MICROSOFT SQL SERVER DATABASE DEVELOPMENT

Course ID : MS-SQL-19-DEV

Scan for Details on Our Website

Duration: 5 Days

(30 Hours) 09:00 AM – 04:00 PM

Price: Call (Inhouse training only)

* (excluding VAT 7%)
* Eligible for 200% tax deduction

Training Schedule

www.9experttraining.com

Category: Data

This course focuses on developing high-performance databases with Microsoft SQL Server. It covers best practices in table and index design, the selection and impact of different index types, and the role of statistics in query plan optimization. The course also includes recommendations for optimizing the performance.

Objectives

1. Acquire comprehensive knowledge of the SQL Server platform and its core services.
2. Configure and create tables, assign appropriate data types, and understand data type conversions.
3. Define key constraints, including PRIMARY KEY, FOREIGN KEY, DEFAULT, CHECK, and UNIQUE.
4. Plan, design, and implement indexes.
5. Interpret and analyze execution plans effectively.

Objectives

6. Plan, design, and develop views, stored procedures, triggers, and user-defined functions.
7. Manage concurrency and resolve deadlocks.
8. Perform error handling and exception management.
9. Work with XML data structures.
10. Utilize full-text indexing capabilities.

Target Audience :

Database programmers who require practical skills in designing, managing, and optimizing SQL Server databases.

Prerequisites

1. Fundamental knowledge of relational database management systems (RDBMS)
2. Familiarity with the SQL language
3. Experience working with Microsoft Windows Server

System Requirements

1. A compatible 64-bit x86/AMD64 CPU (released in 2011 or later)
2. A processor with a core speed of 1.3 GHz or higher
3. At least 8 GB of RAM
4. Windows 11 or Windows 10 operating system
5. Remote Desktop Connection enabled
6. Stable internet access

TRAINING TOPICS

DAY 1 Morning Session 9:00 AM – 12:00 PM

1. Fundamentals of Database Development

- Overview of the SQL Server platform
- Common database development tasks in SQL Server

2. Table Design and Creation

- Understanding data types and schema usage
- Creating and modifying tables
- Hand-on table design exercises

3. Advanced Table Design

- Implementing data partitioning
- Applying data compression techniques
- Working with temporal tables
- Advanced table design practice exercises

DAY 1 Afternoon Session 1:00 PM – 4:00 PM

4. Ensuring Data Integrity with Constraints

- Enforcing data integrity principles
- Implementing domain, entity, and referential integrity
- Hand-on constraint exercises

5. Understanding Indexes

- Fundamental concepts of indexing
- Understanding the relationship between data types and indexes
- Heaps, clustered indexes, and nonclustered indexes
- Composite index design
- Practical Index creation exercises

DAY 2 Morning Session 9:00 AM – 12:00 PM

6. Designing Efficient Indexes

- Selecting appropriate index strategies
- Managing Indexes effectively
- Understanding execution plans
- Using the Database Engine Tuning Advisor
- Working with Query Store
- Hand-on index optimization exercises

7. Columnstore indexes

- Overview and creation of Columnstroe indexes
- Managing Columnstore indexes
- Practical Columnstore indexes exercises

DAY 2 Afternoon Session 1:00 PM – 4:00 PM

8. Designing and Creating Views

- Understanding the purpose and structure of views
- Creating, modifying, and managing views
- Key performance considerations when using views
- Hand-on view design exercises

DAY 3 Morning Session 9:00 AM – 12:00 PM

9. Designing and Creating Stored Procedures

- Understanding the purpose and functionality of stored procedures
- Executing and managing stored procedures
- Creating parameterized stored procedures
- Controlling execution context
- Hand-on stored procedure design exercises

DAY 3 Afternoon Session 1:00 PM – 4:00 PM

10. Designing and Creating User-Defined Functions

- Understanding the purpose and functionality of stored procedures
- Executing and managing stored procedures
- Creating parameterized stored procedures
- Controlling execution context
- Hand-on stored procedure design exercises

DAY 4 Morning Session 9:00 AM – 12:00 PM

11. Responding to Data Access with Triggers

- Designing DML triggers
- Creating and implementing DML triggers
- Advanced concepts in trigger design
- Hands-on trigger exercises

12. Utilizing In-Memory Database Features

- Understanding and working with memory-optimized tables
- Implementing natively compiled stored procedures
- Practical exercises on in-memory database features

DAY 4 Afternoon Session 1:00 PM – 4:00 PM

13. Creating Managed Code

- Integrating CLR functionality with SQL Server
- Creating and deploying CLR assemblies
- Hands-on managed code exercises

14. Storing and Querying XML Data

- Understanding XML documents and schemas
- Storing XML documents and schemas in SQL Server
- Working with XML data types
- Using FOR XML in T-SQL
- Introduction to XQuery
- Manipulating XML data
- Practical XML data exercises

DAY 5 Morning Session 9:00 AM – 12:00 PM

15. Storing and Querying Spatial Data

- Understanding spatial data concepts
- Working with spatial data in SQL Server
- Applying spatial data in real-world applications
- Hand-on Spatial data exercises

16. Storing and Querying BLOB and Text Documents

- Working with BLOB data
- Using FILESTREAM for large object storage
- Implementing full-text search
- Practical exercises on BLOB and text document handling

DAY 5 Afternoon Session 1:00 PM – 4:00 PM

17. Concurrency in SQL Server

- Understanding concurrency and transactions
- Exploring SQL Server locking mechanisms
- Hand-on concurrency exercises

18. Performance and Monitoring

- Introduction to Extended Events
- Using Extended Events for performance diagnostics
- Working with live query statistics
- Configuring database file for optimal performance
- Practical exercises in monitoring, tracing, and baseline comparison

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