**Module 10:**

Data

Information

Database : it use to store the data in table format.

DBMS : Database management system : which help to store the data in table format.

Table -🡪 column 🡪Row (Records)

Employee

Id,name,salary -🡪columns

100,Ravi,12000 🡪 Records

Database Model

RDBMS : Relational Management Database system.

In RDBMS table is known as relation and column is known as field and row (tuple).

MySQL, Oracle, Db2, Postgres etc

MySQL it an open-source database provided by Oracle. (it was belong to sun micro system).

To interact with any RDBMS database. We need one of the language ie SQL. It is a English like statement which help to communicate RDBMS database server.

SQL : Structured Query Language

Divided into 5 types

DRL or DQL (Data retrieval language or Data query language)

The query which start with select clause (view the records)

DDL :Data definition language

Create, drop, alter, truncate etc. (structure of table

DML : Data manipulation language

Insert, delete and update query (deal with data)

TCL : Transactional control language

Commit, rollback and savepoint

DCL : Data control language (admin related queries)

Create user, grant (give the permission) and revoke (take back the permission etc)

**My sql commands**

**show databases;** it display all database present in your account.

use databasename; it is use to switch inside a database.

show tables; this command help us to show all tables present in you account

syntax to create the table

**Trainer**

Tid(PK) TName tech age doj etc

Int, varchar(30) varchar(50) int

create table trainer(

tid int primary key,

tname varchar(30),

tech varchar(50),

age int,

doj date);

insert into tableName values(v1,v2,v3)

mysql> insert into trainer values(100,'Raj','Java',35,'2021-03-10');

Query OK, 1 row affected (0.02 sec)

mysql> insert into trainer values(101,'Ravi','Python',32,'2021-09-15');

Query OK, 1 row affected (0.01 sec)

mysql> insert into trainer values(102,'Raju','HTML5',28,'2025-02-01');

Query OK, 1 row affected (0.01 sec)

mysql> insert into trainer values(103,'Rajesh','JS',29,'2024-06-30');

Query OK, 1 row affected (0.01 sec)

mysql> insert into trainer values(104,'Ram','ReactJS',36,'2019-05-28');

Query OK, 1 row affected (0.01 sec)

Select \* from tableName; view all records as well as all column

Retrieve particular columns details

Select columName,columnName,columnName from tableName;

**Filter the records**

Where clause

1. Relational operator

>, >=, <,<= , =, != etc

select \* from trainer where age>30;

select \* from trainer where doj >'2023-12-31';

select \* from trainer where tech = 'Java';

1. Between operator: range

select \* from trainer where age between 30 and 35;

1. In operator: more than one specific records with conditions.

select \* from trainer where tech in ('Java','Python','Angular');

1. Is null: missing particular property value.

select \* from trainer where doj is null;

**functions**

function is use to perform specific task.

All RDBMS database function mainly divided into 2 types.

1. Single row function : the function functionality apply for each records.
2. Multi row function or aggregate functions : the function functionality apply for whole table or group by.

Single row functions

1. String functions
2. Date function

Aggregate or multi row or group by functions

create table employee(eid int primary key,tame varchar(30), dept varchar(30), marks int);

insert into employee values(1,'Raj','Phy',56);

insert into employee values(2,'Ravi','Che',76);

insert into employee values(3,'Ramesh','Maths',86);

insert into employee values(4,'Rajesh','Che',54);

insert into employee values(5,'Lokesh','Phy',75);

insert into employee values(6,'John','Che',88);

insert into employee values(7,'Steven','Phy',90);

insert into employee values(8,'Ajay','Maths',96);

sum

count

max

min

avg

select count(\*) from employee;

select sum(marks),avg(marks),max(marks),min(marks) from employee;

**find number of employee group by dept**

select dept,count(\*) from employee group by dept;

**Relationship**

One to many

Trainer

TID(PK), TName,tech, age etc

FK column is use to refer to pk. If column is FK that column allow to insert only those values which present in PK column. FK allow duplicate records. FK allow null values.

**Student**

Sid(PK), SName, age, TID(FK)

1,Reeta,18,100

2,Veeta,19,100

3,Meeta,20,101

create table student(

sid int primary key,

sname varchar(30),

age int,

tid int,

foreign key(tid) references trainer(tid));

mysql> insert into student values(1,'Neena',18,100);

Query OK, 1 row affected (0.01 sec)

mysql> insert into student values(2,'Veena',19,100);

Query OK, 1 row affected (0.01 sec)

mysql> insert into student values(3,'Teena',20,101);

Query OK, 1 row affected (0.01 sec)

mysql> insert into student values(4,'Meena',21,104);

Query OK, 1 row affected (0.01 sec)

mysql> insert into student values(5,'Jeena',22,105);

Query OK, 1 row affected (0.00 sec)

Join is use to retrieve more than one column from more than one table with condition.

1. Inner join

select t.tname,t.tech,s.sname from student s inner join trainer t on t.tid=s.tid;

common using on clause

1. Left outer join

select t.tname,t.tech,s.sname from student s left outer join trainer t on t.tid=s.tid;

common + remaining left (first table all records)

1. Right outer join

select t.tname,t.tech,s.sname from student s right outer join trainer t on t.tid=s.tid;

common + remaining right table (second table all records)