers.
- Learn appropriate uses for SQL CLR integration and implement an existing .NET assembly within SQL Server.
- Store XML data and schemas in SQL Server.
- Perform basic queries on XML data in SQL Server.

Course Topics

Module 1: Introduction to Database Development

- Introduction to the SQL Server Platform
- SQL Server Database Development Tasks

Module 2: Designing and Implementing Tables

- Designing Tables
- Data Types
- Working with Schemas
- Creating and Altering Tables
- Partitioning Data
- Compressing Data

Module 3: Ensuring Data Integrity Through Constraints

- Enforcing Data Integrity
- Implementing Domain Integrity
- Implementing Entity and Referential Integrity

Module 4: Introduction to Indexing

- Core Indexing Concepts
- Data Types and Indexes
- Single Column and Composite Indexes

Course Topics *Continued*

Module 5: Designing Optimized Index Strategies
- Covering Indexes
- Managing Indexes
- Working with Execution Plans
- Using the DTE

Module 6: Column store Indexes
- Introduction to column store indexes
- Creating column store Indexes
- Working with column store Indexes

Module 7: Designing and Implementing Views
- Introduction to Views
- Creating and Managing Views
- Performance Considerations for Views

Module 8: Designing and Implementing Stored Procedures
- Introduction to Stored Procedures
- Working with Stored Procedures
- Implementing Parameterized Stored Procedures
- Controlling the Execution Context

Module 9: Designing and Implementing User-Defined Functions
- Overview of Functions
- Designing and Implementing Scalar Functions
- Designing and Implementing Table-Valued Functions
- Implementation Considerations for Functions
- Alternatives to Functions

Module 10: Responding to Data Manipulation via Triggers
- Designing DML Triggers
- Implementing DML Triggers
- Advanced Trigger Concepts

Module 11: Using In-Memory Tables
- In-Memory Tables
- Native Stored Procedures

Module 12: Implementing Managed Code in SQL Server 2014
- Introduction to SQL CLR Integration
- Importing and Configuring Assemblies
- Implementing SQL CLR Integration

Module 13: Storing and Querying XML Data in SQL Server
- Introduction to XML and XML Schemas
- Storing XML Data and Schemas in SQL Server
- Implementing the XML Data Type
- Using the T-SQL FOR XML Statement
- Getting Started with XQuery

Module 14: Working with SQL Server 2014 Spatial Data
- Introduction to Spatial Data
- Working with SQL Server Spatial Data Types
- Using Spatial Data in Applications

Module 15: Incorporating Data Files into Databases
- Querying Data with Stored Procedures
- Implementing FILESTREAM and File Tables
- Searching Data Files

LABS INCLUDED