

Introduction to SQL (2 Day)

Courseware Overview

This SQL training course is designed for students new to writing SQL queries. A typical student will need to learn SQL to build applications or to generate business reports. For the most part, the SQL learned in the course is applicable to all major databases. In the few cases in which there are differences between the databases, these differences will be pointed out.

Course Goals

- Understand how relational databases work.
- Learn to use SQL to output reports.
- Learn to write SQL queries to retrieve data from multiple tables.

Class Outline

Relational Database Basics

Brief History of SQL

Relational Databases

Tables

Rows

Columns

Relationships

Datatypes

Primary Keys

Foreign Keys

Relational Database Management System

Popular Databases

Commercial Databases

Popular Open Source Databases

Valid Object References

SQL Statements

Database Manipulation Language (DML)

Database Definition Language (DDL)

Database Control Language (DCL)

Simple SELECTs

- Introduction to the Northwind Database
- Some Basics
 - Comments
 - Whitespace and Semi-colons
 - Case Sensitivity
- SELECTing All Columns in All Rows
- Exploring the Tables
- SELECTing Specific Columns
- Sorting Records
 - Sorting By a Single Column
 - Sorting By Multiple Columns
 - Sorting By Column Position
 - Ascending and Descending Sorts
- The WHERE Clause and Operator Symbols
 - Checking for Equality
 - Checking for Inequality
 - Checking for Greater or Less Than
 - Checking for NULL
 - WHERE and ORDER BY
- Using the WHERE clause to check for equality or inequality
- Using the WHERE clause to check for greater or less than
- Checking for NULL
- Using WHERE and ORDER BY Together
- The WHERE Clause and Operator Words
 - The BETWEEN Operator
 - The IN Operator
 - The LIKE Operator
 - The NOT Operator
- More SELECTs with WHERE
- Checking Multiple Conditions
 - AND
 - OR
 - Order of Evaluation
- Writing SELECTs with Multiple Conditions

Advanced SELECTs

- Calculated Fields
 - Concatenation
 - Mathematical Calculations
 - Aliases
- Calculating Fields

- Aggregate Functions and Grouping
 - Aggregate Functions
 - Grouping Data
 - Selecting Distinct Records
- Working with Aggregate Functions
- Built-in Data Manipulation Functions
 - Common Math Functions
 - Common String Functions
 - Common Date Functions
- Data Manipulation Functions

Subqueries, Joins and Unions

- Subqueries
- Joins
 - Table Aliases
 - Multi-table Joins
- Using Joins
- Outer Joins
- Unions
 - UNION ALL
 - UNION Rules
- Working with Unions

If time allows, one or more of the following may be covered:

- Conditional Processing with CASE
- INSERT, UPDATE, DELETE
- Student Challenges - Design your own reports