What is Database Management System(DBMS)?

* A software which manages and facilitates access to the data
* It offers an organized way to store, retrieve, and manage data efficiently.

Database Models:

1. Hierarchical Model
2. Network Model
3. Relational Model:

* Data is organized into tables(relations) consisting of rows and columns
* Columns -> Also called attributes or fields
* Rows -> Also called as tuples or records
* Most widely used

Database Technologies:

1. Files

* Storing and retrieving files is tedious and less efficient
* Poor security, difficulty in sharing

1. Databases

* Offers a faster and more efficient way to store and manipulate data.
* Enables data sharing and provides security
* It follows ACID properties.

ACID properties: RnD\*

1. Atomicity:

* A transaction is treated as a single unit; either all steps are completed or none are.
* Ensures no partial changes are occurring.

1. Consistency:

* Ensures the database remains in a valid state before and after the transaction.

1. Isolation:

* Transactions are executed independently without any interference, ensuring intermediate states are not visible to others.

1. Durability:

* Once a transaction is commited, its changes are permanent even in case of system failure.
* SQL data types
* SQL commands
* Constraints
* Where clause