

## 20464 - Developing Microsoft SQL Server Databases

Duration: 5 days

### Overview:

This 5-day Microsoft 20464 training 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. This is a Microsoft Official Course (MOC).

### Target Audience:

The primary audience for this Microsoft 20464 training course is IT Professionals who want to become skilled on SQL Server 2014 product features and technologies for implementing a database.

### Pre-requisites:

Before attending this course, students must have:

- Knowledge of writing T-SQL queries.
- Knowledge of basic relational database concepts.

### At Course Completion:

After completing this course, students 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. [Read More...](#)

### Module 1: Introduction to Database Development

#### Lessons

- Introduction to the SQL Server Platform
- Working with SQL Server Tools
- Configuring SQL Server Services

#### Lab : Introduction to Database Development

- Start SQL Server Management Studio

### Module 2: Designing and Implementing Tables

#### Lessons

- Designing Tables
- Working with Schemas
- Creating and Altering Tables

#### Lab : Designing and Implementing Tables

- Improving the Design of Tables
- Creating a Schema
- Creating the Tables

### Module 3: Ensuring Data Integrity through Constraints

#### Lessons

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

#### Lab : Ensuring Data Integrity through Constraints

- Designing Constraints
- Testing the Constraints

### Module 4: Introduction to Indexing

#### Lessons

- Core Indexing Concepts
- Single Column and Composite Indexes
- SQL Server Table Structures
- Working with Clustered Indexes

#### Lab : Creating Indexes

- Creating Tables with Clustered Indexes
- Improving Performance through Nonclustered Indexes

### Module 5: Advanced Indexing

#### Lessons

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

#### Lab : Planning for SQL Server 2014 Indexing

- Exploring Existing Index Statistics
- Creating Covering Indexes

### Module 6: Columnstore Indexes

#### Lessons

- Columnstore Indexes
- Best Practices for Columnstore Indexes

#### Lab : Using In-Memory Database Capabilities

- Creating Columnstore Indexes

### Module 7: Designing and Implementing Views

#### Lessons

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

#### Lab : Designing and Implementing Views

- Designing, Implementing and Testing the WebStock Views
- Designing and Implementing the Contacts View
- Modifying the AvailableModels View

### Module 8: Designing and Implementing Stored Procedures

#### Lessons

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

#### Lab : Designing and Implementing Stored Procedures

- Creating stored procedures
- Creating a parameterised stored procedure
- Altering the execution context of stored procedures

### Module 9: Designing and Implementing User-Defined Functions

#### Lessons

- Overview of Functions
- Designing and Implementing Scalar Functions
- Designing and Implementing Table-Valued Functions
- Implementation Considerations for Functions
- Alternatives to Functions

#### Lab : Designing and Implementing User-Defined Functions

- Formatting Phone Numbers
- Modifying an Existing Function
- Resolving a Function-Related Performance Issue

### Module 10: Responding to Data Manipulation via Triggers

#### Lessons

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

#### Lab : Responding to Data Manipulation via Triggers

- Creating and Testing the Audit Trigger
- Improving the Audit Trigger

### Module 11: Using In-Memory Tables

#### Lessons

- Memory-Optimised Tables
- Native Stored Procedures

#### Lab : Using In-Memory Database Capabilities

- Working with Memory Optimised Tables
- Working with Natively Compiled Stored Procedures

### Module 12: Implementing Managed Code in SQL Server

#### Lessons

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

#### Lab : Implementing Managed Code in SQL Server

- Assessing Proposed CLR Code
- Implementing a CLR Assembly
- Implementing a CLR User-defined Aggregate and CLR User-defined Data Type

### Module 13: Storing and Querying XML Data in SQL Server

#### Lessons

- 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

#### Lab : Storing and Querying XML Data in SQL Server

- Assessing appropriate Use of XML Data in SQL Server
- Testing XML Data Storage in Variables
- Retrieving Information about XML Schema Collections
- Querying SQL Server Data as XML
- Write a Stored Procedure Returning XML
- Adding Spatial Data to an Existing Table

### Module 14: Working with SQL Server Spatial Data

#### Lessons

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

#### Lab : Working with SQL Server Spatial Data

- Querying the Geometry Data Type