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**s(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)

```
sql> CREATE TABLE Employee (
  ->     Fname VARCHAR(20),
  ->     Mname VARCHAR(20),
  ->     Lname VARCHAR(20) NOT NULL,
  ->     Ssn NUMERIC(10,0) PRIMARY KEY,
  ->     Bdate DATE,
  ->     Address VARCHAR(40),
  ->     Gender VARCHAR(15),
  ->     Salary NUMERIC(10,0),
  ->     Super_Ssn NUMERIC(10,0),
  ->     Dept_num NUMERIC(5,0) NOT NULL,
  ->     FOREIGN KEY (Dept_num) REFERENCES Departments(Dept_num));
```

```
sql> CREATE TABLE Departments (
  ->     Dept_num NUMERIC(5,0) PRIMARY KEY,
  ->     Dept_name VARCHAR(20) UNIQUE,
  ->     Mgr_Ssn NUMERIC(10,0),
  ->     Mgr_startdate DATE);
```

```
sql> CREATE TABLE Department_locations (
   ->      Dept_num NUMERIC(5,0),
   ->      Location VARCHAR(30),
   ->      PRIMARY KEY (Dept_num, Location),
   ->      FOREIGN KEY (Dept_num) REFERENCES Departments(Dept_num)
   -> );
```

```
sql> CREATE TABLE Project (
   ->      Proj_num NUMERIC(10,0) PRIMARY KEY,
   ->      Proj_name VARCHAR(30),
   ->      Proj_location VARCHAR(30),
   ->      Dept_num NUMERIC(5,0),
   ->      FOREIGN KEY (Dept_num) REFERENCES Departments(Dept_num)
   -> );
```

```
sql> CREATE TABLE Employee_Project (
   ->      Ssn NUMERIC(10,0),
   ->      Proj_num NUMERIC(10,0),
   ->      Hours NUMERIC(5,2),
   ->      PRIMARY KEY (Ssn, Proj_num),
   ->      FOREIGN KEY (Ssn) REFERENCES Employee(Ssn),
   ->      FOREIGN KEY (Proj_num) REFERENCES Project(Proj_num)
   -> );
```

```
mysql> create table dependent(
    -> ssn numeric(10,0) primary key,
    -> depn_name varchar(20),
    -> gender varchar(15),
    -> bdate date,
    -> relationship varchar(20),
    -> foreign key(ssn) references employee_details(ssn));
Query OK, 0 rows affected (0.03 sec)
```

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

```
[mysql> ALTER TABLE Employee ADD Blood_group VARCHAR(10);
Query OK, 0 rows affected (0.02 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> ALTER TABLE Employee ADD Hobbies VARCHAR(50);
Query OK, 0 rows affected (0.02 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

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

```
[mysql> ALTER TABLE Employee MODIFY Blood_group VARCHAR(15);
Query OK, 0 rows affected (0.01 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

4. Drop column hobbies from the employee table.

```
[mysql> ALTER TABLE Employee DROP COLUMN Hobbies;
Query OK, 0 rows affected (0.02 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

5. Rename Employee Table to Employee_details.

```
[mysql> ALTER TABLE Employee RENAME TO Employee_details;
Query OK, 0 rows affected (0.02 sec)
```

6. Insert atleast five records in each table.

```
mysql> INSERT INTO Departments (Dept_num, Dept_name, Mgr_Ssn, Mgr_startdate) VALUES
    -> (1, 'Marketing', 888665555, '2010-06-19'),
    -> (2, 'Sales', 482928374, '2018-03-15'),
    -> (3, 'Research', 987123456, '2019-07-01'),
    -> (4, 'Administration', 987654321, '2015-01-01'),
    -> (5, 'Development', 333445555, '2012-05-22');
Query OK, 5 rows affected (0.04 sec)
Records: 5  Duplicates: 0  Warnings: 0
```

```
mysql> INSERT INTO Employee_details (Fname, Mname, Lname, Ssn, Bdate, Address, Gender, Salary, Super_Ssn, Dept_num, Blood_group) VALUES
    -> ('John', 'B', 'Smith', 123456789, '1965-01-09', '731 Fondren, Houston, TX', 'Male', 30000, NULL, 5, 'O+'),
    -> ('Franklin', 'T', 'Wong', 333445555, '1955-12-08', '638 Voss, Houston, TX', 'Male', 40000, 123456789, 5, 'A+'),
    -> ('Alicia', 'J', 'Zelaya', 999887777, '1968-07-19', '3321 Castle, Spring, TX', 'Female', 25000, 333445555, 4, 'B+'),
    -> ('Jennifer', 'S', 'Wallace', 987654321, '1941-06-20', '291 Berry, Bellaire, TX', 'Female', 43000, 333445555, 4, 'AB+'),
    -> ('Ramesh', 'K', 'Narayan', 666884444, '1962-09-15', '975 Fire Oak, Humble, TX', 'Male', 38000, 333445555, 5, 'O-'),
    -> ('Joyce', 'A', 'English', 453453453, '1972-07-31', '5631 Rice, Houston, TX', 'Female', 25000, 333445555, 5, 'A-'),
    -> ('Ahmad', 'V', 'Jabbar', 987987987, '1969-03-29', '980 Dallas, Houston, TX', 'Male', 25000, 987654321, 4, 'B-'),
    -> ('James', 'E', 'Borg', 888665555, '1937-11-10', '450 Stone, Houston, TX', 'Male', 55000, NULL, 1, 'AB-'),
    -> ('Rakesh', 'M', 'Verma', 482928374, '1980-04-15', '123 Main St, Bangalore', 'Male', 4500, 888665555, 2, 'O+'),
    -> ('Priya', 'D', 'Kumar', 987123456, '1992-09-23', '456 Park Rd, Delhi', 'Female', 3800, 888665555, 3, 'A+');
Query OK, 10 rows affected (0.02 sec)
Records: 10  Duplicates: 0  Warnings: 0
```

```
mysql> INSERT INTO Department_locations (Dept_num, Location) VALUES
    -> (1, 'Houston'),
    -> (1, 'Surathkal'),
    -> (2, 'Stafford'),
    -> (2, 'Surathkal'),
    -> (3, 'Bellaire'),
    -> (4, 'Mumbai'),
    -> (5, 'Bangalore');
Query OK, 7 rows affected (0.02 sec)
Records: 7  Duplicates: 0  Warnings: 0
```

```
mysql> INSERT INTO Project (Proj_num, Proj_name, Proj_location, Dept_num) VALUES
    -> (1, 'ProductX', 'Bellaire', 5),
    -> (2, 'ProductY', 'Surathkal', 5),
    -> (3, 'ProductZ', 'Houston', 5),
    -> (10, 'Computerization', 'Stafford', 4),
    -> (20, 'Reorganization', 'Houston', 1),
    -> (30, 'SUPER', 'Surathkal', 2);
Query OK, 6 rows affected (0.00 sec)
```

```
mysql> INSERT INTO Employee_Project (Ssn, Proj_num, Hours) VALUES
    -> (123456789, 1, 32.5),
    -> (123456789, 2, 7.5),
    -> (666884444, 3, 40.0),
    -> (453453453, 1, 20.0),
    -> (453453453, 2, 20.0),
    -> (333445555, 2, 10.0),
    -> (333445555, 3, 10.0),
    -> (333445555, 10, 10.0),
    -> (333445555, 20, 10.0),
    -> (999887777, 30, 30.0),
    -> (999887777, 10, 10.0),
    -> (987654321, 30, 35.0),
    -> (987654321, 20, 15.0),
    -> (888665555, 20, 16.0),
    -> (482928374, 30, 40.0);
Query OK, 15 rows affected (0.01 sec)
Records: 15  Duplicates: 0  Warnings: 0
```

```
mysql> insert into dependent (ssn, depn_name, gender, bdate, relationship) values
    -> (453453453, 'Justin', 'Male', '1970-02-01', 'Father'),
    -> (482928374, 'Muskan', 'Female', '1984-09-01', 'Sister'),
    -> (987123456, 'Hitesh', 'Male', '1990-03-12', 'Brother'),
    -> (8993299102, 'Bruno', 'Male', '1968-09-02', 'Father');
Query OK, 4 rows affected (0.01 sec)
Records: 4  Duplicates: 0  Warnings: 0
```

7. Give 1000 rupees bonus to each employee.

```
[mysql> update employee_details set salary=salary+1000;
Query OK, 10 rows affected (0.03 sec)
Rows matched: 10  Changed: 10  Warnings: 0
```

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

```
[mysql> update employee_details
[    -> set salary=salary+500
[    -> where salary<5000;
Query OK, 1 row affected (0.04 sec)
Rows matched: 1  Changed: 1  Warnings: 0
```

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, 1 row affected (0.01 sec)
Rows matched: 1  Changed: 1  Warnings: 0
```

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

```
[mysql> update employee_details
[    -> set salary=salary+100
[    -> where salary<10000 or bdate < '1990-01-01';
Query OK, 10 rows affected (0.03 sec)
Rows matched: 10  Changed: 10  Warnings: 0
```

11. 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 between 1000 and 5000
[    -> and bdate < '1990-01-01';
Query OK, 0 rows affected (0.03 sec)
Rows matched: 0  Changed: 0  Warnings: 0
```

12. 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 (0.01 sec)
Rows matched: 0  Changed: 0  Warnings: 0
```

13. Update phone number with 0000 where NULL.

```
[mysql> alter table employee_details add phone numeric(10);
Query OK, 0 rows affected (0.04 sec)
Records: 0  Duplicates: 0  Warnings: 0

[mysql> update employee_details
[    -> set phone=0000
[    -> where phone is null;
Query OK, 10 rows affected (0.01 sec)
Rows matched: 10  Changed: 10  Warnings: 0
```

14. 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, 9 rows affected (0.01 sec)
Rows matched: 9  Changed: 9  Warnings: 0
```

15. 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 (0.01 sec)
Rows matched: 0  Changed: 0  Warnings: 0
```

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

```
mysql>
mysql> DELETE FROM employee_details WHERE bdate < '1970-01-01';
Query OK, 7 rows affected (0.01 sec)
```

17. List the name and age of all employees.

```
[mysql> select fname,lname,
[    -> TIMESTAMPDIFF(year, bdate, CURRENT_DATE) as age
[    -> from employee_details;
+--------+---------+------+
| fname  | lname   | age  |
+--------+---------+------+
| Joyce  | English |   52 |
| Rakesh | Verma   |   44 |
| Priya  | Kumar   |   32 |
+--------+---------+------+
3 rows in set (0.00 sec)
```

18. Display the salaries offered to the employees.

```
[mysql> select fname, lname, salary
[    -> from employee_details;
+--------+---------+--------+
| fname  | lname   | salary |
+--------+---------+--------+
| Joyce  | English |  26200 |
| Rakesh | Verma   |   5800 |
| Priya  | Kumar   |   5400 |
+--------+---------+--------+
3 rows in set (0.00 sec)
```

19. List the Bdate and Salary of Employee 'Smith'.

```
[mysql> select fname, lname, salary, bdate
[    -> from employee_details
[    -> where fname='Smith';
+-------+-------+--------+------------+
| fname | lname | salary | bdate      |
+-------+-------+--------+------------+
| Smith | Nolan |  35000 | 1994-03-01 |
+-------+-------+--------+------------+
1 row in set (0.00 sec)
```

20. Find the location of Project 'SUPER'.

```
[mysql> select proj_location
[    -> from project
[    -> where proj_name='Super';
+---------------+
| proj_location |
+---------------+
| Surathkal     |
+---------------+
1 row in set (0.01 sec)
```

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

```
[mysql> SELECT * FROM Dependent WHERE Ssn = 482928374;
+-----------+-----------+--------+------------+--------------+
| Ssn       | Dept_name | Gender | Bdate      | Relationship |
+-----------+-----------+--------+------------+--------------+
| 482928374 | Sales     | Female | 1986-01-15 | Spouse       |
+-----------+-----------+--------+------------+--------------+
1 row in set (0.00 sec)
```

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

```
[mysql> select fname,lname
[    -> from employee_details
[    -> where salary>2000
[    -> and bdate<'1990-01-01';
+--------+--------+
| fname  | lname  |
+--------+--------+
| Joyce  | English|
| Rakesh | Verma  |
+--------+--------+
2 rows in set (0.01 sec)
```

23. List the employees belonging to dept_num 1.

```
[mysql> select fname, lname, ssn
[    -> from employee_details
[    -> where dept_num=1;
+-------+-------+------------+
| fname | lname | ssn        |
+-------+-------+------------+
| Smith | Nolan | 8993299102 |
+-------+-------+------------+
1 row in set (0.01 sec)
```

24. List the project details of dept_num 5.

```
mysql> select * from project
    -> where dept_num=5;
+----------+-----------+---------------+----------+
| Proj_num | Proj_name | Proj_location | Dept_num |
+----------+-----------+---------------+----------+
|        1 | ProductX  | Bellaire      |        5 |
|        2 | ProductY  | Surathkal     |        5 |
|        3 | ProductZ  | Houston       |        5 |
+----------+-----------+---------------+----------+
3 rows in set (0.00 sec)
```

25. List the employee details with their department name.

```
mysql> select fname, lname, ssn, dept_name
    -> from employee_details
    -> natural join departments;
+---------+---------+------------+-------------+
| fname   | lname   | ssn        | dept_name   |
+---------+---------+------------+-------------+
| Joyce   | English |  453453453 | Development |
| Rakesh  | Verma   |  482928374 | Sales       |
| Priya   | Kumar   |  987123456 | Research    |
| Smith   | Nolan   | 8993299102 | Marketing   |
+---------+---------+------------+-------------+
4 rows in set (0.01 sec)
```

26. List the employee details with their project names.

```
mysql> select fname, lname, e.ssn, p.proj_name
    -> from employee_details e
    -> join employee_project ep on e.ssn=ep.ssn
    -> join project p on ep.proj_num=p.proj_num;
+---------+---------+-----------+-----------+
| fname   | lname   | ssn       | proj_name |
+---------+---------+-----------+-----------+
| Joyce   | English | 453453453 | ProductX  |
| Joyce   | English | 453453453 | ProductY  |
| Rakesh  | Verma   | 482928374 | SUPER     |
+---------+---------+-----------+-----------+
3 rows in set (0.01 sec)
```

27. List the employees belonging to Marketing department.

```
mysql> select fname, lname, ssn, dept_name
    -> from employee_details
    -> natural join departments
    -> where dept_name='Marketing';
+-------+-------+------------+-----------+
| fname | lname | ssn        | dept_name |
+-------+-------+------------+-----------+
| Smith | Nolan | 8993299102 | Marketing |
+-------+-------+------------+-----------+
1 row in set (0.00 sec)
```

28. List the project details belonging of Sales department.

```
mysql> select p.*, dept_name
    -> from project p
    -> natural join departments
    -> where dept_name='Sales';
+----------+-----------+---------------+----------+-----------+
| Proj_num | Proj_name | Proj_location | Dept_num | dept_name |
+----------+-----------+---------------+----------+-----------+
|       30 | SUPER     | Surathkal     |        2 | Sales     |
+----------+-----------+---------------+----------+-----------+
1 row in set (0.01 sec)
```

29. List the dependent details of employee 'Smith'.

```
[mysql> select d.depn_name, d.gender,
[    -> d.bdate, d.relationship from
[    -> dependent d join employee_details e
[    -> on d.ssn=e.ssn
[    -> where e.fname='Smith';
+-----------+--------+------------+--------------+
| depn_name | gender | bdate      | relationship |
+-----------+--------+------------+--------------+
| Bruno     | Male   | 1968-09-02 | Father       |
+-----------+--------+------------+--------------+
1 row in set (0.00 sec)
```

30. List the various locations of 'Marketing' department.

```
[mysql> select location, dept_name
[    -> from department_locations
[    -> natural join departments
[    -> where dept_name='Marketing';
+-----------+-----------+
| location  | dept_name |
+-----------+-----------+
| Houston   | Marketing |
| Surathkal | Marketing |
+-----------+-----------+
2 rows in set (0.02 sec)
```

31. List the employees going to 'Surathkal' branch.

```
[mysql> select fname, lname, ssn, location
[    -> from employee_details
[    -> natural join department_locations
[    -> where location='Surathkal';
+--------+-------+------------+-----------+
| fname  | lname | ssn        | location  |
+--------+-------+------------+-----------+
| Smith  | Nolan | 8993299102 | Surathkal |
| Rakesh | Verma |  482928374 | Surathkal |
+--------+-------+------------+-----------+
2 rows in set (0.01 sec)
```

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

```
[mysql> select fname, lname, ssn, salary
[    -> from employee_details
[    -> order by salary desc;
+--------+---------+------------+--------+
| fname  | lname   | ssn        | salary |
+--------+---------+------------+--------+
| Smith  | Nolan   | 8993299102 |  35000 |
| Joyce  | English |  453453453 |  26200 |
| Rakesh | Verma   |  482928374 |   5800 |
| Priya  | Kumar   |  987123456 |   5400 |
+--------+---------+------------+--------+
4 rows in set (0.01 sec)
```

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

```
[mysql> select depn_name, ssn, relationship
[    -> from dependent
[    -> order by depn_name desc;
+------------+------------+--------------+
| depn_name  | ssn        | relationship |
+------------+------------+--------------+
| Muskan     |  482928374 | Sister       |
| Justin     |  453453453 | Father       |
| Hitesh     |  987123456 | Brother      |
| Bruno      | 8993299102 | Father       |
+------------+------------+--------------+
4 rows in set (0.01 sec)
```