DEPARTMENT OF MATHEMATICAL AND COMPUTATIONAL SCIENCES
NATIONAL INSTITUTE OF TECHNOLOGY KARNATAKA, SURATHKAL
MA611 – 4TH SEMESTER MCA 2024-2025
DATABASE SYSTEMS LAB
ASSIGNMENT-6

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1. Create the following tables with the following attributes and constraints on them.
   a. **Employee** (Fname, mname, lname, Ssn, Bdate, address, gender, salary, Super_Ssn, Dept_num)
      Lname, Ssn, Dept_num should be not null

   b. **Department** (Dept_num, Dept_name, Mgr_Ssn, Mgr_startdate)
      Dept_name should be unique

   c. **Department_locations** (Dept_num, location)
      Dept_num and location both are primary key
      Dept_num is foreign key

   d. **Project** (Proj_num, Proj_name, Proj_location, Dept_num)

   e. **Employee_Project** (Ssn, Proj_num, Hours)

   f. **Dependent** (Ssn, Dept_name, gender, bdate, relationship)

```
create table Employee(
   -> Fname varchar(20),
   -> mname varchar(20),
   -> lname varchar(20) not null,
   -> ssn varchar(11) not null primary key,
   -> Bdate Date,
   -> address varchar(30),
   -> gender char(1),
   -> salary numeric(10,2),
   -> Super_ssn varchar(11),
   -> Dept_num numeric
   -> not null
   -> );
create table department(
   -> Dept_num numeric primary key,
   -> Dept_name varchar(20) unique,
   -> Mgr_Ssn varchar(11),
   -> Mgr_startdate Date
   -> );

create table Department_locations(
   -> Dept_num numeric,
   -> location varchar(20),
   -> primary key (Dept_num, location),
   -> foreign key(Dept_num) references department(Dept_num)
   -> );

create table project(
   -> Proj_num numeric primary key,
   -> Proj_name varchar(20),
```

```
   -> Proj_location varchar(30),
   -> Dept_num numeric,
   -> foreign key(Dept_num) references Department(Dept_num)
   -> );

create table Employee_project(
   -> Ssn varchar(11),
   -> Proj_num numeric,
   -> hours numeric(5,2),
   -> foreign key (Ssn) references Employee(Ssn),
   -> foreign key (Proj_num) references Project(Proj_num)
   -> );

CREATE TABLE Dependent (
   ->     Ssn VARCHAR(11),
   ->     Dept_name VARCHAR(20),
   ->     Gender CHAR(1),
   ->     Bdate DATE,
   ->     Relationship VARCHAR(20),
   ->     FOREIGN KEY (Ssn) REFERENCES Employee(Ssn),
   ->     FOREIGN KEY (Dept_name) REFERENCES Department(Dept_name)
);
```

2. Add two column blood group and hobbies to employee table.

```
    alter table employee
-> add blood_group varchar(5);
```

```
     alter table employee
-> add hobbies varchar(20);
```

3. Increase the size of column blood group to 15 to the employee table.

```
    alter table employee
-> modify blood_group varchar(15);
```

4. Drop column hobbies from the employee table.

```
    alter table employee
-> drop column hobbies;
```

5. Rename Employee Table to Employee_details.

```
    alter table employee
-> rename to Employee_details;
```

6. Insert atleast five records in each table.

```
INSERT INTO Employee (Fname, Mname, Lname, Ssn, Bdate, Address, Gender, Salary, Super_Ssn,
Dept_num) VALUES
('Amit', 'Kumar', 'Sharma', '482928', TO_DATE('15-06-1985', 'DD-MM-YYYY'), 'Delhi', 'M', 9000,
NULL, 1);
```

```
INSERT INTO Employee VALUES
('Priya', 'Ravi', 'Iyer', '573839', TO_DATE('20-04-1978', 'DD-MM-YYYY'), 'Mumbai', 'F', 4500,
'482928', 2);

INSERT INTO Employee VALUES
('Rahul', 'Singh', 'Rajput', '648291', TO_DATE('10-12-1992', 'DD-MM-YYYY'), 'Bangalore', 'M',
7000, '482928', 3);

INSERT INTO Employee VALUES
('Sneha', 'Verma', 'Joshi', '927364', TO_DATE('25-08-1965', 'DD-MM-YYYY'), 'Hyderabad', 'F', 5500,
'573839', 1);

INSERT INTO Employee VALUES
('Vikram', 'Ramesh', 'Patil', '284751', TO_DATE('14-03-2000', 'DD-MM-YYYY'), 'Chennai', 'M',
3000, '648291', 5);


INSERT INTO Department VALUES (1, 'Marketing', '482928', TO_DATE('10-01-2015', 'DD-MM-
YYYY'));
INSERT INTO Department VALUES (2, 'Sales', '573839', TO_DATE('15-03-2014', 'DD-MM-
YYYY'));
INSERT INTO Department VALUES (3, 'Finance', '648291', TO_DATE('20-07-2016', 'DD-MM-
YYYY'));
INSERT INTO Department VALUES (4, 'HR', '927364', TO_DATE('05-10-2013', 'DD-MM-
YYYY'));
INSERT INTO Department VALUES (5, 'IT', '284751', TO_DATE('01-12-2018', 'DD-MM-YYYY'));



INSERT INTO Department_locations VALUES (1, 'Delhi');
INSERT INTO Department_locations VALUES (2, 'Mumbai');
INSERT INTO Department_locations VALUES (3, 'Bangalore');
INSERT INTO Department_locations VALUES (4, 'Hyderabad');
INSERT INTO Department_locations VALUES (5, 'Surathkal');


INSERT INTO Project VALUES (101, 'SUPER', 'Delhi', 1);
INSERT INTO Project VALUES (102, 'ALPHA', 'Mumbai', 2);
INSERT INTO Project VALUES (103, 'BETA', 'Bangalore', 3);
INSERT INTO Project VALUES (104, 'GAMMA', 'Hyderabad', 4);
INSERT INTO Project VALUES (105, 'DELTA', 'Surathkal', 5);



INSERT INTO Employee_Project VALUES ('482928', 101, 30);
INSERT INTO Employee_Project VALUES ('573839', 102, 20);
INSERT INTO Employee_Project VALUES ('648291', 103, 25);
INSERT INTO Employee_Project VALUES ('927364', 104, 35);
INSERT INTO Employee_Project VALUES ('284751', 105, 40);

INSERT INTO Dependent VALUES ('482928', 'Marketing', 'M', TO_DATE('15-06-2010', 'DD-MM-
YYYY'), 'Son');
INSERT INTO Dependent VALUES ('573839', 'Sales', 'F', TO_DATE('22-09-2005', 'DD-MM-
YYYY'), 'Daughter');
INSERT INTO Dependent VALUES ('648291', 'Finance', 'M', TO_DATE('30-11-2012', 'DD-MM-
YYYY'), 'Son');
INSERT INTO Dependent VALUES ('927364', 'HR', 'F', TO_DATE('10-07-2008', 'DD-MM-YYYY'),
'Daughter');
INSERT INTO Dependent VALUES ('284751', 'IT', 'M', TO_DATE('05-02-2003', 'DD-MM-YYYY'),
'Spouse');
```

7. Give 1000 rupees bonus to each employee.

```
mysql> update employee_details
    -> set salary= salary+1000;
Query OK, 5 rows affected (0.02 sec)
Rows matched: 5  Changed: 5  Warnings: 0

mysql> select * from employee_details;
+--------+--------+--------+--------+------------+-----------+--------+----------+-----------+----------+-------------+
| Fname  | mname  | lname  | ssn    | Bdate      | address   | gender | salary   | Super_ssn | Dept_num | blood_group |
+--------+--------+--------+--------+------------+-----------+--------+----------+-----------+----------+-------------+
| Vikram | Ramesh | Patil  | 284751 | 2000-03-14 | Chennai   | M      |  4000.00 | 648291    |        5 | NULL        |
| Amit   | Kumar  | Sharma | 482928 | 1985-06-15 | Delhi     | M      | 10000.00 | NULL      |        1 | NULL        |
| Priya  | Ravi   | Iyer   | 573839 | 1978-04-20 | Mumbai    | F      |  5500.00 | 482928    |        2 | NULL        |
| Rahul  | Singh  | Rajput | 648291 | 1992-12-10 | Bangalore | M      |  8000.00 | 482928    |        3 | NULL        |
| Sneha  | Verma  | Joshi  | 927364 | 1965-08-25 | Hyderabad | F      |  6500.00 | 573839    |        1 | NULL        |
+--------+--------+--------+--------+------------+-----------+--------+----------+-----------+----------+-------------+
```

8. Increase the salary of the employees having salary <5000 by 500 rupees.

```
mysql> update employee_details
    -> set salary= salary+500
    -> where salary<5000;
```

9. Give 100 rupees bonus to employees having salary less than 10000 rupees and birth date before 1990.

```
mysql> update employee_details
    -> set salary= salary+100
    -> where salary<10000
    -> and Bdate<('1990-01-01');
Query OK, 2 rows affected (0.05 sec)
Rows matched: 2  Changed: 2  Warnings: 0
```

10. Give 100 rupees bonus to employees having salary between 1000 to 5000 rupees and birth date before 1990.

```
mysql> update employee_details
    -> set salary= salary+100
    -> where salary>1000 and salary<5000 and
    -> Bdate<('1990-01-01');
Query OK, 0 rows affected (0.21 sec)
Rows matched: 0  Changed: 0  Warnings: 0
```

11. Give 100 rupees bonus to employees having salary 1000, 3000 and 5000 rupees.

```
mysql> update employee_details
    -> set salary= salary+100
    -> where salary in (1000,3000,5000);
Query OK, 0 rows affected (0.01 sec)
Rows matched: 0  Changed: 0  Warnings: 0
```

12. Update phone number with 0000 where NULL.

```
mysql> update employee_details
    -> set phone_no='0000'
    -> where phone_no is null;
Query OK, 5 rows affected (0.03 sec)
Rows matched: 5  Changed: 5  Warnings: 0
```

13. Give 100 rupees bonus to employees having salary not between 1000 to 5000 rupees and birth date before 1990.

```
mysql> update employee_details
    -> set salary= salary+100
    -> where salary not between 1000 and 5000
    -> and Bdate<('1990-01-01');
Query OK, 3 rows affected (0.13 sec)
Rows matched: 3  Changed: 3  Warnings: 0
```

14. Give 100 rupees bonus to employees having salary between 1000, 3000 and 5000 rupees.

```
mysql> update employee_details
    -> set salary= salary+100
    -> where salary in (1000,3000,5000);
Query OK, 0 rows affected (0.00 sec)
Rows matched: 0  Changed: 0  Warnings: 0
```

15. Delete from employee the rows having bdate less than 1970.

```
mysql> delete from employee_details
    -> where Bdate<('1970-01-01');
Query OK, 1 row affected (0.02 sec)
```

16. List the name and age of all employees.

```
mysql> select Fname, Mname, Lname,
    -> Timestampdiff(year, Bdate, Curdate()) as age
    -> from employee_details;
+--------+--------+--------+------+
| Fname  | Mname  | Lname  | age  |
+--------+--------+--------+------+
| Vikram | Ramesh | Patil  |   25 |
| Amit   | Kumar  | Sharma |   39 |
| Priya  | Ravi   | Iyer   |   46 |
| Rahul  | Singh  | Rajput |   32 |
+--------+--------+--------+------+
4 rows in set (0.00 sec)
```

17. Display the salaries offered to the employees.

```
mysql> select Fname, Mname, Lname,salary
    -> from employee_details;
+--------+--------+--------+----------+
| Fname  | Mname  | Lname  | salary   |
+--------+--------+--------+----------+
| Vikram | Ramesh | Patil  |  4500.00 |
| Amit   | Kumar  | Sharma | 10100.00 |
| Priya  | Ravi   | Iyer   |  5700.00 |
| Rahul  | Singh  | Rajput |  8000.00 |
+--------+--------+--------+----------+
4 rows in set (0.00 sec)
```

18. List the Bdate and Salary of Employee ‘Smith’.

```
mysql>
       select Bdate, salary
    -> from employee_details
    -> where Lname like 'Smith';
+------------+---------+
| Bdate      | salary  |
+------------+---------+
| 1990-05-10 | 6000.00 |
+------------+---------+
1 row in set (0.04 sec)
```

19. Find the location of Project ‘SUPER’.

```
mysql> select proj_location from project
    -> where Proj_name like 'SUPER';
+---------------+
| proj_location |
+---------------+
| Delhi         |
+---------------+
1 row in set (0.00 sec)
```

20. Find the dependent details of Employee with Ssn number 482928.

```
mysql> select * from dependent
    -> where ssn=482928;
+--------+-----------+--------+------------+--------------+
| Ssn    | Dept_name | Gender | Bdate      | Relationship |
+--------+-----------+--------+------------+--------------+
| 482928 | Marketing | M      | 2010-06-15 | Son          |
+--------+-----------+--------+------------+--------------+
1 row in set (0.04 sec)
```

21. List the employees having salary > 2000 and bdate before 1/1/1990.

```
mysql> select * from employee_details
    -> where salary>2000 and Bdate<('1990-01-01');
+-------+-------+--------+--------+------------+---------+--------+----------+-----------+----------+-------------+----------+
| Fname | mname | lname  | ssn    | Bdate      | address | gender | salary   | Super_ssn | Dept_num | blood_group | phone_no |
+-------+-------+--------+--------+------------+---------+--------+----------+-----------+----------+-------------+----------+
| Amit  | Kumar | Sharma | 482928 | 1985-06-15 | Delhi   | M      | 10100.00 | NULL      |        1 | A-          | 0000     |
| Priya | Ravi  | Iyer   | 573839 | 1978-04-20 | Mumbai  | F      |  5700.00 | 482928    |        2 | B+          | 0000     |
+-------+-------+--------+--------+------------+---------+--------+----------+-----------+----------+-------------+----------+
2 rows in set (0.01 sec)
```

22. List the employees belonging to dept_num 1.

```
mysql> select * from employee_details
    -> where dept_num=1;
+-------+-------+--------+--------+------------+---------+--------+----------+-----------+----------+-------------+----------+
| Fname | mname | lname  | ssn    | Bdate      | address | gender | salary   | Super_ssn | Dept_num | blood_group | phone_no |
+-------+-------+--------+--------+------------+---------+--------+----------+-----------+----------+-------------+----------+
| NULL  | NULL  | Smith  | 123456 | 1990-05-10 | NULL    | NULL   |  6000.00 | NULL      |        1 | NULL        | NULL     |
| Amit  | Kumar | Sharma | 482928 | 1985-06-15 | Delhi   | M      | 10100.00 | NULL      |        1 | A-          | 0000     |
+-------+-------+--------+--------+------------+---------+--------+----------+-----------+----------+-------------+----------+
2 rows in set (0.00 sec)
```

23. List the project details of dept_num 5.

```
mysql> select * from project
    -> where dept_num=5;
+----------+-----------+---------------+----------+
| Proj_num | Proj_name | Proj_location | Dept_num |
+----------+-----------+---------------+----------+
|      105 | DELTA     | Surathkal     |        5 |
+----------+-----------+---------------+----------+
1 row in set (0.01 sec)
```

24. List the employee details with their department name.

```
mysql> select E.Fname, E.Mname, E.Lname, E.ssn, E.salary, E.dept_num, D.dept_name
    -> from Employee_details E join Department D on E.dept_num= D.dept_num;
+--------+--------+--------+--------+----------+----------+-----------+
| Fname  | Mname  | Lname  | ssn    | salary   | dept_num | dept_name |
+--------+--------+--------+--------+----------+----------+-----------+
| NULL   | NULL   | Smith  | 123456 |  6000.00 |        1 | Marketing |
| Vikram | Ramesh | Patil  | 284751 |  4500.00 |        5 | IT        |
| Amit   | Kumar  | Sharma | 482928 | 10100.00 |        1 | Marketing |
| Priya  | Ravi   | Iyer   | 573839 |  5700.00 |        2 | Sales     |
| Rahul  | Singh  | Rajput | 648291 |  8000.00 |        3 | Finance   |
+--------+--------+--------+--------+----------+----------+-----------+
5 rows in set (0.03 sec)
```

25. List the employee details with their project names.

```
mysql> select E.Fname, E.Mname, E.Lname, P.proj_num, P.Proj_name
    -> from Employee_details E join Employee_project EP on E.ssn= EP.ssn
    -> join Project P on P.proj_num= EP.proj_num;
+--------+--------+--------+----------+-----------+
| Fname  | Mname  | Lname  | proj_num | Proj_name |
+--------+--------+--------+----------+-----------+
| Amit   | Kumar  | Sharma |      101 | SUPER     |
| Priya  | Ravi   | Iyer   |      102 | ALPHA     |
| Rahul  | Singh  | Rajput |      103 | BETA      |
| Vikram | Ramesh | Patil  |      105 | DELTA     |
+--------+--------+--------+----------+-----------+
4 rows in set (1.15 sec)
```

26. List the employees belonging to Marketing department.

```
mysql> select E.Fname, E.Mname, E.Lname, E.ssn, E.salary, E.dept_num, D.dept_name
    -> from Employee_details E join Department D on E.dept_num= D.dept_num
    -> where D.dept_name='Marketing';
+-------+-------+--------+--------+----------+----------+-----------+
| Fname | Mname | Lname  | ssn    | salary   | dept_num | dept_name |
+-------+-------+--------+--------+----------+----------+-----------+
| NULL  | NULL  | Smith  | 123456 |  6000.00 |        1 | Marketing |
| Amit  | Kumar | Sharma | 482928 | 10100.00 |        1 | Marketing |
+-------+-------+--------+--------+----------+----------+-----------+
2 rows in set (0.01 sec)
```

27. List the project details belonging of Sales department.

```
mysql> select * from project P
    -> join Department D on P.dept_num= D.dept_num
    -> where D.dept_name='Sales';
+----------+-----------+---------------+----------+----------+-----------+---------+---------------+
| Proj_num | Proj_name | Proj_location | Dept_num | Dept_num | Dept_name | Mgr_Ssn | Mgr_startdate |
+----------+-----------+---------------+----------+----------+-----------+---------+---------------+
|      102 | ALPHA     | Mumbai        |        2 |        2 | Sales     | 573839  | 2014-03-15    |
+----------+-----------+---------------+----------+----------+-----------+---------+---------------+
1 row in set (0.01 sec)
```

28. List the dependent details of employee ‘Smith’.

```
mysql> select D.ssn, d.dept_name, d.gender, d.Bdate, d.relationship
    -> from dependent D
    -> join Employee_details EP on D.ssn= EP.ssn
    -> where EP.lname like 'Smith';
+--------+-----------+--------+------------+--------------+
| ssn    | dept_name | gender | Bdate      | relationship |
+--------+-----------+--------+------------+--------------+
| 123456 | Marketing | F      | 2015-08-12 | Daughter     |
+--------+-----------+--------+------------+--------------+
1 row in set (0.00 sec)
```

29. List the various locations of ‘Marketing’ department.

```
mysql> select dl.location from department_locations dl
    -> join department d on dl.dept_num=d.dept_num
    -> where d.dept_name='Marketing';
+----------+
| location |
+----------+
| Delhi    |
+----------+
1 row in set (0.00 sec)
```

30. List the employees going to ‘Surathkal’ branch.

```
mysql> select e.fname, e.mname, e.lname, e.ssn, e.salary
    -> from employee_details e join department_locations dl on
    -> e.dept_num= dl.dept_num
    -> where dl.location='Surathkal';
+--------+--------+-------+--------+---------+
| fname  | mname  | lname | ssn    | salary  |
+--------+--------+-------+--------+---------+
| Vikram | Ramesh | Patil | 284751 | 4500.00 |
+--------+--------+-------+--------+---------+
1 row in set (0.01 sec)
```

31. List the employees in the descending order of their salary.

```
mysql> select * from employee_details
    -> order by salary desc;
+-------+-------+-------+--------+------------+-----------+--------+----------+-----------+----------+-------------+----------+
| Fname | mname | lname | ssn    | Bdate      | address   | gender | salary   | Super_ssn | Dept_num | blood_group | phone_no |
+-------+-------+-------+--------+------------+-----------+--------+----------+-----------+----------+-------------+----------+
| Amit  | Kumar | Sharma | 482928 | 1985-06-15 | Delhi     | M      | 10100.00 | NULL      |        1 | A-          | 0000     |
| Rahul | Singh | Rajput | 648291 | 1992-12-10 | Bangalore | M      |  8000.00 | 482928    |        3 | AB+         | 0000     |
| NULL  | NULL  | Smith  | 123456 | 1990-05-10 | NULL      | NULL   |  6000.00 | NULL      |        1 | NULL        | NULL     |
| Priya | Ravi  | Iyer   | 573839 | 1978-04-20 | Mumbai    | F      |  5700.00 | 482928    |        2 | B+          | 0000     |
| Vikram | Ramesh | Patil | 284751 | 2000-03-14 | Chennai   | M      |  4500.00 | 648291    |        5 | O+          | 0000     |
+-------+-------+-------+--------+------------+-----------+--------+----------+-----------+----------+-------------+----------+
5 rows in set (0.01 sec)
```

32. List the dependents in the descending order of their names.

```
mysql> select d.Ssn, d.Dept_name, d.gender, d.bdate, d.relationship
    -> from dependent d join employee_details e on
    -> d.ssn=e.ssn
    -> order by e.fname desc;
+--------+-----------+--------+------------+--------------+
| Ssn    | Dept_name | gender | bdate      | relationship |
+--------+-----------+--------+------------+--------------+
| 284751 | IT        | M      | 2003-02-05 | Spouse       |
| 648291 | Finance   | M      | 2012-11-30 | Son          |
| 573839 | Sales     | F      | 2005-09-22 | Daughter     |
| 482928 | Marketing | M      | 2010-06-15 | Son          |
| 123456 | Marketing | F      | 2015-08-12 | Daughter     |
+--------+-----------+--------+------------+--------------+
5 rows in set (0.00 sec)
```

THANK YOU