

# Apply filters to SQL queries

## Project description

I've learned, understand and used the SQL filters and the AND, OR, NOT operators to accomplish different tasks.

## Retrieve after hours failed login attempts

I've recently discovered a potential security incident that occurred after business hours. To investigate this, you need to query the log\_in\_attempts table and review after hours login activity. I've use filters in SQL to create a query that identifies all failed login attempts that occurred after 18:00. I used WHERE condition to get the login details after 18:00. The ">" shows that the value must be greater than 18:00. It will allow me to analyse the after incident details and set the success = FALSE. The **success** column contains a value of **0** when a login attempt failed; you can use either a value of **0** or **FALSE** in your query to identify failed login attempts.

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

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
69	wjaffrey	2022-05-11	19:55:15	USA	192.168.100.17	0
82	abernard	2022-05-12	23:38:46	MEX	192.168.234.49	0
87	apatel	2022-05-08	22:38:31	CANADA	192.168.132.153	0
96	ivelasco	2022-05-09	22:36:36	CAN	192.168.84.194	0
104	asundara	2022-05-11	18:38:07	US	192.168.96.200	0
107	bisles	2022-05-12	20:25:57	USA	192.168.116.187	0
111	astrada	2022-05-10	22:00:26	MEXICO	192.168.76.27	0
127	abellmas	2022-05-09	21:20:51	CANADA	192.168.70.122	0
131	bisles	2022-05-09	20:03:55	US	192.168.113.171	0
155	cgriffin	2022-05-12	22:18:42	USA	192.168.236.176	0
160	jclark	2022-05-10	20:49:00	CANADA	192.168.214.49	0
199	yappiah	2022-05-11	19:34:48	MEXICO	192.168.44.232	0

```
19 rows in set (0.185 sec)
```

## Retrieve login attempts on specific dates

In this scenario, I've used the OR operator to get the details of the day of incident and the day before. In my query I select all columns from log\_in\_attempts table. Then I used WHERE condition to set the login\_date from '2022-05-09' to '2022-05-08' to get those 2 days details.

```

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
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
25	sbaelish	2022-05-09	07:04:02	US	192.168.33.137	1
26	apatel	2022-05-08	17:27:00	CANADA	192.168.123.105	1
28	aestrada	2022-05-09	19:28:12	MEXICO	192.168.27.57	0
30	yappiah	2022-05-09	03:22:22	MEX	192.168.124.48	1
32	acook	2022-05-09	02:52:02	CANADA	192.168.142.239	0
36	asundara	2022-05-08	09:00:42	US	192.168.78.151	1
38	sbaelish	2022-05-09	14:40:01	USA	192.168.60.42	1
39	yappiah	2022-05-09	07:56:40	MEXICO	192.168.57.115	1
42	cgriffin	2022-05-09	23:04:05	US	192.168.4.157	0
43	mcouliba	2022-05-08	02:35:34	CANADA	192.168.16.208	0
44	daquino	2022-05-08	07:02:35	CANADA	192.168.168.144	0
47	dkot	2022-05-08	05:06:45	US	192.168.233.24	1
49	asundara	2022-05-08	14:00:01	US	192.168.173.213	0
53	nmason	2022-05-08	11:51:38	CAN	192.168.133.188	1
56	acook	2022-05-08	04:56:30	CAN	192.168.209.130	1
58	ivelasco	2022-05-09	17:20:54	CAN	192.168.57.162	0
61	dtanaka	2022-05-09	09:45:18	USA	192.168.98.221	1
65	aalonso	2022-05-09	23:42:12	MEX	192.168.52.37	1
66	aestrada	2022-05-08	21:58:32	MEX	192.168.67.223	1
67	abernard	2022-05-09	11:53:41	MEX	192.168.118.29	1
68	mrah	2022-05-08	17:16:13	US	192.168.42.248	1
70	tmitchel	2022-05-09	10:55:17	MEXICO	192.168.87.199	1
71	mcouliba	2022-05-09	06:57:42	CAN	192.168.55.169	0
72	alevitsk	2022-05-08	12:09:10	CANADA	192.168.139.176	1
79	abernard	2022-05-09	11:41:15	MEX	192.168.158.170	0
80	cjackson	2022-05-08	02:18:10	CANADA	192.168.33.140	1
83	lrodriqu	2022-05-08	08:10:23	USA	192.168.67.69	1
87	apatel	2022-05-08	22:38:31	CANADA	192.168.132.153	0

## Retrieve login attempts outside of Mexico

I used the **NOT** operator to exclude the country “**MEXICO**” to investigate the suspicious login activity. After country the **LIKE** command and the % sign used after **MEX** used to complete the next letters for example: Canada abbreviate as “CAN”. So it’ll complete the **MEX** to **MEXICO**.

```
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
5	jrafael	2022-05-11	03:05:59	CANADA	192.168.86.232	0
7	eraab	2022-05-11	01:45:14	CAN	192.168.170.243	1
8	bisles	2022-05-08	01:30:17	US	192.168.119.173	0
10	jrafael	2022-05-12	09:33:19	CANADA	192.168.228.221	0
11	sgilmore	2022-05-11	10:16:29	CANADA	192.168.140.81	0
12	dkot	2022-05-08	09:11:34	USA	192.168.100.158	1
13	mrhah	2022-05-11	09:29:34	USA	192.168.246.135	1
14	sbaelish	2022-05-10	10:20:18	US	192.168.16.99	1
15	lyamamot	2022-05-09	17:17:26	USA	192.168.183.51	0
16	mcouliba	2022-05-11	06:44:22	CAN	192.168.172.189	1
17	pwashing	2022-05-11	02:33:02	USA	192.168.81.89	1
18	pwashing	2022-05-11	19:28:50	US	192.168.66.142	0
19	jhill	2022-05-12	13:09:04	US	192.168.142.245	1
21	iuduike	2022-05-11	17:50:00	US	192.168.131.147	1
25	sbaelish	2022-05-09	07:04:02	US	192.168.33.137	1
26	apatel	2022-05-08	17:27:00	CANADA	192.168.123.105	1
29	bisles	2022-05-11	01:21:22	US	192.168.85.186	0
31	acook	2022-05-12	17:36:45	CANADA	192.168.58.232	0
32	acook	2022-05-09	02:52:02	CANADA	192.168.142.239	0
33	zbernal	2022-05-11	02:52:10	US	192.168.72.59	1
34	drosas	2022-05-11	21:02:04	US	192.168.45.93	0
36	asundara	2022-05-08	09:00:42	US	192.168.78.151	1
37	eraab	2022-05-10	06:03:41	CANADA	192.168.152.148	0
38	sbaelish	2022-05-09	14:40:01	USA	192.168.60.42	1
41	apatel	2022-05-10	17:39:42	CANADA	192.168.46.207	0
42	cgriffin	2022-05-09	23:04:05	US	192.168.4.157	0
43	mcouliba	2022-05-08	02:35:34	CANADA	192.168.16.208	0
44	daquino	2022-05-08	07:02:35	CANADA	192.168.168.144	0
45	dtanaka	2022-05-11	10:28:54	US	192.168.223.157	1
46	eraab	2022-05-11	11:29:27	CAN	192.168.24.12	0
47	dkot	2022-05-08	05:06:45	US	192.168.233.24	1

## Retrieve employees in Marketing

In this section, I used the “=” operator to get all the employees from the **Marketing** Department. Then used the **AND** operator, then used the **LIKE** and % sign in “**East%**”. This will give all the East offices that are available.

```

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 (0.001 sec)

```

## Retrieve employees in Finance or Sales

I used the OR operator to find out whose working in the Finance and 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	tbarnes	Finance	West-415
1045	t567u844v434	pwashing	Finance	East-115
1046	u429v921w138	daquino	Finance	West-280
1047	v109w587x644	cward	Finance	West-373
1048	w167x592y375	tmitchel	Finance	South-288
1049	NULL	jreckley	Finance	Central-295
1050	y132z930a114	csimmons	Finance	North-468
1057	f370g535h632	msscott	Sales	South-270
1062	k367l639m697	redwards	Finance	North-180
1063	l686m140n569	lpope	Sales	East-226
1066	o678p794q957	ttyrell	Sales	Central-444
1069	NULL	jpark	Finance	East-110
1071	t244u829v723	zdutchma	Sales	West-348
1072	u905v920w694	esmith	Sales	East-421
1076	y347z204a710	fgarcia	Finance	Central-270
1078	a667b270c984	sharley	Sales	North-418
1081	d647e310f618	qcorbit	Finance	South-290

## Retrieve all employees not in IT

In this section, NOT operator was used to exclude the employees working in the Information Technology. This will show every employee of every department except IT.

```
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	jlsansky	Finance	South-109
1011	l748m120n401	drosas	Sales	South-292
1015	p611q262r945	jsoto	Finance	North-271
1016	q793r736s288	sbaelish	Human Resources	North-229
1017	r550s824t230	jclark	Finance	North-188
1018	s310t540u653	abellmas	Finance	North-403
1020	u899v381w363	arutley	Marketing	South-351
1022	w237x430y567	arusso	Finance	West-465
1024	y976z753a267	iuduike	Sales	South-215
1025	z381a365b233	jhill	Sales	North-115
1026	a998b568c863	apatel	Human Resources	West-320
1027	b806c503d354	mrah	Marketing	West-246
1028	c603d749e374	aestrada	Human Resources	West-121
1029	d336e475f676	ivelasco	Finance	East-156
1030	e391f189g913	mabadi	Marketing	West-375
1031	f419g188h578	dkot	Marketing	West-408
1034	i679j565k940	bsand	Human Resources	East-484
1035	j236k303l245	bisles	Sales	South-171
1036	k550l533m205	rjensen	Marketing	Central-239
1038	m873n636o225	btang	Human Resources	Central-260
1039	n253o917p623	cjackson	Sales	East-378
1040	o783p832q294	dtarly	Human Resources	East-237
1041	p929q222r778	cgriffin	Sales	North-208
1042	q175r338s833	acook	Human Resources	West-381

## Summary

Using filter and Operators is very useful in SQL to accomplish simple task.