

Introduction to Databases — Page 3

Tables and structure, SQL command types, and why SQL matters.

Tables, hierarchy, and data types

A **table** has **columns** (e.g. Id, Name, Score, Birthdate) and **rows** (records). Each cell holds a **value**. A **primary key** (e.g. Id) uniquely identifies each row. Data is organized in a hierarchy: **Server** → **Database** (e.g. Sales, HR) → **Schema** (e.g. Orders, Customers) → **Table** (e.g. Items, Purchase). Common **data types** include numeric (INT, DECIMAL), string (CHAR, VARCHAR), and date/time (DATE, TIME).

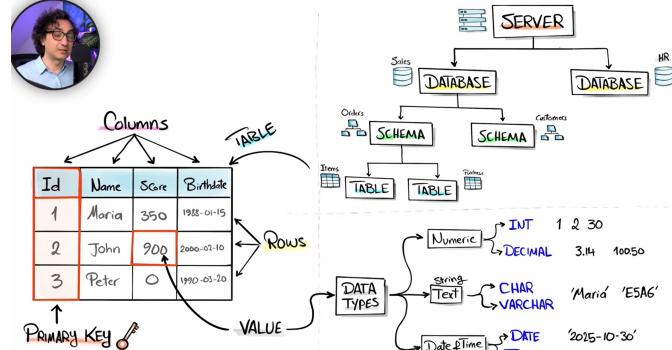


Fig. 1 — Table (columns, rows, values, primary key), hierarchy (Server → Database → Schema → Table), and data types.

SQL command categories

DDL (Data Definition Language) defines structure: **CREATE, ALTER, DROP**. **DML** (Data Manipulation Language) changes data: **INSERT, UPDATE, DELETE**. **DQL** (Data Query Language) retrieves data: **SELECT**. Users and applications send these SQL commands to the database.

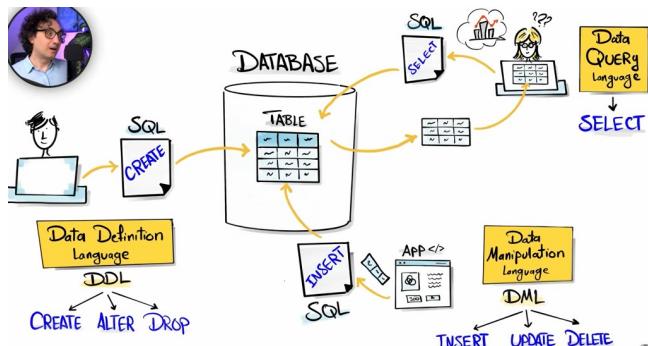


Fig. 2 — DDL (CREATE, ALTER, DROP), DML (INSERT, UPDATE, DELETE), and DQL (SELECT).

Why SQL?

SQL is the way we **talk to data** in databases. It is in **high demand** for roles such as Software Developer, Data Analyst, Data Scientist, and Data Engineer. It is an **industry standard** and is supported by tools like Power BI, Tableau, Spark, Kafka, and Synapse.

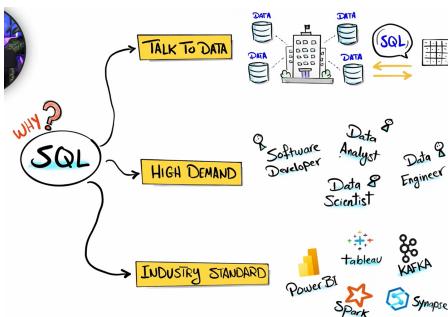


Fig. 3 — Why SQL: talk to data, high demand in the job market, industry standard.