

DBMS Specifics

- Running SQL Programs
- Microsoft Access & SQL Server
- Oracle DB2
- MySQL & PostgreSQL

The Relational Model

- Tables, Columns & Rows
- Primary & Foreign Keys
- Relationships & Normalization

SQL Basics

- SQL Syntax
- SQL Standards & Conformance
- Identifiers & Data Types
- Character String Types
- Binary Large Object & Exact Number Types
- Approximate Numeric & Boolean Types
- Datetime & Interval Types
- Unique Identifiers

Retrieving Data from a Table

- Retrieving Columns with “Select” & “From”
- Creating Column Aliases with “As”
- Eliminating Duplicate Rows with “Distinct”
- Sorting & Filtering with “Order By” & “Where”
- Combining/Negotiating with “And”, “Or”, “Not”
- Matching Patterns with “Like”
- Range/List Filtering with “Between” & “In”
- Testing for Nulls with “Is Null”

Operators and Functions

- Creating Derived Columns
- Performing Arithmetic Operations
- Determining the Order of Evaluation
- Strings & Substrings
- Getting Date and Time & Interval Arithmetic
- Getting User Information
- Converting Data Types with “Cast()”
- Evaluating Conditional Values with “Case”
- Checking for Nulls with “Coalesce()”
- Comparing Expressions with “Nullif()”

Summarizing & Grouping Data

- Aggregate Functions & Expressions
- Finding Minimum & Maximum “Min()” & “Max()”
- Calculating Sum & Average “Sum()” & “Avg()”
- Counting/Grouping Rows
- Aggregating Distinct Values with “Distinct”
- Filtering Groups with “Having”

Using Joins

- Qualifying Column Names
- Creating Table Aliases with “As”
- Creating Joins with “Join” or “Where”
- Using Cross and Natural Joins
- Working with Inner and Outer Joins
- Creating a Self Join

Working with Subqueries

- Subquery Syntax
- Subqueries vs. Joins
- Simple and Correlated Subqueries
- Qualifying Column Names in Subqueries
- Using Subqueries as Column Expressions
- Using Comparison Operators
- Testing Set Membership with “In”
- Comparing Subqueries with “All” and “Any”
- Testing Existence with “Exists”

Set Operations

- Combining Rows with “Union”
- Finding Common Rows with “Intersect”
- Finding Different Rows with “Except”

Inserting, Updating and Deleting Rows

- Displaying Table Definitions
- Inserting/Updating Rows
- Deleting Rows with “Delete”

Creating, Altering and Dropping Tables

- Creating Tables & Understanding Constraints
- Creating a New Table with “Create Table”
- Forbidding Nulls with “Not Null”
- Specifying a Default Value with “Default”
- Specifying Primary/Foreign Keys
- Forcing Unique Values
- Adding a Check Constraint
- Creating Temporary and New Tables
- Altering and Dropping Tables

Using Indexes

- Creating and Dropping an Index

Creating Views

- Creating and Retrieving Views
- Updating Data Through a View
- Dropping a View