55356: Introduction to SQL Database

Duration: 3 Days
Method: Instructor-Led Training (ILT) | Live Online Training

Course Description

This course examines the services and features of Microsoft® SQL from 2012 to 2022, including lessons and lab exercises on key attributes participants will need on the job. It is designed for novices and professionals who are interested in interacting with databases using Structured Query Language (SQL) and seek foundational knowledge and skills. This audience typically includes people who are moving into a database role or expect their role to require interacting with a database server that uses SQL.

Target Audience

This course is intended for:

- Persons who are (looking to) moving into a database role, or whose role has expanded to include database technologies.

Prerequisites

To attend this course, candidates must have:

- General computer literacy.

Course Objectives

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

- Conceptualize data organization in a database.
- Identify various types of databases.
- Retrieve information from a database using SQL, Transact-SQL (T-SQL), and other languages.
- Normalize and denormalize data stored in a database.

Microsoft Partner

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Course Topics

Module 1: Introduction to Databases

- Introduction to Relational Databases
  - What is a Database?
  - What is a Table?
  - What is a Relational Database?
  - Develop Tables with Primary and Foreign Keys
- Retrieve Data from a Relational Database by Using SQL
  - Interact With a Relational Database
  - What is SQL?
  - Compare and Contrast Types of SQL Commands
  - Retrieve Data with the SELECT Statement
  - Select Individual Columns in Queries
  - Refine a SQL SELECT Statement with the WHERE Clause

Module 2: Database tables

- Identify and Use Microsoft SQL Server Data Types
  - Data Types in Microsoft SQL Server
  - Choose the Correct Data Type
  - NULL Values
- Create Tables with SQL
  - Create a Table with SQL
  - Control Values Allowed in Columns Using Constraints
  - Create a Surrogate Primary Key by Using the IDENTITY Property
  - Group Tables by Using a Schema
- Altering and Dropping a Table
  - Add a Column to a Table Using the ALTER TABLE Statement
  - Change a Column Using the ALTER TABLE Statement
  - Drop a Column Using the ALTER TABLE Statement
  - Remove a Table Using the DROP TABLE Statement
- Collect Information from Multiple Tables by Using Joins and Views
  - Use JOIN to Obtain Data from Multiple Tables
  - JOIN Statement Types
  - Create Views

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Module 3: Add and Update Data
- Insert, Update, and Delete Information
  - Add Information to a Table Using the INSERT Keyword
  - Add Multiple Rows to a Table at Once
  - Update Values in a Table
  - Use DELETE to Delete Rows in a Table
- Stored Procedures
  - Define a Stored Procedure
  - Use Multiple Statements in a Stored Procedure
  - Use Input Parameters in a Stored Procedure
  - Describe the Uses of Stored Procedures

Module 4: Entity Relationships
- Model Entity Relationships
  - What is an Entity?
  - Entity Keys
  - Candidate Keys
  - Entity Relationships and Cardinality
  - Join Tables
  - Compare Optional and Mandatory Relationships
  - Entity Relationship Modelling
- Design for Referential Integrity
  - What is Referential Integrity?
  - Ensure Declarative Referential Integrity by Using Key Constraints
  - Ensure Procedural Referential Integrity by Using Triggers
  - Cascading Referential Integrity

Module 5: Normalization and Denormalization
- Normalization
  - What is Normalization?
  - First Normal Form
  - Second Normal Form
  - Third Normal Form
- Denormalization
  - Defining Denormalization
  - Adding Redundant Columns
  - Saving Computed Data
  - Potential Issues

Module 6: Query Performance and Safety
- Indexes
  - What are Indexes?
  - Clustered Indexes
  - Non-Clustered Indexes
  - Indexes and Performance
- Write Performant SQL Code
  - Limit Data Referenced and Returned
  - Use Indexes
  - Use SARGable Queries
- Concurrency
  - What is Concurrency?
  - Problems Caused by Concurrency
  - Isolating Transactions
  - Limiting Concurrency

LABS INCLUDED