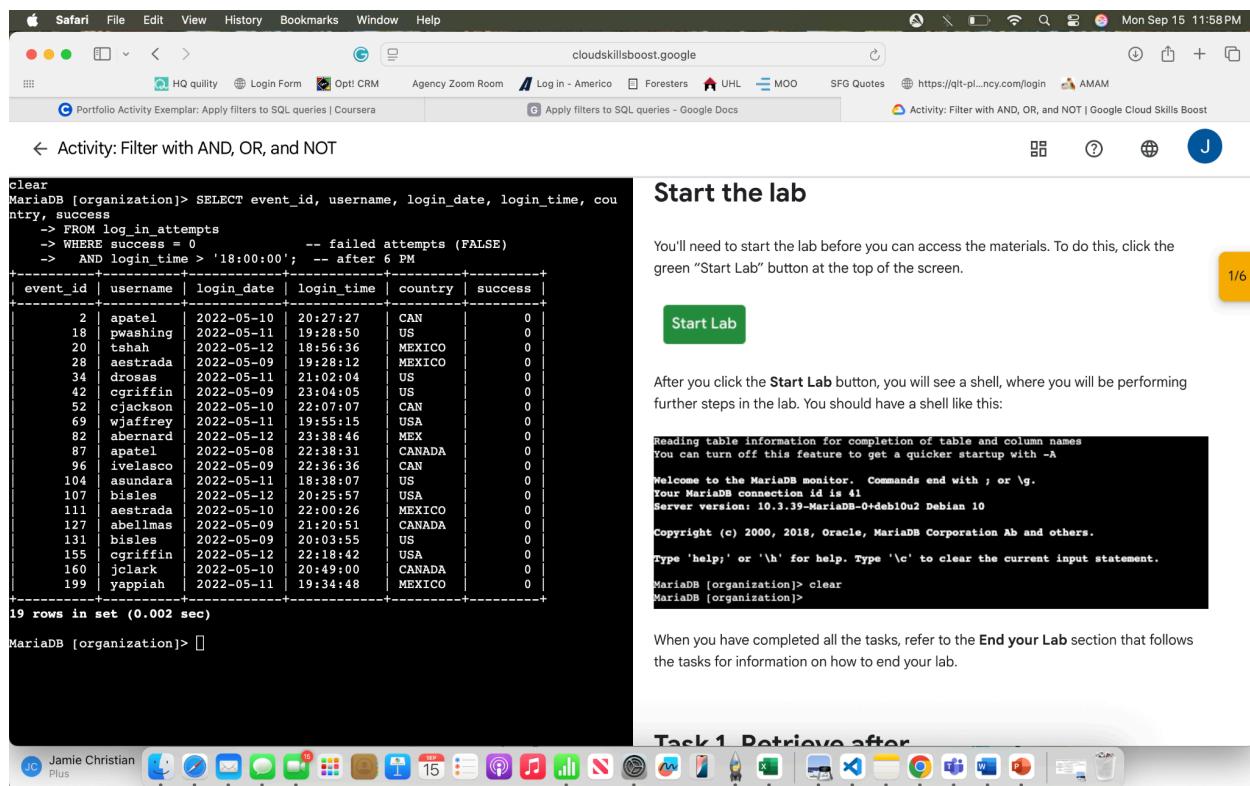


# Apply filters to SQL queries

## Project description

I investigated potential security issues by querying two datasets—`log_in_attempts` and `employees` and used SQL filters (AND, OR, NOT, LIKE, BETWEEN, comparison operators) to isolate risky login behavior and locate employee machines for remediation. The queries and explanations below demonstrate how I filter by times/dates, match patterns with `LIKE`, and combine conditions to answer security questions quickly.

## Retrieve after hours failed login attempts



The screenshot shows a Mac desktop environment. At the top, a Safari browser window is open, displaying a Google Docs document titled "Activity: Filter with AND, OR, and NOT | Google Cloud Skills Boost". The document contains a MySQL query and its results. Below the browser is a terminal window showing the same MySQL session. The desktop bar at the bottom has various application icons, including Finder, Mail, and the App Store. A status bar at the very bottom indicates "JC Plus" and shows system information like battery level and signal strength.

Activity: Filter with AND, OR, and NOT

```
clear
MariaDB [organization]> SELECT event_id, username, login_date, login_time, country, success
    > FROM log_in_attempts
    > WHERE success = 0          -- failed attempts (FALSE)
    >     AND login_time > '18:00:00'; -- after 6 PM
+-----+-----+-----+-----+-----+
| event_id | username | login_date | login_time | country | success |
+-----+-----+-----+-----+-----+
|      2 | apatel   | 2022-05-10 | 20:27:27 | CAN    | 0       |
|     18 | pwashing | 2022-05-11 | 19:28:50 | US     | 0       |
|    20 | tshah   | 2022-05-12 | 18:56:36 | MEXICO | 0       |
|    28 | aestrada | 2022-05-09 | 19:28:12 | MEXICO | 0       |
|    34 | drosas   | 2022-05-11 | 21:02:04 | US     | 0       |
|    42 | cgriffin | 2022-05-09 | 23:04:05 | US     | 0       |
|    52 | cjackson | 2022-05-10 | 22:07:07 | CAN    | 0       |
|    69 | wjaffrey  | 2022-05-11 | 19:55:15 | USA    | 0       |
|    82 | abernard | 2022-05-12 | 23:39:46 | MEX    | 0       |
|    87 | apatel   | 2022-05-08 | 22:38:31 | CANADA | 0       |
|    96 | ivelasco  | 2022-05-09 | 22:36:36 | CAN    | 0       |
|   104 | asundara | 2022-05-11 | 18:38:07 | US     | 0       |
|   107 | bisles   | 2022-05-12 | 20:25:57 | USA    | 0       |
|   111 | aestrada | 2022-05-10 | 22:00:26 | MEXICO | 0       |
|   127 | abellmas | 2022-05-09 | 21:20:51 | CANADA | 0       |
|   131 | bisles   | 2022-05-09 | 20:03:55 | US     | 0       |
|   155 | cgriffin | 2022-05-12 | 22:18:42 | USA    | 0       |
|   160 | jclarkk  | 2022-05-10 | 20:49:00 | CANADA | 0       |
|   199 | yappiah   | 2022-05-11 | 19:34:48 | MEXICO | 0       |
+-----+-----+-----+-----+-----+
19 rows in set (0.002 sec)

MariaDB [organization]>
```

Start the lab

You'll need to start the lab before you can access the materials. To do this, click the green "Start Lab" button at the top of the screen.

Start Lab

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After you click the **Start Lab** button, you will see a shell, where you will be performing further steps in the lab. You should have a shell like this:

```
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A
Welcome to the MariaDB monitor. Commands end with ; or \g.
Your MariaDB connection id is 41
Server version: 10.3.39-MariaDB-0+deb10u2 Debian 10
Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type 'c' to clear the current input statement.

MariaDB [organization]> clear
MariaDB [organization]>
```

When you have completed all the tasks, refer to the **End your Lab** section that follows the tasks for information on how to end your lab.

Task 1. Retrieve after

# Retrieve login attempts on specific dates

The screenshot shows a Mac desktop with a Safari browser window open. The browser has multiple tabs and several icons in the top menu bar. The main content area displays a Google Cloud Skills Boost activity titled "Activity: Filter with AND, OR, and NOT".

**MySQL Query Results:**

```
MariaDB [organization]> SELECT event_id, username, login_date, login_time, country, success
    FROM log_in_attempts
   WHERE login_date = '2022-05-09'
     OR login_date = '2022-05-08';
+----+-----+-----+-----+-----+-----+
| event_id | username | login_date | login_time | country | success |
+----+-----+-----+-----+-----+-----+
|      1 | jrafael  | 2022-05-09 | 04:56:27 | CAN    |      1 |
|      3 | dkot     | 2022-05-09 | 06:47:41 | USA    |      1 |
|      4 | dkot     | 2022-05-08 | 02:00:39 | USA    |      0 |
|      8 | bisles   | 2022-05-08 | 01:30:17 | US     |      0 |
|     12 | dkot     | 2022-05-08 | 09:11:34 | USA    |      1 |
|     15 | lyamamat | 2022-05-09 | 17:17:26 | USA    |      0 |
|     24 | arusso   | 2022-05-09 | 06:49:39 | MEXICO |      1 |
|     25 | sbaelish  | 2022-05-09 | 07:04:02 | US     |      1 |
|     26 | apatel   | 2022-05-08 | 17:27:00 | CANADA |      1 |
|     28 | aestrela | 2022-05-09 | 19:28:12 | MEXICO |      0 |
|     30 | yappiah  | 2022-05-09 | 03:22:22 | MEX    |      1 |
|     32 | acock    | 2022-05-09 | 02:52:02 | CANADA |      0 |
|     36 | asundara | 2022-05-08 | 09:00:42 | US     |      1 |
|     38 | sbaelish  | 2022-05-09 | 14:40:01 | USA    |      1 |
|     39 | yappiah  | 2022-05-09 | 07:56:40 | MEXICO |      1 |
|     42 | cgriffin | 2022-05-09 | 23:04:05 | US     |      0 |
|     43 | mcouliba | 2022-05-08 | 02:35:34 | CANADA |      0 |
|     44 | daquino  | 2022-05-08 | 07:02:35 | CANADA |      0 |
+----+-----+-----+-----+-----+-----+
```

**Terminal Log:**

```
Welcome to the MariaDB monitor. Commands end with ; or \g.
Your MariaDB connection id is 41
Server version: 10.3.39-MariaDB-0+deb10u2 Debian 10

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [organization]> clear
MariaDB [organization]>
```

**Activity Instructions:**

You'll need to start the lab before you can access the materials. To do this, click the green "Start Lab" button at the top of the screen.

**Start the lab**

**Start Lab**

After you click the **Start Lab** button, you will see a shell, where you will be performing further steps in the lab. You should have a shell like this:

Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A

Welcome to the MariaDB monitor. Commands end with ; or \g.
Your MariaDB connection id is 41
Server version: 10.3.39-MariaDB-0+deb10u2 Debian 10

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [organization]> clear
MariaDB [organization]>

When you have completed all the tasks, refer to the **End your Lab** section that follows the tasks for information on how to end your lab.

**Task 1. Retrieve after**

# Retrieve login attempts outside of Mexico

The screenshot shows a Mac desktop with a Safari browser window open. The browser has several tabs and several windows open in the background. The main content of the browser window is a MariaDB query results table and a terminal window.

**MariaDB Query Results:**

```
MariaDB [organization]> SELECT event_id, username, login_date, login_time, country, success
    -> FROM log_in_attempts
    -> WHERE UPPER(country) NOT LIKE 'MEX%';
+----+-----+-----+-----+-----+-----+
| event_id | username | login_date | login_time | country | success |
+----+-----+-----+-----+-----+-----+
|      1 | jrafael | 2022-05-09 | 04:56:27 | CAN    |       1 |
|      2 | apatel   | 2022-05-10 | 20:27:27 | CAN    |       0 |
|      3 | dkot     | 2022-05-09 | 06:47:41 | USA    |       1 |
|      4 | dkot     | 2022-05-08 | 02:00:39 | USA    |       0 |
|      5 | jrafael | 2022-05-11 | 03:05:59 | CANADA |       0 |
|      7 | eraab    | 2022-05-11 | 01:45:14 | CAN    |       1 |
|      8 | bistles  | 2022-05-08 | 01:30:17 | US     |       0 |
|     10 | jrafael | 2022-05-12 | 09:33:19 | CANADA |       0 |
|     11 | sgilmore | 2022-05-11 | 10:16:29 | CANADA |       0 |
|     12 | dkot     | 2022-05-08 | 09:11:34 | USA    |       1 |
|     13 | mrzah   | 2022-05-11 | 09:29:34 | USA    |       1 |
|     14 | sbaelish | 2022-05-10 | 10:20:18 | US     |       1 |
|     15 | lyamamot | 2022-05-09 | 17:17:26 | USA    |       0 |
|     16 | mcouliba | 2022-05-11 | 06:44:22 | CAN    |       1 |
|     17 | pwashing | 2022-05-11 | 02:33:02 | USA    |       1 |
|     18 | pwashing | 2022-05-11 | 19:28:50 | US     |       0 |
|     19 | jhill    | 2022-05-12 | 13:09:04 | US     |       1 |
|     21 | iudurike | 2022-05-11 | 17:50:00 | US     |       1 |
|    25 | sbaelish | 2022-05-09 | 07:04:02 | US     |       1 |
+----+-----+-----+-----+-----+-----+
```

**Terminal Window:**

```
Welcome to the MariaDB monitor. Commands end with ; or \g.
Your MariaDB connection id is 41
Server version: 10.3.39-MariaDB-0+deb10u2 Debian 10

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [organization]> clear
MariaDB [organization]>
```

**Browser UI Elements:**

- Start the lab button (green)
- Start Lab button (green)
- Activity: Filter with AND, OR, and NOT | Google Cloud Skills Boost

# Retrieve employees in Marketing

cloudskillsboost.google

HQ quality Login Form Opt! CRM Agency Zoom Room Log in - America Foresters UHL MOO SFG Quotes https://qlt-pl...ncy.com/login AMAM

Portfolio Activity Exemplar: Apply filters to SQL queries | Coursera

Apply filters to SQL queries - Google Docs

Activity: Filter with AND, OR, and NOT | Google Cloud Skills Boost

← Activity: Filter with AND, OR, and NOT

Start the lab

You'll need to start the lab before you can access the materials. To do this, click the green "Start Lab" button at the top of the screen.

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Start Lab

After you click the **Start Lab** button, you will see a shell, where you will be performing further steps in the lab. You should have a shell like this:

```
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A
Welcome to the MariaDB monitor. Commands end with ; or \g.
Your MariaDB connection id is 41
Server version: 10.3.39-MariaDB-0+deb10u2 Debian 10
Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [organization]> clear
MariaDB [organization]>
```

When you have completed all the tasks, refer to the **End your Lab** section that follows the tasks for information on how to end your lab.

Task 1. Retrieve after hours failed login attempts

employee_id	username	department	office
1000	elarson	Marketing	East-170
1052	jdarosa	Marketing	East-195
1075	fbautist	Marketing	East-267
1088	rgosh	Marketing	East-157
1103	randerss	Marketing	East-460
1156	dellery	Marketing	East-417
1163	cwilliam	Marketing	East-216

144 rows in set (0.098 sec)

```
MariaDB [organization]> SELECT employee_id, username, department, office
-> FROM employees
-> WHERE department = 'Marketing'
-> AND office LIKE 'East-%';
+-----+-----+-----+-----+
| employee_id | username | department | office |
+-----+-----+-----+-----+
|       1000 | elarson | Marketing | East-170 |
|      1052 | jdarosa | Marketing | East-195 |
|      1075 | fbautist | Marketing | East-267 |
|      1088 | rgosh | Marketing | East-157 |
|      1103 | randerss | Marketing | East-460 |
|      1156 | dellery | Marketing | East-417 |
|      1163 | cwilliam | Marketing | East-216 |
+-----+-----+-----+-----+
```

7 rows in set (0.003 sec)

```
MariaDB [organization]>
```

# Retrieve employees in Finance or Sales

The screenshot shows a web browser window with multiple tabs open. The active tab is titled "Activity: Filter with AND, OR, and NOT". The content of the tab displays a MySQL query result and a MariaDB shell session.

**MySQL Query Result:**

```
1052 | jdarosa | Marketing | East-195
1075 | fbautist | Marketing | East-267
1088 | rgosh | Marketing | East-157
1103 | randerss | Marketing | East-460
1156 | dellery | Marketing | East-417
1163 | cwilliam | Marketing | East-216
7 rows in set (0.003 sec)
```

```
MariaDB [organization]> SELECT employee_id, username, department, office
-> FROM employees
-> WHERE department IN ('Finance', 'Sales');
```

employee_id	username	department	office
1003	sgilmore	Finance	South-153
1007	wjaffrey	Finance	North-406
1008	abernhard	Finance	South-170
1009	lrodriguez	Sales	South-134
1010	jlangsby	Finance	South-109
1011	drosas	Sales	South-292
1015	jsoto	Finance	North-271
1017	jclark	Finance	North-188
1018	abelmas	Finance	North-403
1022	arusso	Finance	West-465
1024	iuduke	Sales	South-215
1025	jhill	Sales	North-115
1029	ivelasco	Finance	East-156
1035	bisles	Sales	South-171
1039	cjackson	Sales	East-378
1041	cgriffin	Sales	North-208
1044	tbarnes	Finance	West-415
1045	pwashing	Finance	East-115
1046	daquino	Finance	West-280
1047	cward	Finance	West-373
1048	tmitchel	Finance	South-288
1049	jreckley	Finance	Central-295
1050	csimmons	Finance	North-468
1057	mscott	Sales	South-270
1062	rowards	Finance	North-180
1063	lpope	Sales	East-226
1066	ttyrell	Sales	Central-444
1069	jpark	Finance	East-110

**MariaDB Shell Session:**

```
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A
Welcome to the MariaDB monitor. Commands end with ; or \g.
Your MariaDB connection id is 41
Server version: 10.3.39-MariaDB-0+deb10u2 Debian 10
Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [organization]> clear
MariaDB [organization]>
```

**Start the lab**

You'll need to start the lab before you can access the materials. To do this, click the green "Start Lab" button at the top of the screen.

**Start Lab**

After you click the **Start Lab** button, you will see a shell, where you will be performing further steps in the lab. You should have a shell like this:

When you have completed all the tasks, refer to the **End your Lab** section that follows the tasks for information on how to end your lab.

**Task 1. Retrieve after hours failed login attempts**

## Retrieve all employees not in IT

rows in set (0.020 sec)

```
riadb [organization]> SELECT employee_id, username, department, office
-> FROM employees
-> WHERE department <> 'Information Technology';
+-----+-----+-----+-----+
| employee_id | username | department | office |
+-----+-----+-----+-----+
| 1000 | elarson | Marketing | East-170 |
| 1001 | bmoreno | Marketing | Central-276 |
| 1002 | tshah | Human Resources | North-434 |
| 1003 | sgilmore | Finance | South-153 |
| 1004 | eraab | Human Resources | South-127 |
| 1005 | gesparza | Human Resources | South-366 |
| 1007 | wjaffrey | Finance | North-406 |
| 1008 | abernard | Finance | South-170 |
| 1009 | lrodriguez | Sales | South-134 |
| 1010 | jlansky | Finance | South-109 |
| 1011 | drossas | Sales | South-292 |
| 1015 | jsoto | Finance | North-271 |
| 1016 | sbaelish | Human Resources | North-229 |
| 1017 | jclarke | Finance | North-188 |
| 1018 | abellmas | Finance | North-403 |
| 1020 | arutley | Marketing | South-351 |
| 1022 | arusso | Finance | West-465 |
| 1024 | iuduke | Sales | South-215 |
| 1025 | jhill | Sales | North-115 |
| 1026 | apatel | Human Resources | West-320 |
| 1027 | mrah | Marketing | West-246 |
| 1028 | aestrela | Human Resources | West-121 |
| 1029 | ivelasco | Finance | East-156 |
| 1030 | mabadi | Marketing | West-375 |
| 1031 | dkot | Marketing | West-408 |
| 1034 | bsand | Human Resources | East-484 |
| 1035 | bistles | Sales | South-171 |
| 1036 | rjensen | Marketing | Central-239 |
| 1038 | btang | Human Resources | Central-260 |
| 1039 | cjakson | Sales | East-378 |

```

Start the lab

You'll need to start the lab before you can access the materials. To do this, click the green "Start Lab" button at the top of the screen.

Start Lab

After you click the Start Lab button, you will see a shell, where you will be performing further steps in the lab. You should have a shell like this:

```
Welcome to the MariaDB monitor. Commands end with ; or \g.
Your MariaDB connection id is 41
Server version: 10.3.39-MariaDB-0+deb10u2 Debian 10

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [organization]> clear
MariaDB [organization]>
```

When you have completed all the tasks, refer to the End your Lab section that follows the tasks for information on how to end your lab.

Task 1. Retrieve after

## Summary

I used SQL filters to investigate login anomalies and to scope device updates by department and location. Time-based and date-based filters isolated after-hours failures and specific incident windows; pattern matching with `LIKE` handled inconsistent country/office values; and boolean logic (AND/OR/NOT) narrowed results precisely. These techniques support incident triage and targeted remediation across the organization.