# Database Setup

```
-- DROP DATABASE EmpDept;

CREATE DATABASE EmpDept;
USE EmpDept;

CREATE TABLE Department (
    DepartmentID INT PRIMARY KEY AUTO_INCREMENT,
    DepartmentName VARCHAR(50) NOT NULL
);

CREATE TABLE Employee (
    EmpID INT PRIMARY KEY,
    Name VARCHAR(100) NOT NULL,
    DepartmentID INT,
    Salary DECIMAL(10, 2),
    JoiningDate DATE,
    FOREIGN KEY (DepartmentID) REFERENCES Department(DepartmentID)
);
```

```
mysql> DESC Department;
+----------------+-------------+------+-----+---------+----------------+
| Field          | Type        | Null | Key | Default | Extra          |
+----------------+-------------+------+-----+---------+----------------+
| DepartmentID   | int         | NO   | PRI | NULL    | auto_increment |
| DepartmentName | varchar(50) | NO   |     | NULL    |                |
+----------------+-------------+------+-----+---------+----------------+
2 rows in set (0.00 sec)

mysql> DESC Employee;
+--------------+---------------+------+-----+---------+-------+
| Field        | Type          | Null | Key | Default | Extra |
+--------------+---------------+------+-----+---------+-------+
| EmpID        | int           | NO   | PRI | NULL    |       |
| Name         | varchar(100)  | NO   |     | NULL    |       |
| DepartmentID | int           | YES  | MUL | NULL    |       |
| Salary       | decimal(10,2) | YES  |     | NULL    |       |
| JoiningDate  | date          | YES  |     | NULL    |       |
+--------------+---------------+------+-----+---------+-------+
5 rows in set (0.01 sec)
```

# Inserting Data

*INSERT INTO Department (DepartmentName) VALUES*
*('HR'),*
*('Finance'),*
*('Engineering'),*
*('Marketing');*

```
mysql> SELECT * FROM Department;
+--------------+-----------------+
| DepartmentID | DepartmentName |
+--------------+-----------------+
|            1 | HR              |
|            2 | Finance         |
|            3 | Engineering     |
|            4 | Marketing       |
+--------------+-----------------+
4 rows in set (0.00 sec)
```

*INSERT INTO Employee (EmpID, Name, DepartmentID, Salary, JoiningDate) VALUES*
*(101, 'Alice', 1, 50000, '2020-06-15'),*
*(102, 'Bob', 2, 70000, '2018-03-20'),*
*(103, 'Charlie', 3, 120000, '2017-11-10'),*
*(104, 'David', 4, 45000, '2021-09-25'),*
*(105, 'Eve', 3, 110000, '2019-07-30'),*
*(106, 'Frank', 2, 80000, '2020-01-12'),*
*(107, 'Grace', 1, 55000, '2022-04-05');*

```
mysql> SELECT * FROM Employee;
+-------+---------+--------------+-----------+-------------+
| EmpID | Name    | DepartmentID | Salary    | JoiningDate |
+-------+---------+--------------+-----------+-------------+
|   101 | Alice   |            1 |  50000.00 | 2020-06-15  |
|   102 | Bob     |            2 |  70000.00 | 2018-03-20  |
|   103 | Charlie |            3 | 120000.00 | 2017-11-10  |
|   104 | David   |            4 |  45000.00 | 2021-09-25  |
|   105 | Eve     |            3 | 110000.00 | 2019-07-30  |
|   106 | Frank   |            2 |  80000.00 | 2020-01-12  |
|   107 | Grace   |            1 |  55000.00 | 2022-04-05  |
+-------+---------+--------------+-----------+-------------+
7 rows in set (0.00 sec)
```

*-- **View 1***
```
CREATE VIEW AverageSalaryByDepartment AS
SELECT
    d.DepartmentName,
    AVG(e.Salary) AS AverageSalary
FROM
    Department d
JOIN
    Employee e ON d.DepartmentID = e.DepartmentID
GROUP BY
    d.DepartmentName;
```

```
mysql> SELECT * FROM AverageSalaryByDepartment;
+----------------+---------------+
| DepartmentName | AverageSalary |
+----------------+---------------+
| HR             |  52500.000000 |
| Finance        |  75000.000000 |
| Engineering    | 115000.000000 |
| Marketing      |  45000.000000 |
+----------------+---------------+
4 rows in set (0.01 sec)
```

*-- **View 2***
```
CREATE VIEW EmployeeDetailsWithDepartment AS
SELECT
    e.EmpID,
    e.Name,
    d.DepartmentName,
    e.Salary,
    e.JoiningDate
FROM
    Employee e
JOIN
    Department d ON e.DepartmentID = d.DepartmentID;
```

```
mysql> SELECT * FROM EmployeeDetailsWithDepartment;
+-------+---------+----------------+-----------+-------------+
| EmpID | Name    | DepartmentName | Salary    | JoiningDate |
+-------+---------+----------------+-----------+-------------+
|   101 | Alice   | HR             |  50000.00 | 2020-06-15  |
|   107 | Grace   | HR             |  55000.00 | 2022-04-05  |
|   102 | Bob     | Finance        |  70000.00 | 2018-03-20  |
|   106 | Frank   | Finance        |  80000.00 | 2020-01-12  |
|   103 | Charlie | Engineering    | 120000.00 | 2017-11-10  |
|   105 | Eve     | Engineering    | 110000.00 | 2019-07-30  |
|   104 | David   | Marketing      |  45000.00 | 2021-09-25  |
+-------+---------+----------------+-----------+-------------+
7 rows in set (0.00 sec)
```

```
-- View 3
CREATE VIEW HighestPaidEmployeePerDepartment AS
SELECT
    d.DepartmentName,
    e.Name,
    e.Salary
FROM
    Employee e
JOIN
    Department d ON e.DepartmentID = d.DepartmentID
WHERE
    (e.DepartmentID, e.Salary) IN (
        SELECT
            DepartmentID,
            MAX(Salary)
        FROM
            Employee
        GROUP BY
            DepartmentID
    );
```

```
mysql> SELECT * FROM HighestPaidEmployeePerDepartment;
+----------------+---------+-----------+
| DepartmentName | Name    | Salary    |
+----------------+---------+-----------+
| HR             | Grace   |  55000.00 |
| Finance        | Frank   |  80000.00 |
| Engineering    | Charlie | 120000.00 |
| Marketing      | David   |  45000.00 |
+----------------+---------+-----------+
4 rows in set (0.00 sec)
```

```
-- View 4
CREATE VIEW EmployeeCountPerDepartment AS
SELECT
    d.DepartmentName,
    COUNT(e.EmpID) AS EmployeeCount
FROM
    Department d
LEFT JOIN
    Employee e ON d.DepartmentID = e.DepartmentID
GROUP BY
    d.DepartmentName;
```

```
mysql> SELECT * FROM EmployeeCountPerDepartment;
+----------------+---------------+
| DepartmentName | EmployeeCount |
+----------------+---------------+
| HR             |             2 |
| Finance        |             2 |
| Engineering    |             2 |
| Marketing      |             1 |
+----------------+---------------+
4 rows in set (0.01 sec)
```

# Queries

***-- View 1 Queries***

**1)**

```
SELECT DepartmentName, AverageSalary
FROM AverageSalaryByDepartment
WHERE AverageSalary > (
   SELECT MAX(AverageSalary) * 0.5
   FROM AverageSalaryByDepartment
);
```

```
+----------------+---------------+
| DepartmentName | AverageSalary |
+----------------+---------------+
| Finance        |  75000.000000 |
| Engineering    | 115000.000000 |
+----------------+---------------+
2 rows in set (0.00 sec)
```

**2)**

```
SELECT DepartmentName, AverageSalary
FROM AverageSalaryByDepartment
ORDER BY AverageSalary DESC
LIMIT 1 OFFSET 1;
```

```
+----------------+---------------+
| DepartmentName | AverageSalary |
+----------------+---------------+
| Finance        |  75000.000000 |
+----------------+---------------+
1 row in set (0.00 sec)
```

**3)**

```
SELECT DepartmentName, AverageSalary
FROM AverageSalaryByDepartment
WHERE AverageSalary > (
   SELECT AVG(Salary)
   FROM Employee
);
```

```
mysql> SELECT DepartmentName, AverageSalary
    -> FROM AverageSalaryByDepartment
    -> WHERE AverageSalary > (
    ->     SELECT AVG(Salary)
    ->     FROM Employee
    -> );
+----------------+---------------+
| DepartmentName | AverageSalary |
+----------------+---------------+
| Engineering    | 115000.000000 |
+----------------+---------------+
1 row in set (0.00 sec)
```

***-- View 2 Queries***

**1)**

```
SELECT Name, DepartmentName, Salary
FROM EmployeeDetailsWithDepartment
ORDER BY Salary DESC
LIMIT 3;
```

```
+---------+----------------+-----------+
| Name    | DepartmentName | Salary    |
+---------+----------------+-----------+
| Charlie | Engineering    | 120000.00 |
| Eve     | Engineering    | 110000.00 |
| Frank   | Finance        |  80000.00 |
+---------+----------------+-----------+
3 rows in set (0.00 sec)
```

**2)**

```
SELECT Name, DepartmentName, JoiningDate
FROM EmployeeDetailsWithDepartment
WHERE JoiningDate > '2020-12-31'
AND DepartmentName IN ('Engineering', 'Finance');
```

```
Empty set (0.00 sec)
```

**3)**

```
SELECT SUM(Salary) AS TotalSalary
FROM EmployeeDetailsWithDepartment
WHERE DepartmentName = 'Marketing';
```

```
+-------------+
| TotalSalary |
+-------------+
|    45000.00 |
+-------------+
1 row in set (0.00 sec)
```

***-- View 3 Queries***

**1)**

```
SELECT Name, DepartmentName, Salary
FROM HighestPaidEmployeePerDepartment
ORDER BY Salary DESC
LIMIT 1;
```

```
+---------+----------------+-----------+
| Name    | DepartmentName | Salary    |
+---------+----------------+-----------+
| Charlie | Engineering    | 120000.00 |
+---------+----------------+-----------+
1 row in set (0.01 sec)
```

**2)**

```
SELECT Name, DepartmentName, Salary
FROM EmployeeDetailsWithDepartment
WHERE Salary > (
    SELECT Salary
    FROM HighestPaidEmployeePerDepartment
    WHERE DepartmentName = 'HR'
);
```

```
+---------+----------------+-----------+
| Name    | DepartmentName | Salary    |
+---------+----------------+-----------+
| Bob     | Finance        |  70000.00 |
| Charlie | Engineering    | 120000.00 |
| Eve     | Engineering    | 110000.00 |
| Frank   | Finance        |  80000.00 |
+---------+----------------+-----------+
4 rows in set (0.00 sec)
```

**3)**

```
SELECT Name, DepartmentName, Salary
FROM HighestPaidEmployeePerDepartment
WHERE Salary < 100000
ORDER BY Salary DESC
LIMIT 1;
```

```
+-------+----------------+----------+
| Name  | DepartmentName | Salary   |
+-------+----------------+----------+
| Frank | Finance        | 80000.00 |
+-------+----------------+----------+
1 row in set (0.00 sec)
```

***-- View 4 Queries***

**1)**

```
SELECT DepartmentName, EmployeeCount
FROM EmployeeCountPerDepartment
WHERE EmployeeCount > (
    SELECT AVG(EmployeeCount)
    FROM EmployeeCountPerDepartment
);
```

```
+----------------+---------------+
| DepartmentName | EmployeeCount |
+----------------+---------------+
| HR             |             2 |
| Finance        |             2 |
| Engineering    |             2 |
+----------------+---------------+
3 rows in set (0.00 sec)
```

**2)**

*SELECT DepartmentName, EmployeeCount*
*FROM EmployeeCountPerDepartment*
*ORDER BY EmployeeCount ASC*
*LIMIT 1;*

```
+----------------+---------------+
| DepartmentName | EmployeeCount |
+----------------+---------------+
| Marketing      |             1 |
+----------------+---------------+
1 row in set (0.00 sec)
```

**3)**

*SELECT DepartmentName, EmployeeCount*
*FROM EmployeeCountPerDepartment*
*WHERE EmployeeCount BETWEEN 2 AND 5;*

```
mysql> SELECT DepartmentName, EmployeeCount
    -> FROM EmployeeCountPerDepartment
    -> WHERE EmployeeCount BETWEEN 2 AND 5;
+----------------+---------------+
| DepartmentName | EmployeeCount |
+----------------+---------------+
| HR             |             2 |
| Finance        |             2 |
| Engineering    |             2 |
+----------------+---------------+
3 rows in set (0.00 sec)
```