SQL

1) Introduction to SQL

SQL(Structured Query Language) is used to manage,query ,and manipulate relational databases in enterprise environments.
Core Categories: DDL,DML,DCL,TCL

Data Definition Language
Data Manipulation Language
Data Control Language
Transaction Control Language

Create a database

```
create database mydb;
use mydb
```

Create a table inside your database

```
create table emp(
empid INT primary key,
name varchar(50),
dept varchar(50),
salary decimal(10,2),
hire_date date
)
```

Inserting Values to the table

```
insert into emp (empid,name,dept,salary,hire_date) values
(1,'John','IT',2000000,'12/12/2020')
insert into emp values (2,'Thor','Sales',10000000,'11/01/2024')
insert into emp values (3,'Alex','IT',877777,'10/01/2021')
insert into emp values (4,'Elena','IT',100000,'05/11/2020')
insert into emp values (5,'sarah','Sales',300000,'05/02/2024')
```

Displaying all values from table

```
select * from emp

select CURRENT_TIMESTAMP  -To view current time
select upper(name) from emp   - To print all names in capital
select count(*) from emp   - To count number of rows
select avg(salary) from emp  -To calculate average salary
select sum(salary) from emp - To calculate sum of salary
select len(name) from emp  -To Print length of each name
```

Creating Another Table to perform joins

```
create table dept(
deptid int Primary Key,
```

deptname varchar(50),
empid int)

insert into dept values (101,'IT',3)
insert into dept values (102,'Sales',5)
insert into dept values (103,'Techops',6)
insert into dept values (102,'IT',4)

Inner join
select e.name,e.dept from emp e join dept d on e.empid =d.empid
Left join
select e.name,e.dept from emp e left join dept d on e.empid =d.empid
Right join
select e.name,e.dept from emp e right join dept d on e.empid =d.empid

Group by department and print count of employees in each department

select dept,count(*) from emp group by dept

select round(avg(salary),2) from emp -To round value and have 2 values after decimal point
select max(salary),min(salary) from emp -To know min and max salary

Creating a view

create view high_salary_emp as
select name,salary from emp where salary>800000

select * from high_salary_emp

Subquery and Independent Subquery

select name ,salary from emp where salary >(select avg(salary) from emp)

select name,salary from emp where empid in (select empid from dept)

Difference between DELETE,TRUNCATE, and DROP?

- Delete is used to delete rows based on condition
- Drop is used to delete all rows values and structure from table
- Truncate is used to delete values alone but keeps the structure of table in database

Hands on

Create three tables employee,department and projects.

```
create table emp1(
empid int primary key not null,
empname varchar(10) not null,
deptid int,
foreign key(deptid) references dept1(deptid)
)
alter table emp1 add salary int
update emp1 set salary=50000 where empid=1
update emp1 set salary=55000 where empid=2
update emp1 set salary=35000 where empid=3
update emp1 set salary=40000 where empid=4

insert into emp1 values (1,'jon',101),(2,'amy',101),(3,'zach',102)
insert into emp1 values (4,'jack',103)


create table dept1(
deptid int primary key,
deptname varchar(10) not null,
)
insert into dept1 values(101,'IT'),(102,'Sales')
insert into dept1 values(103,'Techops')
insert into dept1 values(104,'support')

create table proj(
projid int primary key,
projname varchar(10),
empid int ,
foreign key(empid) references emp1(empid)
)
insert into proj values(100,'ABC',1)
insert into proj values(102,'XYZ',3)
insert into proj values(101,'LMN',1)
```

concat()

```
select concat(empid,empname) from emp1
```

JOINS

Select employees who have departments

```
select e.empid,e.empname,d.deptid,d.deptname from emp1 e inner join dept1 d on
e.deptid=d.deptid
```

Select employees who dont have an department

```
select e.empid,e.empname,d.deptid,d.deptname from emp1 e right join dept1 d on
e.deptid=d.deptid where e.empid is null
```

Select Employees who works on multiple projects

select e.empid,e.empname,count(p.projid) as totalprojects from emp1 e join proj p on e.empid=p.empid group by e.empid,e.empname having count(p.projid)>1

Print number of employees in each department

select d.deptname,count(*) as number_of_employees from emp1 e join dept d on e.deptid=d.deptid group by d.deptname

Find departments with average salary greater than 40000

select d.deptid,d.deptname,avg(e.salary) as avgsalary from emp1 e join dept d on e.deptid=d.deptid group by d.deptid,d.deptname having avg(salary)>40000

Subquery

Find employees earning above company salary
select empid,empname,salary from emp1 where salary > (select avg(salary) from emp1)

Find department with highest salary expenses
select d.deptid,d.deptname,sum(e.salary) as total_expense from emp1 e join dept d on e.deptid=d.deptid group by d.deptname,d.deptid

Use IN
select e.empname,d.deptname from emp1 e join dept d on e.deptid=d.deptid where d.deptname in ('IT','Sales')

Use EXISTS
select empid ,empname from emp1 where exists(select * from proj where proj.empid=emp1.empid)

Use NOT EXISTS
select empid ,empname from emp1 where not exists(select * from proj where proj.empid=emp1.empid)