Joins in SQL

Project description

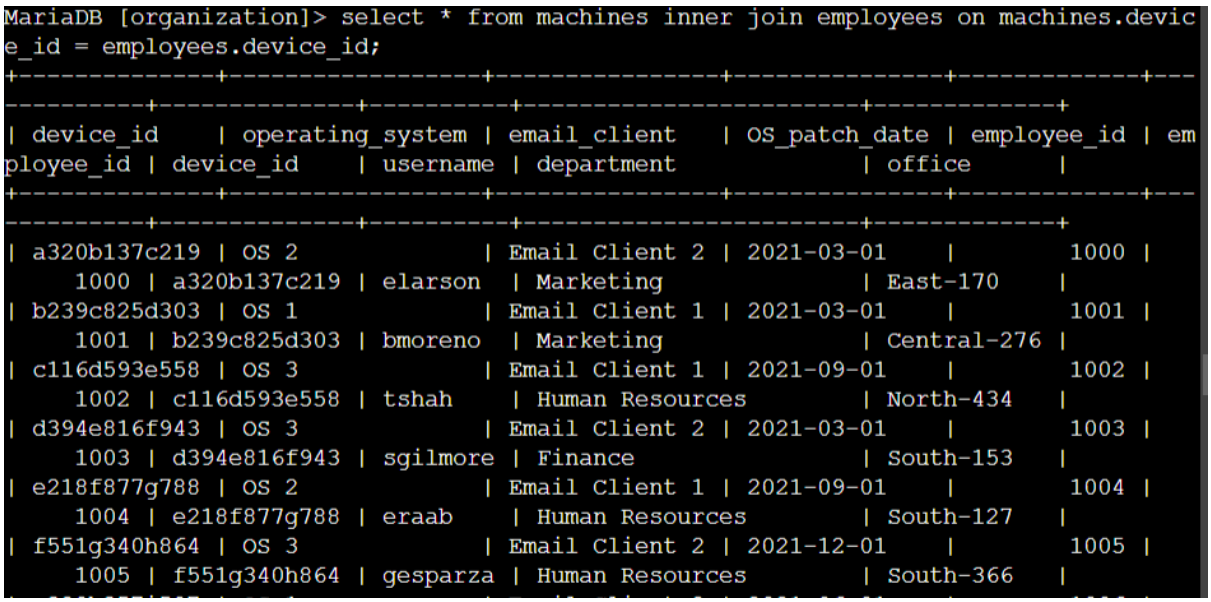
This simulation project puts the performer, **Maheswar Reddy Avula**, into the position of a system administrator for an organization. The security team is investigating a recent security incident that compromised some machines. The admin is responsible for getting the required information from the database for the investigation.

(For readability and simplicity, the outputs have been limited to 5 table entries out of 200)

Match employees to their machines

Direction: Admin must identify which employees are using which machines. The data is located in the **machines** and **employees** tables.

To view the required data, the following query was run using the **inner join** on tables **employees** and **machines** as follows:



```
MariaDB [organization]> select * from machines inner join employees on machines.devic
e_id = employees.device_id;
+-------------+-----------------+---------------+--------------+-------------+---
----------+-------------+----------+-----------------------+-------------+
| device_id   | operating_system | email_client   | OS_patch_date | employee_id | em
ployee_id | device_id   | username | department            | office      |
+-------------+-----------------+---------------+--------------+-------------+---
----------+-------------+----------+-----------------------+-------------+
| a320b137c219 | OS 2            | Email Client 2 | 2021-03-01    |        1000 |
     1000 | a320b137c219 | elarson  | Marketing             | East-170    |
| b239c825d303 | OS 1            | Email Client 1 | 2021-03-01    |        1001 |
     1001 | b239c825d303 | bmoreno  | Marketing             | Central-276 |
| c116d593e558 | OS 3            | Email Client 1 | 2021-09-01    |        1002 |
     1002 | c116d593e558 | tshah    | Human Resources       | North-434   |
| d394e816f943 | OS 3            | Email Client 2 | 2021-03-01    |        1003 |
     1003 | d394e816f943 | sgilmore | Finance               | South-153   |
| e218f877g788 | OS 2            | Email Client 1 | 2021-09-01    |        1004 |
     1004 | e218f877g788 | eraab    | Human Resources       | South-127   |
| f551g340h864 | OS 3            | Email Client 2 | 2021-12-01    |        1005 |
     1005 | f551g340h864 | gesparza | Human Resources       | South-366   |
```

Return more data

Direction: The admin must return the information on all machines and the employees who have machines. Next, they must do the reverse and retrieve the information of all employees and any machines that are assigned to them.

To display information on all machines an the employees who have them, the **left join** is used on tables **machines** and **employees** as follows:

```
MariaDB [organization]> select * from machines left join employees on machines.device
_id = employees.device_id;
+-------------+-----------------+---------------+--------------+-------------+---
----------+-------------+----------+----------------------+-------------+
| device_id   | operating_system | email_client   | OS_patch_date | employee_id | em
ployee_id | device_id   | username | department           | office      |
+-------------+-----------------+---------------+--------------+-------------+---
----------+-------------+----------+----------------------+-------------+
| a320b137c219 | OS 2            | Email Client 2 | 2021-03-01    |        1000 |
     1000 | a320b137c219 | elarson  | Marketing            | East-170    |
| b239c825d303 | OS 1            | Email Client 1 | 2021-03-01    |        1001 |
     1001 | b239c825d303 | bmoreno  | Marketing            | Central-276 |
| c116d593e558 | OS 3            | Email Client 1 | 2021-09-01    |        1002 |
     1002 | c116d593e558 | tshah    | Human Resources      | North-434   |
| d394e816f943 | OS 3            | Email Client 2 | 2021-03-01    |        1003 |
```

To retrieve the information of all employees and any machines that are assigned to them, the **right join** was used on tables **machines** and **employees** as follows:

```
MariaDB [organization]> select * from machines right join employees on machines.devic
e_id = employees.device_id;
+-------------+-----------------+---------------+--------------+-------------+---
----------+-------------+----------+----------------------+-------------+
| device_id   | operating_system | email_client   | OS_patch_date | employee_id | em
ployee_id | device_id   | username | department           | office      |
+-------------+-----------------+---------------+--------------+-------------+---
----------+-------------+----------+----------------------+-------------+
| a320b137c219 | OS 2            | Email Client 2 | 2021-03-01    |        1000 |
     1000 | a320b137c219 | elarson  | Marketing            | East-170    |
| b239c825d303 | OS 1            | Email Client 1 | 2021-03-01    |        1001 |
     1001 | b239c825d303 | bmoreno  | Marketing            | Central-276 |
| c116d593e558 | OS 3            | Email Client 1 | 2021-09-01    |        1002 |
     1002 | c116d593e558 | tshah    | Human Resources      | North-434   |
| d394e816f943 | OS 3            | Email Client 2 | 2021-03-01    |        1003 |
     1003 | d394e816f943 | sgilmore | Finance              | South-153   |
| e218f877g788 | OS 2            | Email Client 1 | 2021-09-01    |        1004 |
```

Summary

The investigation was supplied with the necessary information using the inner, left and right joins in appropriate queries. All tasks were successfully completed in accordance with the directions given by the organization.