DEVIKA . B
Roll no:22

LAB CYCLE 2

Experiment No: 4

Employee Table Schema:

- Employee (ID character 5, DeptID numeric 2, Name character 15, Designation character 15, Basic numeric 10,2, Gender character 1)

```
mysql> Create table Employee(id char(5),deptid int(2),name char(15),designation char(15),basic int(10),gender char(1));
Query OK, 0 rows affected, 2 warnings (0.03 sec)

mysql> desc Employee;
+-------------+----------+------+-----+---------+-------+
| Field       | Type     | Null | Key | Default | Extra |
+-------------+----------+------+-----+---------+-------+
| id          | char(5)  | YES  |     | NULL    |       |
| deptid      | int      | YES  |     | NULL    |       |
| name        | char(15) | YES  |     | NULL    |       |
| designation | char(15) | YES  |     | NULL    |       |
| basic       | int      | YES  |     | NULL    |       |
| gender      | char(1)  | YES  |     | NULL    |       |
+-------------+----------+------+-----+---------+-------+
6 rows in set (0.00 sec)
```

```
mysql> insert into Employee (id,deptid,name,designation,basic,gender) values ('127','2','kiran','manager','4000','M');
Query OK, 1 row affected (0.01 sec)

mysql> select * from Employee;
+------+--------+---------+-------------+-------+--------+
| id   | deptid | name    | designation | basic | gender |
+------+--------+---------+-------------+-------+--------+
| 101  |      1 | ram     | typist      |  2000 | M      |
| 102  |      2 | arun    | analyst     |  6000 | M      |
| 121  |      1 | ruby    | typist      |  2010 | F      |
| 156  |      3 | mary    | manager     |  4500 | F      |
| 123  |      2 | mridula | analyst     |  6000 | F      |
| 114  |      4 | menon   | clerk       |  1500 | M      |
| 115  |      4 | tim     | clerk       |  1500 | M      |
| 127  |      2 | kiran   | manager     |  4000 | M      |
+------+--------+---------+-------------+-------+--------+
8 rows in set (0.00 sec)
```

1. Display the different designations existing in the organization.

   SELECT DISTINCT designation FROM Employee;

```
mysql> select distinct designation from Employee;
+-------------+
| designation |
+-------------+
| typist      |
| analyst     |
| manager     |
| clerk       |
+-------------+
4 rows in set (0.00 sec)
```

2. Display the number of different designations existing in the organization.

   SELECT COUNT(distinct designation) FROM Employee;

```
mysql> select count(distinct designation) from Employee;
+-----------------------------+
| count(distinct designation) |
+-----------------------------+
|                           4 |
+-----------------------------+
1 row in set (0.01 sec)
```

3. Display ID, Name, Designation, DeptID, Basic, DA, HRA, and Net Salary of all employees with suitable headings as DA, HRA, and NET_SAL respectively. (DA is 7.5% of Basic, and NET_SAL is Basic + DA + HRA)

   SELECT id,name,designation,deptid,basic,(basic * 0.075) as DA,(basic * 0.10) as HRA,

   (basic * 0.075) + (basic * 0.10) as net_sal FROM Employee;

```
mysql> select id,name,designation,deptid,basic,(basic * 0.075) as DA,(basic * 0.10) as HRA,(basic+(basic * 0.075)+(basic * 0.10)) as net_sal from Employee;
+------+---------+-------------+--------+-------+---------+--------+----------+
| id   | name    | designation | deptid | basic | DA      | HRA    | net_sal  |
+------+---------+-------------+--------+-------+---------+--------+----------+
| 101  | ram     | typist      |      1 |  2000 | 150.000 | 200.00 | 2350.000 |
| 102  | arun    | analyst     |      2 |  6000 | 450.000 | 600.00 | 7050.000 |
| 121  | ruby    | typist      |      1 |  2010 | 150.750 | 201.00 | 2361.750 |
| 156  | mary    | manager     |      3 |  4500 | 337.500 | 450.00 | 5287.500 |
| 123  | mridula | analyst     |      2 |  6000 | 450.000 | 600.00 | 7050.000 |
| 114  | menon   | clerk       |      4 |  1500 | 112.500 | 150.00 | 1762.500 |
| 115  | tim     | clerk       |      4 |  1500 | 112.500 | 150.00 | 1762.500 |
| 127  | kiran   | manager     |      2 |  4000 | 300.000 | 400.00 | 4700.000 |
+------+---------+-------------+--------+-------+---------+--------+----------+
8 rows in set (0.01 sec)
```

4. Display the maximum salary given for female employees.

   SELECT MAX(basic) AS max_salary FrOm Employee WHERE gender=’F’;

```
mysql> select max(basic) as max_salary from Employee where gender='F';
+------------+
| max_salary |
+------------+
|       6000 |
+------------+
1 row in set (0.00 sec)
```

5. Add a column Manager_ID into the above table.

   ALTER TABLE Employee ADD manager_id int;

```
mysql> alter table Employee add column manager_id int;
Query OK, 0 rows affected (0.04 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> select * from Employee;
+------+--------+---------+-------------+-------+--------+------------+
| id   | deptid | name    | designation | basic | gender | manager_id |
+------+--------+---------+-------------+-------+--------+------------+
| 101  |      1 | ram     | typist      |  2000 | M      |       NULL |
| 102  |      2 | arun    | analyst     |  6000 | M      |       NULL |
| 121  |      1 | ruby    | typist      |  2010 | F      |       NULL |
| 156  |      3 | mary    | manager     |  4500 | F      |       NULL |
| 123  |      2 | mridula | analyst     |  6000 | F      |       NULL |
| 114  |      4 | menon   | clerk       |  1500 | M      |       NULL |
| 115  |      4 | tim     | clerk       |  1500 | M      |       NULL |
| 127  |      2 | kiran   | manager     |  4000 | M      |       NULL |
+------+--------+---------+-------------+-------+--------+------------+
8 rows in set (0.01 sec)
```

6. Update values of Manager_ID of employees as NULL for 101, 101 for 102, 121, 156. 102 for 123, 114, 115. 121 for 127.

```
UPDATE Employee SET manager_id=NULL WHERE id=101;

UPDATE Employee SET manager_id=101 WHERE id in(102,121,156,102);

UPDATE Employee SET manager_id=102 WHERE id in(123,114,115);
```

```
mysql> update Employee set manager_id=NULL where id=101;
Query OK, 0 rows affected (0.00 sec)
Rows matched: 1  Changed: 0  Warnings: 0

mysql> update Employee set manager_id=101 where id in(102,121,156,102);
Query OK, 3 rows affected (0.01 sec)
Rows matched: 3  Changed: 3  Warnings: 0

mysql> update Employee set manager_id=102 where id in(123,114,115);
Query OK, 3 rows affected (0.01 sec)
Rows matched: 3  Changed: 3  Warnings: 0

mysql> update Employee set manager_id=12 where id =127;
Query OK, 1 row affected (0.01 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> select * from Employee;
+------+--------+---------+-------------+-------+--------+------------+
| id   | deptid | name    | designation | basic | gender | manager_id |
+------+--------+---------+-------------+-------+--------+------------+
| 101  |      1 | ram     | typist      |  2000 | M      |       NULL |
| 102  |      2 | arun    | analyst     |  6000 | M      |        101 |
| 121  |      1 | ruby    | typist      |  2010 | F      |        101 |
| 156  |      3 | mary    | manager     |  4500 | F      |        101 |
| 123  |      2 | mridula | analyst     |  6000 | F      |        102 |
| 114  |      4 | menon   | clerk       |  1500 | M      |        102 |
| 115  |      4 | tim     | clerk       |  1500 | M      |        102 |
| 127  |      2 | kiran   | manager     |  4000 | M      |         12 |
+------+--------+---------+-------------+-------+--------+------------+
8 rows in set (0.00 sec)
```

```
UPDATE Employee SET manager_id=121 WHERE id =127;
```

```
mysql> update Employee set  manager_id=121 where id=127;
Query OK, 1 row affected (0.01 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> select * from table Employee;
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corre
mysql> select * from  Employee;
+------+--------+---------+-------------+-------+--------+------------+
| id   | deptid | name    | designation | basic | gender | manager_id |
+------+--------+---------+-------------+-------+--------+------------+
| 101  |      1 | ram     | typist      |  2000 | M      |       NULL |
| 102  |      2 | arun    | analyst     |  6000 | M      |        101 |
| 121  |      1 | ruby    | typist      |  2010 | F      |        101 |
| 156  |      3 | mary    | manager     |  4500 | F      |        101 |
| 123  |      2 | mridula | analyst     |  6000 | F      |        102 |
| 114  |      4 | menon   | clerk       |  1500 | M      |        102 |
| 115  |      4 | tim     | clerk       |  1500 | M      |        102 |
| 127  |      2 | kiran   | manager     |  4000 | M      |        121 |
+------+--------+---------+-------------+-------+--------+------------+
8 rows in set (0.00 sec)
```

7. Add a column Joining Date to the above table and update appropriate values for the Joining Date field.

   ALTER TABLE Employee ADD joining_date date;

```
mysql> alter table Employee add joining_date date;
Query OK, 0 rows affected (0.03 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> select * from Employee;
+------+--------+---------+-------------+-------+--------+------------+--------------+
| id   | deptid | name    | designation | basic | gender | manager_id | joining_date |
+------+--------+---------+-------------+-------+--------+------------+--------------+
| 101  |      1 | ram     | typist      |  2000 | M      |       NULL | NULL         |
| 102  |      2 | arun    | analyst     |  6000 | M      |        101 | NULL         |
| 121  |      1 | ruby    | typist      |  2010 | F      |        101 | NULL         |
| 156  |      3 | mary    | manager     |  4500 | F      |        101 | NULL         |
| 123  |      2 | mridula | analyst     |  6000 | F      |        102 | NULL         |
| 114  |      4 | menon   | clerk       |  1500 | M      |        102 | NULL         |
| 115  |      4 | tim     | clerk       |  1500 | M      |        102 | NULL         |
| 127  |      2 | kiran   | manager     |  4000 | M      |        121 | NULL         |
+------+--------+---------+-------------+-------+--------+------------+--------------+
8 rows in set (0.00 sec)
```

```
mysql> update Employee set joining_date='1995-12-1' where id=102;
Query OK, 1 row affected (0.00 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> update Employee set joining_date='1995-12-11' where id=121;
Query OK, 1 row affected (0.02 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> update Employee set joining_date='1098-02-11' where id='115';
Query OK, 1 row affected (0.01 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> update Employee set joining_date='1098-02-01' where id='114';
Query OK, 1 row affected (0.01 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> update Employee set joining_date='1098-02-09' where id='127';
Query OK, 1 row affected (0.01 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> update Employee set joining_date='1128-02-09' where id='123';
Query OK, 1 row affected (0.01 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> update Employee set joining_date='1111-02-09' where id='156';
Query OK, 1 row affected (0.02 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> select * from Employee ;
+------+--------+---------+-------------+-------+--------+------------+--------------+
| id   | deptid | name    | designation | basic | gender | manager_id | joining_date |
+------+--------+---------+-------------+-------+--------+------------+--------------+
| 101  |      1 | ram     | typist      |  2000 | M      |       NULL | 1999-12-12   |
| 102  |      2 | arun    | analyst     |  6000 | M      |        101 | 1995-12-01   |
| 121  |      1 | ruby    | typist      |  2010 | F      |        101 | 1995-12-11   |
| 156  |      3 | mary    | manager     |  4500 | F      |        101 | 1111-02-09   |
| 123  |      2 | mridula | analyst     |  6000 | F      |        102 | 1128-02-09   |
| 114  |      4 | menon   | clerk       |  1500 | M      |        102 | 1098-02-01   |
| 115  |      4 | tim     | clerk       |  1500 | M      |        102 | 1098-02-11   |
| 127  |      2 | kiran   | manager     |  4000 | M      |        121 | 1098-02-09   |
+------+--------+---------+-------------+-------+--------+------------+--------------+
8 rows in set (0.00 sec)
```

8. Display the details of employees according to their seniority.

SELECT * FROM Employee ORDER BY joining_date ASC;

```
mysql> select * from Employee order by joining_date Asc;
+------+--------+---------+-------------+-------+--------+------------+--------------+
| id   | deptid | name    | designation | basic | gender | manager_id | joining_date |
+------+--------+---------+-------------+-------+--------+------------+--------------+
| 114  |      4 | menon   | clerk       |  1500 | M      |        102 | 1098-02-01   |
| 127  |      2 | kiran   | manager     |  4000 | M      |        121 | 1098-02-09   |
| 115  |      4 | tim     | clerk       |  1500 | M      |        102 | 1098-02-11   |
| 156  |      3 | mary    | manager     |  4500 | F      |        101 | 1111-02-09   |
| 123  |      2 | mridula | analyst     |  6000 | F      |        102 | 1128-02-09   |
| 102  |      2 | arun    | analyst     |  6000 | M      |        101 | 1995-12-01   |
| 121  |      1 | ruby    | typist      |  2010 | F      |        101 | 1995-12-11   |
| 101  |      1 | ram     | typist      |  2000 | M      |       NULL | 1999-12-12   |
+------+--------+---------+-------------+-------+--------+------------+--------------+
8 rows in set (0.00 sec)
```

9. Create a new table DEPARTMENT with fields DEPTID and DNAME. Make DEPTID the primary key and make DEPTID in the Employee table refer to the DEPARTMENT table.

CREATE TABLE department(deptid int ,dname varchar(255),primary key(deptid));

```
mysql> create table department(deptid int ,dname varchar(255),Primary key(deptid));
Query OK, 0 rows affected (0.04 sec)

mysql> desc department;
+--------+--------------+------+-----+---------+-------+
| Field  | Type         | Null | Key | Default | Extra |
+--------+--------------+------+-----+---------+-------+
| deptid | int          | NO   | PRI | NULL    |       |
| dname  | varchar(255) | YES  |     | NULL    |       |
+--------+--------------+------+-----+---------+-------+
2 rows in set (0.00 sec)
```

ALTER TABLE Employee ADD FOREIGN KEY(deptid) REFERENCES department(deptid);

```
mysql> alter table Employee add foreign key(deptid) references department(deptid);
Query OK, 8 rows affected (0.08 sec)
Records: 8  Duplicates: 0  Warnings: 0
```

10. Insert values into the DEPARTMENT table. Ensure that all existing values for DEPTID in Employee are inserted into this table. Sample values: DESIGN, CODING, TESTING, RESEARCH.

INSERT INTO department (deptid, dname) VALUES

(1, 'design'),(2, 'coding'),(3, 'testing'),(4, 'research');

```
mysql> update department set dname='design' where deptid=1;
Query OK, 1 row affected (0.01 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> update department set dname='coding' where deptid=2;
Query OK, 1 row affected (0.02 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> update department set dname='testing' where deptid=3;
Query OK, 1 row affected (0.01 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> update department set dname='research' where deptid=4;
Query OK, 1 row affected (0.01 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> select * from department;
+--------+----------+
| deptid | dname    |
+--------+----------+
|      1 | design   |
|      2 | coding   |
|      3 | testing  |
|      4 | research |
+--------+----------+
4 rows in set (0.00 sec)
```

11.Display the Employee Name and Department Name.

SELECT Employee.name, department.dname FROM Employee JOIN department using(deptid);

```
mysql> select Employee.name ,department.dname from Employee join department using(deptid);
+---------+----------+
| name    | dname    |
+---------+----------+
| ram     | design   |
| ruby    | design   |
| arun    | coding   |
| mridula | coding   |
| kiran   | coding   |
| mary    | testing  |
| menon   | research |
| tim     | research |
+---------+----------+
8 rows in set (0.00 sec)
```

12.Display the Department Name of employee Arun.

SELECT department.dname as department_name FROM department JOIN Employee ON department.deptid=Employee.deptid WHERE Employee.name = 'arun';

```
mysql> select department.dname as department_name from department join Employee on department.deptid=Employee.deptid where Employee.name='arun';
+-----------------+
| department_name |
+-----------------+
| coding          |
+-----------------+
1 row in set (0.00 sec)
```

13.Display the salary given by the DESIGN department.

SELECT Employee.basic as salary FROM Employee JOIN department ON Employee.deptid=department.deptid WHERE department.dname=’design’;

```
mysql> select Employee.basic as salary from Employee join department on Employee.deptid=department.deptid where department.dname='design';
+--------+
| salary |
+--------+
|   2000 |
|   2010 |
+--------+
2 rows in set (0.00 sec)
```

14.Display the details of typists working in the DESIGN department.

SELECT Employee.* from Emloyee JOIN department on Employee.deptid=department.deptid WHERE Employee.designation=’typist’ and department.dname=’design’;

```
mysql> select Employee.* from Employee join department on Employee.deptid=department.deptid where Employee.designation='typist' and department.dname='design';
+------+--------+------+-------------+-------+--------+------------+--------------+
| id   | deptid | name | designation | basic | gender | manager_id | joining_date |
+------+--------+------+-------------+-------+--------+------------+--------------+
| 101  |      1 | ram  | typist      |  2000 | M      |       NULL | 1999-12-12   |
| 121  |      1 | ruby | typist      |  2010 | F      |        101 | 1995-12-11   |
+------+--------+------+-------------+-------+--------+------------+--------------+
2 rows in set (0.00 sec)
```

15.Display the salary of employees working in the RESEARCH department.

SELECT Employee.basic as salary from Employee JOIN department.deptid=Employee.deptid WHERE department.dname=’reaserch’;

```
mysql> select Employee.basic as salary from Employee join department on department.deptid=Employee.deptid where department.dname='research';
+--------+
| salary |
+--------+
|   1500 |
|   1500 |
+--------+
2 rows in set (0.00 sec)
```

16.List the female employees working in the TESTING department.

SELECT * FROM Employee JOIN department ON Employee.deptid=department.deptid WHERE Employee.gender=’F’ and department.dname=’testing’;

```
mysql> select Employee.* from Employee join department on Employee.deptid=department.deptid where Employee.gender='F' and department.dname='testing';
+------+--------+------+-------------+-------+--------+------------+--------------+
| id   | deptid | name | designation | basic | gender | manager_id | joining_date |
+------+--------+------+-------------+-------+--------+------------+--------------+
| 156  |      3 | mary | manager     |  4500 | F      |        101 | 1111-02-09   |
+------+--------+------+-------------+-------+--------+------------+--------------+
1 row in set (0.00 sec)
```

17.Display the details of employees not working in CODING or TESTING departments.

SELECT Employee.* from department on Employee.deptid=department.deptid WHERE department.dname NOT IN (‘coding’,’testing’);

```
mysql> select Employee.* from Employee join department on  Employee.deptid=department.deptid where department.dname not in ('coding' , 'testing');
+------+--------+-------+-------------+-------+--------+------------+--------------+
| id   | deptid | name  | designation | basic | gender | manager_id | joining_date |
+------+--------+-------+-------------+-------+--------+------------+--------------+
| 101  |      1 | ram   | typist      |  2000 | M      |       NULL | 1999-12-12   |
| 121  |      1 | ruby  | typist      |  2010 | F      |        101 | 1995-12-11   |
| 114  |      4 | menon | clerk       |  1500 | M      |        102 | 1098-02-01   |
| 115  |      4 | tim   | clerk       |  1500 | M      |        102 | 1098-02-11   |
+------+--------+-------+-------------+-------+--------+------------+--------------+
4 rows in set (0.00 sec)
```

18.Display the names of departments giving the maximum salary.

SELECT department.dname from Employee join department=department.deptid GROUP BY department.dname ORDER BY MAX(Employee.basic) desc limit 1;

```
mysql> select department.dname from Employee join department on Employee.deptid=department.deptid Group by department.dname order by MAX(Employee.basic) desc limit 1;
+--------+
| dname  |
+--------+
| coding |
+--------+
1 row in set (0.00 sec)
```

19.Display the names of departments with the minimum number of employees.

SELECT department.dname from Employee JOIN department.deptid GROUP BY COUNT(Employee.id) asc limit1;

```
mysql> select department.dname From Employee join department on Employee.deptid=department.deptid group by department.dname order by count(Employee.id) asc limit 1;
+---------+
| dname   |
+---------+
| testing |
+---------+
1 row in set (0.01 sec)
```

20.Display the second maximum salary.

SELECT DISTINCT basic FROM Employee ORDER BY basic desc limit 1 offset 1;

```
mysql> select distinct basic from Employee order by basic desc limit 1 offset 1;
+-------+
| basic |
+-------+
|  4500 |
+-------+
1 row in set (0.00 sec)
```

21.Display the second minimum salary.

SELECT DISTINCT basic FROM Emloyee ORDER BY basic asc limit 1 offset 1;

```
mysql> select distinct basic from Employee order by basic asc limit 1 offset 1;
+-------+
| basic |
+-------+
|  2000 |
+-------+
1 row in set (0.00 sec)
```

22.Display the names of employees getting a salary greater than the average salary of their department.

SELECT E1.name FROM Employee E1 basic>(SELECT AVG(E2.basic) FROM Employee E2 WHERE E1.deptid=E2.deptid);

```
ysql> select E1.name from Employee E1 where E1.basic>(select avg(E2.basic) from Employee E2 where E1.deptid=E2.deptid);
+---------+
| name    |
+---------+
| arun    |
| ruby    |
| mridula |
+---------+
3 rows in set (0.00 sec)
```

23.Display the names of employees working under the manager Ram.

SELECT E1.name FROM Employee E1 JOIN Employee E2 ON E1.manager_id=E2.id WHERE E2.name=’ram’;

```
mysql> select E1.name from Employee E1 Join Employee E2 On E1.manager_id=E2.id where E2.name='ram';
+------+
| name |
+------+
| arun |
| ruby |
| mary |
+------+
3 rows in set (0.00 sec)
```