Lab Program 5

Consider the schema for Company Database:

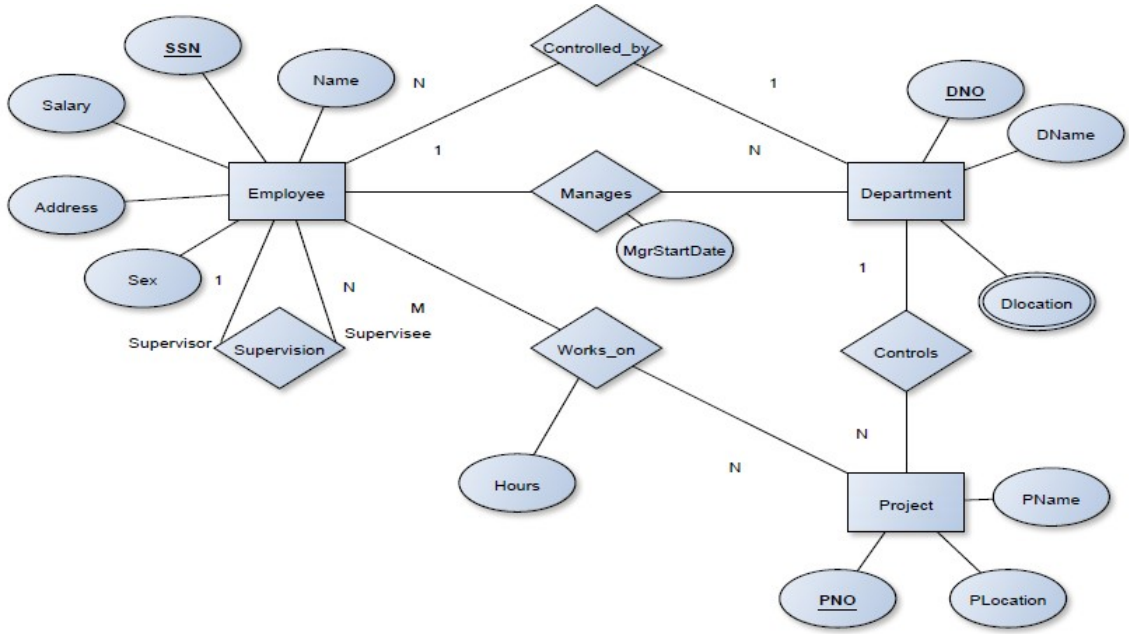
EMPLOYEE(SSN, Name, Address, Sex, Salary, SuperSSN, DNo)
DEPARTMENT(DNo, DName, MgrSSN, MgrStartDate)
DLOCATION(DNo,DLoc)
PROJECT(PNo, PName, PLocation, DNo)
WORKS_ON(SSN, PNo, Hours)

Write SQL queries to

1. Make a list of all project numbers for projects that involve an employee whose last name is 'Scott', either as a worker or as a manager of the department that controls the project.
2. Show the resulting salaries if every employee working on the 'IoT' project is given a 10 percent raise.
3. Find the sum of the salaries of all employees of the 'Accounts' department, as well as the maximum salary, the minimum salary, and the average salary in this department
4. Retrieve the name of each employee who works on all the projects controlledby department number 5 (use NOT EXISTS operator).
5. For each department that has more than five employees, retrieve the department number and the number of its employees who are making more than Rs. 6,00,000.

AIM: Create table, querying the Company database and perform all the operations using sql.

ER DIAGRAM



SCHEMA DIAGRAM:

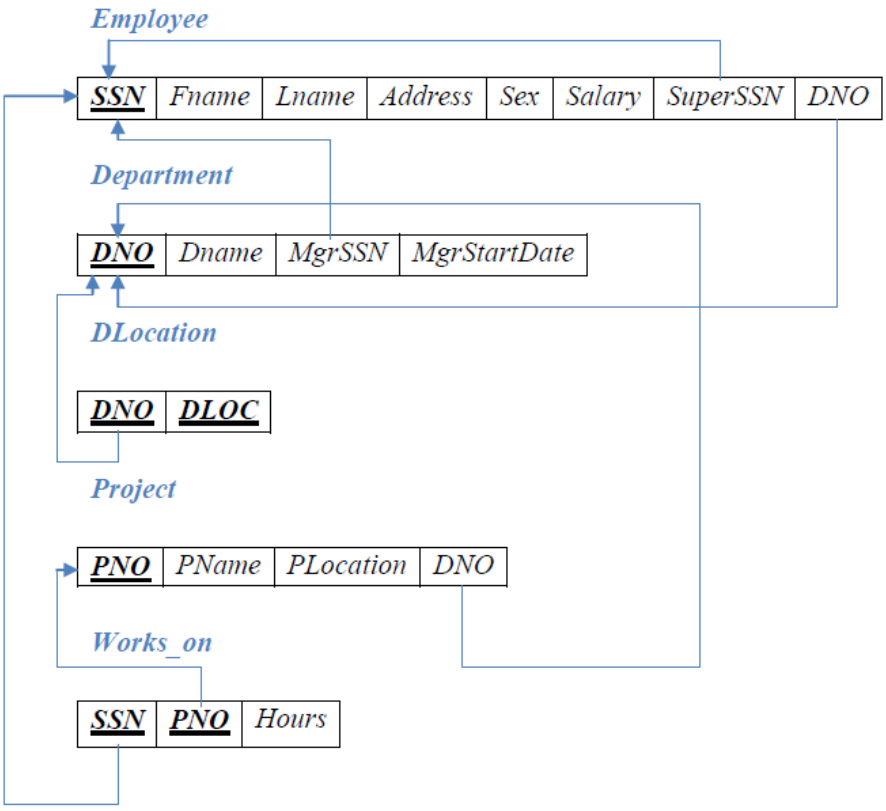


TABLE CREATION:

mysql> create table department(dno int(5) primary key, dname varchar(10), mgrssn varchar(10), mgrstartdate date);
Query OK, 0 rows affected (0.07 sec)

mysql> create table employee(ssn varchar(10) primary key, name varchar(10), address varchar(15), sex varchar(4), salary double, superssn varchar(10), dno int(5),foreign key(superssn) references employee(ssn),foreign key(dno) references department(dno));
Query OK, 0 rows affected (0.09 sec)

mysql> alter table department add foreign key(mgrssn) references employee(ssn);
Query OK, 0 rows affected (0.18 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> create table dlocation(dno int(5), dloc varchar(15), primary key(dno,dloc), foreign key(dno) references department(dno));
Query OK, 0 rows affected (0.08 sec)

mysql> create table project(pno int(5) primary key, pname varchar(10), ploc varchar(10), dno int(5), foreign key(dno) references department(dno) on delete cascade);
Query OK, 0 rows affected (0.13 sec)

mysql> create table works_on(ssn varchar(10), pno int(5), hours int, primary key(ssn,pno), foreign key(ssn) references employee(ssn) on delete cascade, foreign key(pno) references project(pno) on delete cascade);
Query OK, 0 rows affected (0.12 sec)

mysql> desc employee;

```
+----------+-------------+------+-----+---------+-------+
| Field    | Type        | Null | Key | Default | Extra |
+----------+-------------+------+-----+---------+-------+
| ssn      | varchar(10) | NO   | PRI | NULL    |       |
| name     | varchar(10) | YES  |     | NULL    |       |
| address  | varchar(15) | YES  |     | NULL    |       |
| sex      | varchar(4)  | YES  |     | NULL    |       |
| salary   | double      | YES  |     | NULL    |       |
| superssn | varchar(10) | YES  | MUL | NULL    |       |
| dno      | int(5)      | YES  | MUL | NULL    |       |
+----------+-------------+------+-----+---------+-------+
7 rows in set (0.01 sec)

mysql> desc department;
+--------------+-------------+------+-----+---------+-------+
| Field        | Type        | Null | Key | Default | Extra |
+--------------+-------------+------+-----+---------+-------+
| dno          | int(5)      | NO   | PRI | NULL    |       |
| dname        | varchar(10) | YES  |     | NULL    |       |
| mgrssn       | varchar(10) | YES  | MUL | NULL    |       |
| mgrstartdate | date        | YES  |     | NULL    |       |
+--------------+-------------+------+-----+---------+-------+
4 rows in set (0.02 sec)

mysql> desc dlocation;
+-------+-------------+------+-----+---------+-------+
| Field | Type        | Null | Key | Default | Extra |
+-------+-------------+------+-----+---------+-------+
| dno   | int(5)      | NO   | PRI | 0       |       |
| dloc  | varchar(15) | NO   | PRI |         |       |
+-------+-------------+------+-----+---------+-------+
2 rows in set (0.02 sec)

mysql> desc project;
+-------+-------------+------+-----+---------+-------+
| Field | Type        | Null | Key | Default | Extra |
+-------+-------------+------+-----+---------+-------+
| pno   | int(5)      | NO   | PRI | NULL    |       |
| pname | varchar(10) | YES  |     | NULL    |       |
| ploc  | varchar(10) | YES  |     | NULL    |       |
| dno   | int(5)      | YES  | MUL | NULL    |       |
+-------+-------------+------+-----+---------+-------+
4 rows in set (0.02 sec)

mysql> desc works_on;
+-------+-------------+------+-----+---------+-------+
| Field | Type        | Null | Key | Default | Extra |
+-------+-------------+------+-----+---------+-------+
| ssn   | varchar(10) | NO   | PRI |         |       |
| pno   | int(5)      | NO   | PRI | 0       |       |
| hours | int(11)     | YES  |     | NULL    |       |
+-------+-------------+------+-----+---------+-------+
3 rows in set (0.01 sec)

mysql> insert into employee(ssn,name,address,sex,salary)
```

```
values('W101','scott','bangalore','M',25000);
Query OK, 1 row affected (0.03 sec)

mysql> insert into employee(ssn,name,address,sex,salary)
values('W102','smith','mysore','M',15000);
Query OK, 1 row affected (0.04 sec)

mysql> insert into employee(ssn,name,address,sex,salary)
values('M102','john','mangalore','M',600000);
Query OK, 1 row affected (0.03 sec)

mysql> insert into employee(ssn,name,address,sex,salary)
values('M101','kate','mangalore','F',650000);
Query OK, 1 row affected (0.04 sec)

mysql> insert into department values(01,'sales','W101',20001002);
Query OK, 1 row affected (0.04 sec)

mysql> insert into department values(02,'account','W102',19901002);
Query OK, 1 row affected (0.04 sec)

mysql> insert into department values(03,'account','M102',19900503);
Query OK, 1 row affected (0.04 sec)

mysql> insert into department values(04,'sales','M101',19990503);
Query OK, 1 row affected (0.04 sec)

mysql>  insert into dlocation values(01, 'whitefiled');
Query OK, 1 row affected (0.04 sec)

mysql>  insert into dlocation values(02, 'hoodi');
Query OK, 1 row affected (0.04 sec)

mysql>  insert into dlocation values(03, 'rajajinagar');
Query OK, 1 row affected (0.03 sec)

mysql>  insert into dlocation values(04, 'kormangala');
Query OK, 1 row affected (0.04 sec)

mysql> insert into project values(301,'IOT', 'USA', 01);
Query OK, 1 row affected (0.04 sec)

mysql>  insert into project values(302,'IOT', 'USA', 02);
Query OK, 1 row affected (0.04 sec)

mysql> insert into project values(303,'CC', 'Uk', 03);
Query OK, 1 row affected (0.04 sec)

mysql> insert into project values(304,'ML', 'Uk', 04);
Query OK, 1 row affected (0.05 sec)

mysql> insert into works_on values('W101',301,12);
Query OK, 1 row affected (0.05 sec)

mysql> insert into works_on values('W102',302,10);
```

```
Query OK, 1 row affected (0.04 sec)

mysql> insert into works_on values('M101',303,17);
Query OK, 1 row affected (0.03 sec)

mysql> insert into works_on values('M102',304,14);
Query OK, 1 row affected (0.04 sec)

mysql> select * from employee;
+------+-------+-----------+------+--------+----------+------+
| ssn  | name  | address   | sex  | salary | superssn | dno  |
+------+-------+-----------+------+--------+----------+------+
| M101 | kate  | mangalore | F    | 650000 | NULL     | NULL |
| M102 | john  | mangalore | M    | 600000 | NULL     | NULL |
| W101 | scott | bangalore | M    |  25000 | NULL     | NULL |
| W102 | smith | mysore    | M    |  15000 | NULL     | NULL |
+------+-------+-----------+------+--------+----------+------+
4 rows in set (0.00 sec)

mysql> select * from department;
+-----+---------+--------+--------------+
| dno | dname   | mgrssn | mgrstartdate |
+-----+---------+--------+--------------+
|   1 | sales   | W101   | 2000-10-02   |
|   2 | account | W102   | 1990-10-02   |
|   3 | account | M102   | 1990-05-03   |
|   4 | sales   | M101   | 1999-05-03   |
+-----+---------+--------+--------------+
4 rows in set (0.00 sec)

mysql> select * from dlocation;
+-----+-------------+
| dno | dloc        |
+-----+-------------+
|   1 | whitefiled  |
|   2 | hoodi       |
|   3 | rajajinagar |
|   4 | kormangala  |
+-----+-------------+
4 rows in set (0.00 sec)

mysql> select * from project;
+-----+-------+------+------+
| pno | pname | ploc | dno  |
+-----+-------+------+------+
| 301 | IOT   | USA  |    1 |
| 302 | IOT   | USA  |    2 |
| 303 | CC    | Uk   |    3 |
| 304 | ML    | Uk   |    4 |
+-----+-------+------+------+
4 rows in set (0.00 sec)

mysql> select * from works_on;
+------+-----+-------+
| ssn  | pno | hours |
```

```
+------+-----+-------+
| M101 | 303 |    17 |
| M102 | 304 |    14 |
| W101 | 301 |    12 |
| W102 | 302 |    10 |
+------+-----+-------+
4 rows in set (0.01 sec)
```

Query1: . Make a list of all project numbers for projects that involve an employee whose last name is 'Scott', either as a worker or as a manager of the department that controls the project.

```
mysql> (select pno from project p,department d,employee e where p.dno=d.dno and e.ssn=d.mgrssn
and e.name='scott')
    union
   (select pno from employee e,works_on w where e.ssn=w.ssn and e.name='scott');
+-----+
| pno |
+-----+
| 301 |
+-----+
1 row in set (0.00 sec)
```

Query2: Show the resulting salaries if every employee working on the 'IoT' project is given a 10 percent raise.

```
mysql> select e.ssn,salary*1.1 from employee e, works_on w, project p where e.ssn=w.ssn and
w.pno=p.pno and pname='IOT';
+------+--------------------+
| ssn  | salary*1.1         |
+------+--------------------+
| W101 | 27500.000000000004 |
| W102 |              16500 |
+------+--------------------+
2 rows in set (0.01 sec)
```

Query3: Find the sum of the salaries of all employees of the 'Accounts' department, as well as the maximum salary, the minimum salary, and the average salary in this department

```
mysql> select dname, max(salary), min(salary), avg(salary) from employee e, department d where
e.dno=d.dno and d.dname='account';
+---------+-------------+-------------+-------------+
| dname   | max(salary) | min(salary) | avg(salary) |
+---------+-------------+-------------+-------------+
| account |      600000 |       15000 |      307500 |
+---------+-------------+-------------+-------------+
1 row in set (0.00 sec)
```

Query4: Retrieve the name of each employee who works on all the projects controlledby department number 5 (use NOT EXISTS operator).

```
mysql> select e.name from employee e where not exists (select pno from project where dno=4 and
pno not in (select pno from works_on w where w.ssn=e.ssn));
```

```
+------+
| name |
+------+
| john |
+------+
1 row in set (0.00 sec)
```

Query5: For each department that has more than five employees, retrieve the department number and the number of its employees who are making more than Rs. 6,00,000.

```
mysql> select dno, count(ssn) from employee where salary> 600000 and dno in (select dno from employee group by dno having count(ssn)>0);
+------+------------+
| dno  | count(ssn) |
+------+------------+
|    4 |          1 |
+------+------------+
1 row in set (0.00 sec)
```

CONCLUSION: Tables are created and the values have been inserted accordingly and all the mentioned queries have been executed.