Developing Databases on Microsoft SQL Server Training

Duration: **3 Day**

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Overview

A well-designed database is the foundation of every reliable business application. Microsoft SQL Server provides a powerful platform for building secure, scalable, and high-performance database solutions that support modern enterprise systems.

Developing Databases on Microsoft SQL Server is a three-day instructor-led training programme that teaches participants how to design, build, and maintain SQL Server databases using industry best practices. Throughout the course, learners gain practical experience creating database objects such as tables, indexes, views, stored procedures, user-defined functions, and triggers while improving database performance and maintaining data integrity.

By the end of the programme, participants will have the practical skills required to develop efficient SQL Server database solutions for real-world applications.

Prerequisites

Participants are recommended to have the following knowledge.

Essential

- Basic understanding of Microsoft Windows
- Practical experience with Transact-SQL (T-SQL)

Recommended

- Familiarity with relational database concepts
- Basic database design experience

Who Should Attend

This course is intended for:

- SQL Server Database Developers
- Database Administrators (DBAs)
- Software Developers
- Backend Developers
- Application Support Engineers
- Professionals responsible for SQL Server database development and maintenance

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What You Will Learn

Upon successful completion of this course, participants will be able to:

- Design and implement relational database tables.
- Apply advanced table design techniques for enterprise applications.
- Enforce data integrity using SQL Server constraints.
- Improve query performance with clustered, nonclustered, and columnstore indexes.
- Create and maintain database views.
- Develop stored procedures for business logic implementation.
- Build reusable user-defined functions.
- Use triggers to automate responses to data changes.
- Apply SQL Server development best practices to improve database performance and maintainability.

Outline

Module 1 – Introduction to SQL Server Database Development

- Database development fundamentals
- SQL Server architecture
- Creating databases
- Development lifecycle
- Core database objects

Module 2 – Designing and Creating Tables

- Relational table design
- Normalisation
- Data types
- Schemas
- Creating tables
- Keys and relationships

Module 3 – Advanced Table Design

- Partitioned tables
- Compressed tables
- Temporal tables
- High-performance table design
- Enterprise storage strategies

Module 4 – Constraints and Data Integrity

- Primary keys
- Foreign keys
- Unique constraints
- Default constraints
- Check constraints
- Referential integrity
- Data validation

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Module 5 – Indexing and Performance

- SQL Server data access methods
- Clustered indexes
- Nonclustered indexes
- Columnstore indexes
- Index design
- Performance tuning
- Index maintenance

Module 6 – Working with Views

- Creating views
- Managing views
- Updatable views
- Security through views
- Performance considerations

Module 7 – Stored Procedures

- Developing stored procedures
- Parameters
- Error handling
- Implementing business logic
- Performance optimisation

Module 8 – User Defined Functions

- Scalar functions
- Table-valued functions
- Creating reusable functions
- Comparing functions, procedures and views
- Practical implementation scenarios

Module 9 – Working with Triggers

- DML triggers
- AFTER triggers
- INSTEAD OF triggers
- Responding to data modifications
- Automating business rules
- Trigger performance and best practices