

Structured Query Language (SQL)

Relations, SQL Overview, The Table, DML, Joins, DDL, Stored Procedures, Transactions, ORM

Structured Query Language (SQL) is the very popular purpose-built query language for relational databases. A mathematical relation forms the logical underpinning for a relational table. A table consists of an unordered set of rows; each row consists of an unordered set of columns. Columns are named and are associated with a datatype. Some columns has specific characteristics (e.g. primary/foreign keys). Indices can be attached to some constructs which greatly improve performance.

Whether building cloud, enterprise or mobile solutions, devs should at least consider and often select SQL as

the basis for their data management needs. It offers a wide gamut of capabilities and is massively supported across all computing platforms.

There are many SQL products in the marketplace. This course explores standard SQL. Each database vendor adds its own nuances to this standard language, but all support a large core set of SQL functionality, and it is this core that we cover in this course. After this foundational course developers will be ready to explore the product-specific documentation for their selected SQL engine & selected app programming language.

Contents of One-Day Training Course	
<p>Target Audience Developers who wish to learn SQL by focusing on the large set of SQL features that is common to modern relational databases.</p> <p>Prerequisites Experienced software engineers with some data manipulation background. No previous SQL experience is required.</p>	<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p style="text-align: center;">SQL Overview</p> <p>The mathematical relation Representing knowledge via tables Query language for relations Parameterized queries Stored procedures</p> <p style="text-align: center;">Role of SQL</p> <p>Tour of SQL in modern database engines, both client/server & library-based, such as: - Microsoft SQL Server - Sqlite - MySQL - Oracle</p> <p style="text-align: center;">Defining a Table</p> <p>Datatypes Primary key Foreign key Normalization</p> <p style="text-align: center;">Intro to DML</p> <p>SELECT INSERT UPDATE DELETE</p> <p style="text-align: center;">Advanced DML</p> <p>WHERE ORDER BY DISTINCT Aggregates (AVG, SUM, MIN, MAX)</p> <p style="text-align: center;">Joins</p> <p>Combining statements in a join Inner join Left/right join Full join</p> </div> <div style="width: 45%;"> <p style="text-align: center;">DDL</p> <p>CREATE and ALTER DROP TRUNCATE</p> <p style="text-align: center;">Stored Procedures</p> <p>Creating and calling stored procs Parameters and local variables Additional programming constructs (BEGIN/END, TRY-CATCH, etc.)</p> <p style="text-align: center;">ACID</p> <p>Atomicity Consistency Isolation Durability</p> <p style="text-align: center;">Transactions</p> <p>Unit of work All or none Begin Tx and commit or rollback</p> <p style="text-align: center;">SQL And Security</p> <p>SQL injection attack Dangers of dynamically building queries GRANT and REVOKE</p> <p style="text-align: center;">ORM–Object Relational Mapper</p> <p>Many object-oriented programming languages use an ORM to manage SQL queries - how do they work?</p> <p style="text-align: center;">SQL vs. NoSQL</p> <p>Contrast SQL and NoSQL approaches to data storage and data management Suitability for different scenarios</p> <p style="text-align: center;">Project</p> <p>Use of SQL as the basis for data in a comprehensive enterprise solution</p> </div> </div>