

1. Compare SQL and NoSQL Databases

Feature	SQL	NoSQL
Data Structure	Tables (rows & columns)	Documents, Key-Value, Graph, Column
Schema	Fixed	Flexible
Scalability	Vertical (increase server power)	Horizontal (add more servers)
Transactions	Strong ACID support	BASE (eventual consistency)
Query Language	SQL	JSON-based / API
Data Relationships	Strong (joins)	Limited / embedded
Best For Examples	Structured data MySQL, PostgreSQL	Large, unstructured data MongoDB, Cassandra

2. Presentation on Normalization vs. Denormalization

◊ Normalization

Theory (2–3 lines):

Normalization means **splitting data into multiple tables** to avoid repetition and maintain accuracy. It improves **data consistency** and reduces redundancy.

Simple Example:

Customer details stored once in a **customer table**; orders stored separately in an **Order table**.

◊ Denormalization

Theory (2–3 lines):

Denormalization means **combining data into fewer tables** to make data retrieval faster. It improves **query performance** but may cause data duplication.

Simple Example:

Customer name and phone stored **directly with each order** in the same table.