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Course: BSc Hons CS
Semester: IV

Practice Exercise:

A. Create the following database schema EMP-DEPT with all specified constraints and use it to answer the given queries.

Tables to be Created

EMPLOYEE Schema

Field	Type	NULL	KEY	DEFAULT
Eno	Char(3)	NO	PRI	NIL
Ename	Varchar(50)	NO		NIL
Job_type	Varchar(50)	NO		NIL
SupervisorENO	Char(3)	Yes	FK	NIL
Hire_date	Date	NO		NIL
Dno	Integer	YES	FK	NIL
Commission	Decimal(10,2)	YES		NIL
Salary	Decimal(7,2)	NO		NIL

DEPARTMENT Schema

Dno	Integer	No	PRI	NULL
Dname	Varchar(50)	Yes		NULL

```
Location      Varchar(50)   Yes      New Delhi
```

Create Database

```
MariaDB [(none)]> create database EMP_DEPT;
Query OK, 1 row affected (0.001 sec)

MariaDB [(none)]> use EMP_DEPT;
Database changed
MariaDB [EMP_DEPT]>
```

Create Tables

EMPLOYEE
(We need Commisson to be Null, but, we will create it as Not Null to modify it later)
(We need SupervisorENO, but, we will create SupervisonENO to reman it later)

```
MariaDB [EMP_DEPT]> CREATE TABLE EMPLOYEE (
    -> Eno char(3) NOT NULL PRIMARY KEY,
    -> Ename varchar(50) NOT NULL,
    -> Job_type varchar(50) NOT NULL,
    -> SupervisonENO char(3),
    -> Hire_date date NOT NULL,
    -> Dno integer,
    -> Commission decimal(10,2) NOT NULL,
    -> Salary decimal(7,2) NOT NULL
    -> );
Query OK, 0 rows affected (0.020 sec)
```

DEPARTMENT

```
MariaDB [EMP_DEPT]> CREATE TABLE DEPARTMENT (
    -> Dno integer NOT NULL PRIMARY KEY,
    -> Dname varchar(50),
    -> Location varchar(50) DEFAULT 'New Delhi'
    -> );
Query OK, 0 rows affected (0.019 sec)
```

Rename Column

```
MariaDB [EMP_DEPT]> ALTER TABLE EMPLOYEE
    -> RENAME COLUMN SupervisonENO TO SupervisorENO;
Query OK, 0 rows affected (0.057 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

Add Foreign Keys

```
MariaDB [EMP_DEPT]> ALTER TABLE EMPLOYEE
    -> ADD CONSTRAINT FKDno
    -> FOREIGN KEY (Dno) REFERENCES DEPARTMENT(Dno);
Query OK, 0 rows affected (0.033 sec)
Records: 0  Duplicates: 0  Warnings: 0

MariaDB [EMP_DEPT]> ALTER TABLE EMPLOYEE
    -> ADD CONSTRAINT FKEno
    -> FOREIGN KEY (SupervisorENO) REFERENCES EMPLOYEE(Eno);
Query OK, 0 rows affected (0.049 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

Change Not Null to Null

```
MariaDB [EMP_DEPT]> ALTER TABLE EMPLOYEE
    -> MODIFY Commission decimal(10,2) NULL;
Query OK, 0 rows affected (0.026 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

Populate Data

Insert into DEPARTMENT:

```
MariaDB [EMP_DEPT]> INSERT INTO DEPARTMENT values
    -> (10, 'Production', default),
    -> (20, 'R&D', default),
    -> (30, 'Purchasing', default),
    -> (40, 'Marketing', default),
    -> (50, 'HR', default),
    -> (60, 'Accounts', default);
Query OK, 6 rows affected (0.015 sec)

Records: 6  Duplicates: 0  Warnings: 0
```

Insert into EMPLOYEE:

```
MariaDB [EMP_DEPT]> INSERT INTO EMPLOYEE values
    -> ('111', 'Aman Singh', 'HR Manager', null, '2000-01-23', 50, null, 5000),
    -> ('112', 'Ankesh Kumar', 'HR Assistant', '111', '2005-10-30', 50, null, 4000),
    -> ('113', 'Gaurav Singh', 'Account Manager', null, '2002-07-09', 60, 100, 6000),
    -> ('114', 'Sanjeet Kumar', 'Accounting Clerk', '113', '2015-04-18', 60, null, 4500),
    -> ('115', 'Rajnish Yadav', 'Production Manager', null, '1980-12-04', 10, 150, 5500),
    -> ('116', 'Sumit Sharan', 'Production Incharge', 115, '1995-02-24', 10, null, 4500),
    -> ('117', 'Amartya Sinha', 'R&D Scientist', null, '2010-03-15', 20, null, 10000),
```

```
   -> ('118', 'Shahnwaz Khan', 'R&D Associate Engineer', '117', '2016-05-23', 20, null, 4000),
   -> ('119', 'Sonu Giri', 'Purchase Executive', null, '2013-06-17', 30, 140, 7000),
   -> ('120', 'Kaushik Kumar', 'Purchase Specialist', '119', '2018-08-13', 30, null, 4000),
   -> ('121', 'Vishal Yadav', 'Chief Marketing Officer', null, '1995-11-19', 40, 250, 10000),
   -> ('122', 'Satyam Jha', 'Digital Marketing Manager', '121', '2004-09-29', 40, null, 4500);
Query OK, 12 rows affected (0.073 sec)
Records: 12  Duplicates: 0  Warnings: 0
```

Display Databases and Tables

```
MariaDB [EMP_DEPT]> show tables;
+--------------------+
| Tables_in_EMP_DEPT |
+--------------------+
| DEPARTMENT         |
| EMPLOYEE           |
+--------------------+
2 rows in set (0.001 sec)

MariaDB [EMP_DEPT]> desc DEPARTMENT;
+----------+-------------+------+-----+-----------+-------+
| Field    | Type        | Null | Key | Default   | Extra |
+----------+-------------+------+-----+-----------+-------+
| Dno      | int(11)     | NO   | PRI | NULL      |       |
| Dname    | varchar(50) | YES  |     | NULL      |       |
| Location | varchar(50) | YES  |     | New Delhi |       |
+----------+-------------+------+-----+-----------+-------+
```

```
3 rows in set (0.002 sec)

MariaDB [EMP_DEPT]> desc EMPLOYEE;
+---------------+---------------+------+-----+---------+-------+
| Field         | Type          | Null | Key | Default | Extra |
+---------------+---------------+------+-----+---------+-------+
| Eno           | char(3)       | NO   | PRI | NULL    |       |
| Ename         | varchar(50)   | NO   |     | NULL    |       |
| Job_type      | varchar(50)   | NO   |     | NULL    |       |
| SupervisorENO | char(3)       | YES  | MUL | NULL    |       |
| Hire_date     | date          | NO   |     | NULL    |       |
| Dno           | int(11)       | YES  | MUL | NULL    |       |
| Commission    | decimal(10,2) | YES  |     | NULL    |       |
| Salary        | decimal(7,2)  | NO   |     | NULL    |       |
+---------------+---------------+------+-----+---------+-------+
8 rows in set (0.002 sec)

MariaDB [EMP_DEPT]> select * from DEPARTMENT;
+-----+------------+-----------+
| Dno | Dname      | Location  |
+-----+------------+-----------+
|  10 | Production | New Delhi |
|  20 | R&D        | New Delhi |
|  30 | Purchasing | New Delhi |
|  40 | Marketing  | New Delhi |
|  50 | HR         | New Delhi |
|  60 | Accounts   | New Delhi |
+-----+------------+-----------+
6 rows in set (0.001 sec)
```

```
MariaDB [EMP_DEPT]> select * from EMPLOYEE;
+-----+--------------+--------------------------+--------------+------------+------+------------+----------+
| Eno | Ename        | Job_type                 | SupervisorENO | Hire_date  | Dno  | Commission | Salary   |
+-----+--------------+--------------------------+--------------+------------+------+------------+----------+
| 111 | Aman Singh   | HR Manager               | NULL         | 2000-01-23 |   50 |       NULL |  5000.00 |
| 112 | Ankesh Kumar | HR Assistant             | 111          | 2005-10-30 |   50 |       NULL |  4000.00 |
| 113 | Gaurav Singh | Account Manager          | NULL         | 2002-07-09 |   60 |     100.00 |  6000.00 |
| 114 | Sanjeet Kumar | Accounting Clerk        | 113          | 2015-04-18 |   60 |       NULL |  4500.00 |
| 115 | Rajnish Yadav | Production Manager      | NULL         | 1980-12-04 |   10 |     150.00 |  5500.00 |
| 116 | Sumit Sharan | Production Incharge      | 115          | 1995-02-24 |   10 |       NULL |  4500.00 |
| 117 | Amartya Sinha | R&D Scientist           | NULL         | 2010-03-15 |   20 |       NULL | 10000.00 |
| 118 | Shahnwaz Khan | R&D Associate Engineer  | 117          | 2016-05-23 |   20 |       NULL |  4000.00 |
| 119 | Sonu Giri    | Purchase Executive       | NULL         | 2013-06-17 |   30 |     140.00 |  7000.00 |
| 120 | Kaushik Kumar | Purchase Specialist     | 119          | 2018-08-13 |   30 |       NULL |  4000.00 |
| 121 | Vishal Yadav | Chief Marketing Officer  | NULL         | 1995-11-19 |   40 |     250.00 | 10000.00 |
| 122 | Satyam Jha   | Digital Marketing Manager | 121          | 2004-09-29 |   40 |       NULL |  4500.00 |
+-----+--------------+--------------------------+--------------+------------+------+------------+----------+
12 rows in set (0.001 sec)
```

Queries

Q1. Query to display Employee Name, Job, Hire Date, Employee Number; for each employee with the Employee Number appearing first.

Sol:

```
MariaDB [EMP_DEPT]> SELECT Eno, Ename, Job_type, Hire_date FROM EMPLOYEE;
+-----+--------------+--------------------------+------------+
```

```
| Eno | Ename         | Job_type                  | Hire_date  |
+-----+---------------+---------------------------+------------+
| 111 | Aman Singh    | HR Manager                | 2000-01-23 |
| 112 | Ankesh Kumar  | HR Assistant              | 2005-10-30 |
| 113 | Gaurav Singh  | Account Manager           | 2002-07-09 |
| 114 | Sanjeet Kumar | Accounting Clerk          | 2015-04-18 |
| 115 | Rajnish Yadav | Production Manager        | 1980-12-04 |
| 116 | Sumit Sharan  | Production Incharge       | 1995-02-24 |
| 117 | Amartya Sinha | R&D Scientist             | 2010-03-15 |
| 118 | Shahnwaz Khan | R&D Associate Engineer    | 2016-05-23 |
| 119 | Sonu Giri     | Purchase Executive        | 2013-06-17 |
| 120 | Kaushik Kumar | Purchase Specialist       | 2018-08-13 |
| 121 | Vishal Yadav  | Chief Marketing Officer   | 1995-11-19 |
| 122 | Satyam Jha    | Digital Marketing Manager | 2004-09-29 |
+-----+---------------+---------------------------+------------+
12 rows in set (0.016 sec)
```

Q2. Query to display unique Jobs from the Employee Table.

Sol:

```
MariaDB [EMP_DEPT]> SELECT DISTINCT Job_type FROM EMPLOYEE;
+---------------------------+
| Job_type                  |
+---------------------------+
| HR Manager                |
| HR Assistant              |
| Account Manager           |
| Accounting Clerk          |
| Production Manager        |
```

```
| Production Incharge       |
| R&D Scientist             |
| R&D Associate Engineer    |
| Purchase Executive        |
| Purchase Specialist       |
| Chief Marketing Officer   |
| Digital Marketing Manager |
+---------------------------+
12 rows in set (0.002 sec)
```

Q3. Query to display the Employee Name concatenated by a Job separated by a comma.

Sol:

```
MariaDB [EMP_DEPT]> SELECT CONCAT(Ename,", ",Job_type) FROM EMPLOYEE;
+--------------------------------------+
| CONCAT(Ename,", ",Job_type)          |
+--------------------------------------+
| Aman Singh, HR Manager               |
| Ankesh Kumar, HR Assistant           |
| Gaurav Singh, Account Manager        |
| Sanjeet Kumar, Accounting Clerk      |
| Rajnish Yadav, Production Manager    |
| Sumit Sharan, Production Incharge    |
| Amartya Sinha, R&D Scientist         |
| Shahnwaz Khan, R&D Associate Engineer |
| Sonu Giri, Purchase Executive        |
| Kaushik Kumar, Purchase Specialist   |
| Vishal Yadav, Chief Marketing Officer |
| Satyam Jha, Digital Marketing Manager |
```

```
+--------------------------------------+
12 rows in set (0.001 sec)
```

Q4. Query to display all the data from the Employee Table. Separate each Column by a comma and name the said column as THE_OUTPUT.

Sol:

CONCAT_WS() is used instead of CONCAT() to skip the NULL value.

```
MariaDB [EMP_DEPT]> SELECT CONCAT_WS(', ', Eno, Ename, Job_type, SupervisorENO, Hire_date, Dno,
Commission, Salary) as THE_OUTPUT FROM EMPLOYEE;
+-------------------------------------------------------------------------------+
| THE_OUTPUT                                                                    |
+-------------------------------------------------------------------------------+
| 111, Aman Singh, HR Manager, 2000-01-23, 50, 5000.00                          |
| 112, Ankesh Kumar, HR Assistant, 111, 2005-10-30, 50, 4000.00                 |
| 113, Gaurav Singh, Account Manager, 2002-07-09, 60, 100.00, 6000.00           |
| 114, Sanjeet Kumar, Accounting Clerk, 113, 2015-04-18, 60, 4500.00            |
| 115, Rajnish Yadav, Production Manager, 1980-12-04, 10, 150.00, 5500.00       |
| 116, Sumit Sharan, Production Incharge, 115, 1995-02-24, 10, 4500.00          |
| 117, Amartya Sinha, R&D Scientist, 2010-03-15, 20, 10000.00                   |
| 118, Shahnwaz Khan, R&D Associate Engineer, 117, 2016-05-23, 20, 4000.00      |
| 119, Sonu Giri, Purchase Executive, 2013-06-17, 30, 140.00, 7000.00           |
| 120, Kaushik Kumar, Purchase Specialist, 119, 2018-08-13, 30, 4000.00         |
| 121, Vishal Yadav, Chief Marketing Officer, 1995-11-19, 40, 250.00, 10000.00  |
| 122, Satyam Jha, Digital Marketing Manager, 121, 2004-09-29, 40, 4500.00      |
+-------------------------------------------------------------------------------+
12 rows in set (0.001 sec)
```

Q5. Query to display the Employee Name and Salary of all the employees earning more than $2850.

Sol:
Here, we will use COALESCE() so that we can get 0 when the Commission is NULL for any Employee. COALESCE() returns the first Not Null value. So, we will pass Commission as the 1st parameter and 0 as the 2nd parameter.

```
MariaDB [EMP_DEPT]> SELECT Ename, Salary FROM EMPLOYEE WHERE (COALESCE(Commission, 0) + Salary)>2850;
+---------------+----------+
| Ename         | Salary   |
+---------------+----------+
| Aman Singh    |  5000.00 |
| Ankesh Kumar  |  4000.00 |
| Gaurav Singh  |  6000.00 |
| Sanjeet Kumar |  4500.00 |
| Rajnish Yadav |  5500.00 |
| Sumit Sharan  |  4500.00 |
| Amartya Sinha | 10000.00 |
| Shahnwaz Khan |  4000.00 |
| Sonu Giri     |  7000.00 |
| Kaushik Kumar |  4000.00 |
| Vishal Yadav  | 10000.00 |
| Satyam Jha    |  4500.00 |
+---------------+----------+
12 rows in set (0.001 sec)
```

Q6. Query to display Employee Name and Department Number for Employee No= 79.

Sol:
Since there is no Employee with Employee No=79, we will use 114.

```
MariaDB [EMP_DEPT]> SELECT Ename, Dno from EMPLOYEE WHERE Eno=79;
Empty set (0.012 sec)
```

```
MariaDB [EMP_DEPT]> SELECT Ename, Dno from EMPLOYEE WHERE Eno=114;
+---------------+------+
| Ename         | Dno  |
+---------------+------+
| Sanjeet Kumar |   60 |
+---------------+------+
1 row in set (0.001 sec)
```

Q7. Query to display Employee Name and Salary for all employees whose salary is not in the range of $1500 and $2850.

Sol:

```
MariaDB [EMP_DEPT]> SELECT Ename, Salary FROM EMPLOYEE WHERE Salary NOT BETWEEN 1500 and 2850;
+---------------+----------+
| Ename         | Salary   |
+---------------+----------+
| Aman Singh    |  5000.00 |
| Ankesh Kumar  |  4000.00 |
| Gaurav Singh  |  6000.00 |
| Sanjeet Kumar |  4500.00 |
| Rajnish Yadav |  5500.00 |
| Sumit Sharan  |  4500.00 |
| Amartya Sinha | 10000.00 |
| Shahnwaz Khan |  4000.00 |
| Sonu Giri     |  7000.00 |
| Kaushik Kumar |  4000.00 |
| Vishal Yadav  | 10000.00 |
| Satyam Jha    |  4500.00 |
```

```
+---------------+----------+
12 rows in set (0.001 sec)
```

Q8. Query to display Employee Name and Department No. of all the employees in Dept 10 and Dept 30 in alphabetical order by name.

Sol:

```
MariaDB [EMP_DEPT]> SELECT Ename, Dno FROM EMPLOYEE WHERE Dno=10 or Dno=30 ORDER BY Ename;
+---------------+------+
| Ename         | Dno  |
+---------------+------+
| Kaushik Kumar |   30 |
| Rajnish Yadav |   10 |
| Sonu Giri     |   30 |
| Sumit Sharan  |   10 |
+---------------+------+
4 rows in set (0.001 sec)
```

Q9. Query to display the Name and Hire Date of every Employee who was hired in 1981.

Sol:

Since no employee is hired in 1981, we will check for 1980.

```
MariaDB [EMP_DEPT]> SELECT Ename, Hire_date FROM EMPLOYEE WHERE YEAR(Hire_date)=1981;
Empty set (0.001 sec)

MariaDB [EMP_DEPT]> SELECT Ename, Hire_date FROM EMPLOYEE WHERE YEAR(Hire_date)=1980;
+---------------+------------+
| Ename         | Hire_date  |
```

```
+---------------+------------+
| Rajnish Yadav | 1980-12-04 |
+---------------+------------+
1 row in set (0.001 sec)
```

Q10. Query to display the Name and Job of all employees who have not assigned a supervisor.

Sol:

```
MariaDB [EMP_DEPT]> SELECT Ename, Job_type FROM EMPLOYEE WHERE SupervisorENO IS NULL;
+---------------+------------------------+
| Ename         | Job_type               |
+---------------+------------------------+
| Aman Singh    | HR Manager             |
| Gaurav Singh  | Account Manager        |
| Rajnish Yadav | Production Manager     |
| Amartya Sinha | R&D Scientist          |
| Sonu Giri     | Purchase Executive     |
| Vishal Yadav  | Chief Marketing Officer |
+---------------+------------------------+
6 rows in set (0.001 sec)
```

Q11. Query to display the Name, Salary, and Commission for all the employees who earn a commission.

Sol:

```
MariaDB [EMP_DEPT]> SELECT Ename, Salary, Commission FROM EMPLOYEE WHERE Commission IS NOT NULL;
+---------------+----------+------------+
| Ename         | Salary   | Commission |
+---------------+----------+------------+
```

```
| Gaurav Singh   |  6000.00 |     100.00 |
| Rajnish Yadav |  5500.00 |     150.00 |
| Sonu Giri      |  7000.00 |     140.00 |
| Vishal Yadav   | 10000.00 |     250.00 |
+---------------+----------+------------+
4 rows in set (0.001 sec)
```

Q12. Sort the data in descending order of Salary and Commission.

Sol:

```
MariaDB [EMP_DEPT]> SELECT * FROM EMPLOYEE ORDER BY Salary DESC, Commission DESC;
+-----+---------------+---------------------------+---------------+------------+------+------------+----------+
| Eno | Ename         | Job_type                  | SupervisorENO | Hire_date  | Dno  | Commission | Salary   |
+-----+---------------+---------------------------+---------------+------------+------+------------+----------+
| 121 | Vishal Yadav  | Chief Marketing Officer   | NULL          | 1995-11-19 |   40 |     250.00 | 10000.00 |
| 117 | Amartya Sinha | R&D Scientist             | NULL          | 2010-03-15 |   20 |       NULL | 10000.00 |
| 119 | Sonu Giri     | Purchase Executive        | NULL          | 2013-06-17 |   30 |     140.00 |  7000.00 |
| 113 | Gaurav Singh  | Account Manager           | NULL          | 2002-07-09 |   60 |     100.00 |  6000.00 |
| 115 | Rajnish Yadav | Production Manager        | NULL          | 1980-12-04 |   10 |     150.00 |  5500.00 |
| 111 | Aman Singh    | HR Manager                | NULL          | 2000-01-23 |   50 |       NULL |  5000.00 |
| 116 | Sumit Sharan  | Production Incharge       | 115           | 1995-02-24 |   10 |       NULL |  4500.00 |
| 114 | Sanjeet Kumar | Accounting Clerk          | 113           | 2015-04-18 |   60 |       NULL |  4500.00 |
| 122 | Satyam Jha    | Digital Marketing Manager | 121           | 2004-09-29 |   40 |       NULL |  4500.00 |
| 118 | Shahnwaz Khan | R&D Associate Engineer    | 117           | 2016-05-23 |   20 |       NULL |  4000.00 |
| 120 | Kaushik Kumar | Purchase Specialist       | 119           | 2018-08-13 |   30 |       NULL |  4000.00 |
| 112 | Ankesh Kumar  | HR Assistant              | 111           | 2005-10-30 |   50 |       NULL |  4000.00 |
+-----+---------------+---------------------------+---------------+------------+------+------------+----------+
12 rows in set (0.001 sec)
```

Q13. Query to display the Name of all the employees where the third letter of their name is ‘A’.

Sol:

```
MariaDB [EMP_DEPT]> SELECT Ename FROM EMPLOYEE WHERE Ename LIKE '__a%';
+---------------+
| Ename         |
+---------------+
| Aman Singh    |
| Amartya Sinha |
| Shahnwaz Khan |
+---------------+
3 rows in set (0.002 sec)
```

Q14. Query to display the Name of all employees either have two ‘R’s or have two ‘A’s in their name and are either in Dept No = 30 or their Manger’s Employee No = 7788.

Sol:

```
MariaDB [EMP_DEPT]> SELECT Ename FROM EMPLOYEE WHERE Ename LIKE '%r%r%' OR Ename LIKE '%a%a%' AND Dno=30
OR SupervisorENO=7788;
+---------------+
| Ename         |
+---------------+
| Kaushik Kumar |
+---------------+
1 row in set (0.001 sec)
```

Q15. Query to display Name, Salary, and Commission for all employees whose Commission amount is greater than their Salary increased by 5%.

Sol:

```
MariaDB [EMP_DEPT]> UPDATE EMPLOYEE
   -> SET Commission=4500 WHERE Eno=120;
Query OK, 1 row affected (0.013 sec)
Rows matched: 1  Changed: 1  Warnings: 0

MariaDB [EMP_DEPT]> SELECT Ename, Salary, Commission from EMPLOYEE WHERE Commission > (Salary +
(Salary*0.05));
+---------------+---------+------------+
| Ename         | Salary  | Commission |
+---------------+---------+------------+
| Kaushik Kumar | 4000.00 |    4500.00 |
+---------------+---------+------------+
1 row in set (0.001 sec)
```

Q16. Query to display the Current Date along with the day name.

Sol:

```
MariaDB [EMP_DEPT]> SELECT CURDATE() as DATE, DAYNAME(CURDATE()) as DAY;
+------------+-----------+
| DATE       | DAY       |
+------------+-----------+
| 2022-02-02 | Wednesday |
+------------+-----------+
1 row in set (0.000 sec)
```

Q17. Query to display Name, Hire Date, and Salary Review Date which is the 1st Monday after six months of employment.

Sol:

We will create a view that will store hire date as well as review date after six months. Then, we will use that view for fetching the 1st monday.

```
MariaDB [EMP_DEPT]> create view DATES as select Hire_date, date_add(Hire_date, interval 6 month) as
After_6_mnth from EMPLOYEE;
Query OK, 0 rows affected (0.016 sec)
```

Now, checking whether the review day is Monday or not. If the day is not Monday, find the next Monday.

```
MariaDB [EMP_DEPT]> select Ename, Hire_date,
   -> case when weekday(After_6_mnth) = 1 then date_add(After_6_mnth, interval+6 day)
   -> when weekday(After_6_mnth) = 2 then date_add(After_6_mnth, interval+5 day)
   -> when weekday(After_6_mnth) = 3 then date_add(After_6_mnth, interval+4 day)
   -> when weekday(After_6_mnth) = 4 then date_add(After_6_mnth, interval+3 day)
   -> when weekday(After_6_mnth) = 5 then date_add(After_6_mnth, interval+2 day)
   -> when weekday(After_6_mnth) = 6 then date_add(After_6_mnth, interval+1 day)
   -> end as Review_date from EMPLOYEE natural join DATES;
+---------------+------------+-------------+
| Ename         | Hire_date  | Review_date |
+---------------+------------+-------------+
| Aman Singh    | 2000-01-23 | 2000-07-24  |
| Ankesh Kumar  | 2005-10-30 | 2006-05-01  |
| Gaurav Singh  | 2002-07-09 | 2003-01-13  |
| Sanjeet Kumar | 2015-04-18 | 2015-10-19  |
| Rajnish Yadav | 1980-12-04 | 1981-06-08  |
| Sumit Sharan  | 1995-02-24 | 1995-08-28  |
| Amartya Sinha | 2010-03-15 | 2010-09-20  |
| Shahnwaz Khan | 2016-05-23 | 2016-11-28  |
```

```
| Sonu Giri     | 2013-06-17 | 2013-12-23  |
| Kaushik Kumar | 2018-08-13 | 2019-02-18  |
| Vishal Yadav  | 1995-11-19 | 1996-05-20  |
| Satyam Jha    | 2004-09-29 | 2005-04-04  |
+---------------+------------+-------------+
12 rows in set (0.002 sec)
```

Q18. Query to display Name and calculate the number of months between today and the date on which employee was hired of department ‘Purchase’.

Sol:

```
MariaDB [EMP_DEPT]> SELECT Ename, TIMESTAMPDIFF(month, Hire_date, CURDATE()) as 'Months Worked' FROM
EMPLOYEE WHERE Dno in (SELECT Dno FROM DEPARTMENT WHERE Dname='Purchasing');
+---------------+---------------+
| Ename         | Months Worked |
+---------------+---------------+
| Sonu Giri     |           103 |
| Kaushik Kumar |            41 |
+---------------+---------------+
2 rows in set (0.001 sec)
```

Q19. Query to display the following for each employee <E-Name> earns < Salary> monthly but wants < 3 * Current Salary >. Label the Column as Dream Salary.

Sol:

```
MariaDB [EMP_DEPT]> SELECT Ename, Salary, (3*Salary) as 'Dream Salary' FROM EMPLOYEE;
+---------------+----------+--------------+
```

```
| Ename         | Salary   | Dream Salary |
+---------------+----------+--------------+
| Aman Singh    |  5000.00 |     15000.00 |
| Ankesh Kumar  |  4000.00 |     12000.00 |
| Gaurav Singh  |  6000.00 |     18000.00 |
| Sanjeet Kumar |  4500.00 |     13500.00 |
| Rajnish Yadav |  5500.00 |     16500.00 |
| Sumit Sharan  |  4500.00 |     13500.00 |
| Amartya Sinha | 10000.00 |     30000.00 |
| Shahnwaz Khan |  4000.00 |     12000.00 |
| Sonu Giri     |  7000.00 |     21000.00 |
| Kaushik Kumar |  4000.00 |     12000.00 |
| Vishal Yadav  | 10000.00 |     30000.00 |
| Satyam Jha    |  4500.00 |     13500.00 |
+---------------+----------+--------------+
12 rows in set (0.001 sec)
```

Q20. Query to display Name with the 1st letter capitalized and all other letters lower case and length of their name of all the employees whose name starts with ‘J’, ’A’ and ‘M’.

Sol:

Here, I have extracted the first letter using LEFT() and capitalized it using UCASE(). Then, I have extracted a substring from the 2nd letter using SUBSTRING() and converted to lower case using LCASE(). Both, the strings are concatenated using CONCAT().

```
MariaDB [EMP_DEPT]> SELECT CONCAT(UCASE(LEFT(Ename, 1)), LCASE(SUBSTRING(Ename, 2))) as Name FROM
EMPLOYEE WHERE Ename like 'J%' OR Ename like 'A%' OR Ename like 'M%';
+---------------+
| Name          |
+---------------+
| Aman singh    |
```

```
| Ankesh kumar  |
| Amartya sinha |
+---------------+
3 rows in set (0.000 sec)
```

Q21. Query to display Name, Hire Date, and Day of the week on which the employee started.

Sol:

```
MariaDB [EMP_DEPT]> SELECT Ename, Hire_date, DAYNAME(Hire_date) as 'Job Start Day' FROM EMPLOYEE;
+---------------+------------+---------------+
| Ename         | Hire_date  | Job Start Day |
+---------------+------------+---------------+
| Aman Singh    | 2000-01-23 | Sunday        |
| Ankesh Kumar  | 2005-10-30 | Sunday        |
| Gaurav Singh  | 2002-07-09 | Tuesday       |
| Sanjeet Kumar | 2015-04-18 | Saturday      |
| Rajnish Yadav | 1980-12-04 | Thursday      |
| Sumit Sharan  | 1995-02-24 | Friday        |
| Amartya Sinha | 2010-03-15 | Monday        |
| Shahnwaz Khan | 2016-05-23 | Monday        |
| Sonu Giri     | 2013-06-17 | Monday        |
| Kaushik Kumar | 2018-08-13 | Monday        |
| Vishal Yadav  | 1995-11-19 | Sunday        |
| Satyam Jha    | 2004-09-29 | Wednesday     |
+---------------+------------+---------------+
12 rows in set (0.001 sec)
```

Q22. Query to display Name, Department Name, and Department No for all the employees.

Sol:

```
MariaDB [EMP_DEPT]> SELECT Ename, Dname, d.Dno FROM EMPLOYEE e, DEPARTMENT d
   -> WHERE d.Dno=e.Dno;
+---------------+------------+-----+
| Ename         | Dname      | Dno |
+---------------+------------+-----+
| Rajnish Yadav | Production |  10 |
| Sumit Sharan  | Production |  10 |
| Amartya Sinha | R&D        |  20 |
| Shahnwaz Khan | R&D        |  20 |
| Sonu Giri     | Purchasing |  30 |
| Kaushik Kumar | Purchasing |  30 |
| Vishal Yadav  | Marketing  |  40 |
| Satyam Jha    | Marketing  |  40 |
| Aman Singh    | HR         |  50 |
| Ankesh Kumar  | HR         |  50 |
| Gaurav Singh  | Accounts   |  60 |
| Sanjeet Kumar | Accounts   |  60 |
+---------------+------------+-----+
12 rows in set (0.001 sec)
```

Q23. Query to display Unique Listing of all Jobs that are in Department number 30.

Sol:

```
MariaDB [EMP_DEPT]> SELECT DISTINCT Job_type from EMPLOYEE WHERE Dno=30;
+--------------------+
| Job_type           |
+--------------------+
```

```
| Purchase Executive  |
| Purchase Specialist |
+---------------------+
2 rows in set (0.001 sec)
```

Q24. Query to display Name, Dept Name of all employees who have an ‘A’ in their name.

Sol:

```
MariaDB [EMP_DEPT]> select Ename, Dname from EMPLOYEE, DEPARTMENT where EMPLOYEE
.DNO = DEPARTMENT.DNO and Ename like "%A%";
+---------------+------------+
| Ename         | Dname      |
+---------------+------------+
| Rajnish Yadav | Production |
| Sumit Sharan  | Production |
| Amartya Sinha | R&D        |
| Shahnwaz Khan | R&D        |
| Kaushik Kumar | Purchasing |
| Vishal Yadav  | Marketing  |
| Satyam Jha    | Marketing  |
| Aman Singh    | HR         |
| Ankesh Kumar  | HR         |
| Gaurav Singh  | Accounts   |
| Sanjeet Kumar | Accounts   |
+---------------+------------+
11 rows in set (0.012 sec)
```

Q25. Query to display Name, Job, Department No. And Department Name for all the employees working at the Dallas location.

Sol:

Dallas location is not available, so we will udpate the table first.

```
MariaDB [EMP_DEPT]> select * from DEPARTMENT;
+-----+------------+-----------+
| Dno | Dname      | Location  |
+-----+------------+-----------+
|  10 | Production | New Delhi |
|  20 | R&D        | New Delhi |
|  30 | Purchasing | New Delhi |
|  40 | Marketing  | New Delhi |
|  50 | HR         | New Delhi |
|  60 | Accounts   | New Delhi |
+-----+------------+-----------+
6 rows in set (0.015 sec)
```

Now, the table will be updated for Dno 30 and 40.

```
MariaDB [EMP_DEPT]> update DEPARTMENT set Location = "Dallas" where Dno = 30 or Dno = 40;
Query OK, 2 rows affected (0.013 sec)
Rows matched: 2  Changed: 2  Warnings: 0
```

Table after update

```
MariaDB [EMP_DEPT]> select * from DEPARTMENT;
+-----+------------+-----------+
| Dno | Dname      | Location  |
+-----+------------+-----------+
|  10 | Production | New Delhi |
```

```
|  20 | R&D        | New Delhi |
|  30 | Purchasing | Dallas    |
|  40 | Marketing  | Dallas    |
|  50 | HR         | New Delhi |
|  60 | Accounts   | New Delhi |
+-----+------------+-----------+
6 rows in set (0.001 sec)
```

Now, running our query to fetch required data.

```
MariaDB [EMP_DEPT]> select Ename, Job_type, EMPLOYEE.Dno, Dname from EMPLOYEE join DEPARTMENT on
EMPLOYEE.Dno = DEPARTMENT.Dno where Location = "Dallas";
+--------------+--------------------------+------+------------+
| Ename        | Job_type                 | Dno  | Dname      |
+--------------+--------------------------+------+------------+
| Sonu Giri    | Purchase Executive       |   30 | Purchasing |
| Kaushik Kumar | Purchase Specialist     |   30 | Purchasing |
| Vishal Yadav | Chief Marketing Officer  |   40 | Marketing  |
| Satyam Jha   | Digital Marketing Manager |   40 | Marketing  |
+--------------+--------------------------+------+------------+
4 rows in set (0.001 sec)
```

Q26. Query to display Name and Employee no. Along with their supervisor's Name and the supervisor's employee no; along with the Employees' Names who do not have a supervisor.

Sol:

```
MariaDB [EMP_DEPT]> select e.Ename, e.Eno, s.Ename as Supervisor_Name, e.SupervisorENO from EMPLOYEE e
left join EMPLOYEE s  on e.SupervisorENo = s.Eno;
+--------------+-----+----------------+--------------+
| Ename        | Eno | Supervisor_Name | SupervisorENO |
```

```
+---------------+-----+-----------------+---------------+
| Aman Singh    | 111 | NULL            | NULL          |
| Ankesh Kumar  | 112 | Aman Singh      | 111           |
| Gaurav Singh  | 113 | NULL            | NULL          |
| Sanjeet Kumar | 114 | Gaurav Singh    | 113           |
| Rajnish Yadav | 115 | NULL            | NULL          |
| Sumit Sharan  | 116 | Rajnish Yadav   | 115           |
| Amartya Sinha | 117 | NULL            | NULL          |
| Shahnwaz Khan | 118 | Amartya Sinha   | 117           |
| Sonu Giri     | 119 | NULL            | NULL          |
| Kaushik Kumar | 120 | Sonu Giri       | 119           |
| Vishal Yadav  | 121 | NULL            | NULL          |
| Satyam Jha    | 122 | Vishal Yadav    | 121           |
+---------------+-----+-----------------+---------------+
12 rows in set (0.001 sec)
```

Q27. Query to display Name, Dept No. And Salary of any employee whose department No. and salary matches both the department no. And the salary of any employee who earns a commission.

Sol:

```
MariaDB [EMP_DEPT]> select Ename, Dno, Salary from EMPLOYEE where (Dno, Salary)
in (select Dno, Salary from EMPLOYEE where Commission is not null);
+---------------+------+----------+
| Ename         | Dno  | Salary   |
+---------------+------+----------+
| Gaurav Singh  |   60 |  6000.00 |
| Rajnish Yadav |   10 |  5500.00 |
| Sonu Giri     |   30 |  7000.00 |
| Kaushik Kumar |   30 |  4000.00 |
| Vishal Yadav  |   40 | 10000.00 |
```

```
+---------------+------+----------+
5 rows in set (0.013 sec)
```

Q28. Query to display Name and Salaries represented by asterisks, where each asterisk (*) signifies $100.

Sol:

```
MariaDB [EMP_DEPT]> select Ename, repeat("*", Salary/100) as "Salary *|100" from EMPLOYEE;
+---------------+-----------------------------------------------------------------------------------------------------------------------+
| Ename         | Salary *|100                                                                                                        |
+---------------+-----------------------------------------------------------------------------------------------------------------------+
| Aman Singh    | *************************************************                                                                     |
| Ankesh Kumar  | ************************************                                                                                  |
| Gaurav Singh  | ************************************************************                                                          |
| Sanjeet Kumar | *******************************************                                                                           |
| Rajnish Yadav | ****************************************************                                                                  |
| Sumit Sharan  | *******************************************                                                                           |
| Amartya Sinha | ********************************************************************************************************************* |
| Shahnwaz Khan | ************************************                                                                                  |
| Sonu Giri     | ***************************************************************                                                       |
| Kaushik Kumar | ************************************                                                                                  |
| Vishal Yadav  | ********************************************************************************************************************* |
| Satyam Jha    | *******************************************                                                                           |
+---------------+-----------------------------------------------------------------------------------------------------------------------+
12 rows in set (0.015 sec)
```

Q29. Query to display the Highest, Lowest, Sum, and Average Salaries of all the employees.

Sol:

```
MariaDB [EMP_DEPT]> select max(Salary) as Highest, min(Salary) as Lowest, sum(Salary) as Sum, avg(Salary)
```

```
as Average from EMPLOYEE;
+----------+---------+----------+-------------+
| Highest  | Lowest  | Sum      | Average     |
+----------+---------+----------+-------------+
| 10000.00 | 4000.00 | 69000.00 | 5750.000000 |
+----------+---------+----------+-------------+
1 row in set (0.012 sec)
```

Q30. Query to display the number of employees performing the same Job type functions.

Sol:

```
MariaDB [EMP_DEPT]> select Job_type, count(*) as Total_employee from EMPLOYEE where Job_Type in (select
Job_Type from EMPLOYEE) group by Job_type;
+--------------------------+----------------+
| Job_type                 | Total_employee |
+--------------------------+----------------+
| Account Manager          |              1 |
| Accounting Clerk         |              1 |
| Chief Marketing Officer  |              1 |
| Digital Marketing Manager |              1 |
| HR Assistant             |              1 |
| HR Manager               |              1 |
| Production Incharge      |              1 |
| Production Manager       |              1 |
| Purchase Executive       |              1 |
| Purchase Specialist      |              1 |
| R&D Associate Engineer   |              1 |
| R&D Scientist            |              1 |
+--------------------------+----------------+
12 rows in set (0.002 sec)
```

Q31. Query to display the total number of supervisors without listing their names.

Sol:

```
MariaDB [EMP_DEPT]> select distinct count(SupervisorENO) from EMPLOYEE;
+----------------------+
| count(SupervisorENO) |
+----------------------+
|                    6 |
+----------------------+
1 row in set (0.001 sec)
```

Q32. Query to display the Department Name, Location Name, No. of Employees, and the average salary for all employees in that department.

Sol:

```
MariaDB [EMP_DEPT]> select Dname, Location, count(*) as Total_Employee, avg(Salary) as Average_salary
from EMPLOYEE JOIN DEPARTMENT ON EMPLOYEE.Dno = DEPARTMENT.Dno group by Dname;
+------------+-----------+----------------+----------------+
| Dname      | Location  | Total_Employee | Average_salary |
+------------+-----------+----------------+----------------+
| Accounts   | New Delhi |              2 |    5250.000000 |
| HR         | New Delhi |              2 |    4500.000000 |
| Marketing  | Dallas    |              2 |    7250.000000 |
| Production | New Delhi |              2 |    5000.000000 |
| Purchasing | Dallas    |              2 |    5500.000000 |
| R&D        | New Delhi |              2 |    7000.000000 |
+------------+-----------+----------------+----------------+
6 rows in set (0.002 sec)
```

Q33. Query to display Name and Hire Date for all employees in the same dept. as Blake.

Sol:

We are using Sonu Giri instead of Blake as we do not have any employee named Blake.

```
MariaDB [EMP_DEPT]> select Ename, Hire_date from EMPLOYEE where Dno in (select Dno from EMPLOYEE where
Ename="Sonu Giri");
+---------------+------------+
| Ename         | Hire_date  |
+---------------+------------+
| Sonu Giri     | 2013-06-17 |
| Kaushik Kumar | 2018-08-13 |
+---------------+------------+
2 rows in set (0.001 sec)
```

Q34. Query to display Employee No. And Name for all employees who earn more than the average salary.

Sol:

```
MariaDB [EMP_DEPT]> select Eno, Ename from EMPLOYEE where Salary > (select avg(Salary) from EMPLOYEE);
+-----+---------------+
| Eno | Ename         |
+-----+---------------+
| 113 | Gaurav Singh  |
| 117 | Amartya Sinha |
| 119 | Sonu Giri     |
| 121 | Vishal Yadav  |
+-----+---------------+
4 rows in set (0.001 sec)
```

Q35. Query to display Employee Number and Name for all employees who work in a department with any employee whose name contains a 'T'.

Sol:

```
MariaDB [EMP_DEPT]> select Eno, Ename from EMPLOYEE where Dno in (select Dno from EMPLOYEE where Ename
like "%t%");
+-----+---------------+
| Eno | Ename         |
+-----+---------------+
| 113 | Gaurav Singh  |
| 114 | Sanjeet Kumar |
| 115 | Rajnish Yadav |
| 116 | Sumit Sharan  |
| 117 | Amartya Sinha |
| 118 | Shahnwaz Khan |
| 121 | Vishal Yadav  |
| 122 | Satyam Jha    |
+-----+---------------+
8 rows in set (0.001 sec)
```

Q36. Query to display the names and salaries of all employees who report to a supervisor named 'King'

Sol:

Using Amartya Sinha instead of King as no Supervisor named King is here.

```
MariaDB [EMP_DEPT]> select Ename, Salary from EMPLOYEE where SupervisorENO in (select Eno from EMPLOYEE
where Ename="Amartya Sinha");
+---------------+---------+
| Ename         | Salary  |
+---------------+---------+
| Shahnwaz Khan | 4000.00 |
```

```
+---------------+---------+
1 row in set (0.001 sec)
```

Q37. Query to display the department no, name, and job for all employees in the Sales department.

Sol:

Checking for Accounts dept (60) as Sales dept is not in this database.

```
MariaDB [EMP_DEPT]> select Dno, Ename, Job_type from EMPLOYEE where Dno in (select Dno from DEPARTMENT
where Dname = "Accounts");
+------+---------------+------------------+
| Dno  | Ename         | Job_type         |
+------+---------------+------------------+
|   60 | Gaurav Singh  | Account Manager  |
|   60 | Sanjeet Kumar | Accounting Clerk |
+------+---------------+------------------+
2 rows in set (0.003 sec)
```

Q38. Display names of employees along with their department name who has more than 20 years of experience.

Sol:

```
MariaDB [EMP_DEPT]> select Ename, Dname from EMPLOYEE natural join DEPARTMENT where timestampdiff(year, H
ire_date, curdate()) > 20;
+---------------+------------+
| Ename         | Dname      |
+---------------+------------+
| Rajnish Yadav | Production |
| Sumit Sharan  | Production |
| Vishal Yadav  | Marketing  |
```

```
| Aman Singh    | HR         |
+---------------+------------+
4 rows in set (0.001 sec)
```

Q39. Display total number of departments at each location

Sol:

```
MariaDB [EMP_DEPT]> select Location, count(Location) as Tot_Dept from DEPARTMENT group by Location;
+-----------+----------+
| Location  | Tot_Dept |
+-----------+----------+
| Dallas    |        2 |
| New Delhi |        4 |
+-----------+----------+
2 rows in set (0.001 sec)
```

Q40. Find the department name in which at least 20 employees work in.

Sol:

Using 2 instead of 20 as no department has 20 employees in this case.

```
MariaDB [EMP_DEPT]> select Dname from EMPLOYEE join DEPARTMENT on EMPLOYEE.Dno = DEPARTMENT.Dno group by
Dname having count(Dname) >=2;
+------------+
| Dname      |
+------------+
| Accounts   |
| HR         |
| Marketing  |
| Production |
| Purchasing |
```

```
| R&D        |
+------------+
6 rows in set (0.001 sec)
```

Q41. Query to find the employee' name who is not supervisor and name of supervisor supervising more than 5 employees.

Sol:

Using for greater equal to 1 employee due to lesser records.

```
MariaDB [EMP_DEPT]> (select Ename from EMPLOYEE where Eno not in (select distinct SupervisorENO from
EMPLOYEE where SupervisorENO is not null)) union (select Ename from EMPLOYEE where Eno in (select
SupervisorENO from EMPLOYEE group by SupervisorENO having count(SupervisorENO)>=1));
+---------------+
| Ename         |
+---------------+
| Aman Singh    |
| Gaurav Singh  |
| Rajnish Yadav |
| Amartya Sinha |
| Sonu Giri     |
| Vishal Yadav  |
+---------------+
6 rows in set (0.002 sec)
```

Q42. Query to display the job type with maximum and minimum employees

Sol:

First of all, we will create a view containing the count of all job types so that we can directly access max and min from that view.

```
MariaDB [EMP_DEPT]> create view Job_count as select Job_type, count(Job_type) as count from EMPLOYEE
group by Job_type;
```

Accessing max and min from the newly created view.

```
MariaDB [EMP_DEPT]> select Job_type, 'Maximum' as MAXMIN from Job_count where count in (select max(count)
from Job_count) union select Job_type, 'Minimum' as MAXMIN from Job_count where count in (select
min(count) from Job_count);
+---------------------------+---------+
| Job_type                  | MAXMIN  |
+---------------------------+---------+
| R&D Scientist             | Maximum |
| R&D Associate Engineer    | Maximum |
| Purchase Specialist       | Maximum |
| Purchase Executive        | Maximum |
| Production Manager        | Maximum |
| Production Incharge       | Maximum |
| HR Manager                | Maximum |
| HR Assistant              | Maximum |
| Digital Marketing Manager | Maximum |
| Chief Marketing Officer   | Maximum |
| Accounting Clerk          | Maximum |
| Account Manager           | Maximum |
| R&D Scientist             | Minimum |
| R&D Associate Engineer    | Minimum |
| Purchase Specialist       | Minimum |
| Purchase Executive        | Minimum |
| Production Manager        | Minimum |
| Production Incharge       | Minimum |
| HR Manager                | Minimum |
| HR Assistant              | Minimum |
| Digital Marketing Manager | Minimum |
| Chief Marketing Officer   | Minimum |
```

```
| Accounting Clerk           | Minimum |
| Account Manager            | Minimum |
+----------------------------+---------+
24 rows in set (0.003 sec)
```