

# SQL Basics

<b>Length</b>	3 days
<b>Audience</b>	Application Developers who work in any relational database environment, including Oracle, Sybase, SQL Server, Access, DB2, Ingres, Informix, and many others
<b>Prerequisites</b>	Experience using the editor in which the class is taught, which can be TSO/ISPF in an IBM mainframe environment, any version of Microsoft Windows, or other editor; experience with any programming or query language;
<b>Objectives</b>	After successful completion, each student will have developed a large number of SQL SELECT statements, including joins and subqueries, and written INSERT, UPDATE and DELETE statements.
<b>Hardware, software</b>	One workstation per student, with access to a Relational DBMS such as DB2, Access, Oracle, Sybase, SQL Server, etc.
<b>Exercises</b>	Students spend the majority of the class time in hands-on exercises.

# SQL Basics

- SQL Overview
  - Database environments
  - Relational database concepts
  - SQL syntax rules
  - Data Manipulation, Data Definition, and Data Control statements
  - Static and Dynamic SQL
- SQL SELECT statements
  - Clauses of the SELECT statement
  - The SELECT clause
  - Selecting column names; column aliases, using AS
  - Using WHERE predicates, comparison operators, compound predicates with AND and OR
  - How null values behave
  - Range searches, with BETWEEN
  - Lists, with IN
  - Matching strings, with LIKE
  - Sorting with ORDER BY
- SQL Functions and Expressions
  - Eliminating duplicates with DISTINCT
  - Using arithmetic expressions
  - Literals; concatenating strings
  - Functions for replacing nulls
  - String handling, type-conversion, and formatting functions
  - Date and time functions
  - Nested table expressions
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- The ORDER BY clause with functions and expressions
- SQL Updating
  - The INSERT statement
  - The UPDATE statement
  - The DELETE statement
  - Referential Integrity and other constraints, default values
- SQL Joins
  - Inner joins, old and SQL 92 syntax
  - Table aliases
  - Self-joins
  - Left, Right, and Full Outer Joins
- SQL with Multiple Tables
  - Intersection of tables using IN and EXISTS subqueries
  - Difference, using NOT IN, NOT EXISTS, and outer joins
  - Other correlated subqueries
  - The UNION of multiple sets
- SQL Summarization
  - Column functions MIN, MAX, AVG, SUM, COUNT
  - Grouping rows using GROUP BY and HAVING
- SQL: Preparing for the Real World
  - Step-by-step approach to writing complex SQL queries
  - Final Exam: a group exercise