Advanced SQL Queries

In this section, we'll cover some advanced SQL queries using MySQL. We'll use the existing `EMPLOYEES` table, and add a bit more data if necessary.

1. Adding More Data

Let's add some more data to the `EMPLOYEES` table to illustrate the examples better.

```sql
INSERT INTO EMPLOYEES (EmployeeID, FirstName, LastName, Department, Salary,
JoinDate) VALUES
(7, 'Sarah', 'Taylor', 'HR', 62000.00, '2020-08-15'),
(8, 'David', 'Anderson', 'Finance', 54000.00, '2023-01-20'),
(9, 'Laura', 'Martinez', 'IT', 58000.00, '2021-02-12');
```

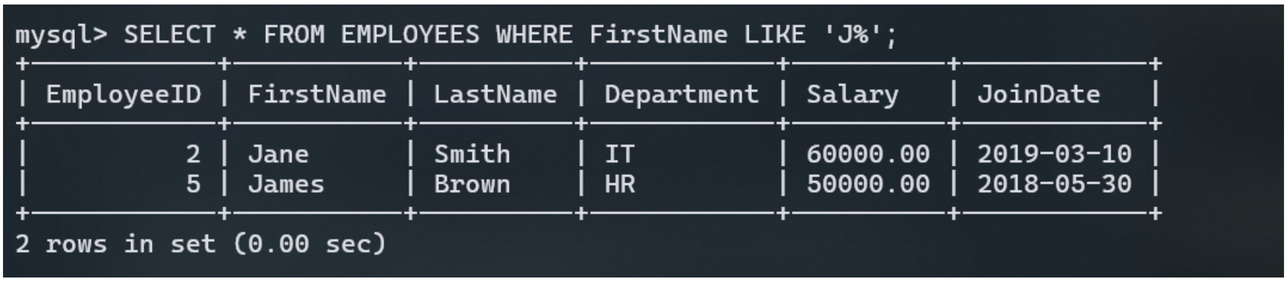
2. Advanced SQL Queries

2.1 LIKE Operator:

- **Definition**: The `LIKE` operator is a SQL keyword used to search for a specified pattern within a column. It acts as a filtering tool that allows you to find rows where the data matches a specific pattern.
- **Purpose**: The `LIKE` operator itself is the command that you use to perform the pattern search in SQL.
- **Example**:

  ```sql
  SELECT * FROM EMPLOYEES WHERE FirstName LIKE 'J%';
  ```

- **Output**:



```
mysql> SELECT * FROM EMPLOYEES WHERE FirstName LIKE 'J%';
+------------+-----------+----------+------------+----------+------------+
| EmployeeID | FirstName | LastName | Department | Salary   | JoinDate   |
+------------+-----------+----------+------------+----------+------------+
|          2 | Jane      | Smith    | IT         | 60000.00 | 2019-03-10 |
|          5 | James     | Brown    | HR         | 50000.00 | 2018-05-30 |
+------------+-----------+----------+------------+----------+------------+
2 rows in set (0.00 sec)
```

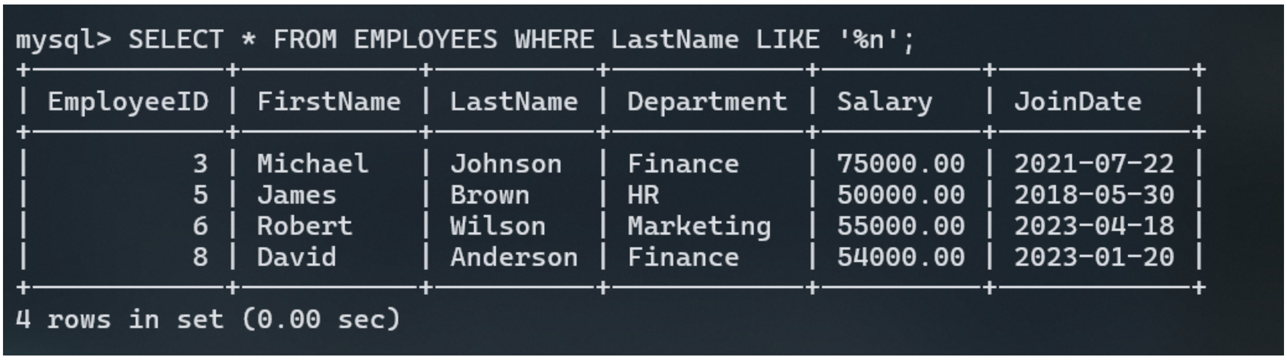
2.2 Wildcards:

- **Definition**: Wildcards are special symbols used in conjunction with the `LIKE` operator to define the pattern you want to search for. The two most common wildcards are:
  - `%`: Represents zero or more characters.
  - `_`: Represents a single character.

- **Purpose**: Wildcards enhance the `LIKE` operator by allowing you to create flexible search patterns.
- **Example**:

```sql
SELECT * FROM EMPLOYEES WHERE LastName LIKE '%n';
```

- **Output**:



```
mysql> SELECT * FROM EMPLOYEES WHERE LastName LIKE '%n';
+------------+-----------+----------+------------+----------+------------+
| EmployeeID | FirstName | LastName | Department | Salary   | JoinDate   |
+------------+-----------+----------+------------+----------+------------+
|          3 | Michael   | Johnson  | Finance    | 75000.00 | 2021-07-22 |
|          5 | James     | Brown    | HR         | 50000.00 | 2018-05-30 |
|          6 | Robert    | Wilson   | Marketing  | 55000.00 | 2023-04-18 |
|          8 | David     | Anderson | Finance    | 54000.00 | 2023-01-20 |
+------------+-----------+----------+------------+----------+------------+
4 rows in set (0.00 sec)
```

- **LIKE Operator**: The command used to perform pattern matching.
- **Wildcards**: Symbols used within the `LIKE` pattern to define the specific search criteria.

2.3 IN Operator

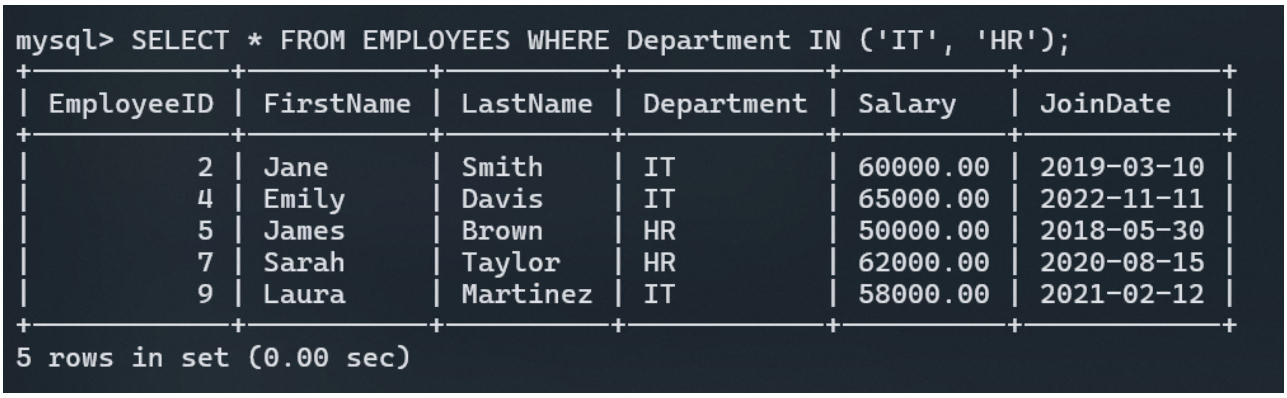
- **IN Operator**: The `IN` operator allows you to specify multiple values in a `WHERE` clause. It's a shorthand for multiple `OR` conditions.

Example :

- Find all employees who work in the 'IT' or 'HR' departments.

```sql
SELECT * FROM EMPLOYEES WHERE Department IN ('IT', 'HR');
```

- **Output**



```
mysql> SELECT * FROM EMPLOYEES WHERE Department IN ('IT', 'HR');
+------------+-----------+----------+------------+----------+------------+
| EmployeeID | FirstName | LastName | Department | Salary   | JoinDate   |
+------------+-----------+----------+------------+----------+------------+
|          2 | Jane      | Smith    | IT         | 60000.00 | 2019-03-10 |
|          4 | Emily     | Davis    | IT         | 65000.00 | 2022-11-11 |
|          5 | James     | Brown    | HR         | 50000.00 | 2018-05-30 |
|          7 | Sarah     | Taylor   | HR         | 62000.00 | 2020-08-15 |
|          9 | Laura     | Martinez | IT         | 58000.00 | 2021-02-12 |
+------------+-----------+----------+------------+----------+------------+
5 rows in set (0.00 sec)
```

2.4 BETWEEN Operator

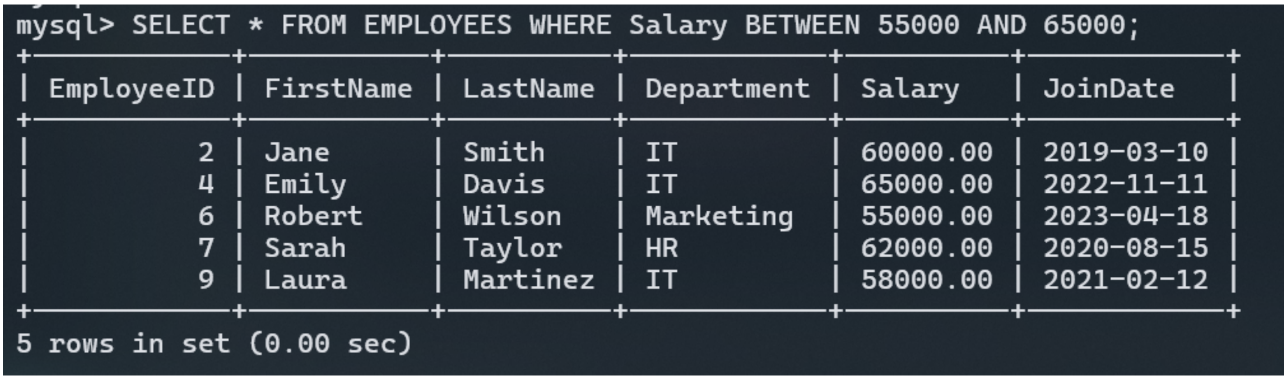
- **BETWEEN Operator**: The `BETWEEN` operator is used to filter the result set within a certain range. The values can be numbers, text, or dates.

Example :

- Find all employees with a salary between 55000 and 65000.

```
SELECT * FROM EMPLOYEES WHERE Salary BETWEEN 55000 AND 65000;
```

- **Output**



```
mysql> SELECT * FROM EMPLOYEES WHERE Salary BETWEEN 55000 AND 65000;
+------------+-----------+----------+------------+----------+------------+
| EmployeeID | FirstName | LastName | Department | Salary   | JoinDate   |
+------------+-----------+----------+------------+----------+------------+
|          2 | Jane      | Smith    | IT         | 60000.00 | 2019-03-10 |
|          4 | Emily     | Davis    | IT         | 65000.00 | 2022-11-11 |
|          6 | Robert    | Wilson   | Marketing  | 55000.00 | 2023-04-18 |
|          7 | Sarah     | Taylor   | HR         | 62000.00 | 2020-08-15 |
|          9 | Laura     | Martinez | IT         | 58000.00 | 2021-02-12 |
+------------+-----------+----------+------------+----------+------------+
5 rows in set (0.00 sec)
```

2.5 Aliases (AS)

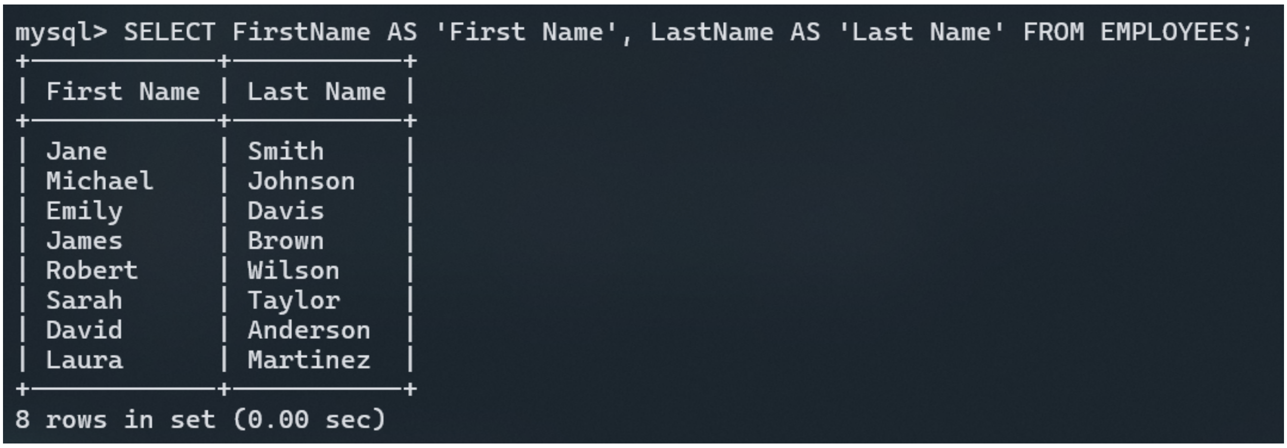
- **Aliases (AS)**: Aliases are used to give a table or a column a temporary name. This name only exists for the duration of that query.

Example :

- Select the first and last names of employees with the aliases 'First Name' and 'Last Name'.

```
SELECT FirstName AS 'First Name', LastName AS 'Last Name' FROM EMPLOYEES;
```

- **Output**



```
mysql> SELECT FirstName AS 'First Name', LastName AS 'Last Name' FROM EMPLOYEES;
+------------+-----------+
| First Name | Last Name |
+------------+-----------+
| Jane       | Smith     |
| Michael    | Johnson   |
| Emily      | Davis     |
| James      | Brown     |
| Robert     | Wilson    |
| Sarah      | Taylor    |
| David      | Anderson  |
| Laura      | Martinez  |
+------------+-----------+
8 rows in set (0.00 sec)
```