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(20762B) – Developing SQL Databases

OBJECTIVE

This 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.

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

Module 3: Advanced Table Designs

- Partitioning Data
- Compressing Data
- Temporal Tables

Module 4: Ensuring Data Integrity through Constraints

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

Module 5: Introduction to Indexes

- Core Indexing Concepts
- Data Types and Indexes
- Heaps, Clustered, and Nonclustered Indexes
- Single Column and Composite Indexes

Module 6: Designing Optimized Index Strategies

- Index Strategies
- Managing Indexes
- Execution Plans
- The Database Engine Tuning Advisor
- Query Store

Module 7: Columnstore Indexes

- Introduction to Columnstore Indexes
- Creating Columnstore Indexes
- Working with Columnstore Indexes

Module 8: Designing and Implementing Views

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

Module 9: Designing and Implementing Stored Procedures

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

Module 10: Designing and Implementing User-Defined Functions

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

Module 11: Responding to Data Manipulation via Triggers

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

Module 12: Using In-Memory Tables

- Memory-Optimized Tables
- Natively Compiled Stored Procedures

Module 13: Implementing Managed Code in SQL Server

- Introduction to CLR Integration in SQL Server
- Implementing and Publishing CLR Assemblies

Module 14: 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 Transact-SQL FOR XML Statement
- Getting Started with XQuery
- Shredding XML

Module 15: Storing and Querying Spatial Data in SQL Server

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

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

- Considerations for BLOB Data
- Working with FILESTREAM
- Using Full-Text Search

Module 17: SQL Server Concurrency

- Concurrency and Transactions
- Locking Internals

Module 18: Performance and Monitoring

- Extended Events
- Working with extended Events
- Live Query Statistics
- Optimize Database File Configuration
- Metrics

PREREQUISITES

This course requires that you meet the following prerequisites:

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

TRAINING APPROACH

This course includes lectures, course notes, exercises and hands-on practice.

COURSE DURATION

24 Hours (in 3 days)

Time: 9:00am to 6:00pm

Lunch Time: 1:00pm to 2:00pm

CERTIFICATION COMPLETION

A certificate of completion is provided for all trainees attending the course