**Database:** a database can be defined as an application which stores the collection of data in a structured format

* Each DB has one or more distinct API’s creating, managing, searching and replicating the data

**API (application programming interface):** This can be defined as an interface between two system or applications that is used to communicate between both the systems

**DBMS (database management system):** this can be defined as a s/w used to store, manage, retrieve and manipulate data in a database and process the SQL queries

**Ex:** MySQL, PostgreSQL, Oracle Database, MongoDB, SQLite

**Flow of execution:**

**SQL query (Workbench) → DBMS (MySQL) → Database (stored on disk) → DBMS (MySQL) → SQL query result (Workbench).**

**Relational DBMS: RDBMS (Relational Database Management System)** is a type of **DBMS** (Database Management System) that stores data in a **relational model,** which means that data is organized into **tables** (also called **relations**) that are linked together based on relationships between the data.

**Non-relational DBMS: Non-RDBMS (Non-Relational Database Management System)** refers to databases that do **not** follow the traditional **relational model** used by **RDBMS (Relational Database Management Systems)** like MySQL, PostgreSQL, or SQL Server.

**DDL commands:** DDL commands do not manipulate the data itself, but instead handle the database schema.

1. **CREATE**: Used to create a new table, view, index, or database.
2. **ALTER**: Used to modify an existing database object (e.g., table structure).
3. **DROP**: Used to delete a database object (e.g., table, view, or index).
4. **TRUNCATE**: Used to remove all rows from a table, but the table structure remains.
5. **RENAME**: Used to rename a database object (e.g., a table or column).

**DML commands:** DML commands allow you to retrieve, insert, update, or delete data in the database tables.

1. **SELECT**: Retrieves data from a database.
2. **INSERT**: Adds new records to a table.
3. **UPDATE**: Modifies existing records in a table.
4. **DELETE**: Removes records from a table.

DBMS is not physical. DBMS is a set of programs running in the backend of your computer. For example, when you are working with the workbench, here the workbench is just an UI interface for the user used to communicate with the database. And in this scenario the database is the hard disk on your computer.

In workbench we will be writing the queries to perform operation on the data. When you write a query this query is managed and executed by the DBMS software running in the background and this s/w retrieves the data from the disk

**Script:**

create database vignan;

use vignan;

show databases;

show tables;

create table players(player\_name varchar(20),birth\_year int,jersey\_no int,team varchar(20),`role` varchar(30));

desc players;

insert into players (player\_name,birth\_year,jersey\_no,team,`role`) values ('Dhoni',1981,7,'INDIA','Batsman'),

('Kohli',1988,18,'INDIA','Batsman'),

('Bravo',1983,47,'WEST INDIES','All rounder'),

('warner',1986,31,'Australia','Batsman'),

('Rabada',1995,25,'South Africa','Bowler');

select \* from players;

create table employees (emp\_id int,emp\_name varchar(20),`role` varchar(30),city varchar(10),salary int);

select \*from employees;

desc employees;

insert into employees (emp\_id,emp\_name,`role`,city,salary) values(1,'Mani','Devops Engineer','HYD',50000),

(2,'vignan','software Engineer','HYD',40000),

(3,'Rahul','project Engineer','DEL',70000),

(4,'Rakesh','manager','Pune',80000),

(5,'Raju','Team lead','HYD',40000),

(6,'Vinod','HR','BNG',70000),

(7,'Kapil','Admin','HYD',50000),

(8,'Sneha','Associate','CHN',35000),

(9,'Madhu','Developer','HYD',55000),

(10,'Balu','Intern','BNG',10000);

create table doctors(doctor\_id int,doctor\_name varchar(20),specialization varchar(20),phone\_no varchar(30),email varchar(50));

show tables;

insert into doctors(doctor\_id,doctor\_name,specialization,phone\_no,email)values

(1, 'Dr. Arjun Mehta', 'Cardiologist', '9876543210', 'arjun.mehta@healthcare.com'),

(2, 'Dr. Priya Sharma', 'Dermatologist', '8765432109', 'priya.sharma@healthcare.com'),

(3, 'Dr. Rajesh Gupta', 'Orthopedic Surgeon', '7654321098', 'rajesh.gupta@healthcare.com'),

(4, 'Dr. Nisha Menon', 'Gynecologist', '6543210987', 'nisha.menon@healthcare.com'),

(5, 'Dr. Vikram Desai', 'Neurologist', '5432109876', 'vikram.desai@healthcare.com'),

(6, 'Dr. Ritu Verma', 'Pediatrician', '4321098765', 'ritu.verma@healthcare.com'),

(7, 'Dr. Manoj Kumar', 'Oncologist', '3210987654', 'manoj.kumar@healthcare.com'),

(8, 'Dr. Sunita Patel', 'Endocrinologist', '2109876543', 'sunita.patel@healthcare.com'),

(9, 'Dr. Aakash Yadav', 'General Surgeon', '1098765432', 'aakash.yadav@healthcare.com'),

(10, 'Dr. Meera Rao', 'Psychiatrist', '1987654321', 'meera.rao@healthcare.com');

select \* from doctors;

create table subscribers(user\_id int, user\_name varchar(30),email varchar(30),plan varchar(20),plan\_status varchar(30));

insert into subscribers(user\_id,user\_name,email,plan,plan\_status) values

(1, 'Ravi Sharma', 'ravi.sharma@subscription.com', 'Premium', 'Active'),

(2, 'Anita Desai', 'anita.desai@subscription.com', 'Basic', 'Expired'),

(3, 'Vikram Yadav', 'vikram.yadav@subscription.com', 'Standard', 'Active'),

(4, 'Neha Gupta', 'neha.gupta@subscription.com', 'Premium', 'Active'),

(5, 'Arjun Patel', 'arjun.patel@subscription.com', 'Basic', 'Pending'),

(6, 'Sonia Verma', 'sonia.verma@subscription.com', 'Standard', 'Active'),

(7, 'Manoj Kumar', 'manoj.kumar@subscription.com', 'Premium', 'Active'),

(8, 'Priya Singh', 'priya.singh@subscription.com', 'Basic', 'Canceled'),

(9, 'Amit Joshi', 'amit.joshi@subscription.com', 'Standard', 'Active'),

(10, 'Ritu Mehta', 'ritu.mehta@subscription.com', 'Premium', 'Expired');

show tables;

select \* from subscribers;

create table accounts (

account\_id int,customer\_id int,account\_type varchar(20),balance int,created\_at varchar(30));

insert into accounts (account\_id, customer\_id, account\_type, balance, created\_at)

values

(101, 201, 'Savings', 50000.00, '2023-01-15'),

(102, 202, 'Current', 150000.50, '2023-02-20'),

(103, 203, 'Savings', 23000.75, '2023-03-05'),

(104, 204, 'Fixed Deposit', 1000000.00, '2023-04-25'),

(105, 205, 'Savings', 80000.25, '2023-05-30'),

(106, 206, 'Current', 120000.00, '2023-06-18'),

(107, 207, 'Savings', 35000.50, '2023-07-12'),

(108, 208, 'Current', 250000.75, '2023-08-01'),

(109, 209, 'Savings', 95000.00, '2023-09-23'),

(110, 210, 'Fixed Deposit', 500000.00, '2023-10-10');

select \* from doctors;

select \* from accounts;

select \* from employees;

select \* from players;

select \* from subscribers;