

Apply filters to SQL queries

Project description

A task is assigned to me to examine the organization's data in our **employees** and **log_in_attempts** tables. So I will need to use the following steps using SQL filters to retrieve records from different datasets and investigate the potential security issues.

Retrieve after hours failed login attempts

Our team is investigating failed login attempts that were made after business hours. You want to retrieve this information from the login activity. We'll identify all unsuccessful attempts after 18:00.

```
MariaDB [organization]> SELECT * FROM log_in_attempts WHERE login_time > '18:00' 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 | astrada | 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 |
| 42 | cgriffin | 2022-05-09 | 23:04:05 | US | 192.168.4.157 | 0 |
| 52 | cjackson | 2022-05-10 | 22:07:07 | CAN | 192.168.58.57 | 0 |

19 failed login attempts occurred after 18:00

Retrieve login attempts on specific dates

Our team is investigating a suspicious event that occurred on '2022-05-09'. You want to retrieve all login attempts that occurred on this day and the day before ('2022-05-08').

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

| 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 |

75 login attempts were made on these two days?

Retrieve login attempts outside of Mexico

My team is investigating logins that did not originate in Mexico, and we need to find this information. Note that the country field includes entries with 'MEX' and 'MEXICO'. We should use the NOT and LIKE operators and the matching pattern 'MEX%'.

```
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 | 192.168.178.71 | 0 |

Retrieve employees in Marketing

We need to retrieve the information from the department and office columns in the employees table. We need to obtain the information about employees in the

'Marketing' department who are located in all offices in the East building (such as 'East-170' or 'East-320').

```
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 | k865l965m233 | 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 (0.017 sec)

The first condition is the `department = 'Marketing'` portion, which filters for employees in the Marketing department. The second condition is the `office LIKE 'East%'` portion, which filters for employees in the East building.

Retrieve employees in Finance or Sales

To retrieve records for employees in the 'Finance' or the 'Sales' department.

```
MariaDB [organization]> SELECT *FROM employees WHERE department = 'Finance' 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 | k242l212m542 | 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 | j236k303l245 | bisles | Sales | South-171 |
| 1039 | n253o917p623 | cjackson | Sales | East-378 |
| 1041 | p929q222r778 | cgriffin | Sales | North-208 |
| 1044 | s429t157u159 | tharner | Finance | West-415 |

. The first condition is `department = 'Finance'`, which filters for employees from the Finance department. The second condition is `department = 'Sales'`, which filters for employees from the Sales department.

Retrieve all employees not in IT

To retrieve records for employees who are not in the 'Information Technology' department.

```
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 |
| 1010 | k242l212m542 | ilansky | Finance | South-109 |

all data selected from the `employees` table.a `WHERE` clause with `NOT` to filter for employees not in this department.

Summary

- run SQL queries to retrieve information from a database and
- apply AND, OR, and NOT operators to filter SQL queries.
- LIKE and wild card %for pattern filters