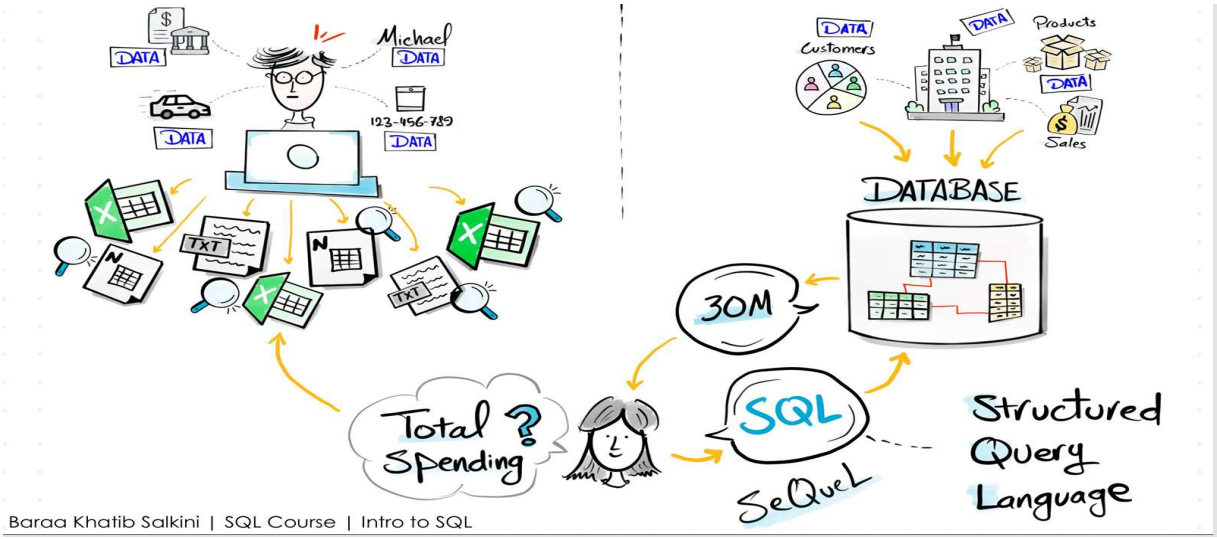
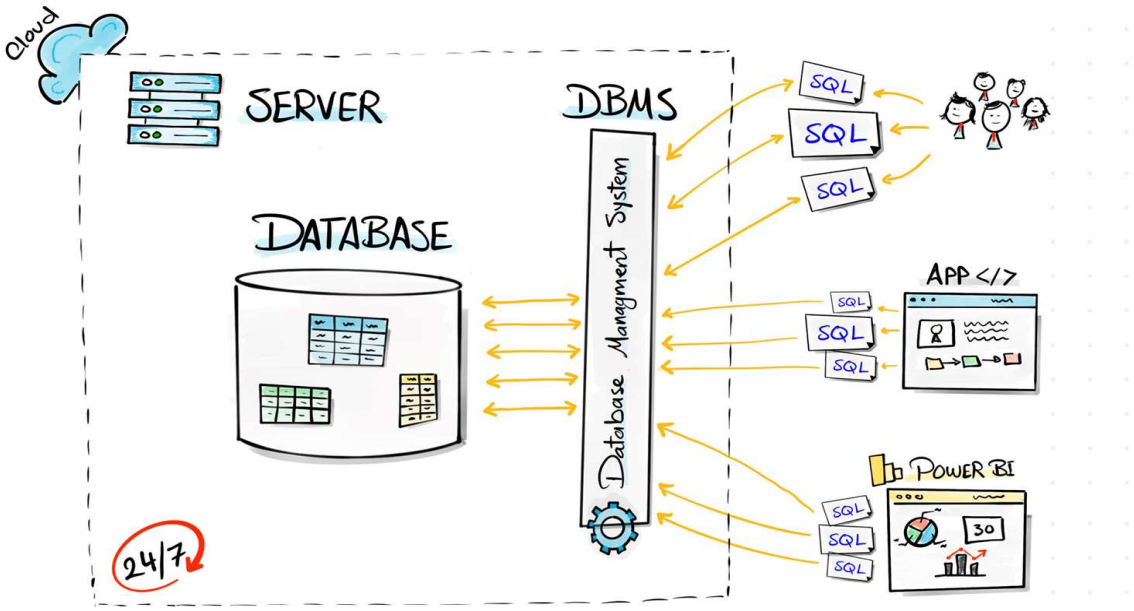
2.Structured Query Language

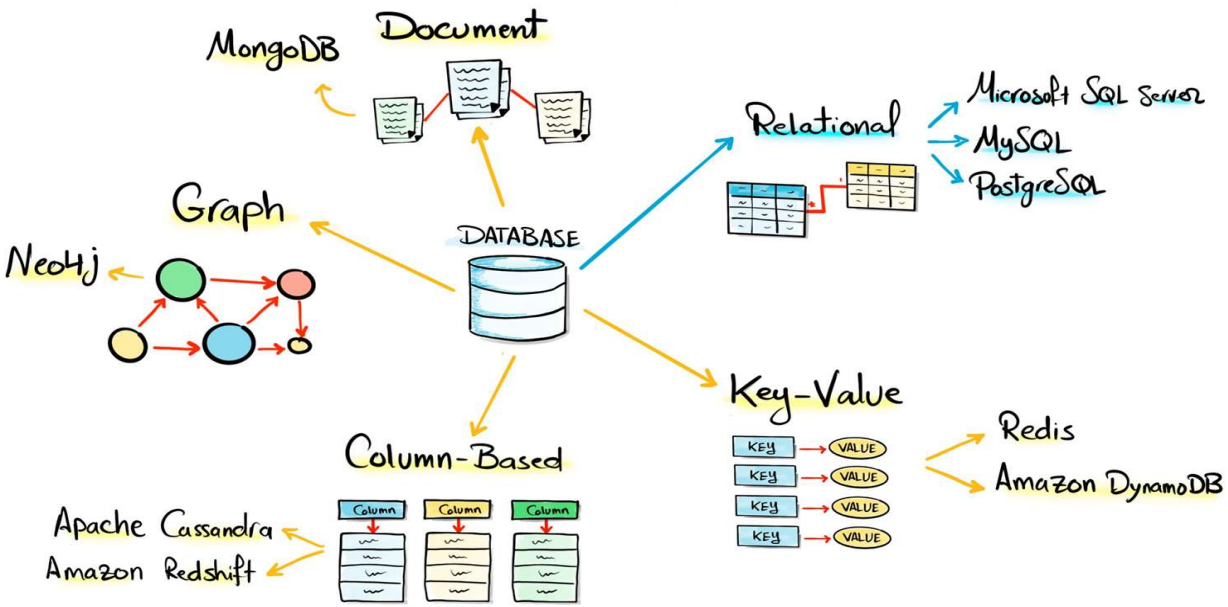
Wednesday, February 4, 2026 9:39 AM



SQL stands for **Structured Query Language**.
SQL is a **language used to communicate with a database**.
It allows humans and applications to **store, retrieve, modify, and manage data** that is stored inside a **relational database**.
In simple words:

SQL is the language you use to talk to a database.





Relational Database Management System (RDBMS)

Definition

A **Relational Database Management System (RDBMS)** is software that manages data stored in **tables**.

Each table consists of **rows (records)** and **columns (attributes)**, and relationships between tables are created using **keys** such as primary keys and foreign keys.

Key Features of RDBMS

1. Table-Based Structure

- Data is stored in tables with rows and columns.
- Each row represents a record; each column represents a field.

2. Use of SQL

- SQL (Structured Query Language) is used to query, insert, update, and delete data.

3. Relationships Between Tables

- Tables are linked using **primary keys** and **foreign keys**.
- This allows efficient data retrieval and avoids redundancy.

4. Data Integrity & Constraints

- Supports constraints like PRIMARY KEY, FOREIGN KEY, UNIQUE, NOT NULL, CHECK.

5. ACID Properties

Ensures:

- **Atomicity**
- **Consistency**
- **Isolation**
- **Durability**

These guarantee reliable transactions.

Examples of Popular RDBMS

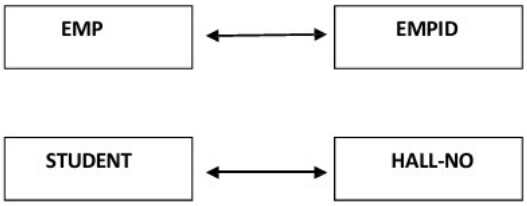
- **MySQL**
- **SQL Server**
- **PostgreSQL**
- **Oracle Database**

Why RDBMS Is Important

- Easy to understand (table format is intuitive)
- Strong data consistency
- Powerful querying with SQL
- Ideal for business applications, analytics, and transactional systems

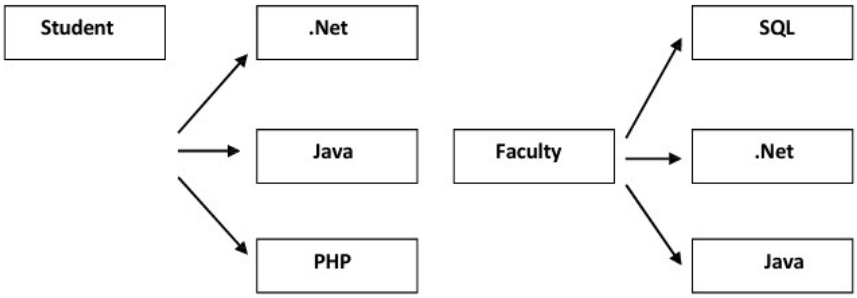
One – One relationship:

- In this relationship one object can have a relationship with another object



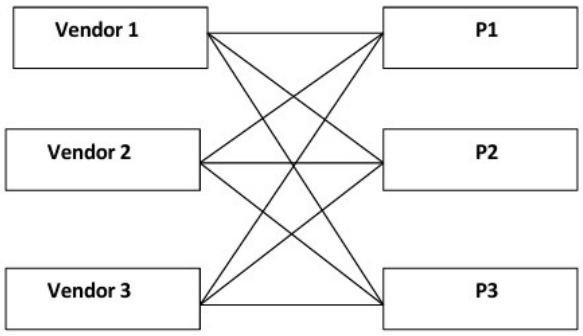
One - Many relationships:

- In this relationship one object can have a relationship with many objects



Many – Many relationship:

- In this relationship many vendors (or) many objects can have the relationship with many other objects



- All the above relationships can be called as "Degree of Relationships"
- This model was developed on the basis of a mathematical concept can be called as "Relation Algebra" (i.e. sets & Relations)