Apply filters to SQL queries

Project description

Through SQL I can accomplish searching for data in a database, I can filter the search results to focus on a more specific piece of data. I can get the information I need in a quick manner which can be important in a high pressure scenario.

Retrieve after hours failed login attempts

My first task was to retrieve all failed login attempts made after hours.

```
MariaDB [organization]> SELECT * FROM log_in_attempts WHERE login_time
> '18:00:00' AND success = 0;
+----------+----------+------------+------------+---------+------------
-----+---------+
| event_id | username | login_date | login_time | country | ip_address
     | success |
+----------+----------+------------+------------+---------+------------
-----+---------+
|        2 | apatel   | 2022-05-10 | 20:27:27   | CAN     | 192.168.205
.12  |       0 |
|       18 | pwashing | 2022-05-11 | 19:28:50   | US      | 192.168.66.
142  |       0 |
|       20 | tshah    | 2022-05-12 | 18:56:36   | MEXICO  | 192.168.109
.50  |       0 |
|       28 | aestrada | 2022-05-09 | 19:28:12   | MEXICO  | 192.168.27.
57   |       0 |
|       34 | drosas   | 2022-05-11 | 21:02:04   | US      | 192.168.45.
93   |       0 |
```

To query this data and keep the output organized I applied two filters in the search. First I'm able to filter out all login attempts made before `'18:00:00'`. This ensures the correct time of day for the login attempt to be after hours. Secondly, I filtered out all successful login attempts by using the `AND` operator and searching for a `FALSE` (`0`) ouput in the `success` column. These two filters combined should result in only after hours failed login attempts being returned by the query.

Retrieve login attempts on specific dates

In order to retrieve the login attempts on specific dates. I must create a query to search the database for the correct `login_date`. I was searching for the dates `'2022-05-08'` and also

`'2022-05-09'`. I will use a filter in the query to retrieve this specific timeframe and shorten our response time.

```
MariaDB [organization]> SELECT *
    -> FROM log_in_attempts
    -> WHERE login_date = '2022-05-08' OR login_date = '2022-05-09';
+----------+----------+------------+------------+---------+------------
-----+---------+
| event_id | username | login_date | login_time | country | ip_address
     | success |
+----------+----------+------------+------------+---------+------------
-----+---------+
|        1 | jrafael  | 2022-05-09 | 04:56:27   | CAN     | 192.168.243
.140 |       1 |
|        3 | dkot     | 2022-05-09 | 06:47:41   | USA     | 192.168.151
.162 |       1 |
|        4 | dkot     | 2022-05-08 | 02:00:39   | USA     | 192.168.178
.71  |       0 |
|        8 | bisles   | 2022-05-08 | 01:30:17   | US      | 192.168.119
.173 |       0 |
|       12 | dkot     | 2022-05-08 | 09:11:34   | USA     | 192.168.100
.158 |       1 |
|       15 | lyamamot | 2022-05-09 | 17:17:26   | USA     | 192.168.183
.51  |       0 |
|       24 | arusso   | 2022-05-09 | 06:49:39   | MEXICO  | 192.168.171
.192 |       1 |
```

My query first uses the `SELECT` operator. Then the following argument is (`*`) which represents all of the columns in the selected database. Next, using the `FROM` operator. I assign the `log_in_attempts` database as the correct database to run the query. Then, `WHERE login_date = '2022-05-08'` is how i chose the first date to filter for. Followed by the `OR` operator. Lastly, I include the second date `'2022-05-09'` for the search to focus on.

Retrieve login attempts outside of Mexico

This screenshot shows how I can filter out a specific piece of data that I don't want to be a part of the output or search results.

```
MariaDB [organization]> SELECT *
    -> FROM log_in_attempts
    -> WHERE NOT country LIKE 'MEX%';
+----------+----------+------------+------------+---------+------------
-----+---------+
| event_id | username | login_date | login_time | country | ip_address
     | success |
+----------+----------+------------+------------+---------+------------
-----+---------+
|        1 | jrafael  | 2022-05-09 | 04:56:27   | CAN     | 192.168.243
.140 |       1 |
|        2 | apatel   | 2022-05-10 | 20:27:27   | CAN     | 192.168.205
.12  |       0 |
|        3 | dkot     | 2022-05-09 | 06:47:41   | USA     | 192.168.151
.162 |       1 |
|        4 | dkot     | 2022-05-08 | 02:00:39   | USA     | 192.168.178
```

My query first uses the `SELECT` operator. Then the following argument is (`*`) which represents

all of the columns in the selected database. Next, using the `FROM` operator. I assign the `log_in_attempts` database as the correct database to run the query. Then, `WHERE NOT country LIKE 'MEX%';` this is the command that filters out any country that is or begins with "MEX". The `NOT` operator is what removes this criteria from the query results.

Retrieve employees in Marketing

In order to know all of the employees in the marketing department I have to come up with a query that filters for employees only working in the Marketing department. I was also tasked with making sure the employee has an office in the east wing of the building.

```
MariaDB [organization]> SELECT *
    -> FROM employees
    -> WHERE department = 'Marketing' AND office LIKE 'East%';
+-------------+--------------+----------+------------+----------+
| employee_id | device_id    | username | department | office   |
+-------------+--------------+----------+------------+----------+
|        1000 | a320b137c219 | elarson  | Marketing  | East-170 |
|        1052 | a192b174c940 | jdarosa  | Marketing  | East-195 |
|        1075 | x573y883z772 | fbautist | Marketing  | East-267 |
|        1088 | k8651965m233 | rgosh    | Marketing  | East-157 |
|        1103 | NULL         | randerss | Marketing  | East-460 |
|        1156 | a184b775c707 | dellery  | Marketing  | East-417 |
|        1163 | h679i515j339 | cwilliam | Marketing  | East-216 |
+-------------+--------------+----------+------------+----------+
7 rows in set (0.001 sec)
```

My query first uses the `SELECT` operator. Then the following argument is (`*`) which represents all of the columns in the selected database. Next, using the `FROM` operator. I assign the `employees` database as the correct database to run the query. Then, `WHERE department = 'Marketing'` to make sure that our search results only come back as marketing department employees. Lastly, `AND office LIKE 'East%';` is the last filter I will apply to return only employees that have an office in the east wing of the building.

Retrieve employees in Finance or Sales

This query is in efforts to pull all of the employees working in either the Finance or Sales department.

```
MariaDB [organization]> SELECT * FROM employees WHERE department = 'Fin
ance' OR department = 'Sales';
+-------------+-------------+----------+------------+-------------+
| employee_id | device_id   | username | department | office      |
+-------------+-------------+----------+------------+-------------+
|        1003 | d394e816f943 | sgilmore | Finance    | South-153   |
|        1007 | h174i497j413 | wjaffrey | Finance    | North-406   |
|        1008 | i858j583k571 | abernard | Finance    | South-170   |
|        1009 | NULL        | lrodriqu | Sales      | South-134   |
|        1010 | k2421212m542 | jlansky  | Finance    | South-109   |
|        1011 | l748m120n401 | drosas   | Sales      | South-292   |
|        1015 | p611q262r945 | jsoto    | Finance    | North-271   |
|        1017 | r550s824t230 | jclark   | Finance    | North-188   |
|        1018 | s310t540u653 | abellmas | Finance    | North-403   |
|        1022 | w237x430y567 | arusso   | Finance    | West-465    |
|        1024 | y976z753a267 | iuduike  | Sales      | South-215   |
|        1025 | z381a365b233 | jhill    | Sales      | North-115   |
|        1029 | d336e475f676 | ivelasco | Finance    | East-156    |
|        1035 | j236k3031245 | bisles   | Sales      | South-171   |
|        1039 | n253o917p623 | cjackson | Sales      | East-378    |
|        1041 | p929q222r778 | cgriffin | Sales      | North-208   |
```

The `OR` operator is how I simultaneously filter for multiple criterias. In this case it is `WHERE department = 'Finance' OR department = 'Sales';` This line in the screenshot shows that I'm looking in the `department` column only for employees that work in finance or sales.

Retrieve all employees not in IT

This screenshot shows how I can filter out a specific piece of data that I don't want to be a part of the output or search results

```
MariaDB [organization]> SELECT * FROM employees WHERE NOT department =
'Information Technology';
+-------------+-------------+----------+-----------------+------------
-+
| employee_id | device_id    | username | department      | office
 |
+-------------+-------------+----------+-----------------+------------
-+
|        1000 | a320b137c219 | elarson  | Marketing       | East-170
 |
|        1001 | b239c825d303 | bmoreno  | Marketing       | Central-276
 |
|        1002 | c116d593e558 | tshah    | Human Resources | North-434
 |
|        1003 | d394e816f943 | sgilmore | Finance         | South-153
 |
|        1004 | e218f877g788 | eraab    | Human Resources | South-127
 |
|        1005 | f551g340h864 | gesparza | Human Resources | South-366
 |
|        1007 | h174i497j413 | wjaffrey | Finance         | North-406
 |
|        1008 | i858j583k571 | abernard | Finance         | South-170
 |
|        1009 | NULL         | lrodriqu | Sales           | South-134
```

The first line of the screenshot is the command that filters out any employee that works in “Information Technology”. `WHERE NOT department = ‘Information Technology’;`. The `NOT` operator is what removes this criteria from the query results.

Summary

Using filters to focus a search and specify criteria in SQL can improve efficiency and display data in a well organized manner.