Apply filters to SQL queries

Project description

In this task, my role was to help the team gather specific data from the company's database related to employees, their departments, and login activities. The goal was to support both system security investigations and machine updates.

To complete the task, I wrote SQL queries that filtered the necessary information. I started by identifying failed login attempts that happened after business hours. Then, I retrieved login attempts that occurred on specific dates related to a suspicious event. I also filtered out all login attempts that originated from Mexico to focus only on external activity.

Next, I worked with the employees table to find users in the Marketing department located in offices that start with "East." I also gathered records for employees in either the Finance or Sales departments, as well as those who are not part of the Information Technology team.

Each query was tailored using AND, OR, and NOT operators to precisely target the required information from the database.

Retrieve after hours failed login attempts

To identify failed login attempts made after business hours (after 18:00), I queried the log_in_attempts table using the following SQL:

```
MariaDB [organization]> clear
MariaDB [organization]> SELECT *
    -> FROM log_in_attempts
    -> WHERE login_time > '18:00' and success = 0 ;
```

This query filters for login times later than 6 PM and returns only those attempts that were not successful.

Retrieve login attempts on specific dates

To investigate suspicious activity on 2022-05-09 and the previous day, I used this SQL query:

```
MariaDB [organization]>
MariaDB [organization]> SELECT *
    -> FROM log_in_attempts
    -> WHERE login_date = '2022-05-08' OR login_date = '2022-05-09' ;
```

The OR operator helps to include both dates in the search results.

Retrieve login attempts outside of Mexico

To exclude login attempts from Mexico (entries starting with 'MEX' or 'MEXICO'), the following SQL was used

```
MariaDB [organization]> SELECT *
    -> FROM log_in_attempts
    -> WHERE NOT country LIKE 'MEX%' ;
```

This filters out all countries that begin with 'MEX'.

Retrieve employees in Marketing

To get employees in the Marketing department located in East buildings, I used this SQL:

```
MariaDB [organization]> SELECT *
    -> FROM employees
    -> WHERE department = 'Marketing' AND office LIKE 'East-%' ;
```

This query selects all Marketing staff from offices whose names begin with 'East-'.

Retrieve employees in Finance or Sales

To list all employees working in either the Finance or Sales departments, I used:

```
MariaDB [organization]> SELECT *
    -> FROM employees
    -> WHERE department = 'Finance' OR department = 'Sales';
```

The OR operator allows retrieving records from either of the two departments.

Retrieve all employees not in IT

To find employees who are not in the Information Technology department, I applied this SQL:

```
MariaDB [organization]> SELECT *
    -> FROM employees
    -> WHERE department = 'Finance' OR department = 'Sales';
```

The NOT operator is used to exclude a specific department.

Summary

In this project, I demonstrated how to use SQL filters to extract precise data from tables. I retrieved data based on time, date, department, location, and success status. The use of AND, OR, and NOT allowed me to build complex yet efficient queries. This practice reinforced my ability to handle real-world data filtering and investigation scenarios using SQL.