

## Agenda

- Intro to Databases
- Relational Databases vs Non-Relational Databases
- DB vs DBMS vs SQL
- SQL vs NoSQL
- Database Design

What are database

→ Database is any logically modeled collection of Information

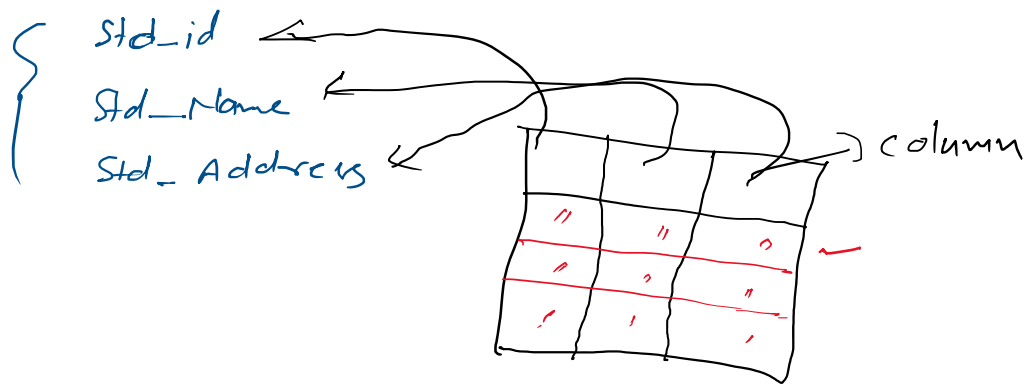
Data → facts or piece of information  
↓  
collection of data .

✓  
① File System → can store text, audio video, \_\_\_\_\_

DBMS →

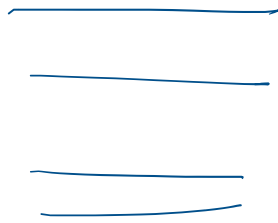
Text → Unstructured

Structured  
or Records of student in a college



CSV, Excel

(b) Unstructured



Pdf, Docx, txt ✓

DBMS →

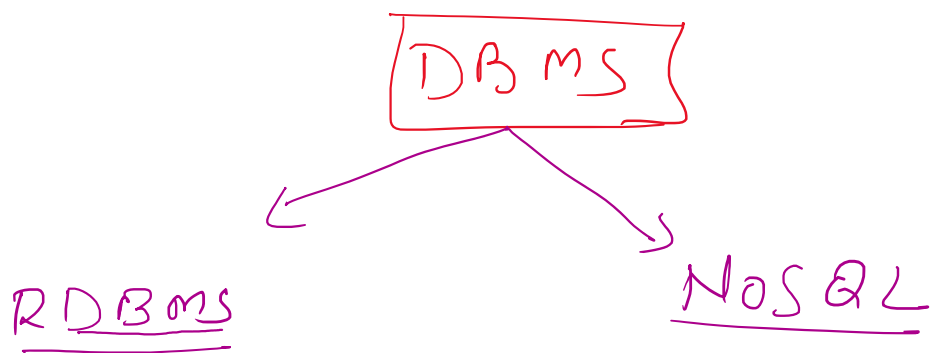
Data base management System

→ way to manage data or huge records

"It is a software system that is designed to manage & organize data in a structured manner."

key features DBMS

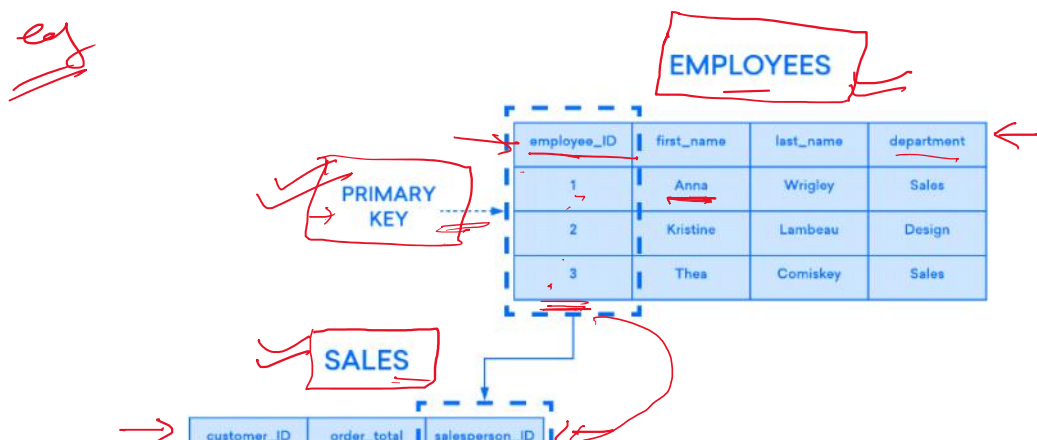
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- ① Data modeling
  - ② Data storage & retrieval
  - ③ Concurrency
  - ④ Backup & recovery



## RDBMS

Data is organized in the form of tables and each table has a set of rows & columns.

→ The data are related to each other through primary & foreign keys.



SALES

<u>customer_ID</u>	<u>order_total</u>	<u>salesperson_ID</u>
001	\$422.01	3
002	\$899.76	1
003	\$560.00	3

FOREIGN KEY

Screen clipping taken: 11-08-2024 07:31 PM

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MySQL →

MS SQL Server →

PostgreSQL

SQLite →

NoSQL or Non-Relational Database

→ Data is organized in the format of key-value pairs, documents, graphs

→ These are designed to handle large-scale, high-performance scenarios.

(a) Key-value Database

eg Redis { key : value }

(b)

Document-oriented database

eg Mongodb { key : Documents }

eg mongodb { key : Documents }

## SQL & NOSQL

SQL → Structured Query language

- It's a domain-specific programming language.
- Commonly used for tasks such as inserting, updating, querying & deleting data with a database.

SQL is also used to create & modify database schemas.

## Database Design in DBMS

- ① Determine the goals of your database.
- ② List down the entities.
- ③ Organize information into different tables.
- ④ Ensure uniqueness in every table →