DBMS LAB Assignment –7
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REG 2020CA089

Q.1) Consider a database that is being constructed for a Company's office organization where it stores the value of Employees, their Bonus and Job title. The employee relation contains the details of id, first name, last name, salary, joining date of office and the department in which they are working. The Bonus relation contains the details of employee reference id, bonus date and amount of bonus. Title relate to bonus table through the reference id and this table stores the value of employer designation and their job affected from which date.

Consider the sales info system consisting of following schemas:-

Employee (E_id, First_Name, Last_Name, Salary, Joining_Date, Department)

```
MariaDB [(none)]> use assign7
Database changed
MariaDB [assign7]> CREATE TABLE `assign7`.`employee` ( `E_id` INT(5) NOT NULL , `First_name` VARCHAR(100) NOT NULL , `La
st_name` VARCHAR(100) NOT NULL , `Salary` INT(10) NOT NULL , `Joining_date` DATE NOT NULL , `department` INT NOT NULL ,
PRIMARY KEY (`E_id`)) ;
Query OK, 0 rows affected (0.020 sec)
```

Bonus (E_Ref_Id, Bonus_Date, Bonus_Amount)

```
MariaDB [assign7]> CREATE TABLE `assign7`.`bonus` ( `E_Ref_id` INT(5) NOT NULL , `Bonus_date` DATE NOT NULL , `Bonus_amo
unt` INT(100) NOT NULL ) ;
Query OK, 0 rows affected (0.027 sec)
```

Job_Title (E_Ref_Id, E_Title, Affected_From)

```
MariaDB [assign7]> CREATE TABLE `assign7`.`job_title` ( `E_Ref_id` INT(5) NOT NULL , `E_title` VARCHAR(100) NOT NULL , `
Affected_from` VARCHAR(100) NOT NULL ) ;
Query OK, 0 rows affected (0.025 sec)
```

Stabilized Relation Between Employee table to Bonus and Job_title table

```
MariaDB [assign7]> alter table bonus add foreign key(E_Ref_id) references employee(E_id);
Query OK, 0 rows affected (0.059 sec)
Records: 0  Duplicates: 0  Warnings: 0

MariaDB [assign7]> alter table job_title add foreign key(E_Ref_id) references employee(E_id);
Query OK, 0 rows affected (0.050 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

```
MariaDB [assign7]> select * from employee;
+------+------------+-----------+--------+--------------+------------+
| E_id | First_name | Last_name | Salary | Joining_date | department |
+------+------------+-----------+--------+--------------+------------+
|    2 | rahul      | thakur    |  60000 | 2022-01-04   | hindi      |
|    3 | raina      | sharma    |   8000 | 2021-01-12   | math       |
|    4 | chandan    | chanchar  |  55000 | 2016-01-21   | history    |
|    5 | manoj      | singh     |  56200 | 2017-01-12   | history    |
|  101 | ram        | sharma    |   5000 | 2020-01-01   | science    |
+------+------------+-----------+--------+--------------+------------+
5 rows in set (0.000 sec)
```

```
MariaDB [assign7]> select * from bonus;
+----------+------------+--------------+
| E_Ref_id | Bonus_date | Bonus_amount |
+----------+------------+--------------+
|        2 | 2020-03-23 |         5000 |
|      101 | 2021-04-25 |         6000 |
+----------+------------+--------------+
2 rows in set (0.000 sec)
```

```
MariaDB [assign7]> select * from job_title;
+----------+--------------------+---------------+
| E_Ref_id | E_title            | Affected_from |
+----------+--------------------+---------------+
|        2 | department head    | 2014-01-17    |
|        5 | dean               | 2016-01-08    |
|      101 | assistance teacher | 2015-01-15    |
+----------+--------------------+---------------+
```

Write the SQL queries for the following with respect to database created: –

a) Fetch first name of worker using alias name as E_Name.

```
MariaDB [assign7]> select first_name as E_Name from employee;
+---------+
| E_Name  |
+---------+
| rahul   |
| raina   |
| chandan |
| manoj   |
| ram     |
+---------+
5 rows in set (0.000 sec)
```

b) List the last name of employees in upper case.

```
MariaDB [assign7]> select upper(last_name) from employee;
+------------------+
| upper(last_name) |
+------------------+
| THAKUR           |
| SHARMA           |
| CHANCHAR         |
| SINGH            |
| SHARMA           |
+------------------+
5 rows in set (0.000 sec)
```

c) Retrieve the first three characters of employees from their first name.

```
MariaDB [assign7]> select substring(first_name,1,3) from employee;
+---------------------------+
| substring(first_name,1,3) |
+---------------------------+
| rah                       |
| rai                       |
| cha                       |
| man                       |
| ram                       |
+---------------------------+
5 rows in set (0.000 sec)
```

d) Retrieve the unique values of department and display its length.

```
MariaDB [assign7]> select distinct department ,length(department) from employee;
+------------+--------------------+
| department | length(department) |
+------------+--------------------+
| hindi      |                  5 |
| math       |                  4 |
| history    |                  7 |
| science    |                  7 |
+------------+--------------------+
4 rows in set (0.000 sec)
```

e) List the first name from employees table after replacing ‘a’ with ‘A’.

```
MariaDB [assign7]> select first_name,replace(first_name,'a','A') from employee;
+------------+-----------------------------+
| first_name | replace(first_name,'a','A') |
+------------+-----------------------------+
| rahul      | rAhul                       |
| raina      | rAinA                       |
| chandan    | chAndAn                     |
| manoj      | mAnoj                       |
| ram        | rAm                         |
+------------+-----------------------------+
5 rows in set (0.000 sec)
```

f) Display all worker details, use order by in first name asec and department in desc.

```
MariaDB [assign7]> select * from employee ORDER BY employee.first_name asc,employee.department desc;

+------+------------+-----------+--------+--------------+------------+
| E_id | First_name | Last_name | Salary | Joining_date | department |
+------+------------+-----------+--------+--------------+------------+
|    4 | chandan    | chanchar  |  55000 | 2016-01-21   | history    |
|    5 | manoj      | singh     |  56200 | 2017-01-12   | history    |
|    2 | rahul      | thakur    |  60000 | 2022-01-04   | hindi      |
|    3 | raina      | sharma    |   8000 | 2021-01-12   | math       |
|  101 | ram        | sharma    |   5000 | 2020-01-01   | science    |
+------+------------+-----------+--------+--------------+------------+
5 rows in set (0.000 sec)
```

g) List the details of an employee whose first name ends with ‘h’ and contains six alphabets.

```
MariaDB [assign7]> select * from employee where first_name like '%l' and length(first_name)=6;
Empty set (0.000 sec)

MariaDB [assign7]> select * from employee where first_name like '%l' and length(first_name)=5;
+------+------------+-----------+--------+--------------+------------+
| E_id | First_name | Last_name | Salary | Joining_date | department |
+------+------------+-----------+--------+--------------+------------+
|    2 | rahul      | thakur    |  60000 | 2022-01-04   | hindi      |
+------+------------+-----------+--------+--------------+------------+
1 row in set (0.000 sec)

MariaDB [assign7]> select * from employee where first_name like '%h' and length(first_name)=6;
+------+------------+-----------+--------+--------------+------------+
| E_id | First_name | Last_name | Salary | Joining_date | department |
+------+------------+-----------+--------+--------------+------------+
|    6 | harish     | kumar     |  66666 | 2019-01-17   | hindi      |
+------+------------+-----------+--------+--------------+------------+
1 row in set (0.000 sec)
```

h) Display the details of employees who have joined in Feb 2014.

```
MariaDB [assign7]> select * from employee where joining_date like "%2014-02-%"
    -> ;
+------+------------+-----------+--------+--------------+------------+
| E_id | First_name | Last_name | Salary | Joining_date | department |
+------+------------+-----------+--------+--------------+------------+
|    2 | rahul      | thakur    |  60000 | 2014-02-04   | hindi      |
+------+------------+-----------+--------+--------------+------------+
1 row in set (0.000 sec)

MariaDB [assign7]>
```

i) Fetch the employee's names with salaries over and equal to 50000 and less than equal to 100000.

```
MariaDB [assign7]> select * from employee where salary>=50000 and salary<100000;
+------+------------+-----------+--------+--------------+------------+
| E_id | First_name | Last_name | Salary | Joining_date | department |
+------+------------+-----------+--------+--------------+------------+
|    2 | rahul      | thakur    |  60000 | 2014-02-04   | hindi      |
|    5 | manoj      | singh     |  56200 | 2017-01-12   | history    |
+------+------------+-----------+--------+--------------+------------+
2 rows in set (0.000 sec)
```

j) List the no. of employees for each department in desc order.

```
MariaDB [assign7]> select * from employee order by department desc;
+------+------------+-----------+--------+--------------+------------+
| E_id | First_name | Last_name | Salary | Joining_date | department |
+------+------------+-----------+--------+--------------+------------+
|  101 | ram        | sharma    |   5000 | 2020-01-01   | science    |
|    3 | raina      | sharma    |   8000 | 2021-01-12   | math       |
|    4 | chandan    | chanchar  | 100200 | 2016-01-21   | history    |
|    5 | manoj      | singh     |  56200 | 2017-01-12   | history    |
|    2 | rahul      | thakur    |  60000 | 2014-02-04   | hindi      |
|    6 | harish     | kumar     | 100000 | 2019-01-17   | hindi      |
+------+------------+-----------+--------+--------------+------------+
6 rows in set (0.000 sec)
```

k) Print the details of employees who are also managers.

```
MariaDB [assign7]> select * from employee where department='manager';
+------+------------+-----------+--------+--------------+------------+
| E_id | First_name | Last_name | Salary | Joining_date | department |
+------+------------+-----------+--------+--------------+------------+
|    4 | chandan    | chanchar  | 100200 | 2016-01-21   | manager    |
+------+------------+-----------+--------+--------------+------------+
1 row in set (0.000 sec)
```

l) Fetch the duplicate records having matching data in some fields of a table.

```
MariaDB [assign7]> select first_name,Last_name,department,count(*) from employee group by department
 having count(*)>1;
+------------+-----------+------------+----------+
| first_name | Last_name | department | count(*) |
+------------+-----------+------------+----------+
| rahul      | thakur    | hindi      |        2 |
+------------+-----------+------------+----------+
1 row in set (0.001 sec)
```

m) Fetch intersecting records of two tables.

```
MariaDB [assign7]> select * from bonus inner join job_title on bonus.E_ref_id=Job_title.E_ref_id;
+----------+------------+--------------+----------+--------------------+---------------+
| E_Ref_id | Bonus_date | Bonus_amount | E_Ref_id | E_title            | Affected_from |
+----------+------------+--------------+----------+--------------------+---------------+
|        2 | 2020-03-23 |         5000 |        2 | department head    | 2014-01-17    |
|      101 | 2021-04-25 |         6000 |      101 | assistance teacher | 2015-01-15    |
+----------+------------+--------------+----------+--------------------+---------------+
2 rows in set (0.002 sec)
```

n) Find the nth (say n=5) highest salary from a table.

```
MariaDB [assign7]> select * from employee order by salary desc limit 5;
+------+------------+-----------+--------+--------------+------------+
| E_id | First_name | Last_name | Salary | Joining_date | department |
+------+------------+-----------+--------+--------------+------------+
|    4 | chandan    | chanchar  | 100200 | 2016-01-21   | manager    |
|    6 | harish     | kumar     | 100000 | 2019-01-17   | hindi      |
|    2 | rahul      | thakur    |  60000 | 2014-02-04   | hindi      |
|    5 | manoj      | singh     |  56200 | 2017-01-12   | history    |
|    3 | raina      | sharma    |   8000 | 2021-01-12   | math       |
+------+------------+-----------+--------+--------------+------------+
5 rows in set (0.001 sec)
```

o) Find the 4th highest salary without using TOP or limit method.

```
MariaDB [assign7]> select * from employee emp where (4-1)=(select emp.salary from employee emp1 wher
e emp1.salary>emp1.salary);
Empty set (0.000 sec)

MariaDB [assign7]> select * from employee emp where (4-1)=(select count(distinct(emp.salary)) from e
mployee emp1 where emp1.salary>emp1.salary);
Empty set (0.000 sec)
```

p) List the details of employees with the same salary.

```
MariaDB [assign7]> select * from employee where salary in (select salary from employee group by sala
ry having count(*)>1) order by department desc;
+------+------------+-----------+--------+--------------+------------+
| E_id | First_name | Last_name | Salary | Joining_date | department |
+------+------------+-----------+--------+--------------+------------+
|  101 | ram        | sharma    |   8000 | 2020-01-01   | science    |
|    3 | raina      | sharma    |   8000 | 2021-01-12   | math       |
+------+------------+-----------+--------+--------------+------------+
2 rows in set (0.001 sec)
```

q) Display the second highest salary from a table.

```
MariaDB [assign7]> select * from employee order by salary desc limit 1,1;
+------+------------+-----------+--------+--------------+------------+
| E_id | First_name | Last_name | Salary | Joining_date | department |
+------+------------+-----------+--------+--------------+------------+
|    6 | harish     | kumar     | 100000 | 2019-01-17   | hindi      |
+------+------------+-----------+--------+--------------+------------+
1 row in set (0.000 sec)
```

r) Display all departments along with the number of people in there.

```
MariaDB [assign7]> select department , count(*) from employee group by department;
+------------+----------+
| department | count(*) |
+------------+----------+
| hindi      |        2 |
| history    |        1 |
| manager    |        1 |
| math       |        1 |
| science    |        1 |
+------------+----------+
5 rows in set (0.000 sec)
```

s) List the name of employees having the highest salary in each department.

```
MariaDB [assign7]> select first_name,last_name,max(salary) from employee group by department;
+------------+-----------+-------------+
| first_name | last_name | max(salary) |
+------------+-----------+-------------+
| rahul      | thakur    |      100000 |
| manoj      | singh     |       56200 |
| chandan    | chanchar  |      100200 |
| raina      | sharma    |        8000 |
| ram        | sharma    |        8000 |
+------------+-----------+-------------+
5 rows in set (0.000 sec)
```

t) Fetch three min salaries from a table

```
MariaDB [assign7]> select * from employee order by salary asc limit 3;
+------+------------+-----------+--------+--------------+------------+
| E_id | First_name | Last_name | Salary | Joining_date | department |
+------+------------+-----------+--------+--------------+------------+
|    3 | raina      | sharma    |   8000 | 2021-01-12   | math       |
|  101 | ram        | sharma    |   8000 | 2020-01-01   | science    |
|    5 | manoj      | singh     |  56200 | 2017-01-12   | history    |
+------+------------+-----------+--------+--------------+------------+
3 rows in set (0.000 sec)
```

u) Fetch departments along with the total salaries paid for each of them.

```
MariaDB [assign7]> select department,sum(salary) from employee group by department;
+------------+-------------+
| department | sum(salary) |
+------------+-------------+
| hindi      |      160000 |
| history    |       56200 |
| manager    |      100200 |
| math       |        8000 |
| science    |        8000 |
+------------+-------------+
5 rows in set (0.001 sec)
```

v) Fetch the names of employees who earn the highest salary.

```
MariaDB [assign7]> select * from employee order by salary desc limit 1;
+------+------------+-----------+--------+--------------+------------+
| E_id | First_name | Last_name | Salary | Joining_date | department |
+------+------------+-----------+--------+--------------+------------+
|    4 | chandan    | chanchar  | 100200 | 2016-01-21   | manager    |
+------+------------+-----------+--------+--------------+------------+
1 row in set (0.000 sec)
```