

# Apply filters to SQL queries

## Project description

This project demonstrates the application of filters in SQL queries to retrieve specific information from a database. It utilizes the **AND**, **OR**, and **NOT** operators to create complex filters and extract meaningful data based on various criteria.

## Retrieve after hours failed login attempts

```
SELECT * FROM log_in_attempts WHERE login_time > '18:00' AND success = FALSE;
```

This SQL query retrieves all failed login attempts from the **log\_in\_attempts** table where the login time is after 6 PM. This query utilizes the **login\_time** column to identify login attempts that occurred after 18:00, indicating a time outside regular business hour. The **AND** operator ensures that both conditions (login time after 18:00 and failed login) are met for a login attempt to be included in the results.

```
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	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
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	aestrada	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 (0.226 sec)
```

There are 19 failed login attempts that occurred after 18:00.

## Retrieve login attempts on specific dates

```
SELECT * FROM log_in_attempts WHERE login_date = '2022-05-09' OR login_date = '2022-05-08';
```

This SQL query retrieves all login attempts from the **log\_in\_attempts** table where the login date is either May 9th, 2022, or May 8th, 2022. The **OR** operator allows for filtering based on multiple conditions.

```
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
187	arusso	2022-05-09	00:36:26	MEX	192.168.77.137	0
189	nmason	2022-05-08	05:37:24	CANADA	192.168.168.117	1
190	jsoto	2022-05-09	05:09:21	USA	192.168.25.60	0
191	cjackson	2022-05-08	06:46:07	CANADA	192.168.7.187	0
193	lrodriqu	2022-05-08	07:11:29	US	192.168.125.240	0
197	jsoto	2022-05-08	09:05:09	US	192.168.36.21	0

75 rows in set (0.047 sec)

There are 75 login attempts in these two days.

## Retrieve login attempts outside of Mexico

```
SELECT * FROM log_in_attempts WHERE NOT country LIKE 'MEX%';
```

This SQL query retrieves all login attempts from the **log\_in\_attempts** table where the user's country is not Mexico. The **NOT** operator negates the comparison, ensuring that only login attempts from outside of Mexico are included. The **LIKE** operator matches a pattern, and the **'%MEX%'** pattern matches any string that starts with "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
5	jrafael	2022-05-11	03:05:59	CANADA	192.168.86.232	0
194	jclark	2022-05-12	14:11:04	CAN	192.168.197.247	0
195	alevitsk	2022-05-11	06:59:13	CANADA	192.168.236.78	1
196	acook	2022-05-10	09:56:48	CAN	192.168.52.90	0
197	jsoto	2022-05-08	09:05:09	US	192.168.36.21	0
200	jclark	2022-05-12	01:11:45	CANADA	192.168.91.103	1

144 rows in set (0.142 sec)

There are 144 login attempts made outside of Mexico.

## Retrieve employees in Marketing

```
SELECT * FROM employees WHERE department = 'Marketing' AND office LIKE 'East%';
```

This SQL query retrieves all employees from the **employees** table who belong to the **Marketing** department and work in an **office** located in the **East** region. This query utilizes the department and office columns to identify employees working in these specific departments and locations.

```
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 | randers | Marketing | East-460 |
| 1156 | a184b775c707 | dellery | Marketing | East-417 |
| 1163 | h679i515j339 | cwilliam | Marketing | East-216 |
+-----+-----+-----+-----+-----+
7 rows in set (0.001 sec)
```

The username of the first employee in the Marketing department in the East building is elarson.

## Retrieve employees in Finance or Sales

```
SELECT * FROM employees WHERE department = 'Finance' OR department = 'Sales';
```

This SQL query retrieves all employees from the employees table who belong to the Finance or Sales department. This query utilizes the department column to identify employees working in these specific departments.

```
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 |
+-----+-----+-----+-----+-----+
```

The username of the first employee in the Sales department is lrodriqu.

## Retrieve all employees not in IT

```
SELECT * FROM employees WHERE NOT department = 'Information Technology';
```

This SQL query retrieves all employees from the employees table who do not belong to the Information Technology (IT) department. This query utilizes the department column to identify employees not working in the IT 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
1191	NULL	shakimi	Marketing	Central-366
1194	m340n287o441	zwarren	Human Resources	West-212
1195	n516o853p957	orainier	Finance	East-346
1198	q308r573s459	jmartine	Marketing	South-117
1199	r520s571t459	areyes	Human Resources	East-100

```
161 rows in set (0.001 sec)
```

There are 161 employees who aren't in the Information Technology department.

## Summary

This project showcases the application of filters in SQL queries to extract specific information from a database. By utilizing operators such as AND, OR, and NOT, complex filters are created to retrieve meaningful data based on various criteria. The examples include retrieving failed login attempts after business hours, login attempts on specific dates, attempts outside a specific country, and employees in specific departments or regions. The project highlights the flexibility of SQL queries in extracting relevant data through well-crafted filters.