Problem 3268: Find Overlapping Shifts II

Problem Information

Difficulty: Hard
Acceptance Rate: 0.00%
Paid Only: No

Problem Description

Table:

EmployeeShifts

+------------------+----------+ | Column Name | Type | +------------------+----------+ | employee_id | int | | start_time | datetime | | end_time | datetime | +------------------+----------+ (employee_id, start_time) is the unique key for this table. This table contains information about the shifts worked by employees, including the start time, and end time.

Write a solution to analyze overlapping shifts for each employee. Two shifts are considered overlapping if they occur on the

same date

and one shift's

end_time

is

later than

another shift's

start_time

.

For

each employee

, calculate the following:

The

maximum

number of shifts that

overlap

at any

given time

.

The

total duration

of all overlaps in minutes.

Return the result table ordered by

employee_id

in

ascending

order

.

The query result format is in the following example.

Example:

Input:

EmployeeShifts

table:

+-------------+---------------------+---------------------+ | employee_id | start_time | end_time | +-------------+---------------------+---------------------+ | 1 | 2023-10-01 09:00:00 | 2023-10-01 17:00:00 | | 1 | 2023-10-01 15:00:00 | 2023-10-01 23:00:00 | | 1 | 2023-10-01 16:00:00 | 2023-10-02 00:00:00 | | 2 | 2023-10-01 09:00:00 | 2023-10-01 17:00:00 | | 2 | 2023-10-01 11:00:00 | 2023-10-01 19:00:00 | | 3 | 2023-10-01 09:00:00 | 2023-10-01 17:00:00 | +-------------+---------------------+---------------------+

Output:

+-------------+--------------------------+-----------------------+ | employee_id | max_overlapping_shifts | total_overlap_duration | +-------------+--------------------------+-----------------------+ | 1 | 3 | 600 | | 2 | 2 | 360 | | 3 | 1 | 0 | +-------------+--------------------------+-----------------------+

Explanation:

Employee 1 has 3 shifts:

2023-10-01 09:00:00 to 2023-10-01 17:00:00

2023-10-01 15:00:00 to 2023-10-01 23:00:00

2023-10-01 16:00:00 to 2023-10-02 00:00:00

The maximum number of overlapping shifts is 3 (from 16:00 to 17:00). The total overlap duration is: - 2 hours (15:00-17:00) between 1st and 2nd shifts - 1 hour (16:00-17:00) between 1st and 3rd shifts - 7 hours (16:00-23:00) between 2nd and 3rd shifts Total: 10 hours = 600 minutes

Employee 2 has 2 shifts:

2023-10-01 09:00:00 to 2023-10-01 17:00:00

2023-10-01 11:00:00 to 2023-10-01 19:00:00

The maximum number of overlapping shifts is 2. The total overlap duration is 6 hours (11:00-17:00) = 360 minutes.

Employee 3 has only 1 shift, so there are no overlaps.

The output table contains the employee_id, the maximum number of simultaneous overlaps, and the total overlap duration in minutes for each employee, ordered by employee_id in ascending order.

Code Snippets

MySQL:

```
# Write your MySQL query statement below
```

MS SQL Server:

```
/* Write your T-SQL query statement below */
```

PostgreSQL:

```
-- Write your PostgreSQL query statement below
```

Oracle:

```
/* Write your PL/SQL query statement below */
```

Pandas:

```
import pandas as pd

def calculate_shift_overlaps(employee_shifts: pd.DataFrame) -> pd.DataFrame:
```

Solutions

MySQL Solution:

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