Operators in My SQL

Objective: To be familiar with different operators in SQL.

- **Problems with its Solutions:**

1. **Create a table named employee with the following attributes by considering employee_id as primary key**

employee(empoyee_id,first_name,last_name,age,address, department,postion,salary)

create table employee(employee_id int PRIMARY KEY,first_name varchar(20),last_name varchar(20),age int,address varchar(30),department varchar(30), position varchar(30),salary float(12,4));

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

MariaDB [(none)]> use labfour;
Database changed
MariaDB [labfour]> create table employee(employee_id int PRIMARY KEY,first_name varchar(20),last_name
    -> varchar(20),age int,address varchar(30),department varchar(30), position varchar(30),salary
    -> float(12,4));
Query OK, 0 rows affected (0.210 sec)
```

2. **Now insert at least any 10 records of employee**

```
insert into employee values(1,'anish','sharma',26,'kathmandu','finance','manager',80000);
insert into employee values(2,'roshan','pokhrel',28,'pokhara','sales','analyst',60000);
insert into employee values(3,'aakriti','bagale',30,'butwal','purchase','manager',95000);
insert into employee values(4,'rojina','karki',25,'pokhara','marketing','manager',85000);
insert into employee values(5,'keshav','ghimire',35,'kathmandu','purchase','analyst',65000);
insert into employee values(6,'roshan','pandey',38,'chitwan','operations','analyst',70000);
insert into employee values(7,'sita','pokhrel',23,'lalitpur','marketing','analyst',68000);
insert into employee values(8,'srijana','bhattrai',29,'butwal','finance','analyst',62000);
insert into employee values(9,'niraj','acharya',40,'kathmandu','sales','manager',90000);
insert into employee values(10,'nikita','giri',15,'pokhara','purchase','secretary',25000);
```

```
MariaDB [labfour]> insert into employee values(1,'anish','sharma',26,'kathmandu','finance','manager',80000);
Query OK, 1 row affected (0.081 sec)

MariaDB [labfour]> insert into employee values(2,'roshan','pokhrel',28,'pokhara','sales','analyst',60000);
Query OK, 1 row affected (0.175 sec)

MariaDB [labfour]> insert into employee values(3,'aakriti','bagale',30,'butwal','purchase','manager',95000);
Query OK, 1 row affected (0.028 sec)

MariaDB [labfour]> insert into employee values(4,'rojina','karki',25,'pokhara','marketing','manager',85000);
Query OK, 1 row affected (0.059 sec)

MariaDB [labfour]> insert into employee values(5,'keshav','ghimire',35,'kathmandu','purchase','analyst',65000);
Query OK, 1 row affected (0.054 sec)

MariaDB [labfour]> insert into employee values(6,'roshan','pandey',38,'chitwan','operations','analyst',70000);
Query OK, 1 row affected (0.064 sec)

MariaDB [labfour]> insert into employee values(7,'sita','pokhrel',23,'lalitpur','marketing','analyst',68000);
Query OK, 1 row affected (0.109 sec)

MariaDB [labfour]> insert into employee values(8,'srijana','bhattrai',29,'butwal','finance','analyst',62000);
Query OK, 1 row affected (0.106 sec)

MariaDB [labfour]> insert into employee values(9,'niraj','acharya',40,'kathmandu','sales','manager',90000);
Query OK, 1 row affected (0.086 sec)

MariaDB [labfour]> insert into employee values(10,'nikita','giri',15,'pokhara','purchase','secretary',25000);
Query OK, 1 row affected (0.042 sec)
```

employee_id	first_name	last_name	age	Addresss	department	Position	salary
1	anish	Sharma	26	Kathmandu	Finance	Manager	80000
2	roshan	pokhrel	28	Pokhara	Sales	Analyst	60000
3	aakriti	Bagale	30	Butwal	Purchase	Manager	95000
4	rojina	Karki	25	Pokhara	Marketing	Manager	85000
5	keshav	ghimire	35	Kathmandu	Purchase	Analyst	65000
6	roshan	Pandey	38	Chitwan	Operations	Analyst	70000
7	sita	pokhrel	23	Laltipur	Marketing	Analyst	68000
8	srijana	Bhattrai	29	Butwal	Finance	Analyst	62000
9	niraj	Acharya	40	Kathmandu	Sales	Manager	90000
10	nikita	Giri	15	Pokhara	Purchase	Secretary	25000

Now, write a query to perform the following operations

- **Arithmetic, logical and relational operators**

1) Display the first_name and last_name of employee whose deparment is finance

select first_name,last_name from employee where department='finance';

```
MariaDB [labfour]> select first_name,last_name from employee where department='finance';
+------------+-----------+
| first_name | last_name |
+------------+-----------+
| anish      | sharma    |
| srijana    | bhattrai  |
+------------+-----------+
```

2) Display all the information of employee in employee table whose address is not Kathmandu

select * from employee where address!='kathmandu';

```
MariaDB [labfour]> select * from employee where address!='kathmandu';
+-------------+------------+-----------+------+----------+------------+-----------+------------+
| employee_id | first_name | last_name | age  | address  | department | position  | salary     |
+-------------+------------+-----------+------+----------+------------+-----------+------------+
|           2 | roshan     | pokhrel   |   28 | pokhara  | sales      | analyst   | 60000.0000 |
|           3 | aakriti    | bagale    |   30 | butwal   | purchase   | manager   | 95000.0000 |
|           4 | rojina     | karki     |   25 | pokhara  | marketing  | manager   | 85000.0000 |
|           6 | roshan     | pandey    |   38 | chitwan  | operations | analyst   | 70000.0000 |
|           7 | sita       | pokhrel   |   23 | lalitpur | marketing  | analyst   | 68000.0000 |
|           8 | srijana    | bhattrai  |   29 | butwal   | finance    | analyst   | 62000.0000 |
|          10 | nikita     | giri      |   15 | pokhara  | purchase   | secretary | 25000.0000 |
+-------------+------------+-----------+------+----------+------------+-----------+------------+
```

3) Increment the salary of all employees by 15%

update employee set salary=salary*1.15;

```
MariaDB [labfour]> update employee
    -> set salary=salary*1.15;
Query OK, 10 rows affected (0.109 sec)
Rows matched: 10  Changed: 10  Warnings: 0

MariaDB [labfour]> select * from employee;
+-------------+------------+-----------+------+-----------+------------+-----------+-------------+
| employee_id | first_name | last_name | age  | address   | department | position  | salary      |
+-------------+------------+-----------+------+-----------+------------+-----------+-------------+
|           1 | anish      | sharma    |   26 | kathmandu | finance    | manager   |  92000.0000 |
|           2 | roshan     | pokhrel   |   28 | pokhara   | sales      | analyst   |  69000.0000 |
|           3 | aakriti    | bagale    |   30 | butwal    | purchase   | manager   | 109250.0000 |
|           4 | rojina     | karki     |   25 | pokhara   | marketing  | manager   |  97750.0000 |
|           5 | keshav     | ghimire   |   35 | kathmandu | purchase   | analyst   |  74750.0000 |
|           6 | roshan     | pandey    |   38 | chitwan   | operations | analyst   |  80500.0000 |
|           7 | sita       | pokhrel   |   23 | lalitpur  | marketing  | analyst   |  78200.0000 |
|           8 | srijana    | bhattrai  |   29 | butwal    | finance    | analyst   |  71300.0000 |
|           9 | niraj      | acharya   |   40 | kathmandu | sales      | manager   | 103500.0000 |
|          10 | nikita     | giri      |   15 | pokhara   | purchase   | secretary |  28750.0000 |
+-------------+------------+-----------+------+-----------+------------+-----------+-------------+
```

4) Decrease the salary of manager by 5%

update employee set salary=salary*0.95 where position='manager';

5) Delete information of employee whose age is less than 18

delete from employee where age<18;

6) Display the position of employee whose salary is greater than or equals to 50000

select distinct position from employee where salary >=50000;

```
MariaDB [labfour]> select distinct position from employee
    -> where salary>50000;
+-----------+
| position  |
+-----------+
| manager   |
| analyst   |
+-----------+
```

7) Display information of employee whose position is manager and address is Kathmandu

select * from employee where position='manager' and address='kathmandu';

```
MariaDB [labfour]> select * from employee
    -> where position="manager"
    -> and address="kathmandu";
+-------------+------------+-----------+------+-----------+------------+----------+------------+
| employee_id | first_name | last_name | age  | address   | department | position | salary     |
+-------------+------------+-----------+------+-----------+------------+----------+------------+
|           1 | anish      | sharma    |   26 | kathmandu | finance    | manager  | 87400.0000 |
|           9 | niraj      | acharya   |   40 | kathmandu | sales      | manager  | 98325.0000 |
+-------------+------------+-----------+------+-----------+------------+----------+------------+
```

8) Display information of employee who either live in pokhara or kathmandu but age is greater than 25.

select * from employee where (address='kathmandu' or address='pokhara') and age>25;

```
MariaDB [labfour]> select * from employee where (address='kathmandu' or address='pokhara') and age>25;
+-------------+------------+-----------+------+-----------+------------+----------+------------+
| employee_id | first_name | last_name | age  | address   | department | position | salary     |
+-------------+------------+-----------+------+-----------+------------+----------+------------+
|           1 | anish      | sharma    |   26 | kathmandu | finance    | manager  | 87400.0000 |
|           2 | roshan     | pokhrel   |   28 | pokhara   | sales      | analyst  | 65550.0000 |
|           5 | keshav     | ghimire   |   35 | kathmandu | purchase   | analyst  | 71012.5000 |
|           9 | niraj      | acharya   |   40 | kathmandu | sales      | manager  | 98325.0000 |
+-------------+------------+-----------+------+-----------+------------+----------+------------+
```

9) Display first_name,last_name and position of employee whose salary is in the range of 70000 to 80000.

select first_name,last_name,position from employee where salary between 70000 and 80000;

```
MariaDB [labfour]> select first_name,last_name,position from employee
    -> where salary between 70000 and 80000;
+------------+-----------+----------+
| first_name | last_name | position |
+------------+-----------+----------+
| keshav     | ghimire   | analyst  |
| roshan     | pandey    | analyst  |
| sita       | pokhrel   | analyst  |
+------------+-----------+----------+
```

10) Display first_name,last_name and position of employee whose salary is not in the range of 70000 to 80000.

Select first_name,last_name,position from employee where salary not between 70000 and 80000;

```
MariaDB [labfour]> select first_name,last_name,position from employee
    -> where salary not between 70000 and 80000;
+------------+-----------+----------+
| first_name | last_name | position |
+------------+-----------+----------+
| anish      | sharma    | manager  |
| roshan     | pokhrel   | analyst  |
| aakriti    | bagale    | manager  |
| rojina     | karki     | manager  |
| srijana    | bhattrai  | analyst  |
| niraj      | acharya   | manager  |
+------------+-----------+----------+
6 rows in set (0.001 sec)
```

11) Display the information of employee whose salary is equal to 69000,30000,35000,40000,71300,80500.

select * from employee where salary in (69000,30000,35000,40000,71300,80500);

```
MariaDB [labfour]> select * from employee where salary in (69000,30000,35000,40000,71300,80500);
Empty set (0.001 sec)
```

12) Display information of employee whose department is (sales, purchase) but not salary equal to (69000,71300,80500).

select * from employee where department in ('sales','purchase') and salary not in (69000,71300,80500);

```
MariaDB [labfour]> select * from employee where department in ('sales','purchase') and salary not in
    -> (69000,71300,80500);
+-------------+------------+-----------+------+-----------+------------+----------+-------------+
| employee_id | first_name | last_name | age  | address   | department | position | salary      |
+-------------+------------+-----------+------+-----------+------------+----------+-------------+
|           2 | roshan     | pokhrel   |   28 | pokhara   | sales      | analyst  |  65550.0000 |
|           3 | aakriti    | bagale    |   30 | butwal    | purchase   | manager  | 103787.5000 |
|           5 | keshav     | ghimire   |   35 | kathmandu | purchase   | analyst  |  71012.5000 |
|           9 | niraj      | acharya   |   40 | kathmandu | sales      | manager  |  98325.0000 |
+-------------+------------+-----------+------+-----------+------------+----------+-------------+
```

- **Like operator with wildcard characters**

13) Display information of employees whose first_name starts with letter 'a'.

select * from employee where first_name like 'a%';

```
MariaDB [labfour]> select * from employee where first_name like 'a%';
+-------------+------------+-----------+------+-----------+------------+----------+-------------+
| employee_id | first_name | last_name | age  | address   | department | position | salary      |
+-------------+------------+-----------+------+-----------+------------+----------+-------------+
|           1 | anish      | sharma    |   26 | kathmandu | finance    | manager  |  87400.0000 |
|           3 | aakriti    | bagale    |   30 | butwal    | purchase   | manager  | 103787.5000 |
+-------------+------------+-----------+------+-----------+------------+----------+-------------+
2 rows in set (0.001 sec)
```

14) Display information of employees whose first_name starts with letter 'ro'.

select * from employee where first_name like 'ro%';

```
MariaDB [labfour]> select * from employee where first_name like 'ro%';
+-------------+------------+-----------+------+---------+------------+----------+-------------+
| employee_id | first_name | last_name | age  | address | department | position | salary      |
+-------------+------------+-----------+------+---------+------------+----------+-------------+
|           2 | roshan     | pokhrel   |   28 | pokhara | sales      | analyst  | 65550.0000  |
|           4 | rojina     | karki     |   25 | pokhara | marketing  | manager  | 92862.5000  |
|           6 | roshan     | pandey    |   38 | chitwan | operations | analyst  | 76475.0000  |
+-------------+------------+-----------+------+---------+------------+----------+-------------+
```

15) Display information of employees whose last_name ends with letter 'el'

select * from employee where last_name like '%el';

```
MariaDB [labfour]> select * from employee where last_name like '%el';
+-------------+------------+-----------+------+----------+------------+----------+-------------+
| employee_id | first_name | last_name | age  | address  | department | position | salary      |
+-------------+------------+-----------+------+----------+------------+----------+-------------+
|           2 | roshan     | pokhrel   |   28 | pokhara  | sales      | analyst  | 65550.0000  |
|           7 | sita       | pokhrel   |   23 | lalitpur | marketing  | analyst  | 74290.0000  |
+-------------+------------+-----------+------+----------+------------+----------+-------------+
```

16) Display information of employees whose first_name has exactly six characters.

select * from employee where first_name like '_ _ _ _ _ _';

```
MariaDB [labfour]> select * from employee where first_name like '______';
+-------------+------------+-----------+------+-----------+------------+----------+-------------+
| employee_id | first_name | last_name | age  | address   | department | position | salary      |
+-------------+------------+-----------+------+-----------+------------+----------+-------------+
|           2 | roshan     | pokhrel   |   28 | pokhara   | sales      | analyst  | 65550.0000  |
|           4 | rojina     | karki     |   25 | pokhara   | marketing  | manager  | 92862.5000  |
|           5 | keshav     | ghimire   |   35 | kathmandu | purchase   | analyst  | 71012.5000  |
|           6 | roshan     | pandey    |   38 | chitwan   | operations | analyst  | 76475.0000  |
+-------------+------------+-----------+------+-----------+------------+----------+-------------+
```

17) Display information of employees whose first_name starts with r and has exactly six characters.

select * from employee where first_name like 'r_ _ _ _ _';

```
MariaDB [labfour]> select * from employee where first_name like 'r_____';
+-------------+------------+-----------+------+---------+------------+----------+-------------+
| employee_id | first_name | last_name | age  | address | department | position | salary      |
+-------------+------------+-----------+------+---------+------------+----------+-------------+
|           2 | roshan     | pokhrel   |   28 | pokhara | sales      | analyst  | 65550.0000  |
|           4 | rojina     | karki     |   25 | pokhara | marketing  | manager  | 92862.5000  |
|           6 | roshan     | pandey    |   38 | chitwan | operations | analyst  | 76475.0000  |
+-------------+------------+-----------+------+---------+------------+----------+-------------+
```

18) Display the information of employees which contains substring of first_name as 'sha'.

select * from employee where first_name like '%sha%';

```
MariaDB [labfour]> select * from employee where first_name like '%sha%';
+-------------+------------+-----------+------+-----------+------------+----------+------------+
| employee_id | first_name | last_name | age  | address   | department | position | salary     |
+-------------+------------+-----------+------+-----------+------------+----------+------------+
|           2 | roshan     | pokhrel   |   28 | pokhara   | sales      | analyst  | 65550.0000 |
|           5 | keshav     | ghimire   |   35 | kathmandu | purchase   | analyst  | 71012.5000 |
|           6 | roshan     | pandey    |   38 | chitwan   | operations | analyst  | 76475.0000 |
+-------------+------------+-----------+------+-----------+------------+----------+------------+
```

19) Display information of employees whose second position of first_name contains letter 'o'.

select * from employee where first_name like '_o%';

```
MariaDB [labfour]> select * from employee where first_name like '_o%';
+-------------+------------+-----------+------+---------+------------+----------+------------+
| employee_id | first_name | last_name | age  | address | department | position | salary     |
+-------------+------------+-----------+------+---------+------------+----------+------------+
|           2 | roshan     | pokhrel   |   28 | pokhara | sales      | analyst  | 65550.0000 |
|           4 | rojina     | karki     |   25 | pokhara | marketing  | manager  | 92862.5000 |
|           6 | roshan     | pandey    |   38 | chitwan | operations | analyst  | 76475.0000 |
+-------------+------------+-----------+------+---------+------------+----------+------------+
```

20) Display the information of employees whose third postion of first_name contains the letter 's'.

select * from employee where first_name like '_ _s%';

```
MariaDB [labfour]> select * from employee where first_name like '__s%';
+-------------+------------+-----------+------+-----------+------------+----------+------------+
| employee_id | first_name | last_name | age  | address   | department | position | salary     |
+-------------+------------+-----------+------+-----------+------------+----------+------------+
|           2 | roshan     | pokhrel   |   28 | pokhara   | sales      | analyst  | 65550.0000 |
|           5 | keshav     | ghimire   |   35 | kathmandu | purchase   | analyst  | 71012.5000 |
|           6 | roshan     | pandey    |   38 | chitwan   | operations | analyst  | 76475.0000 |
+-------------+------------+-----------+------+-----------+------------+----------+------------+
```

21) Display information of employees which have first_name of at least six characters.

select * from employee where first_name like '_ _ _ _ _ _%';

```
MariaDB [labfour]> select * from employee where first_name like '______%';
+-------------+------------+-----------+------+-----------+------------+----------+--------------+
| employee_id | first_name | last_name | age  | address   | department | position | salary       |
+-------------+------------+-----------+------+-----------+------------+----------+--------------+
|           2 | roshan     | pokhrel   |   28 | pokhara   | sales      | analyst  |   65550.0000 |
|           3 | aakriti    | bagale    |   30 | butwal    | purchase   | manager  |  103787.5000 |
|           4 | rojina     | karki     |   25 | pokhara   | marketing  | manager  |   92862.5000 |
|           5 | keshav     | ghimire   |   35 | kathmandu | purchase   | analyst  |   71012.5000 |
|           6 | roshan     | pandey    |   38 | chitwan   | operations | analyst  |   76475.0000 |
|           8 | srijana    | bhattrai  |   29 | butwal    | finance    | analyst  |   67735.0000 |
+-------------+------------+-----------+------+-----------+------------+----------+--------------+
6 rows in set (0.001 sec)
```

➢ DISCUSSION & CONCLUSION:

"In this lab, we tested various operators in MySQL to see how they affect how quickly we can get information from the database. We found that different operators, like '=', 'LIKE', 'IN', and 'BETWEEN', work better in different situations.

For exact matches, '=' was super-fast. 'LIKE' was good at finding patterns in the data but might slow down with lots of information. 'IN' worked well when we had a few specific values to check. 'BETWEEN' was great for searching within a range.

By knowing which operator works best for different situations, we can speed up getting information from databases and make our systems work better overall. So, it's important to pick the right operator based on what you need to do.