20762 - Developing SQL Databases

Duration: **4 days**

Overview:

This four-day instructor-led course provides students with the knowledge and skills to develop a Microsoft SQL Server 2016 database. The course focuses on teaching individuals how to use SQL Server 2016 product features and tools related to developing a database.

Target Audience:

The primary audience for this course is IT Professionals who want to become skilled on SQL Server 2016 product features and technologies for implementing a database.The secondary audiences for this course are individuals who are developers from other product platforms looking to become skilled in the implementation of a SQL Server 2016 database.

Pre-requisites:

Before attending this course, students must have:

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

At Course Completion:

After completing this course, students will be able to:

- Design and Implement Tables.
- Describe advanced table designs
- Ensure Data Integrity through Constraints.
- Describe indexes, including Optimized and Columnstore indexes
- Design and Implement Views.
- Design and Implement Stored Procedures.
- Design and Implement User Defined Functions.
- Respond to data manipulation using triggers.
- Design and Implement In-Memory Tables.
- Implement Managed Code in SQL Server.
- Store and Query XML Data.
- Work with Spatial Data.
- Store and Query Blobs and Text Documents.

Module 1: Introduction to Database Development

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

Lab : SQL Server Database Development Tasks

Module 2: Designing and Implementing Tables

Lessons
- Designing Tables
- Data Types
- Working with Schemas
- Creating and Altering Tables

Lab : Designing and Implementing Tables

Module 3: Advanced Table Designs

Lessons
- Partitioning data
- Compressing Data
- Temporal Tables

Lab : Using Advanced Table Designs

Module 4: Ensuring Data Integrity through Constraints

Lessons
- Enforcing data Integrity
- Implementing Domain Integrity
- Implementing Entity and Referential Integrity

Lab : Ensuring Data Integrity through Constraints

Module 5: Introduction to Indexes

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

Lab : Implementing Indexes

Module 6: Designing Optimized Index Strategies

Lessons
- Covering Indexes
- Managing Indexes
- Execution Plans
- Using the DTE

Lab : Designing Optimized Index Strategies

Module 7: Columnstore Indexes

Lessons
- Introduction to Columnstore indexes
- Creating Columnstore indexes
- Working Columnstore indexes

Lab : Using Columnstore indexes

Module 8: Designing and Implementing Views

Lessons
- Introduction to views
- Creating and managing views
- Performance considerations for views

Lab : Designing and Implementing Views

Module 9: Designing and Implementing Stored Procedures

Lessons
- Introduction to Stored Procedures
- Working with Stored Procedures
- Implementing Parameterized Stored Procedures
- Controlling Execution Context

Lab : Designing and Implementing Stored Procedures

Module 10: 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

Module 11: Responding to Data Manipulation via Triggers

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

Lab : Responding to Data Manipulation via Triggers

Module 12: Using In-Memory Tables

Lessons
- In-Memory tables
- Native Stored Procedures

Lab : In Memory OLTP

Module 13: 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

Module 14: 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

Lab : Storing and Querying XML Data in SQL Server

Module 15: 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

Module 16: Storing and Querying Blobs and Text Documents in SQL Server

Lessons
- Considerations for BLOB Data
- Working with FileStream
- Using Full-Text Search

Lab : Storing and Querying Blobs and Text Documents in SQL Server