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# MSSQL Server Fundamentals

## A Practical One-Day Introduction to SQL Server, SQL and Basic Administration

FA-0331 · One-Day

DevOps, Cloud & Infrastructure · Data & Analytics

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## Introduction

Microsoft SQL Server is both a database platform and an environment that developers, administrators, analysts, and application teams regularly need to understand. For a complete beginner, the challenge is not simply learning SQL syntax. It is understanding how a SQL Server environment is structured, how users connect to it, how databases and tables relate to one another, and how to work with data without accidentally damaging it.

This one-day course is deliberately kept focused. It is not intended to produce a database administrator or SQL developer in a single day. Instead, it gives participants a practical foundation in the parts of SQL Server they are most likely to encounter first: databases, tables, connections, client tools, basic T-SQL, data retrieval and modification, simple database objects, security awareness, and backup concepts.

Participants will work primarily with Microsoft SQL Server using common client tools such as SQL Server Management Studio and Visual Studio Code with the MSSQL extension. The course will also briefly explain where different SQL Server versions, editions, and deployment models fit, without spending valuable classroom time on advanced infrastructure or cloud administration.

The instructor has **over 30 years of industry experience** and will deliver the course from a practical industry perspective. The emphasis will be on real operational knowledge, commonly used terminology, useful SQL skills, and the day-to-day concepts participants are likely to encounter in actual working environments rather than an overly academic treatment of database theory.

## Learning outcomes

By the end of the course, participants should be able to:

- Explain what Microsoft SQL Server is and how relational databases work
- Understand the basic structure of a SQL Server environment

- Distinguish SQL, T-SQL, databases, tables, schemas, and instances
- Connect to SQL Server using common client tools
- Use SQL Server Management Studio and Visual Studio Code for basic database work
- Create and understand basic tables and relationships
- Write basic T-SQL queries
- Filter, sort, aggregate, and join data
- Insert, update, and delete data
- Understand primary keys, foreign keys, and common constraints
- Understand the purpose of views and stored procedures
- Recognize basic SQL Server security concepts
- Understand the purpose of backups and routine administration
- Recognize common SQL Server deployment options

# Prerequisites

- No previous SQL Server experience required
- No previous SQL programming experience required
- Basic computer literacy
- Familiarity with files, folders, and applications
- Basic Visual Studio Code familiarity is helpful but not required

# Training outline

## 1. Introduction to Microsoft SQL Server

### Relational database fundamentals

1. Databases, tables, rows and columns
2. Primary keys and foreign keys
3. Relationships
4. Referential integrity

### Understanding SQL Server

1. SQL versus T-SQL
2. SQL Server instances

3. Databases and schemas
4. Database objects
5. Current and commonly encountered SQL Server versions
6. SQL Server editions overview

# 2. Connecting to and Navigating SQL Server

## SQL Server connectivity

1. Server and instance names
2. Authentication methods
3. Connection fundamentals

## SQL Server Management Studio

1. Object Explorer
2. Query Editor
3. Basic database navigation
4. Administrative capabilities

## Visual Studio Code with MSSQL Extension

1. Connecting to SQL Server
2. Object Explorer
3. Query execution
4. VS Code versus SSMS

# 3. SQL and T-SQL Fundamentals

## Retrieving Data

1. SELECT
2. Column selection
3. Aliases
4. DISTINCT
5. TOP

### Filtering and Sorting

1. WHERE
2. Comparison operators
3. AND and OR
4. IN
5. BETWEEN
6. LIKE
7. NULL handling
8. ORDER BY

### Working with Multiple Tables

1. INNER JOIN
2. LEFT JOIN
3. Table aliases
4. Basic relational queries

### Aggregating Data

1. COUNT
2. SUM
3. AVG
4. MIN and MAX
5. GROUP BY
6. HAVING

## 4. Creating and Modifying Data

### Basic Table Design

1. Common SQL Server data types
2. NULL and NOT NULL
3. Primary keys
4. Foreign keys
5. IDENTITY columns
6. Basic constraints

### Data Modification

1. INSERT
2. UPDATE
3. DELETE
4. Safe modification practices

## 5. Basic SQL Server Programmability

### Views

1. Purpose of views
2. Creating and querying views

### Stored Procedures

1. Purpose of stored procedures
2. Basic procedure structure
3. Input parameters
4. Executing stored procedures

### Triggers and Functions

1. Trigger purpose and awareness
2. Function purpose and awareness
3. Appropriate use considerations

## 6. Basic SQL Server Administration

### Security Fundamentals

1. Windows authentication
2. SQL Server authentication
3. Logins and users
4. Roles and permissions
5. Principle of least privilege

### Backup and Recovery Awareness

1. Why backups are required
2. Full backups
3. Restore fundamentals
4. Backup verification awareness

### Basic Operational Awareness

1. Database status
2. SQL Server services
3. Error logs
4. Database growth
5. Basic monitoring

## 7. SQL Server Deployment Awareness

### Common Deployment Models

1. SQL Server on Windows
2. SQL Server on Linux
3. Virtual machines
4. Cloud-hosted SQL Server

### Modern Deployment Awareness

1. SQL Server in Docker containers
2. SQL Server on Amazon EC2
3. Amazon RDS for SQL Server
4. Managed versus self-managed environments

## 8. Practical SQL Server Working Practices

1. Safe database operations
2. Development versus production environments
3. Naming conventions
4. Script-based changes
5. Basic source control awareness
6. Documentation and change management

# Scope Note

As this is a one-day beginner course, the focus is deliberately limited to the core knowledge required to understand and begin working with Microsoft SQL Server. Advanced topics such as complex stored procedures, triggers, functions, query optimization, advanced indexing, SQL Server Agent, high availability, replication, clustering, detailed backup strategies, Docker administration, AWS deployment, and enterprise performance tuning are outside the practical scope of a single-day introduction and may only be mentioned at an awareness level.

# Disclaimer

This training outline is intended to serve as a structured guideline for delivery and represents the anticipated scope of the programme at the time of preparation. The instructor may, at their professional discretion, modify, reorder, expand, reduce, substitute, or omit individual topics according to participant experience, available training time, software or platform changes, operational requirements, and the overall pace of the class. Such adjustments may be made without prior notice where considered necessary to preserve the relevance, quality, and practical effectiveness of the training.

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