DEVIKA.B
Roll No:22

```
CREATE TABLE Locations (
    LocationID INT PRIMARY KEY,
    StreetAddress VARCHAR(255),
    PostalCode VARCHAR(20),
    City VARCHAR(100),
    StateProvince VARCHAR(100),
    CountryID VARCHAR(10)
);

CREATE TABLE Departments (
    DepartmentID INT PRIMARY KEY,
    DepartmentName VARCHAR(100),
    LocationID INT,
    FOREIGN KEY (LocationID) REFERENCES Locations(LocationID)
);

CREATE TABLE Employees (
    EmployeeID INT PRIMARY KEY,
    FirstName VARCHAR(100),
    LastName VARCHAR(100),
    Email VARCHAR(100),
    PhoneNumber VARCHAR(20),
    HireDate DATE,
    JobTitle VARCHAR(100),
    Salary DECIMAL(10,2),
    Commission DECIMAL(5,2),
    ManagerID INT,
    DepartmentID INT,
    FOREIGN KEY (ManagerID) REFERENCES Employees(EmployeeID),
    FOREIGN KEY (DepartmentID) REFERENCES Departments(DepartmentID)
);

CREATE TABLE Dependents (
    DependentID INT PRIMARY KEY,
    FirstName VARCHAR(100),
    LastName VARCHAR(100),
    EmployeeID INT,
    FOREIGN KEY (EmployeeID) REFERENCES Employees(EmployeeID)
);
```

```
mysql> show tables;
+------------------+
| Tables_in_24mca22 |
+------------------+
| Employee         |
| departments      |
| dependents       |
| location         |
+------------------+
4 rows in set (0.01 sec)

mysql> select * from Employee;
+------------+-----------+----------+--------------------------+-------------+------------+------------------+----------+------------+-----------+-------------+
| employeeid | firstname | lastname | email                    | phonenumber | hiredate   | jobtitle         | salary   | commission | managerid | departmentid |
+------------+-----------+----------+--------------------------+-------------+------------+------------------+----------+------------+-----------+-------------+
|        101 | john      | smith    | john.smith@email.com     | 9998887777  | 2021-05-10 | manager          | 12000.00 |       0.05 |      NULL |           1 |
|        102 | alice     | taylor   | alice.taylor@email.com   | 8887776666  | 2022-06-12 | hr executive     |  8000.00 |       0.02 |       101 |           2 |
|        103 | robert    | williams | robert.williams@email.com | 7776665555 | 2023-07-15 | software engineer |  9500.00 |       0.03 |       101 |           3 |
|        104 | michael   | brown    | michael.brown@email.com  | 6665554444  | 2020-03-20 | marketing head   | 11000.00 |       0.04 |      NULL |           4 |
|        105 | emma      | davis    | emma.davis@email.com     | 5554443333  | 2019-11-25 | sales executive  |  7000.00 |       0.01 |       101 |           5 |
|        106 | sophia    | johnson  | sophia.johnson@email.com | 4443332222  | 2021-08-30 | finance analyst  | 11500.00 |       0.05 |       101 |           1 |
+------------+-----------+----------+--------------------------+-------------+------------+------------------+----------+------------+-----------+-------------+
6 rows in set (0.00 sec)

mysql> select * from departments;
+--------------+----------------+------------+
| departmentid | departmentname | locationid |
+--------------+----------------+------------+
|            1 | Finance        |       1700 |
|            2 | HR             |       1800 |
|            3 | IT             |       1900 |
|            4 | Marketing      |       2000 |
|            5 | sales          |       1700 |
+--------------+----------------+------------+
5 rows in set (0.00 sec)

mysql> select * from dependents;
+-------------+-----------+----------+------------+
| dependentid | firstname | lastname | employeeid |
+-------------+-----------+----------+------------+
|           1 | Olivia    | Smith    |        101 |
|           2 | Liam      | Taylor   |        102 |
|           3 | Emma      | Williams |        103 |
|           4 | Noah      | Brown    |        104 |
+-------------+-----------+----------+------------+
```

```
+------------+-----------+----------+--------------------------+-------------+------------+------------------+----------+------------+-----------+-------------+
|        101 | john      | smith    | john.smith@email.com     | 9998887777  | 2021-05-10 | manager          | 12000.00 |       0.05 |      NULL |           1 |
|        102 | alice     | taylor   | alice.taylor@email.com   | 8887776666  | 2022-06-12 | hr executive     |  8000.00 |       0.02 |       101 |           2 |
|        103 | robert    | williams | robert.williams@email.com | 7776665555 | 2023-07-15 | software engineer |  9500.00 |       0.03 |       101 |           3 |
|        104 | michael   | brown    | michael.brown@email.com  | 6665554444  | 2020-03-20 | marketing head   | 11000.00 |       0.04 |      NULL |           4 |
|        105 | emma      | davis    | emma.davis@email.com     | 5554443333  | 2019-11-25 | sales executive  |  7000.00 |       0.01 |       101 |           5 |
|        106 | sophia    | johnson  | sophia.johnson@email.com | 4443332222  | 2021-08-30 | finance analyst  | 11500.00 |       0.05 |       101 |           1 |
+------------+-----------+----------+--------------------------+-------------+------------+------------------+----------+------------+-----------+-------------+
6 rows in set (0.00 sec)

mysql> select * from departments;
+--------------+----------------+------------+
| departmentid | departmentname | locationid |
+--------------+----------------+------------+
|            1 | Finance        |       1700 |
|            2 | HR             |       1800 |
|            3 | IT             |       1900 |
|            4 | Marketing      |       2000 |
|            5 | sales          |       1700 |
+--------------+----------------+------------+
5 rows in set (0.00 sec)

mysql> select * from dependents;
+-------------+-----------+----------+------------+
| dependentid | firstname | lastname | employeeid |
+-------------+-----------+----------+------------+
|           1 | Olivia    | Smith    |        101 |
|           2 | Liam      | Taylor   |        102 |
|           3 | Emma      | Williams |        103 |
|           4 | Noah      | Brown    |        104 |
+-------------+-----------+----------+------------+
4 rows in set (0.00 sec)

mysql> select * from location;
+------------+------------------+------------+-----------+---------------+-----------+
| locationid | streetaddress    | postalcode | city      | stateprovince | countryid |
+------------+------------------+------------+-----------+---------------+-----------+
|       1700 | 123 mg road      | 11001      | delhi     | delhi         | in        |
|       1800 | 456 park street  | 70016      | kolkata   | west bengal   | in        |
|       1900 | 789 anna salai   | 60002      | chennai   | tamil nadu    | in        |
|       2000 | 101 brigade road | 560001     | bangalore | karnataka     | in        |
+------------+------------------+------------+-----------+---------------+-----------+
4 rows in set (0.00 sec)

mysql>
```

1. **Find all employees who locate in the location with the id 1700.**

```
SELECT * FROM Employees
WHERE DepartmentID IN (SELECT DepartmentID FROM Departments WHERE
LocationID = 1700);
```

```
mysql> SELECT * FROM Employee  WHERE departmentid IN (SELECT departmentid FROM departments WHERE locationid = 1700)
    -> ;
+------------+----------+----------+------------------------+-------------+-----------+----------------+----------+------------+-----------+-------------+
| employeeid | firstname | lastname | email                  | phonenumber | hiredate  | jobtitle       | salary   | commission | managerid | departmentid |
+------------+----------+----------+------------------------+-------------+-----------+----------------+----------+------------+-----------+-------------+
|        101 | john      | smith    | john.smith@email.com   | 9998887777  | 2021-05-10 | manager        | 12000.00 |       0.05 |      NULL |            1 |
|        106 | sophia    | johnson  | sophia.johnson@email.com | 4443332222 | 2021-08-30 | finance analyst | 11500.00 |       0.05 |       101 |            1 |
|        105 | emma      | davis    | emma.davis@email.com   | 5554443333  | 2019-11-25 | sales executive |  7000.00 |       0.01 |       101 |            5 |
+------------+----------+----------+------------------------+-------------+-----------+----------------+----------+------------+-----------+-------------+
3 rows in set (0.01 sec)
```

2. **Find all employees who do not locate at the location 1700.**

```
SELECT * FROM Employees
WHERE DepartmentID NOT IN (SELECT DepartmentID FROM Departments WHERE
LocationID = 1700);
```

```
mysql> SELECT * FROM Employee  WHERE departmentid NOT IN (SELECT departmentid FROM departments WHERE locationid = 1700)
    -> ;
+------------+----------+----------+------------------------+-------------+-----------+------------------+----------+------------+-----------+-------------+
| employeeid | firstname | lastname | email                  | phonenumber | hiredate  | jobtitle         | salary   | commission | managerid | departmentid |
+------------+----------+----------+------------------------+-------------+-----------+------------------+----------+------------+-----------+-------------+
|        102 | alice     | taylor   | alice.taylor@email.com | 8887776666  | 2022-06-12 | hr executive     |  8000.00 |       0.02 |       101 |            2 |
|        103 | robert    | williams | robert.williams@email.com | 7776665555 | 2023-07-15 | software engineer |  9500.00 |       0.03 |       101 |            3 |
|        104 | michael   | brown    | michael.brown@email.com | 6665554444  | 2020-03-20 | marketing head   | 11000.00 |       0.04 |      NULL |            4 |
+------------+----------+----------+------------------------+-------------+-----------+------------------+----------+------------+-----------+-------------+
3 rows in set (0.00 sec)
```

3. **Find the employees who have the highest salary.**

```
SELECT * FROM Employees
WHERE Salary = (SELECT MAX(Salary) FROM Employees);
```

```
mysql> SELECT * FROM Employee  WHERE salary = (SELECT MAX(salary) FROM Employee);
+------------+----------+----------+----------------------+-------------+-----------+----------+----------+------------+-----------+-------------+
| employeeid | firstname | lastname | email                | phonenumber | hiredate  | jobtitle | salary   | commission | managerid | departmentid |
+------------+----------+----------+----------------------+-------------+-----------+----------+----------+------------+-----------+-------------+
|        101 | john      | smith    | john.smith@email.com | 9998887777  | 2021-05-10 | manager  | 12000.00 |       0.05 |      NULL |            1 |
+------------+----------+----------+----------------------+-------------+-----------+----------+----------+------------+-----------+-------------+
1 row in set (0.00 sec)
```

4. **Find all employees whose salaries are greater than the average salary of all employees.**

```
SELECT * FROM Employees
WHERE Salary > (SELECT AVG(Salary) FROM Employees);
```

```
mysql> SELECT * FROM Employee  WHERE salary > (SELECT AVG(salary) FROM Employee);
+------------+----------+----------+------------------------+-------------+-----------+----------------+----------+------------+-----------+-------------+
| employeeid | firstname | lastname | email                  | phonenumber | hiredate  | jobtitle       | salary   | commission | managerid | departmentid |
+------------+----------+----------+------------------------+-------------+-----------+----------------+----------+------------+-----------+-------------+
|        101 | john      | smith    | john.smith@email.com   | 9998887777  | 2021-05-10 | manager        | 12000.00 |       0.05 |      NULL |            1 |
|        104 | michael   | brown    | michael.brown@email.com | 6665554444 | 2020-03-20 | marketing head | 11000.00 |       0.04 |      NULL |            4 |
|        106 | sophia    | johnson  | sophia.johnson@email.com | 4443332222 | 2021-08-30 | finance analyst | 11500.00 |       0.05 |       101 |            1 |
+------------+----------+----------+------------------------+-------------+-----------+----------------+----------+------------+-----------+-------------+
3 rows in set (0.00 sec)
```

5. **Find all departments that have at least one employee with a salary greater than 10,000.**

```
SELECT DISTINCT DepartmentID, DepartmentName
FROM Departments
WHERE DepartmentID IN (SELECT DepartmentID FROM Employees WHERE Salary >
10000);
```

```
mysql> SELECT DISTINCT departmentid, departmentname  FROM departments  WHERE departmentid IN (SELECT departmentid FROM Employee WHERE salary > 10000);
+--------------+----------------+
| departmentid | departmentname |
+--------------+----------------+
|            1 | Finance        |
|            4 | Marketing      |
+--------------+----------------+
2 rows in set (0.00 sec)
```

6. **Find all departments that do not have any employee with a salary greater than 10,000.**

```
SELECT * FROM Departments
WHERE DepartmentID NOT IN (SELECT DISTINCT DepartmentID FROM Employees
WHERE Salary > 10000);
```

```
mysql> SELECT * FROM departments  WHERE departmentid NOT IN (SELECT DISTINCT departmentid FROM
 Employee WHERE salary > 10000);
+---------------+-----------------+-------------+
| departmentid | departmentname | locationid |
+---------------+-----------------+-------------+
|             2 | HR              |        1800 |
|             3 | IT              |        1900 |
|             5 | sales           |        1700 |
+---------------+-----------------+-------------+
3 rows in set (0.00 sec)
```

7. **Find all employees whose salaries are greater than the lowest salary of every department.**

```
SELECT * FROM Employees
WHERE Salary > ALL (SELECT MIN(Salary) FROM Employees GROUP BY
DepartmentID);
```

```
mysql> SELECT * FROM Employee  WHERE salary > ALL (SELECT MIN(salary) FROM Employee GROUP BY departmentid);
+------------+-----------+----------+---------------------+-------------+------------+----------+----------+------------+-----------+--------------+
| employeeid | firstname | lastname | email               | phonenumber | hiredate   | jobtitle | salary   | commission | managerid | departmentid |
+------------+-----------+----------+---------------------+-------------+------------+----------+----------+------------+-----------+--------------+
|        101 | john      | smith    | john.smith@email.com | 9998887777  | 2021-05-10 | manager  | 12000.00 |       0.05 |      NULL |            1 |
+------------+-----------+----------+---------------------+-------------+------------+----------+----------+------------+-----------+--------------+
1 row in set (0.00 sec)
```

8. **Find all employees whose salaries are greater than or equal to the highest salary of every department.**

```
SELECT * FROM Employees
WHERE Salary >= ALL (SELECT MAX(Salary) FROM Employees GROUP BY
DepartmentID);
```

```
mysql> SELECT * FROM Employee  WHERE salary >= ALL (SELECT MAX(salary) FROM Employee GROUP BY
departmentid);
+------------+-----------+----------+---------------------+-------------+------------+----------+----------+------------+-----------+-------------+
| employeeid | firstname | lastname | email               | phonenumber | hiredate   | jobtitle | salary   | commission | managerid | departmentid |
+------------+-----------+----------+---------------------+-------------+------------+----------+----------+------------+-----------+-------------+
|        101 | john      | smith    | john.smith@email.com | 9998887777  | 2021-05-10 | manager  | 12000.00 |       0.05 |      NULL |           1 |
+------------+-----------+----------+---------------------+-------------+------------+----------+----------+------------+-----------+-------------+
1 row in set (0.00 sec)
```

9. **Calculate the average of the average salary of departments.**

```
SELECT AVG(DeptAvg) FROM
(SELECT AVG(Salary) AS DeptAvg FROM Employees GROUP BY DepartmentID) AS
AvgSalaries;
```

```
mysql> SELECT AVG(DeptAvg) FROM  (SELECT AVG(salary) AS DeptAvg FROM Employee GROUP BY departmentid) AS AvgSalaries;
+-----------------+
| AVG(DeptAvg)    |
+-----------------+
| 9450.0000000000 |
+-----------------+
1 row in set (0.00 sec)
```

10. **Find salaries of all employees, their average salary, and the difference between their salary and the average salary.**

```
SELECT EmployeeID, Salary,
(SELECT AVG(Salary) FROM Employees) AS AvgSalary,
Salary - (SELECT AVG(Salary) FROM Employees) AS SalaryDifference
FROM Employees;
```

```
mysql> SELECT employeeid, salary,  (SELECT AVG(salary) FROM Employee) AS AvgSalary,  salary -
(SELECT AVG(Salary) FROM Employee) AS SalaryDifference  FROM Employee;
+------------+----------+-------------+------------------+
| employeeid | salary   | AvgSalary   | SalaryDifference |
+------------+----------+-------------+------------------+
|        101 | 12000.00 | 9833.333333 |      2166.666667 |
|        102 |  8000.00 | 9833.333333 |     -1833.333333 |
|        103 |  9500.00 | 9833.333333 |      -333.333333 |
|        104 | 11000.00 | 9833.333333 |      1166.666667 |
|        105 |  7000.00 | 9833.333333 |     -2833.333333 |
|        106 | 11500.00 | 9833.333333 |      1666.666667 |
+------------+----------+-------------+------------------+
6 rows in set (0.00 sec)
```

11. **Find employees whose salary is higher than the average salary of employees in their department.**

```
SELECT * FROM Employees e
WHERE Salary > (SELECT AVG(Salary) FROM Employees WHERE DepartmentID =
e.DepartmentID);
```

```
mysql> SELECT * FROM Employee  e  WHERE salary > (SELECT AVG(salary) FROM Employee WHERE departmentid = e.departmentid);
+------------+-----------+----------+---------------------+-------------+------------+----------+----------+------------+-----------+-------------+
| employeeid | firstname | lastname | email               | phonenumber | hiredate   | jobtitle | salary   | commission | managerid | departmentid |
+------------+-----------+----------+---------------------+-------------+------------+----------+----------+------------+-----------+-------------+
|        101 | john      | smith    | john.smith@email.com | 9998887777  | 2021-05-10 | manager  | 12000.00 |       0.05 |      NULL |            1 |
+------------+-----------+----------+---------------------+-------------+------------+----------+----------+------------+-----------+-------------+
1 row in set (0.00 sec)
```

12. **Return all employees who have no dependents.**

```
SELECT * FROM Employees
WHERE EmployeeID NOT IN (SELECT DISTINCT EmployeeID FROM Dependents);
```

```
mysql> SELECT * FROM Employee  WHERE employeeid NOT IN (SELECT DISTINCT employeeid FROM dependents);
+------------+-----------+----------+-----------------------+-------------+------------+----------------+----------+------------+-----------+-------------+
| employeeid | firstname | lastname | email                 | phonenumber | hiredate   | jobtitle       | salary   | commission | managerid | departmentid |
+------------+-----------+----------+-----------------------+-------------+------------+----------------+----------+------------+-----------+-------------+
|        105 | emma      | davis    | emma.davis@email.com  | 5554443333  | 2019-11-25 | sales executive |  7000.00 |       0.01 |       101 |            5 |
|        106 | sophia    | johnson  | sophia.johnson@email.com | 4443332222 | 2021-08-30 | finance analyst | 11500.00 |       0.05 |       101 |            1 |
+------------+-----------+----------+-----------------------+-------------+------------+----------------+----------+------------+-----------+-------------+
2 rows in set (0.00 sec)
```

13. **Display first name, last name, department name of employees of Department ID 1, 2, and 3.**

```
SELECT e.FirstName, e.LastName, d.DepartmentName
FROM Employees e
JOIN Departments d ON e.DepartmentID = d.DepartmentID
WHERE e.DepartmentID IN (1, 2, 3);
```

```
mysql> SELECT e.firstname, e.lastname, d.departmentname  FROM Employee e  JOIN departments d ON e.departmentid = d.departmentid  WHERE e.departmentid IN (1, 2, 3);
+-----------+----------+----------------+
| firstname | lastname | departmentname |
+-----------+----------+----------------+
| john      | smith    | Finance        |
| sophia    | johnson  | Finance        |
| alice     | taylor   | HR             |
| robert    | williams | IT             |
+-----------+----------+----------------+
4 rows in set (0.00 sec)
```

14.**Display employee details of departments 1, 2, and 3 with a salary greater than 10,000.**

```
SELECT e.FirstName, e.LastName, e.JobTitle, d.DepartmentName
FROM Employees e
JOIN Departments d ON e.DepartmentID = d.DepartmentID
WHERE e.DepartmentID IN (1, 2, 3) AND e.Salary > 10000;
```

```
mysql> SELECT e.firstname, e.lastname, e.jobtitle, d.departmentname  FROM Employee e  JOIN departments d ON e.departmentid = d.departmentid  WHERE e.departmentid IN (1, 2, 3) AND e.salary
> 10000;
+-----------+---------+---------------+---------------+
| firstname | lastname | jobtitle        | departmentname |
+-----------+---------+---------------+---------------+
| john      | smith    | manager         | Finance        |
| sophia    | johnson  | finance analyst | Finance        |
+-----------+---------+---------------+---------------+
2 rows in set (0.01 sec)
```

15.**Display department details including location information.**

```
SELECT d.DepartmentName, l.StreetAddress, l.PostalCode, l.City, l.StateProvince
FROM Departments d
JOIN Locations l ON d.LocationID = l.LocationID;
```

```
mysql> SELECT d.departmentname, l.streetaddress, l.postalcode, l.city, l.stateprovince  FROM departments d  JOIN location l ON d.locationid = l.locationid;
+---------------+-----------------+------------+----------+--------------+
| departmentname | streetaddress    | postalcode | city      | stateprovince |
+---------------+-----------------+------------+----------+--------------+
| Finance        | 123 mg road      | 11001      | delhi     | delhi         |
| sales          | 123 mg road      | 11001      | delhi     | delhi         |
| HR             | 456 park street  | 70016      | kolkata   | west bengal   |
| IT             | 789 anna salai   | 60002      | chennai   | tamil nadu    |
| Marketing      | 101 brigade road | 560001     | bangalore | karnataka     |
+---------------+-----------------+------------+----------+--------------+
5 rows in set (0.00 sec)
```

16.**Find employees with or without a department.**

```
SELECT e.FirstName, e.LastName, e.DepartmentID, d.DepartmentName
FROM Employees e
LEFT JOIN Departments d ON e.DepartmentID = d.DepartmentID;
```

```
mysql> SELECT e.firstname, e.lastname, e.departmentid, d.departmentname  FROM Employee e  LEFT
 JOIN departments d ON e.departmentid = d.departmentid;
+-----------+----------+--------------+----------------+
| firstname | lastname | departmentid | departmentname |
+-----------+----------+--------------+----------------+
| john      | smith    |            1 | Finance        |
| alice     | taylor   |            2 | HR             |
| robert    | williams |            3 | IT             |
| michael   | brown    |            4 | Marketing      |
| emma      | davis    |            5 | sales          |
| sophia    | johnson  |            1 | Finance        |
+-----------+----------+--------------+----------------+
6 rows in set (0.01 sec)
```

17.**Find employees whose first name contains ‘Z’.**

```
SELECT e.FirstName, e.LastName, d.DepartmentName, l.City, l.StateProvince
FROM Employees e
JOIN Departments d ON e.DepartmentID = d.DepartmentID
JOIN Locations l ON d.LocationID = l.LocationID
WHERE e.FirstName LIKE '%Z%';
```

```
mysql> SELECT e.firstname, e.lastname, d.departmentname, l.city, l.stateprovince  FROM Employee e  JOIN departments d ON e.departmentid = d.departmentid  JOIN location l ON d.locationid =
l.locationid  WHERE e.firstName LIKE '%Z%';
Empty set (0.00 sec)
```

18.**Find all departments including those without employees.**

```
SELECT d.DepartmentID, d.DepartmentName, e.FirstName, e.LastName
FROM Departments d
LEFT JOIN Employees e ON d.DepartmentID = e.DepartmentID;
```

```
mysql> SELECT d.departmentid, d.departmentname, e.firstname, e.lastname  FROM departments d  LEFT JOIN Employee e ON d.departmentid = e.departmentid;
+--------------+----------------+-----------+----------+
| departmentid | departmentname | firstname | lastname |
+--------------+----------------+-----------+----------+
|            1 | Finance        | john      | smith    |
|            1 | Finance        | sophia    | johnson  |
|            2 | HR             | alice     | taylor   |
|            3 | IT             | robert    | williams |
|            4 | Marketing      | michael   | brown    |
|            5 | sales          | emma      | davis    |
+--------------+----------------+-----------+----------+
6 rows in set (0.00 sec)
```

19.**Find employees and their managers.**

```
SELECT e.FirstName AS Employee, m.FirstName AS Manager
FROM Employees e
LEFT JOIN Employees m ON e.ManagerID = m.EmployeeID;
```

```
mysql> SELECT e.firstname AS Employee, m.firstname AS Manager  FROM Employee e  LEFT JOIN Employee m ON e.managerid = m.Employeeid;
+----------+---------+
| Employee | Manager |
+----------+---------+
| john     | NULL    |
| alice    | john    |
| robert   | john    |
| michael  | NULL    |
| emma     | john    |
| sophia   | john    |
+----------+---------+
6 rows in set (0.00 sec)
```

20.**Find employees working in the same department as 'Taylor'.**

```
SELECT FirstName, LastName, DepartmentID
FROM Employees
WHERE DepartmentID = (SELECT DepartmentID FROM Employees WHERE LastName =
'Taylor');
```

```
mysql> SELECT firstname, lastname, departmentid  FROM Employee  WHERE departmentid = (SELECT departmentid FROM Employee WHERE lastname = 'Taylor');
+-----------+----------+--------------+
| firstname | lastname | departmentid |
+-----------+----------+--------------+
| alice     | taylor   |            2 |
+-----------+----------+--------------+
1 row in set (0.00 sec)
```

21.**Calculate the salary difference from the max salary for their job title.**

```
SELECT JobTitle, FirstName, LastName,
(SELECT MAX(Salary) FROM Employees e2 WHERE e1.JobTitle = e2.JobTitle) - Salary
AS SalaryDifference
FROM Employees e1;
```

```
mysql> SELECT jobtitle, firstname, lastname,  (SELECT MAX(salary) FROM Employee e2 WHERE e1.jobtitle = e2.jobtitle) - salary AS Salarydifference  FROM Employee e1;
+------------------+-----------+----------+------------------+
| jobtitle         | firstname | lastname | Salarydifference |
+------------------+-----------+----------+------------------+
| manager          | john      | smith    |             0.00 |
| hr executive     | alice     | taylor   |             0.00 |
| software engineer | robert    | williams |             0.00 |
| marketing head   | michael   | brown    |             0.00 |
| sales executive  | emma      | davis    |             0.00 |
| finance analyst  | sophia    | johnson  |             0.00 |
+------------------+-----------+----------+------------------+
6 rows in set (0.00 sec)
```

22.**Calculate average salary and count of employees with commissions per department.**

```
SELECT d.DepartmentName, AVG(e.Salary) AS AvgSalary, COUNT(e.EmployeeID) AS
EmployeesWithCommission
FROM Employees e
JOIN Departments d ON e.DepartmentID = d.DepartmentID
WHERE e.Commission > 0
GROUP BY d.DepartmentName;
```

```
mysql> SELECT d.departmentname, AVG(e.salary) AS AvgSalary, COUNT(e.employeeid) AS EmployeesWithcommission  FROM Employee e  JOIN departments d ON e.departmentid = d.departmentid  WHERE e.co
mmission > 0  GROUP BY d.departmentname;
+---------------+-------------+-------------------------+
| departmentname | AvgSalary   | EmployeesWithcommission |
+---------------+-------------+-------------------------+
| Finance       | 11750.000000 |                       2 |
| HR            |  8000.000000 |                       1 |
| IT            |  9500.000000 |                       1 |
| Marketing     | 11000.000000 |                       1 |
| sales         |  7000.000000 |                       1 |
+---------------+-------------+-------------------------+
5 rows in set (0.01 sec)
```

23. **Create a view for employees in Delhi.**

```
CREATE VIEW DelhiEmployees AS
SELECT e.FirstName, e.EmployeeID, e.PhoneNumber, e.JobTitle, d.DepartmentName,
m.FirstName AS ManagerName
FROM Employees e
JOIN Departments d ON e.DepartmentID = d.DepartmentID
JOIN Employees m ON e.ManagerID = m.EmployeeID
WHERE d.LocationID = (SELECT LocationID FROM Locations WHERE City = 'Delhi');
```

```
mysql> CREATE VIEW DelhiEmployee AS  SELECT e.firstname, e.employeeid, e.phonenumber, e.jobtitle, d.departmentname, m.firstname AS managername  FROM Employee e  JOIN departments d ON e.depar
tmentid = d.departmentid  JOIN Employee m ON e.managerid = m.employeeid  WHERE d.locationid
= (SELECT locationid FROM location WHERE city = 'Delhi');
Query OK, 0 rows affected (0.01 sec)

mysql> select * from DelhiEmployee;
+-----------+------------+-------------+----------------+----------------+-------------+
| firstname | employeeid | phonenumber | jobtitle       | departmentname | managername |
+-----------+------------+-------------+----------------+----------------+-------------+
| sophia    |        106 | 4443332222  | finance analyst | Finance        | john        |
| emma      |        105 | 5554443333  | sales executive | sales          | john        |
+-----------+------------+-------------+----------------+----------------+-------------+
2 rows in set (0.01 sec)
```

24. **Use the previously created view to find employees whose job title is ‘Manager’ and department is ‘Finance’.**

```
SELECT * FROM DelhiEmployees
WHERE JobTitle = 'Manager' AND DepartmentName = 'Finance';
```

```
mysql> SELECT * FROM DelhiEmployee  WHERE jobtitle = 'manager' AND departmentname = 'Finance';
Empty set (0.00 sec)
```

25. **Check if it is possible to update the phone number of an employee named ‘Smith’ using the view.**

```
UPDATE DelhiEmployees
SET PhoneNumber = '9876543210'
WHERE FirstName = 'Smith';
```

```
mysql> UPDATE DelhiEmployee  SET phonenumber = '9876543210'  WHERE firstname = 'Smith';
Query OK, 0 rows affected (0.00 sec)
Rows matched: 0  Changed: 0  Warnings: 0

mysql>
mysql> SELECT * FROM DelhiEmployees
    -> ;
ERROR 1146 (42S02): Table '24mca22.DelhiEmployees' doesn't exist
mysql> SELECT * FROM DelhiEmployee;
+-----------+------------+-------------+-----------------+----------------+-------------+
| firstname | employeeid | phonenumber | jobtitle        | departmentname | managername |
+-----------+------------+-------------+-----------------+----------------+-------------+
| sophia    |        106 | 4443332222  | finance analyst | Finance        | john        |
| emma      |        105 | 5554443333  | sales executive | sales          | john        |
+-----------+------------+-------------+-----------------+----------------+-------------+
2 rows in set (0.00 sec)
```

26.**Display the details of employees who have no dependents.**

```
SELECT * FROM Employees
WHERE EmployeeID NOT IN (SELECT DISTINCT EmployeeID FROM Dependents);
```

```
mysql> SELECT * FROM Employee  WHERE employeeid NOT IN (SELECT DISTINCT employeeid FROM dependents);
+------------+-----------+----------+-------------------------+-------------+------------+-----------------+----------+------------+-----------+-------------+
| employeeid | firstname | lastname | email                   | phonenumber | hiredate   | jobtitle        | salary   | commission | managerid | departmentid |
+------------+-----------+----------+-------------------------+-------------+------------+-----------------+----------+------------+-----------+-------------+
|        105 | emma      | davis    | emma.davis@email.com    | 5554443333  | 2019-11-25 | sales executive |  7000.00 |       0.01 |       101 |           5 |
|        106 | sophia    | johnson  | sophia.johnson@email.com | 4443332222  | 2021-08-30 | finance analyst | 11500.00 |       0.05 |       101 |           1 |
+------------+-----------+----------+-------------------------+-------------+------------+-----------------+----------+------------+-----------+-------------+
2 rows in set (0.00 sec)
```

27.**Display details of employees whose manager ID is 101 or 201 (Use UNION clause).**

```
SELECT * FROM Employees WHERE ManagerID = 101
UNION
SELECT * FROM Employees WHERE ManagerID = 201;
```

```
mysql> SELECT * FROM Employee WHERE managerid = 101  UNION  SELECT * FROM Employee WHERE managerid = 201;
+------------+-----------+----------+-------------------------+-------------+------------+-----------------+----------+------------+-----------+-------------+
| employeeid | firstname | lastname | email                   | phonenumber | hiredate   | jobtitle        | salary   | commission | managerid | departmentid |
+------------+-----------+----------+-------------------------+-------------+------------+-----------------+----------+------------+-----------+-------------+
|        102 | alice     | taylor   | alice.taylor@email.com  | 8887776666  | 2022-06-12 | hr executive    |  8000.00 |       0.02 |       101 |           2 |
|        103 | robert    | williams | robert.williams@email.com | 7776665555  | 2023-07-15 | software engineer |  9500.00 |       0.03 |       101 |           3 |
|        105 | emma      | davis    | emma.davis@email.com    | 5554443333  | 2019-11-25 | sales executive |  7000.00 |       0.01 |       101 |           5 |
|        106 | sophia    | johnson  | sophia.johnson@email.com | 4443332222  | 2021-08-30 | finance analyst | 11500.00 |       0.05 |       101 |           1 |
+------------+-----------+----------+-------------------------+-------------+------------+-----------------+----------+------------+-----------+-------------+
4 rows in set (0.00 sec)
```

28.**Display the details of employees who have at least one dependent.**

```
SELECT * FROM Employees
WHERE EmployeeID IN (SELECT DISTINCT EmployeeID FROM Dependents);
```

```
mysql> SELECT * FROM Employee  WHERE employeeid IN (SELECT DISTINCT employeeid FROM dependents);
+------------+-----------+----------+-------------------------+-------------+------------+-----------------+----------+------------+-----------+-------------+
| employeeid | firstname | lastname | email                   | phonenumber | hiredate   | jobtitle        | salary   | commission | managerid | departmentid |
+------------+-----------+----------+-------------------------+-------------+------------+-----------------+----------+------------+-----------+-------------+
|        101 | john      | smith    | john.smith@email.com    | 9998887777  | 2021-05-10 | manager         | 12000.00 |       0.05 |      NULL |           1 |
|        102 | alice     | taylor   | alice.taylor@email.com  | 8887776666  | 2022-06-12 | hr executive    |  8000.00 |       0.02 |       101 |           2 |
|        103 | robert    | williams | robert.williams@email.com | 7776665555  | 2023-07-15 | software engineer |  9500.00 |       0.03 |       101 |           3 |
|        104 | michael   | brown    | michael.brown@email.com | 6665554444  | 2020-03-20 | marketing head  | 11000.00 |       0.04 |      NULL |           4 |
+------------+-----------+----------+-------------------------+-------------+------------+-----------------+----------+------------+-----------+-------------+
4 rows in set (0.00 sec)
```