Complete a SQL Join

Skills Acquired:

- Inner Join
- Left Join
- Right Join

Scenario:

In this scenario, you'll investigate a recent security incident that compromised some machines.

You are responsible for getting the required information from the database for the investigation.

Task 1. Match employees to their machines

First, you must identify which employees are using which machines. The data is located in the machines and employees tables.

You must use a SQL inner join to return the records you need based on a connecting column. In the scenario, both tables include the device_id column, which you'll use to perform the join.

1. Run the following query to retrieve all records from the machines table:

```
SELECT *
FROM machines;
```

You'll note that this query is not sufficient to perform the join and retrieve the information you need.

2. Complete the query to perform an inner join between the machines and employees tables on the device_id column.

- **How many rows did the inner join return?**

  185

```
MariaDB [organization]> SELECT *
    -> FROM machines
    -> INNER JOIN employees ON machines.device_id = employees.device_id;
```

```
----+
185 rows in set (0.019 sec)
```

Task 2. Return more data

You now must return the information on all machines and the employees who have machines. Next, you must do the reverse and retrieve the information of all employees and any machines that are assigned to them.

To achieve this, you'll complete a left join and a right join on the employees and machines tables. The results will include all records from one or the other table. You must link these tables using the common device_id column.

1. Run the following SQL query to connect the machines and employees tables through a left join.

- **What is the value in the username column for the last record returned?**

  NULL

```
MariaDB [organization]> SELECT *
    -> FROM machines
    -> LEFT JOIN employees ON machines.device_id = employees.device_id;
```

```
| x561y839z458 | OS 2              | Email Client 1 | 2021-09-01    |
 0 |         NULL | NULL          | NULL      | NULL                    | NULL
    |
| y246z508a775 | OS 2              | Email Client 1 | 2021-12-01    |
 0 |         NULL | NULL          | NULL      | NULL                    | NULL
    |
| z821a946b264 | OS 3              | Email Client 2 | 2021-06-01    |
 0 |         NULL | NULL          | NULL      | NULL                    | NULL
    |
+--------------+-----------------+----------------+---------------+-------
---+-------------+--------------+----------+-----------------------+------
----+
200 rows in set (0.008 sec)
```

2. Run the following SQL query to connect the machines and employees tables through a right join.

- **What is the value in the username column for the last record returned?**

  Areyes

```
MariaDB [organization]> SELECT *
    -> FROM machines
    -> RIGHT JOIN employees ON machines.device_id = employees.device_id;
```

```
| q308r573s459 | OS 3             | Email Client 1 | 2021-03-01    |        11
98 |        1198 | q308r573s459 | jmartine | Marketing              | South-11
7   |
| r520s571t459 | OS 2             | Email Client 2 | 2021-03-01    |        11
99 |        1199 | r520s571t459 | areyes   | Human Resources        | East-100
    |
+--------------+------------------+----------------+---------------+----------
---+-------------+--------------+----------+------------------------+---------
----+
200 rows in set (0.001 sec)
```

Task 3. Retrieve login attempt data

To continue investigating the security incident, you must retrieve the information on all employees who have made login attempts. To achieve this, you'll perform an inner join on the employees and log_in_attempts tables, linking them on the common username column.

- Run the following SQL query to perform an inner join on the employees and log_in_attempts tables.

- **How many records are returned by this inner join?**

  200

```
MariaDB [organization]> SELECT *
    -> FROM employees
    -> INNER JOIN log_in_attempts ON employees.username = log_in_attempts.user
name;
```

```
---------+
200 rows in set (0.009 sec)
```