# What is DBMS (**D**ata **B**ase **M**anagement **S**ystem)?

Data: Information about something

Base: Store

Database: Storage of information / Collection of data

System: Organise way of doing something

Management: We are trying to manage the data here

DBMS: Software system that allow us to store, manage, fetch data

# What are the types of Databases?

1. Relational Database (SQL)

MySQL, Azure SQL

1. Non-Relational Database (NO SQL)

Mongo, Cassandra

# Relational Data Model?

Relational: Anything that is related.

Data: Information about something

Model: Anything which is describing something

Data Model: Representation of the data.

Formal Definition: Data represented as multiple relations that are related to each other.

Relation: Table

Attributes: Columns of a table

Tuple: Row of table

Degree: number of columns

Cardinality: number of records/Tuples.

Table: Collection of rows

# Important points

* When querying the data order of retrieval is never guaranteed. Because data is stored as SET in table
* Order of the column does not matter.
* Value in Each cell should be atomic (single smallest value possible). Multi valued values are not allowed that means No List, No Set, No Json
* Each row needs to be unique (data is set is also unique)

# Keys

A set of columns that help us to uniquely identify the row in a table.

If we match value of these columns which will result in one row only.

# Types of Keys

1. **Super key**

Any set of columns whose values can uniquely identify a row.

1. **Candidate key**

Key of minimum size

Minimum: Something you cannot break. If you break that it will lose its property.

If we remove any column then the resultant key is not a key anymore.

1. **Primary key**

It is a candidate key that has been assigned as primary key while creating table in DB.

Primary key mostly used for

auto incremental of DB

auto id generator of DB

used for UUID also.

1. **Foreign key**

*Constraints*

Restricted / not allowed

Cascade

NULL

1. **Composite key**

Candidate key with more than one column

# SQL (Structured Query Language)

Mechanism or Syntax to Query a relational database.

SQL is query language and MYSQL is database.

1. Data manipulation (Store | fetch | update)
2. Data Control (access control)
3. Data definition (Declaration of the table)