

Apply filters to SQL queries

Project description

I'm a security professional at a large organization. My job is to investigate issues and help keep the system secure. Recently I discovered some potential security issues involving login attempts and employee machines. My task is to examine the organizations data in their employees and log_in_attempts tables and retrieve records from different datasets and investigate the potential security threats.

Retrieve after hours failed login attempts

A potential security risk occurred after business hours. I need to investigate all the login failed attempts after 18:00 business hours.

The following code is the SQL Query I used to filter the information I needed to retrieve all the failed login attempts

```
-> 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	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 (0.181 sec)

I selected data from the log_in_attempt table then I used the clause WHERE for the login_time that was > then 18:00, which would be after business was closed with the operator AND for column success with 0 = failed attempts and filtered the output I needed of failed attempts. This query filters for failed login attempts that occurred after 18:00

Retrieve login attempts on specific dates

A suspicious event occurred on 2022-05-09. I need to investigate this event by reviewing all login attempts on this day and the day before.

The following is the SQL Query I used to filter all login attempts for the specific dates.

```
aDB [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	aruso	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

I selected data from the `log_in_attempt` table, then I used the clause `WHERE` for the `login_date` Column and the `OR` operator to filter the specific dates `'2022-05-09'`, `'2022-05-08'`. This Query gave an output of all logins from the dates from 2022-05-08 and 2022-05-09

Retrieve login attempts outside of Mexico

There's been suspicious activity with login attempts , but the team has determined that this activity did not originate in Mexico. I need to investigate all logins that occurred outside of Mexico.

```

riaDB [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	mrah	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

In the screenshot I created a SQL Query to retrieve all data from the `log_in_attempts` and used the `WHERE` clause with `NOT` to filter all the logins from `country` column except, and because the datasets use both `MEX` and `MEXICO` I used the `Like` and `%` sign to match both patterns. The Query output gave me all login attempts for all countries except for Mexico

Retrieve employees in Marketing

My team needs to perform security updates on specific employee machines in the Marketing Department. I'm responsible for getting information on these employee machines in the Marketing Department for all offices in the East building.

```

riaDB [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	randeress	Marketing	East-460
1156	a184b775c707	dellery	Marketing	East-417
1163	h679i515j339	cwilliam	Marketing	East-216

rows in set (0.001 sec)

To retrieve the information needed I used the `employees` table then I used a `WHERE` clause with `AND` to filter for employees who work in the Marketing department and in the East building, and because the `office` column shows the East building and the North building with the specific office number I need to use the `LIKE` and `%` sign to give me all the East building only. 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. This query returns all employees in the Marketing department in the East building.

Retrieve employees in Finance or Sales

My team needs to perform a different security update on machines for employees in the Sales and Finance Departments. I'm responsible for getting this information.

The following Query shows how I retrieved all employees from the Finance and Sales Departments

```

ariaDB [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	x167y592z275	tritchel	Finance	South-288

I used data from the `employees` table, then I used a `WHERE` clause with `OR` to filter for employees who are in the Finance and Sales departments. Because I needed employees in the Sales or Finance Department I used `OR` operator instead of `AND` because I want all employees who are in either department. 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. This query returns all employees in the Finance and Sales departments

Retrieve all employees not in IT

MY team needs to make one more update to employee machines in every department except the IT Department. I need to create a Query that will give me employee machines not 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
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	jlansky	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

I used all the data from the `employees` table. Then, I used a `WHERE` clause with `NOT` to filter for employees not in the IT Department. `WHERE NOT department = 'Information Technology'`; This query returns all employees not in the Information Technology department

Summary

I created SQL queries to get specific Information on login attempts and employee machines. I applied filters to two tables and used AND, OR, NOT, operators to filter specific machines and used LIKE and the % sign to filter for patterns.