

Problem 3601: Find Drivers with Improved Fuel Efficiency

Problem Information

Difficulty: Medium

Acceptance Rate: 47.32%

Paid Only: No

Tags: Database

Problem Description

Table: `drivers`

+-----+-----+ | Column Name | Type | +-----+-----+ | driver_id | int | |
driver_name | varchar | +-----+-----+ driver_id is the unique identifier for this table.
Each row contains information about a driver.

Table: `trips`

+-----+-----+ | Column Name | Type | +-----+-----+ | trip_id | int | | driver_id
| int | | trip_date | date | | distance_km | decimal | | fuel_consumed | decimal |
+-----+-----+ trip_id is the unique identifier for this table. Each row represents a trip
made by a driver, including the distance traveled and fuel consumed for that trip.

Write a solution to find drivers whose **fuel efficiency has improved** by **comparing** their average fuel efficiency in the**first half** of the year with the **second half** of the year.

* Calculate **fuel efficiency** as `distance_km / fuel_consumed` for **each** trip * **First half** : January to June, **Second half** : July to December * Only include drivers who have trips in **both halves** of the year * Calculate the **efficiency improvement** as $(\text{second_half_avg} - \text{first_half_avg})$ * **Round** all**** results**** to**`2` **decimal**** places

Return _the result table ordered by efficiency improvement in**descending** order, then by driver name in **ascending** order_.

The result format is in the following example.

****Example:****

****Input:****

drivers table:

driver_id	driver_name
1	Alice Johnson
2	Bob Smith
3	Carol Davis
4	David Wilson
5	Emma Brown

trips table:

trip_id	driver_id	trip_date
1	1	2023-02-15
2	1	2023-03-20
3	1	2023-08-10
4	1	2023-09-25
5	2	2023-01-10
6	2	2023-04-15
7	2	2023-10-05
8	3	2023-03-12
9	3	2023-05-18
10	4	2023-07-22
11	4	2023-11-30
12	5	2023-02-28

****Output:****

driver_id	driver_name	first_half_avg	second_half_avg	efficiency_improvement
2	Bob Smith	11.24	13.33	2.10

****Explanation:****

* **Alice Johnson (driver_id = 1):** * First half trips (Jan-Jun): Feb 15 ($120.5 / 10.2 = 11.81$), Mar 20 ($200.0 / 16.5 = 12.12$) * First half average efficiency: $(11.81 + 12.12) / 2 = 11.97$ * Second half trips (Jul-Dec): Aug 10 ($150.0 / 11.0 = 13.64$), Sep 25 ($180.0 / 12.5 = 14.40$) * Second half average efficiency: $(13.64 + 14.40) / 2 = 14.02$ * Efficiency improvement: $14.02 - 11.97 = 2.05$ * **Bob Smith (driver_id = 2):** * First half trips: Jan 10 ($100.0 / 9.0 = 11.11$), Apr 15 ($250.0 / 22.0 = 11.36$) * First half average efficiency: $(11.11 + 11.36) / 2 = 11.24$ * Second half trips: Oct 5 ($200.0 / 15.0 = 13.33$) * Second half average efficiency: 13.33 * Efficiency improvement: $13.33 - 11.24 = 2.10$ (rounded to 2 decimal places) * **Drivers not included:** * Carol Davis (driver_id = 3): Only has trips in first half (Mar, May) * David Wilson (driver_id = 4): Only has trips in second half (Jul, Nov) * Emma Brown (driver_id = 5): Only has trips in first

half (Feb)

The output table is ordered by efficiency improvement in descending order then by name 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
```