Developing Microsoft SQL Server Databases 2012-2014
(MOC 20464C)

Course 21464– 40 Hours

Overview

This 5-day instructor-led course introduces SQL Server 2014 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. Also this course helps you prepare for the Exam 70-464.

On Completion, Delegates will be able to

- Introduce the entire SQL Server platform and its major tools. It will cover editions, versions, 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, and create alias data types.
- Be aware of good design practices regarding SQL Server tables and be able to create tables using T-SQL. (Note: partitioned tables are not covered).
- Implement PRIMARY KEY, FOREIGN KEY, DEFAULT, CHECK and UNIQUE constraints, and investigate cascading FOREIGN KEY constraints.
- Determine appropriate single column and composite indexes strategies.
- Create tables as heaps and tables with clustered indexes. Also 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. (Also 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.
- Work with the GEOGRAPHY and GEOMETRY data types
- Implement and query a full-text index.

Who Should Attend

The primary audience for this course is IT Professionals who want to become skilled on SQL Server 2014 product features and technologies for implementing a database.

Prerequisites

This course requires that you meet the following prerequisites:
- Knowledge of writing T-SQL queries.
- Knowledge of basic relational database concepts.

Course Contents

Module 1: Introduction to Database Development
This module introduces database development and the key tasks that a database developer would typically perform.
- Introduction to the SQL Server Platform
- Working with SQL Server Tools
- Configuring SQL Server Services

Module 2: Designing and Implementing Tables
This module explains how to design, create, and alter tables. Also it focusses on working with schemas.
- Designing Tables
- Working with Schemas
- Creating and Altering Tables

Module 3: Ensuring Data Integrity through Constraints
This module explains how to enforce data integrity, and implement domain integrity to maintain high quality data. Also it focusses on implementing Entity and Referential Integrity.
- Enforcing Data Integrity
- Implementing Domain Integrity
- Implementing Entity and Referential Integrity

Module 4: Introduction to Indexing
This module describes the concept of an index and discusses selectivity, density and statistics. It covers appropriate data type choices and choices around composite index structures.
- Core Indexing Concepts
- Single Column and Composite Indexes
- SQL Server Table Structures
- Working with Clustered Indexes

Module 5: Advanced Indexing

This module explains covering indexes and the INCLUDE clause as well as the use of padding, hints and statistics. The module also covers the use of the Database Engine Tuning Advisor and index-related dynamic management views to assess indexing strategies.

- Execution Plan Core Concepts
- Common Execution Plan Elements
- Working with Execution Plans
- Designing Effective Nonclustered Indexes
- Performance Monitoring

Module 6: Columnstore Indexes

This module explains columnstore indexes, introduces clustered and nonclustered columnstore indexes, and discusses considerations for using columnstore indexes.

- Columnstore Indexes
- Best Practices for Columnstore Indexes

Module 7: Designing and Implementing Views

This module introduces Views, and explains how to create and manage Views. Also it focusses on the performance consideration for Views.

- Introduction to Views
- Creating and Managing Views
- Performance Considerations for Views

Module 8: Designing and Implementing Stored Procedures

This module describes the potential advantages of the use of stored procedures along with guidelines on creating them.

- Introduction to Stored Procedures
- Working With Stored Procedures
- Implementing Parameterized Stored Procedures
- Controlling Execution Context

Module 9: Designing and Implementing User-Defined Functions

This module explains how to design and implement user-defined functions that enforce business rules or data consistency, and modify and maintain existing functions written by other developers.

- 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

This module, explains what DML triggers are and how they enforce data integrity. Also it focusses on the different types of triggers available, and how to define triggers in a database.

- Designing DML Triggers
- Implementing DML Triggers
- Advanced Trigger Concepts

Module 11: Using In-Memory Tables

This module covers the creation of in-memory tables and native stored procedures and discusses the advantages and disadvantages of using in-memory tables.

- Memory-Optimized Tables
- Native Stored Procedures

Module 12: Implementing Managed Code in SQL Server

This module explains how to use CLR integrated code to create user-defined database objects that are managed by the .NET Framework.

- Introduction to SQL CLR Integration
- Importing and Configuring Assemblies
- Implementing SQL CLR Integration

Module 13: Storing and Querying XML Data in SQL Server

This module introduces XML and shows how XML data can be stored within SQL Server and then queried, including queries written in a language called XQuery.

- 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
- Shredding XML

Module 14: Working with SQL Server Spatial Data

This module introduces Spatial Data, and explains how to work with SQL Server Spatial Data Types.

- Introduction to Spatial Data
- Working with SQL Server Spatial Data Types
- Using Spatial Data in Applications