Activity overview

As a security analyst, knowing how to make better queries to retrieve specific pieces of data can help you find the security-related information you need more efficiently.

In this lab activity, you'll apply basic filters to SQL queries to retrieve information from a MariaDB database.

MariaDB is a popular open source relational database that is compatible with MySQL.

This activity provides you with a great opportunity to apply what you've learned and add filters to SQL queries.

Note: *The terms* ***row*** *and* ***record*** *are used interchangeably in this lab activity.*

Scenario

In this scenario, you need to get specific information about employees, their machines, and the departments they're in. Your team needs this data to perform various tasks, such as running updates, posting a privacy notice in certain departments, and sending an alert to an employee with an issue on a machine.

You are responsible for finding the required information by querying a database. You'll add filters to your queries to locate the information more quickly.

Here's how you'll do this task: **First**, you'll list all organization machines and their operating systems. **Second**, you'll list all machines with the operating system OS 2. **Third**, you'll list all the employees in the Finance and Sales departments. **Fourth**, you'll obtain information about machines.

You're ready to add filters to SQL queries.

Note: *In this lab you'll be working with the organization database and the tables it contains. The lab starts with the organization database in the MariaDB shell that is already open. This means you can start with the tasks as soon as you click the* ***Start Lab****button. If you unintentionally exit the organization database in the MariaDB shell, you can reconnect by running the* `sudo mysql organization` *command.*
Disclaimer: For optimal performance and compatibility, it is recommended to use either **Google Chrome** or **Mozilla Firefox** browsers while accessing the labs.

Start your lab

Before you begin, you can review the instructions for using the Qwiklabs platform under the **Resources** tab in Coursera.

If you haven't already done so, click **Start Lab**. This brings up the terminal so that you can begin completing the tasks!

When you have completed all the tasks, refer to the **End your Lab** section that follows the tasks for information on how to end your lab.

ask 1. List all organization machines

In this task, you need to get a list of all organization machines and their operating systems. The data is contained in the `machines` table. You'll need to use the SELECT keyword to return specific columns.

- Run a SQL query to retrieve only the `device_id` and `operating_system` columns from the `machines` table.

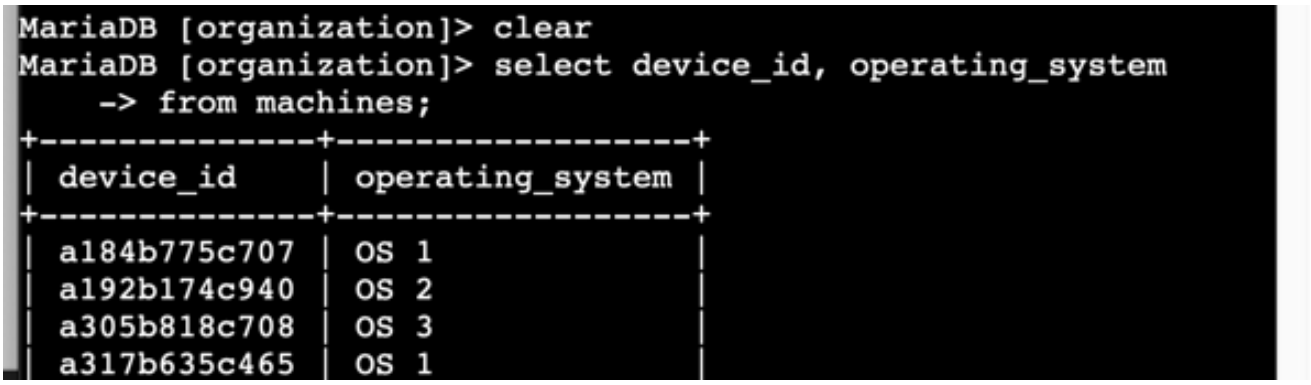
How many rows were returned from the machines table? (You can view the number of rows at the bottom of the output.)

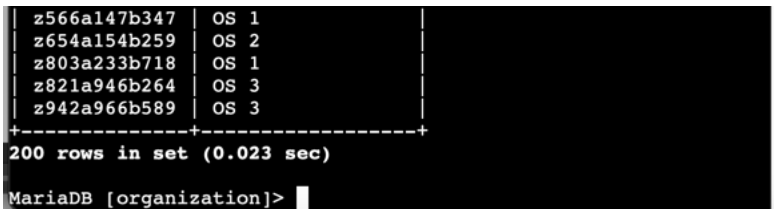
100

close~~250~~

300

check200





Task 2. Retrieve a list of the machines with OS 2

In this task, you need to obtain a list of all machines with the `'OS 2'` operating system because these machines need an update. To get this information, you'll run your first SQL query with a filter.

- Select all the records from the `machines` table with a value of `'OS 2'` in the `operating_system` column. Replace the value X with the correct string:

```
SELECT device_id, operating_system
FROM machines
WHERE operating_system = 'X';
```

Copied!

Note: *The `WHERE` clause allows you to filter the results returned by a query by returning only the records that satisfy the condition.*

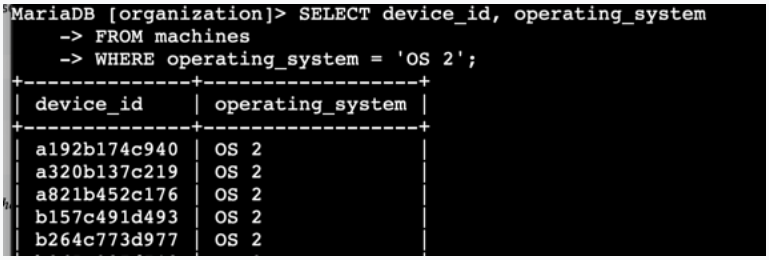
How many machines in the database use the OS 2 operating system?

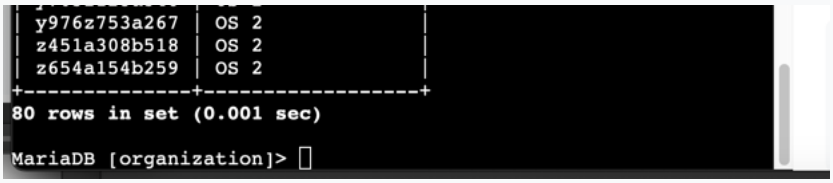
88

200

check80

44





Task 3. List employees in specific departments

In this task, you need to retrieve a list of all the employees in the Finance and Sales departments to obtain their office numbers. A notice about handling confidential financial information will be posted to these offices.

1. Filter the rows returned from `department` column in the `employees` table to include only employees from the `'Finance'` department. Replace `X` with the appropriate column name and `Y` with the appropriate value to complete the filter:

```
SELECT *
FROM employees
WHERE X = 'Y';
```

Copied!

What is the employee_id of the first row returned?

1001

check1003

1119

1049

```
MariaDB [organization]> select *
    -> from employees
    -> where department = 'Finance';
+-------------+-------------+----------+------------+-------------+
| 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   |
|        1010 | k2421212m542 | jlansky  | Finance    | South-109   |
|        1015 | p611q262r945 | jsoto    | Finance    | North-271   |
```

2. Modify the previous query so that it returns employees who are in the `'Sales'` department.

How many employees work in the Sales department?

42

check33

17

10

Click **Check my progress** to verify that you have completed this task correctly.

```
MariaDB [organization]> select *
    -> from employees
    -> where department = 'Sales'
    -> where department = 'Sales';
ERROR 1064 (42000): You have an error in your SQL syntax; check the m
anual that corresponds to your MariaDB server version for the right s
yntax to use near 'where department = 'Sales'' at line 4
MariaDB [organization]> select *
    -> from employees
    -> where department = 'Sales';
+-------------+-------------+----------+------------+-------------+
| employee_id | device_id   | username | department | office      |
+-------------+-------------+----------+------------+-------------+
|        1009 | NULL        | lrodriqu | Sales      | South-134   |
|        1011 | l748m120n401 | drosas   | Sales      | South-292   |
|        1024 | y976z753a267 | iuduike  | Sales      | South-215   |
|        1025 | z381a365b233 | jhill    | Sales      | North-115   |
|        1035 | j236k3031245 | bisles   | Sales      | South-171   |
|        1039 | n253o917p623 | cjackson | Sales      | East-378    |
|        1041 | p929q222r778 | cgriffin | Sales      | North-208   |
|        1130 | a317b635c465 | tsnow    | Sales      | Central-451 |
|        1169 | NULL        | mmitchel | Sales      | Central-250 |
|        1176 | u849v569w521 | nliu     | Sales      | West-220    |
|        1185 | d790e839f461 | revens   | Sales      | North-330   |
|        1186 | e281f433g404 | sacosta  | Sales      | North-460   |
+-------------+-------------+----------+------------+-------------+
33 rows in set (0.001 sec)
```

Task 4. Identify employee machines

Your team recently discovered that there are issues with machines in the South building. In this task, you need to obtain certain employee and computer information.

A machine in `'South-109'` has an issue. You need to determine which employee uses that computer so you can send them an alert.

1. Write a query to identify which employee uses the office in `'South-109'`. (The data must be returned from the `office` column in the `employees` table.)

Which of the following employees uses the computer with the issue?

jhill

tsnow

checkjlansky

nmitchell

```
MariaDB [organization]>
MariaDB [organization]> select *
    -> from employees
    -> where office = 'South-109';
+-------------+--------------+----------+------------+-----------+
| employee_id | device_id    | username | department | office    |
+-------------+--------------+----------+------------+-----------+
|        1010 | k2421212m542 | jlansky  | Finance    | South-109 |
+-------------+--------------+----------+------------+-----------+
1 row in set (0.001 sec)

MariaDB [organization]>
```

Next, your team has determined that there is an issue with all the machines in the South building. Offices in the organization are named with the building name, a hyphen, and the office number in that building (for example, `'South-109'`).

2. Modify the query you used in the previous step so that it returns information on all the employees in the `'South'` building. Use the `LIKE` operator with `%` in this query.

Note: *The `LIKE` keyword in SQL performs simple string matches. The matching pattern may include the wildcard `%` to represent a string of any length. This wildcard may be placed both before and after the targeted substring.*

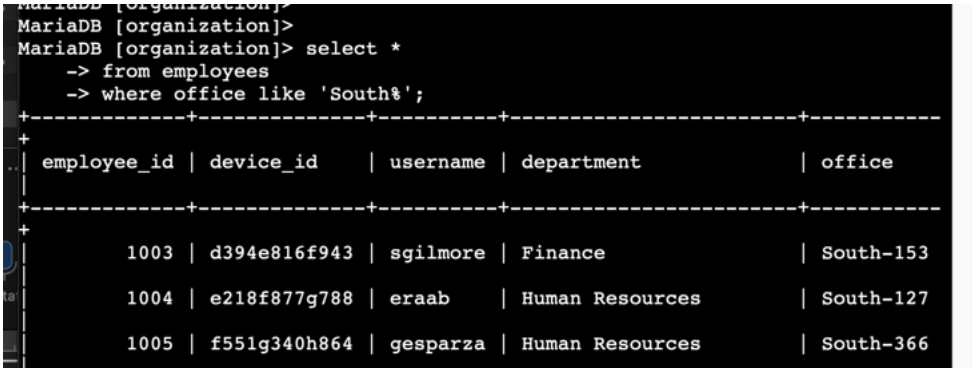
Which department does the first employee listed in the South building belong to?

Information Technology

Sales

checkFinance

Marketing



```
MariaDB [organization]>
MariaDB [organization]> select *
    -> from employees
    -> where office like 'South%';
+-------------+--------------+----------+-----------------------+-----------
+
| employee_id | device_id    | username | department            | office
|
+-------------+--------------+----------+-----------------------+-----------
+
|        1003 | d394e816f943 | sgilmore | Finance               | South-153
|
|        1004 | e218f877g788 | eraab    | Human Resources       | South-127
|
|        1005 | f551g340h864 | gesparza | Human Resources       | South-366
|
```