Employee Attendance Monitoring and Access Control

Project Description

In this project, I developed a system to monitor employee attendance and manage access permissions using SQL. The goal was to ensure compliance with company policies, track employee activity, and restrict access to sensitive areas based on role and department. By applying SQL filters and queries, I was able to retrieve specific data to support these objectives.

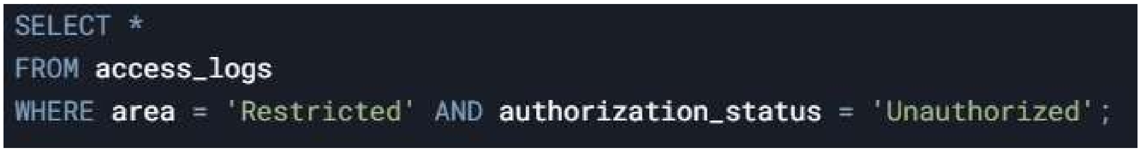
Language Used

SQL

Project Walk-through

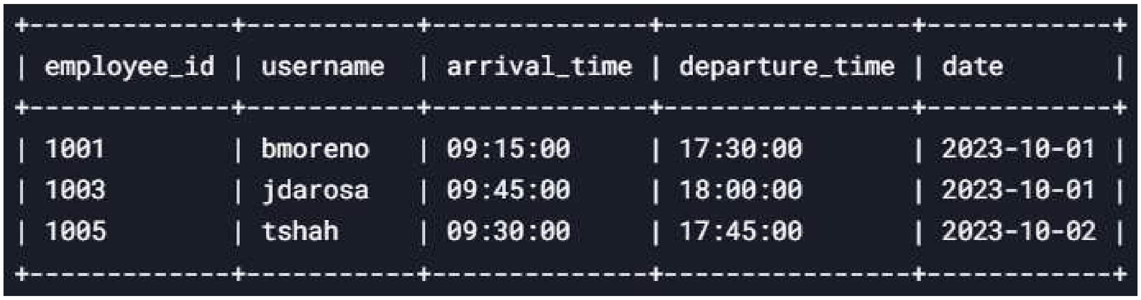
1. Retrieve Employees with Late Arrivals

To enforce punctuality, I was tasked with identifying employees who arrived late (after 9:00 AM). The following SQL query demonstrates how I filtered the attendance logs to retrieve late arrivals:



```
SELECT *
FROM access_logs
WHERE area = 'Restricted' AND authorization_status = 'Unauthorized';
```

Query Results:



```
+-------------+-----------+--------------+----------------+------------+
| employee_id | username  | arrival_time | departure_time | date       |
+-------------+-----------+--------------+----------------+------------+
| 1001        | bmoreno   | 09:15:00     | 17:30:00       | 2023-10-01 |
| 1003        | jdarosa   | 09:45:00     | 18:00:00       | 2023-10-01 |
| 1005        | tshah     | 09:30:00     | 17:45:00       | 2023-10-02 |
+-------------+-----------+--------------+----------------+------------+
```

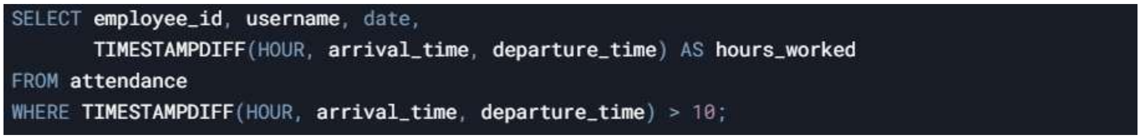
Explanation:

- I selected all data from the `access_logs` table.
- Used the `WHERE` clause to filter for entries where the `area` is "Restricted" and the `authorization_status` is "Unauthorized".

---

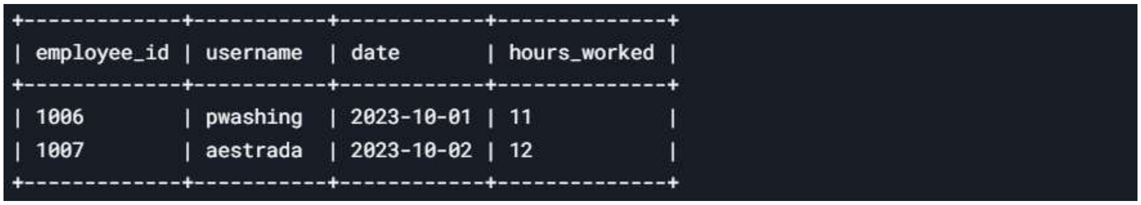
3. Retrieve Employees with Excessive Overtime

To monitor employee workload and ensure compliance with labor laws, I was tasked with identifying employees who worked more than 10 hours in a single day. The following SQL query demonstrates how I calculated and filtered overtime:



```
SELECT employee_id, username, date,
       TIMESTAMPDIFF(HOUR, arrival_time, departure_time) AS hours_worked
FROM attendance
WHERE TIMESTAMPDIFF(HOUR, arrival_time, departure_time) > 10;
```

Query Results:



```
+-------------+----------+------------+--------------+
| employee_id | username | date       | hours_worked |
+-------------+----------+------------+--------------+
| 1006        | pwashing | 2023-10-01 | 11           |
| 1007        | aestrada | 2023-10-02 | 12           |
+-------------+----------+------------+--------------+
```

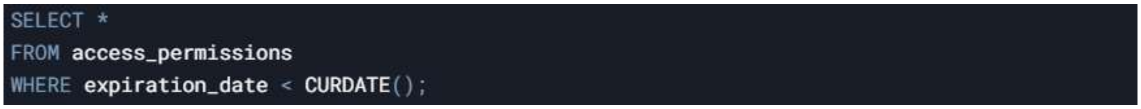
Explanation:

- I selected the `employee_id`, `username`, `date`, and calculated the `hours_worked` using the `TIMESTAMPDIFF` function.
- Used the `WHERE` clause to filter for employees who worked more than 10 hours.

---

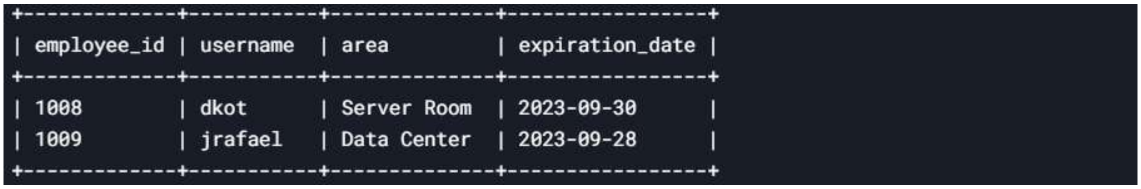
4. Retrieve Employees with Expired Access Permissions

To maintain security, I was asked to identify employees with expired access permissions. The following SQL query demonstrates how I filtered the access logs:



```
SELECT *
FROM access_permissions
WHERE expiration_date < CURDATE();
```

Query Results:



```
+-------------+----------+-------------+-----------------+
| employee_id | username | area        | expiration_date |
+-------------+----------+-------------+-----------------+
| 1008        | dkot     | Server Room | 2023-09-30      |
| 1009        | jrafael  | Data Center | 2023-09-28      |
+-------------+----------+-------------+-----------------+
```

Explanation:

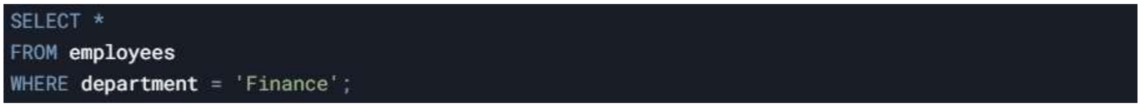
Explanation:

- I selected all data from the `access_permissions` table.
- Used the `WHERE` clause to filter for entries where the `expiration_date` is before the current date (`CURDATE()`).

---

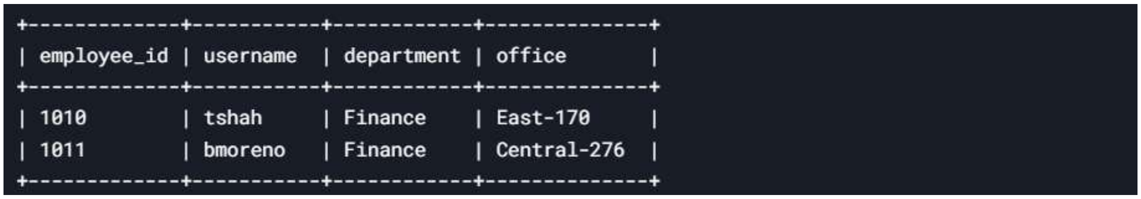
5. Retrieve Employees by Department for Security Training

To organize security training sessions, I was asked to retrieve a list of employees by department. The following SQL query demonstrates how I filtered the data:



```
SELECT *
FROM employees
WHERE department = 'Finance';
```

Query Results:



```
+-------------+----------+------------+-------------+
| employee_id | username | department | office      |
+-------------+----------+------------+-------------+
| 1010        | tshah    | Finance    | East-170    |
| 1011        | bmoreno  | Finance    | Central-276 |
+-------------+----------+------------+-------------+
```

Explanation:

- I selected all data from the `employees` table.
- Used the `WHERE` clause to filter for employees in the "Finance" department.

Summary

In this project, I applied various SQL filters and queries to monitor employee attendance, manage access permissions, and ensure compliance with company policies. By using operators like `WHERE`, `AND`, and functions like `TIMESTAMPDIFF`, I was able to retrieve specific data to support security and operational objectives. This project highlights the importance of SQL in managing employee activity and maintaining organizational security.