SQL Querying: Fundamentals Training

Duration: **2 Day**

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Overview

Learn database design and hands-on fundamental knowledge of the SQL language.

Organizations typically store their most critical information — the information used to manage day-to-day operations — within a database. The ability to retrieve and analyze this information is essential to the functioning of the organization. Structured Query Language (SQL) is the primary language used to accomplish such tasks. Essentially, SQL is the language you use to interact with a database.

The ability to write SQL is an essential job skill for those who need to manage large volumes of data, produce reports, mine data, or combine data from multiple sources. Even if someone else on your team creates reports for you, having a fundamental understanding of SQL querying will help you ask the right questions and know what you're looking for in your data analysis tools.

This course not only teaches you to use SQL as tool to retrieve the information you need from databases, but it also introduces a process for effectively planning and designing a functional, efficient database. Knowing how to plan a relational database is important to the success of the databases you create. Without planning, you cannot possibly know what the database needs to do, or even what information to include in the database. Planning a database is essential and prevents the extra work of fixing data maintenance problems later on.

Is This The Right Course?

To ensure your success in this course, you should have fundamental computer skills.

Who Should Attend?

This course is intended for individuals with basic computer skills, familiar with concepts related to database structure and terminology, who need to learn database design essentials and use SQL to query databases.

- Business Analysts
- Data Analysts
- Developers
- Those needing to know how to query in a SQL database.

Prerequisites

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What You Will Learn

In this course, you will perform steps to design a relational database, including gathering requirements, data modeling, and planning implementation, and compose SQL queries to retrieve desired information from a database.

You will:

- Follow an efficient process for designing a relational database.
- Define the database conceptual model.
- Define the database logical model.
- Apply database normalization methods to improve the initial design of a database.
- Complete the database design, including controls to ensure its referential integrity and data integrity.
- Connect to the SQL Server database and execute a simple query.
- Include a search condition in a simple query.
- Use various functions to perform calculations on data.
- Organize the data obtained from a query before it is displayed onscreen.
- Retrieve data from multiple tables.
- Export the results of a query.

Outline

Lesson 1: Getting Started with Relational Database Design

- Topic A: Identify Database Components
- Topic B: Identify Common Database Design Problems
- Topic C: Follow a Database Design Process
- Topic D: Gather Requirements

Lesson 2: Defining the Database Conceptual Model

- Topic A: Create the Conceptual Model
- Topic B: Identify Entity Relationships

Lesson 3: Defining the Database Logical Model

- Topic A: Identify Columns
- Topic B: Identify Primary Keys
- Topic C: Identify and Diagram Relationships

Lesson 4: Normalizing Data

- Topic A: Avoid Common Database Design Errors
- Topic B: Comply with Higher Normal Forms

Lesson 5: Finalizing the Database Design

- Topic A: Adapt the Physical Model for Different Systems
- Topic B: Ensure Referential Integrity
- Topic C: Ensure Data Integrity at the Column Level

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- Topic D: Ensure Data Integrity at the Table Level
- Topic E: Design for the Cloud

Lesson 6: Executing a Simple Query

- Topic A: Connect to the SQL Database
- Topic B: Query a Database
- Topic C: Save a Query
- Topic D: Modify and Execute a Saved Query

Lesson 7: Performing a Conditional Search

- Topic A: Search Using One or More Conditions
- Topic B: Search for a Range of Values and NULL Values
- Topic C: Search Data Based on String Patterns

Lesson 8: Working with Functions

- Topic A: Perform Date Calculations
- Topic B: Calculate Data Using Aggregate Functions
- Topic C: Manipulate String Values

Lesson 9: Organizing Data

- Topic A: Sort Data
- Topic B: Rank Data
- Topic C: Group Data
- Topic D: Filter Grouped Data
- Topic E: Summarize Grouped Data
- Topic F: Use PIVOT and UNPIVOT Operators

Lesson 10: Retrieving Data from Multiple Tables

- Topic A: Combine the Results of Two Queries
- Topic B: Compare the Results of Two Queries
- Topic C: Retrieve Data by Joining Tables

Lesson 11: Exporting Query Results

- Topic A: Generate a Text File
- Topic B: Generate an XML File