

# Hands-on SQL Databases Course Using MSSQL

FA-0492 · 2-day

Data & Analytics

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## Introduction

This comprehensive 2-day hands-on course is designed to provide participants with a strong foundation in SQL databases using Microsoft SQL Server (MSSQL). The course will cover the essential concepts of database management, data modeling, and SQL query language specific to MSSQL. Participants will learn how to create and manipulate MSSQL databases, design efficient database schemas, and write powerful SQL queries to retrieve and modify data. Through a combination of theoretical explanations, practical examples, and hands-on exercises, participants will develop the necessary skills to effectively manage and work with SQL databases using MSSQL.

## Duration : 2 Days

## Prerequisites

To get the most out of this course, participants should have:

- Basic computer literacy and familiarity with operating systems (Windows, macOS, or Linux).
- Familiarity with general programming concepts, although prior programming experience is not mandatory.

Note: Participants who have prior experience with SQL or databases will be able to build upon their existing knowledge, while those with limited or no experience will gain a solid foundation in SQL databases using MSSQL through the course.

## Learning Outcome

Upon completion of this 2-day hands-on course on SQL Databases using MSSQL, participants will be able to:

- Understand the importance of databases and the role of SQL in managing data.
- Design efficient database schemas using entity-relationship modeling and normalization techniques specific to MSSQL.
- Create and manage MSSQL databases, tables, constraints, and indexes.
- Write and execute SQL queries to retrieve, manipulate, and aggregate data in MSSQL.
- Utilize advanced SQL techniques such as joins, subqueries, and performance optimization in MSSQL.
- Administer MSSQL databases, including user management, backup, recovery, and performance monitoring.
- Develop and execute stored procedures and functions in MSSQL for data manipulation.
- Integrate MSSQL with programming languages and other systems for seamless data connectivity.

# Training outline

## 1. Introduction to SQL Databases and MSSQL

1. Understanding the importance of databases
2. Overview of SQL and its relevance
3. Introduction to Microsoft SQL Server (MSSQL)

## 2. Setting Up the MSSQL Environment

1. Installing and configuring MSSQL Server
2. Creating a database and connecting to it

## 3. Database Design and Modeling with MSSQL

1. Introduction to database design principles
2. Entity-Relationship (ER) modeling with MSSQL
3. Normalization techniques for efficient data structures in MSSQL

## 4. Creating and Managing MSSQL Databases

1. Creating and managing MSSQL databases and tables
2. Understanding and using data types in MSSQL
3. Adding constraints and indexes in MSSQL tables

## 5. SQL Data Manipulation Language (DML) in MSSQL

1. Retrieving data with SELECT statements in MSSQL
2. Inserting, updating, and deleting data in MSSQL tables
3. Working with aggregate functions in MSSQL

## 6. Advanced SQL Queries in MSSQL

1. Writing complex queries with joins in MSSQL
2. Subqueries and nested queries in MSSQL
3. Performance optimization techniques for MSSQL queries

## 7. Database Administration in MSSQL

1. User management and access control in MSSQL
2. Backup and recovery strategies in MSSQL
3. Monitoring and optimizing MSSQL database performance

## 8. MSSQL Stored Procedures and Functions

1. Introduction to stored procedures and functions in MSSQL
2. Creating and executing stored procedures in MSSQL
3. Using functions for data manipulation in MSSQL

## 9. MSSQL Database Connectivity and Integration

1. Introduction to database connectivity options with MSSQL
2. Using MSSQL with programming languages (e.g., Python)
3. Integration with other systems and data sources in MSSQL

## 10. Conclusions and Tests