

SQL Server Training – Syllabus

Module 1: Introduction to SQL Server

- What is SQL Server?
- Features and Editions of SQL Server
- SQL Server Management Studio (SSMS) Overview
- Database Concepts: Tables, Keys, Relationships

Module 2: Basic SQL Operations

- Introduction to SQL Syntax
- Creating Databases and Tables
- Insert, Update, Delete Operations
- Retrieving Data using SELECT Statements
- Filtering Data with WHERE Clause
- Sorting Data with ORDER BY
- Working with NULL Values

Module 3: Advanced Querying Techniques

- Aggregate Functions (SUM, COUNT, AVG, MIN, MAX)
- GROUP BY and HAVING Clauses
- Joins: INNER JOIN, LEFT JOIN, RIGHT JOIN, FULL JOIN
- Subqueries and Nested Queries
- Set Operators: UNION, UNION ALL, INTERSECT, EXCEPT

Module 4: Data Integrity and Constraints

- Primary Key, Foreign Key, Unique Key
- Default, Check, and Not Null Constraints
- Identity Columns and Sequences

Module 5: Stored Procedures, Functions, and Views

- Creating and Executing Stored Procedures
- Parameters in Stored Procedures
- User Defined Functions (Scalar & Table Valued)
- Creating and Managing Views
- Indexed Views

Module 6: Transactions and Error Handling

- Transactions: COMMIT and ROLLBACK
- ACID Properties
- TRY...CATCH for Error Handling
- Savepoints

Module 7: Indexing and Performance Tuning

- Clustered vs Non-Clustered Indexes
- Index Creation and Management
- Query Optimization Techniques

- Execution Plan Analysis

Module 8: Database Security

- Authentication and Authorization
- Roles and Permissions Management
- SQL Injection Basics and Prevention
- Data Encryption Techniques

Module 9: Backup and Recovery




- Backup Types (Full, Differential, Transaction Log)
- Restoring Databases
- Database Recovery Models
- Point-in-Time Recovery

Module 10: SQL Server Integration with Applications

- Connecting SQL Server with Python / Power BI / .NET
- Introduction to Linked Servers
- Working with Azure SQL Database (Basics)

Module 11: Real-Time Project

- Designing and Implementing a Full Database Solution
- Writing Complex Queries, Procedures, and Reports
- Database Backup and Restore Practice
- Hands-on Final Project Review and Assessment

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