Perform a SQL Query

Skills Acquired:

- Select specific columns from a table
- Select all columns from a table by using an asterisk (*)
- Sort query results using the ORDER BY keyword

Scenario:

In this scenario, you have to determine which employee devices must be updated. You also need to investigate user login activity to explore if any unusual activity has occurred.

The information you need is located in the machines and login_attempts tables in the organization database.

Task 1. Retrieve employee device data

In this task, you need to obtain information on employee devices because your team needs to update them. The information you need is in the machines table in the organization database.

First, you need to retrieve all the information about the employee devices.

1. Run the following query to select all device information from the machines table:

```
SELECT *

FROM machines;
```

Next, you want to focus on the email client running on various devices.

2. Run the following query to select only the device_id and email_client columns from the machines table. Replace X with device_id and Y with email_client:

```
SELECT X, Y FROM machines;
```

- **What email client is returned in the third row?**

  Email Client 2

```
MariaDB [organization]> select device_id, email_client
    -> from machines;
+--------------+----------------+
| device_id    | email_client   |
+--------------+----------------+
| a184b775c707 | Email Client 1 |
| a192b174c940 | Email Client 1 |
| a305b818c708 | Email Client 2 |
| a317b635c465 | Email Client 2 |
| a320b137c219 | Email Client 2 |
```

Now, You need information on the operating systems used on various devices and their last patch date.

3. Complete the query to return only the device_id, operating_system, and OS_patch_date columns from the machines table. Replace X, Y, and Z with the columns that you need to return:

SELECT X, Y, Z FROM machines;

- **What is the patch date of the first entry?**

  2021-09-01

```
MariaDB [organization]> select device_id, operating_system, OS_patch_date
    -> from machines;
+--------------+------------------+---------------+
| device_id    | operating_system | OS_patch_date |
+--------------+------------------+---------------+
| a184b775c707 | OS 1             | 2021-09-01    |
| a192b174c940 | OS 2             | 2021-06-01    |
| a305b818c708 | OS 3             | 2021-06-01    |
| a317b635c465 | OS 1             | 2021-03-01    |
| a320b137c219 | OS 2             | 2021-03-01    |
```

Task 2. Investigate login activity

In this task, you need to analyze the information from the log_in_attempts table to determine if any unusual activity has occurred.

First, you need to investigate the locations where login attempts were made to ensure that they're in expected areas (the United States, Canada, or Mexico).

1. Write a SQL query to select the event_id and country columns from the log_in_attempts table.

- **Were any login attempts made from Australia?**

  No

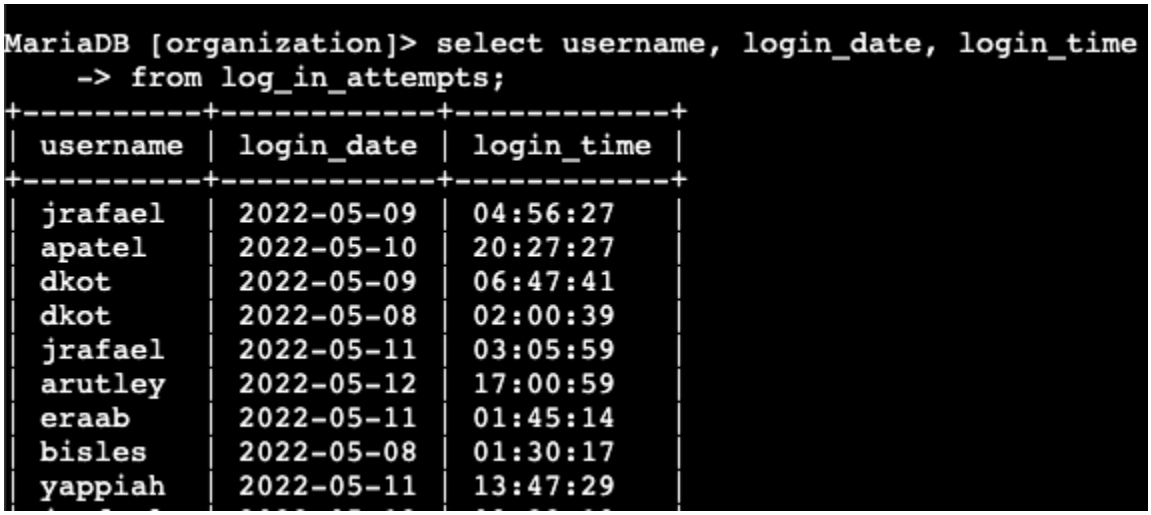
```
MariaDB [organization]> select event_id, country
    -> from log_in_attempts
    -> order by country;
+----------+---------+
| event_id | country |
+----------+---------+
|        1 | CAN     |
|      161 | CAN     |
|       71 | CAN     |
|      150 | CAN     |
|      137 | CAN     |
|       74 | CAN     |
|       76 | CAN     |
|      126 | CAN     |
```

Next, you need to check if login attempts were made outside of the organization's working hours.

2. Write a SQL query that selects the username, login_date, and login_time columns from the log_in_attempts table.

- **What username is returned in the fifth row?**

  Jrafael



```
MariaDB [organization]> select username, login_date, login_time
    -> from log_in_attempts;
+----------+------------+------------+
| username | login_date | login_time |
+----------+------------+------------+
| jrafael  | 2022-05-09 | 04:56:27   |
| apatel   | 2022-05-10 | 20:27:27   |
| dkot     | 2022-05-09 | 06:47:41   |
| dkot     | 2022-05-08 | 02:00:39   |
| jrafael  | 2022-05-11 | 03:05:59   |
| arutley  | 2022-05-12 | 17:00:59   |
| eraab    | 2022-05-11 | 01:45:14   |
| bisles   | 2022-05-08 | 01:30:17   |
| yappiah  | 2022-05-11 | 13:47:29   |
```

Now, you need to get a complete picture of all login attempts.

3. Write a SQL query that selects all columns from the log_in_attempts table, using a single symbol after the SELECT keyword.

```
MariaDB [organization]> select *
    -> from log_in_attempts;
```

Task 3. Order login attempts data

In this task, you need to use the ORDER BY keyword. You'll sequence the data that your query returns according to the login date and time.

First, you need to sort the information by date.

1. Run the following query, which orders log_in_attempts data by login_date:

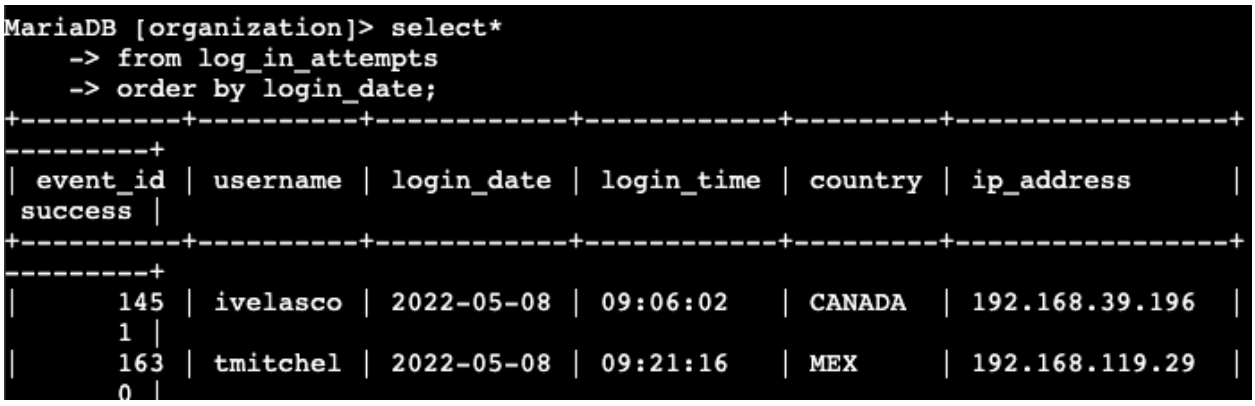
```
SELECT *

FROM log_in_attempts

ORDER BY login_date;
```

- **What are the username and login date of the first record returned?**

  ivelasco on 2022-05-08



```
MariaDB [organization]> select*
    -> from log_in_attempts
    -> order by login_date;
+----------+----------+------------+------------+---------+-----------------+
---------+
| event_id | username | login_date | login_time | country | ip_address      |
 success |
+----------+----------+------------+------------+---------+-----------------+
---------+
|      145 | ivelasco | 2022-05-08 | 09:06:02   | CANADA  | 192.168.39.196  |
       1 |
|      163 | tmitchel | 2022-05-08 | 09:21:16   | MEX     | 192.168.119.29  |
       0 |
```

Now, you need to further organize the previous results by ordering them by login_time.

2. Modify the query from the previous step by adding the login time to the ORDER BY clause. You must replace X with the appropriate column name:

```
SELECT *

FROM log_in_attempts

ORDER BY login_date, X;
```

- **What are the username and login time of the first record returned by the above query?**

  bsand at 00:19:1

```
MariaDB [organization]> select*
    -> from log_in_attempts
    -> order by login_date, login_time;
+----------+----------+------------+------------+---------+-----------------+
---------+
| event_id | username | login_date | login_time | country | ip_address      |
 success |
+----------+----------+------------+------------+---------+-----------------+
---------+
|      117 | bsand    | 2022-05-08 | 00:19:11   | USA     | 192.168.197.187 |
       0 |
|       92 | pwashing | 2022-05-08 | 00:36:12   | US      | 192.168.247.219 |
       0 |
```