Apply filters to SQL queries

Project description

My organization is working to make their system more secure. It is my job to ensure the system is safe, investigate all potential security issues, and update employee computers as needed. The following steps provide examples of how I used SQL with filters to perform security-related tasks.

Retrieve after hours failed login attempts

There was a potential security incident that occurred after business hours (after 18:00). All after hours login attempts that failed need to be investigated.

The following code demonstrates how I created a SQL query to filter for failed login attempts that occurred after business hours.

```
MariaDB [organization]> clear
MariaDB [organization]> SELECT * FROM log_in_attempts WHERE login_time > '18:00:00' AND succe
ss = 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 (0.043 sec)

MariaDB [organization]>
```

The code is my query, and the table below is a portion of the output.
This query filters for failed login attempts that occurred after 18:00.
First, I started by selecting all data from the `log_in_attempts` table. Then, I used a `WHERE` clause with an `AND` operator to filter my results to output only login attempts that occurred after 18:00 and were unsuccessful. The first condition is `login_time > '18:00'`, which

filters for the login attempts that occurred after 18:00. The second condition is `success = FALSE`, which filters for the failed login attempts.

Retrieve login attempts on specific dates

A suspicious event occurred on 2022-05-09. Any login activity that happened on 2022-05-09 or on the day before needs to be investigated.

The following code demonstrates how I created a SQL query to filter for login attempts that occurred on specific dates.

```
MariaDB [organization]> SELECT * FROM log_in_attempts  WHERE login_date = '2022-05-08' OR log
in_date = '2022-05-09';
+----------+----------+------------+------------+---------+-----------------+---------+
| 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
90	gesparza	2022-05-09	00:49:05	CANADA	192.168.87.201	0
92	pwashing	2022-05-08	00:36:12	US	192.168.247.219	0
96	ivelasco	2022-05-09	22:36:36	CAN	192.168.84.194	0
97	jreckley	2022-05-09	02:49:23	MEXICO	192.168.32.231	1
101	sbaelish	2022-05-08	12:01:22	US	192.168.145.158	0
102	jreckley	2022-05-09	16:51:44	MEX	192.168.108.13	1
108	daquino	2022-05-09	21:30:48	CANADA	192.168.15.110	1
110	mabadi	2022-05-09	00:01:54	USA	192.168.90.124	1
112	rjensen	2022-05-09	09:22:05	MEX	192.168.69.116	1
117	bsand	2022-05-08	00:19:11	USA	192.168.197.187	0
120	tmitchel	2022-05-09	02:58:17	MEXICO	192.168.134.62	0
127	abellmas	2022-05-09	21:20:51	CANADA	192.168.70.122	0
128	jclark	2022-05-09	10:45:59	CANADA	192.168.122.169	0
131	bisles	2022-05-09	20:03:55	US	192.168.113.171	0
134	iuduike	2022-05-09	06:46:40	USA	192.168.22.115	1
135	bsand	2022-05-09	14:06:33	US	192.168.91.238	0
144	daquino	2022-05-09	11:09:32	CANADA	192.168.139.9	0
145	ivelasco	2022-05-08	09:06:02	CANADA	192.168.39.196	1
147	yappiah	2022-05-08	06:04:34	MEX	192.168.65.245	0
148	daquino	2022-05-08	06:15:55	CANADA	192.168.135.6	1
150	nmason	2022-05-08	14:40:02	CAN	192.168.204.124	0
151	mabadi	2022-05-09	16:29:46	USA	192.168.30.225	1
158	smartell	2022-05-09	19:30:32	MEXICO	192.168.190.178	1
161	abellmas	2022-05-09	13:25:50	CAN	192.168.180.205	0
162	yappiah	2022-05-09	04:51:22	MEXICO	192.168.162.100	0
163	tmitchel	2022-05-08	09:21:16	MEX	192.168.119.29	0

165	jreckley	2022-05-08	15:28:43	MEXICO	192.168.34.193	0
168	jlansky	2022-05-08	13:25:42	USA	192.168.210.94	1
169	alevitsk	2022-05-08	08:10:43	CANADA	192.168.210.228	0
170	sbaelish	2022-05-09	16:43:18	USA	192.168.65.113	0
172	mabadi	2022-05-08	08:06:50	US	192.168.180.41	1
178	sgilmore	2022-05-08	12:27:22	CAN	192.168.52.216	0
184	alevitsk	2022-05-08	03:09:48	CAN	192.168.33.70	0
186	bisles	2022-05-09	04:29:17	USA	192.168.40.72	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 (0.019 sec)

The code is my query, and the table below is a portion of the output.

This query returns all login attempts that occurred on 2022-05-09 or 2022-05-08.
First, I started by selecting all data from the `log_in_attempts` table. Then, I used a `WHERE` clause with an `OR` operator to filter my results to output only login attempts that occurred on either 2022-05-09 or 2022-05-08. The first condition is `login_date = '2022-05-09'`, which filters for logins on 2022-05-09. The second condition is `login_date = '2022-05-08'`, which filters for logins on 2022-05-08.

Retrieve login attempts outside of Mexico

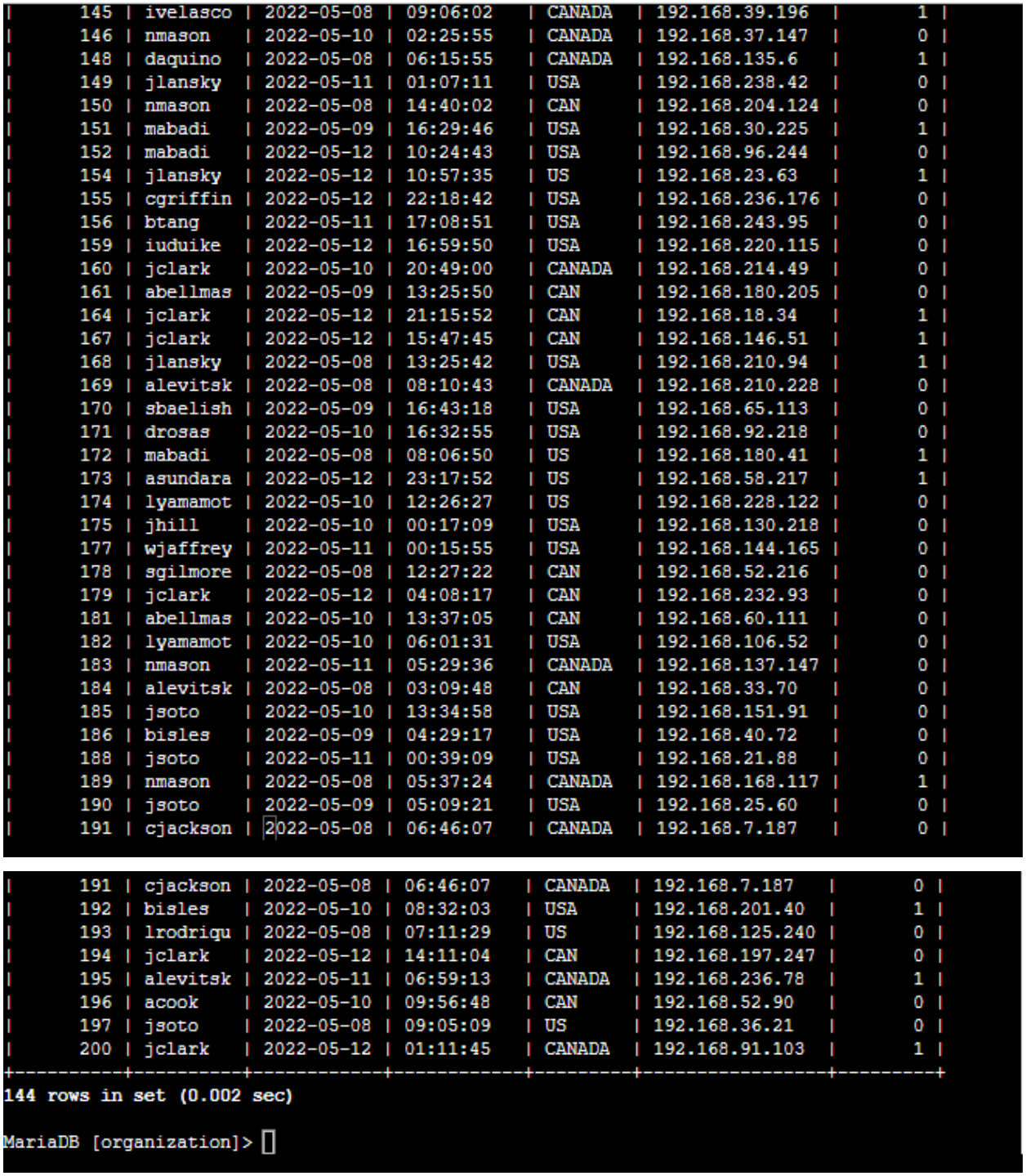
After investigating the organization's data on login attempts, I believe there is an issue with the login attempts that occurred outside of Mexico. These login attempts should be investigated.

The following code demonstrates how I created a SQL query to filter for login attempts that occurred outside of 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 | 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 |
|       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
48	asundara	2022-05-11	03:18:45	USA	192.168.72.10	1
49	asundara	2022-05-08	14:00:01	US	192.168.173.213	0
50	jclark	2022-05-10	10:48:02	CANADA	192.168.174.117	0
51	jrafael	2022-05-10	22:40:01	CANADA	192.168.148.115	1
52	cjackson	2022-05-10	22:07:07	CAN	192.168.58.57	0
53	nmason	2022-05-08	11:51:38	CAN	192.168.133.188	1
55	jlansky	2022-05-11	05:15:34	US	192.168.6.170	0
56	acook	2022-05-08	04:56:30	CAN	192.168.209.130	1
57	asundara	2022-05-12	21:13:02	US	192.168.211.201	1
58	ivelasco	2022-05-09	17:20:54	CAN	192.168.57.162	0
60	acook	2022-05-11	21:46:00	CAN	192.168.54.45	1
61	dtanaka	2022-05-09	09:45:18	USA	192.168.98.221	1
64	apatel	2022-05-10	22:00:09	CANADA	192.168.172.71	1
68	mrah	2022-05-08	17:16:13	US	192.168.42.248	1
69	wjaffrey	2022-05-11	19:55:15	USA	192.168.100.17	0
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
73	zbernal	2022-05-10	17:46:45	USA	192.168.80.46	0
74	nmason	2022-05-11	15:55:48	CAN	192.168.162.2	1
75	zbernal	2022-05-12	04:14:35	US	192.168.188.63	1
76	bmoreno	2022-05-10	10:53:55	CAN	192.168.61.200	0
77	wjaffrey	2022-05-12	08:37:59	US	192.168.106.183	1
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
84	jrafael	2022-05-11	09:26:17	CAN	192.168.243.203	1
86	dtanaka	2022-05-10	10:22:20	USA	192.168.197.135	1
87	apatel	2022-05-08	22:38:31	CANADA	192.168.132.153	0
89	dkot	2022-05-12	10:52:00	USA	192.168.128.75	1
90	gesparza	2022-05-09	00:49:05	CANADA	192.168.87.201	0
91	jhill	2022-05-11	17:46:47	US	192.168.172.74	1
92	pwashing	2022-05-08	00:36:12	US	192.168.247.219	0

92	pwashing	2022-05-08	00:36:12	US	192.168.247.219	0
96	ivelasco	2022-05-09	22:36:36	CAN	192.168.84.194	0
98	gesparza	2022-05-11	06:30:14	CANADA	192.168.148.80	0
99	mcouliba	2022-05-12	11:54:14	CANADA	192.168.218.160	1
101	sbaelish	2022-05-08	12:01:22	US	192.168.145.158	0
103	jhill	2022-05-11	09:10:54	US	192.168.60.153	0
104	asundara	2022-05-11	18:38:07	US	192.168.96.200	0
105	cjackson	2022-05-12	19:36:42	CAN	192.168.247.153	1
107	bisles	2022-05-12	20:25:57	USA	192.168.116.187	0
108	daquino	2022-05-09	21:30:48	CANADA	192.168.15.110	1
109	mcouliba	2022-05-10	04:43:15	CANADA	192.168.39.246	1
110	mabadi	2022-05-09	00:01:54	USA	192.168.90.124	1
113	gesparza	2022-05-10	00:40:00	CAN	192.168.64.133	0
115	ivelasco	2022-05-10	23:06:01	CAN	192.168.154.1	1
117	bsand	2022-05-08	00:19:11	USA	192.168.197.187	0
121	btang	2022-05-10	22:00:36	US	192.168.80.143	1
123	bmoreno	2022-05-10	04:43:30	CANADA	192.168.98.2	1
124	asundara	2022-05-12	10:51:21	USA	192.168.136.29	1
125	bisles	2022-05-11	08:36:19	US	192.168.74.9	1
126	jrafael	2022-05-12	18:47:52	CAN	192.168.22.16	1
127	abellmas	2022-05-09	21:20:51	CANADA	192.168.70.122	0
128	jclark	2022-05-09	10:45:59	CANADA	192.168.122.169	0
129	drosas	2022-05-12	15:39:40	USA	192.168.152.200	0
130	mrah	2022-05-11	02:54:21	USA	192.168.102.147	0
131	bisles	2022-05-09	20:03:55	US	192.168.113.171	0
133	asundara	2022-05-12	05:57:04	USA	192.168.6.9	1
134	iuduike	2022-05-09	06:46:40	USA	192.168.22.115	1
135	bsand	2022-05-09	14:06:33	US	192.168.91.238	0
136	mabadi	2022-05-10	06:56:44	US	192.168.214.234	1
137	jrafael	2022-05-12	02:42:37	CAN	192.168.186.176	1
139	apatel	2022-05-11	01:54:36	CAN	192.168.95.222	0
140	btang	2022-05-10	13:17:29	US	192.168.249.111	0
141	btang	2022-05-12	10:12:03	USA	192.168.82.139	0
142	gesparza	2022-05-11	06:31:14	CANADA	192.168.117.56	1
143	jhill	2022-05-11	00:30:22	USA	192.168.189.19	0
144	daquino	2022-05-09	11:09:32	CANADA	192.168.139.9	0



145	ivelasco	2022-05-08	09:06:02	CANADA	192.168.39.196	1
146	nmason	2022-05-10	02:25:55	CANADA	192.168.37.147	0
148	daquino	2022-05-08	06:15:55	CANADA	192.168.135.6	1
149	jlansky	2022-05-11	01:07:11	USA	192.168.238.42	0
150	nmason	2022-05-08	14:40:02	CAN	192.168.204.124	0
151	mabadi	2022-05-09	16:29:46	USA	192.168.30.225	1
152	mabadi	2022-05-12	10:24:43	USA	192.168.96.244	0
154	jlansky	2022-05-12	10:57:35	US	192.168.23.63	1
155	cgriffin	2022-05-12	22:18:42	USA	192.168.236.176	0
156	btang	2022-05-11	17:08:51	USA	192.168.243.95	0
159	iuduike	2022-05-12	16:59:50	USA	192.168.220.115	0
160	jclark	2022-05-10	20:49:00	CANADA	192.168.214.49	0
161	abellmas	2022-05-09	13:25:50	CAN	192.168.180.205	0
164	jclark	2022-05-12	21:15:52	CAN	192.168.18.34	1
167	jclark	2022-05-12	15:47:45	CAN	192.168.146.51	1
168	jlansky	2022-05-08	13:25:42	USA	192.168.210.94	1
169	alevitsk	2022-05-08	08:10:43	CANADA	192.168.210.228	0
170	sbaelish	2022-05-09	16:43:18	USA	192.168.65.113	0
171	drosas	2022-05-10	16:32:55	USA	192.168.92.218	0
172	mabadi	2022-05-08	08:06:50	US	192.168.180.41	1
173	asundara	2022-05-12	23:17:52	US	192.168.58.217	1
174	lyamamot	2022-05-10	12:26:27	US	192.168.228.122	0
175	jhill	2022-05-10	00:17:09	USA	192.168.130.218	0
177	wjaffrey	2022-05-11	00:15:55	USA	192.168.144.165	0
178	sgilmore	2022-05-08	12:27:22	CAN	192.168.52.216	0
179	jclark	2022-05-12	04:08:17	CAN	192.168.232.93	0
181	abellmas	2022-05-10	13:37:05	CAN	192.168.60.111	0
182	lyamamot	2022-05-10	06:01:31	USA	192.168.106.52	0
183	nmason	2022-05-11	05:29:36	CANADA	192.168.137.147	0
184	alevitsk	2022-05-08	03:09:48	CAN	192.168.33.70	0
185	jsoto	2022-05-10	13:34:58	USA	192.168.151.91	0
186	bisles	2022-05-09	04:29:17	USA	192.168.40.72	0
188	jsoto	2022-05-11	00:39:09	USA	192.168.21.88	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
191	cjackson	2022-05-08	06:46:07	CANADA	192.168.7.187	0
192	bisles	2022-05-10	08:32:03	USA	192.168.201.40	1
193	lrodriqu	2022-05-08	07:11:29	US	192.168.125.240	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 (0.002 sec)

MariaDB [organization]>

The code is my query, and the table below is a portion of the output.

This query returns all login attempts that occurred in countries other than Mexico.
First, I started by selecting all data from the `log_in_attempts` table. Then, I used a `WHERE` clause with `NOT` to filter for countries other than Mexico. I used `LIKE` with `MEX%` as the pattern to match because the dataset represents Mexico as `MEX` and `MEXICO`. The percentage sign (`%`) represents any number of unspecified characters when used with `LIKE`.

Retrieve employees in Marketing

My team wants to update the computers for certain employees in the Marketing department. To do this, I have to get information on which employee machines to update.

The following code demonstrates how I created a SQL query to filter for employee machines from employees in the Marketing department in the East building.

```
MariaDB [organization]> SELECT * FROM employees WHERE department = 'Marketing' AND office LIK
E '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 | k8651965m233 | 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)

MariaDB [organization]>
```

The code is my query, and the table below is a portion of the output.

This query returns all employees in the Marketing department in the East building. First, I started by selecting all data from 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. I used `LIKE` with `East%` as the pattern to match because the data in the `office` column represents the East building with the specific office number. 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

The machines for employees in the Finance and Sales departments also need to be updated. Since a different security update is needed, I have to get information on employees only from these two departments.

The following code demonstrates how I created a SQL query to filter for employee machines from employees in the Finance or Sales 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 | k2421212m542 | 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 | j236k3031245 | 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 | mscott   | Sales      | South-270   |
|        1062 | k3671639m697 | redwards | Finance    | North-180   |
|        1063 | l686m140n569 | lpope    | Sales      | East-226    |
|        1066 | o678p794q957 | ttyrell  | Sales      | Central-444 |
|        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   |
|        1083 | f840g812h544 | gkoshi   | Finance    | West-165    |
|        1085 | h339i498j269 | cperez   | Sales      | East-325    |
|        1086 | i281j129k749 | lmajumda | Sales      | West-499    |
|        1089 | l358m929n154 | jpark2   | Sales      | West-251    |
|        1091 | n378o313p469 | rtran    | Sales      | Central-230 |
|        1092 | o391p779q935 | lpark    | Sales      | West-227    |
|        1098 | u671v146w618 | tarchamb | Sales      | North-423   |
|        1099 | v283w690x104 | anaser   | Finance    | West-357    |
|        1105 | b551c837d758 | kmei     | Finance    | Central-232 |
|        1107 | d168e758f876 | akajwara | Sales      | North-471   |
|        1109 | f229g533h679 | nlocklea | Sales      | East-196    |
|        1110 | g567h376i314 | pchaudhu | Sales      | Central-428 |
|        1111 | h835i179j862 | jlee     | Sales      | West-309    |
|        1116 | m272n572o874 | nzhao    | Sales      | South-100   |
|        1117 | n683o758p820 | dahmad   | Sales      | West-405    |
|        1118 | o305p208q337 | jpark3   | Sales      | South-329   |
|        1119 | p164q780r999 | omubarak | Sales      | West-409    |
|        1121 | r628s557t397 | mrojas   | Sales      | East-288    |
|        1122 | s103t952u851 | btorres  | Finance    | West-319    |
|        1130 | a317b635c465 | tsnow    | Sales      | Central-451 |
|        1136 | g299h520i457 | jhawes   | Finance    | West-416    |
|        1138 | i671j355k725 | sromero  | Finance    | South-329   |
|        1142 | m674n127o823 | lsilva   | Finance    | East-440    |
|        1144 | NULL         | erobinso | Finance    | Central-266 |
|        1147 | r454s225t299 | tvega    | Finance    | West-177    |
|        1148 | s328t505u907 | dharvey  | Finance    | South-181   |
|        1159 | d881e710f732 | jshen    | Finance    | East-193    |
|        1164 | i682j513k442 | fsmeltz  | Finance    | North-163   |
|        1169 | NULL         | mmitchel | Sales      | Central-250 |
|        1174 | s371t911u987 | eortiz   | Finance    | North-428   |
|        1175 | t959u687v394 | jclark2  | Finance    | North-194   |
|        1176 | u849v569w521 | nliu     | Sales      | West-220    |
|        1181 | z803a233b718 | sessa    | Finance    | South-207   |
|        1185 | d790e839f461 | revens   | Sales      | North-330   |
|        1186 | e281f433g404 | sacosta  | Sales      | North-460   |
|        1187 | f963g637h851 | bbode    | Finance    | East-351    |
|        1188 | g164h566i795 | noshiro  | Finance    | West-252    |
|        1195 | n516o853p957 | orainier | Finance    | East-346    |
+-------------+--------------+----------+------------+-------------+
71 rows in set (0.001 sec)
```

The code is my query, and the table is a portion of the output.

This query returns all employees in the Finance and Sales departments.
First, I started by selecting all 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. I used the `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.

Retrieve all employees not in IT

My team needs to make one more security update on employees who are not in the Information Technology department. To make the update, I first have to get information on these employees.

The following demonstrates how I created a SQL query to filter for employee machines from employees not in the Information Technology department.

```
MariaDB [organization]> SELECT * FROM employees WHERE NOT department = 'Information Technolog
y';
+-------------+-------------+----------+-----------------+-------------+
| 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 | k2421212m542 | 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   |
|        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 | j236k3031245 | bisles    | Sales           | South-171    |
|        1036 | k5501533m205 | 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     |
|        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    |
|        1051 | z451a308b518 | itraora   | Marketing       | Central-134  |
|        1052 | a192b174c940 | jdarosa   | Marketing       | East-195     |
|        1053 | b979c871d361 | nemmanue  | Human Resources | Central-259  |
|        1055 | d831e972f553 | awilliam  | Marketing       | Central-256  |
|        1056 | e782f537g683 | ankala    | Marketing       | North-139    |
|        1057 | f370g535h632 | mscott    | Sales           | South-270    |
|        1058 | g264h852i697 | madebowa  | Marketing       | South-119    |
|        1059 | h832i322j795 | jnguyen   | Marketing       | South-255    |
|        1061 | j255k2811925 | nhersh    | Human Resources | East-163     |
|        1062 | k3671639m697 | redwards  | Finance         | North-180    |
|        1063 | l686m140n569 | lpope     | Sales           | East-226     |
|        1064 | NULL         | ejones    | Marketing       | South-477    |
|        1065 | n428o322p522 | imoore    | Human Resources | West-490     |
|        1066 | o678p794q957 | ttyrell   | Sales           | Central-444  |
|        1067 | p288q432r721 | lwhite    | Marketing       | North-277    |
|        1069 | NULL         | jpark     | Finance         | East-110     |
|        1070 | s772t175u409 | tbailey   | Human Resources | North-204    |
|        1071 | t244u829v723 | zdutchma  | Sales           | West-348     |
|        1072 | u905v920w694 | esmith    | Sales           | East-421     |
|        1073 | v135w241x773 | srobinso  | Marketing       | Central-494  |
|        1075 | x573y883z772 | fbautist  | Marketing       | East-267     |
|        1176 | u849v569w521 | nliu      | Sales           | West-220     |
|        1177 | v691w183x928 | aezra     | Human Resources | East-190     |
|        1178 | w986x187y885 | nlannist  | Marketing       | North-196    |
|        1179 | x174y934z376 | asalas    | Human Resources | North-445    |
|        1180 | y131z211a578 | medwards  | Human Resources | Central-340  |
|        1181 | z803a233b718 | sessa     | Finance         | South-207    |
|        1183 | b566c710d544 | lquraish  | Human Resources | East-400     |
|        1184 | c986d200e170 | ptsosie   | Human Resources | Central-247  |
|        1185 | d790e839f461 | revens    | Sales           | North-330    |
|        1186 | e281f433g404 | sacosta   | Sales           | North-460    |
|        1187 | f963g637h851 | bbode     | Finance         | East-351     |
|        1188 | g164h566i795 | noshiro   | Finance         | West-252     |
|        1189 | h784i120j837 | slefkowi  | Human Resources | West-342     |
|        1190 | NULL         | kcarter   | Marketing       | Central-270  |
|        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)

MariaDB [organization]>
```

The code is my query, and the table is a portion of the output. The query returns all employees not in the Information Technology department. First, I started by selecting all data from the

`employees` table. Then, I used a `WHERE` clause with `NOT` to filter for employees not in this department.

Summary

I applied filters to SQL queries to get specific information on login attempts and employee machines. I used two different tables, `log_in_attempts` and `employees`. I used the `AND`, `OR`, and `NOT` operators to filter for the specific information needed for each task. I also used `LIKE` and the percentage sign (`%`) wildcard to filter for patterns.