

Problem 3214: Year on Year Growth Rate

Problem Information

Difficulty: Hard

Acceptance Rate: 0.00%

Paid Only: No

Problem Description

Table:

user_transactions

```
+-----+-----+ | Column Name | Type | +-----+-----+ | transaction_id |
integer | | product_id | integer | | spend | decimal | | transaction_date | datetime |
+-----+-----+ The transaction_id column uniquely identifies each row in this table.
Each row of this table contains the transaction ID, product ID, the spend amount, and the
transaction date.
```

Write a solution to calculate the

year-on-year growth rate

for the total spend

for each product

.

The result table should include the following columns:

year

: The year of the transaction.

product_id

: The ID of the product.

curr_year_spend

: The total spend for the current year.

prev_year_spend

: The total spend for the previous year.

yoy_rate

: The year-on-year growth rate percentage, rounded to

2

decimal places.

Return

the result table ordered by

product_id

,

year

in

ascending

order

.

The result format is in the following example.

Example:

Input:

user_transactions

table:

transaction_id	product_id	spend	transaction_date
1341	123424	1500.60	2019-12-31 12:00:00
1423	123424	1000.20	2020-12-31 12:00:00
1623	123424	1246.44	2021-12-31 12:00:00
1322	123424	2145.32	2022-12-31 12:00:00

Output:

year	product_id	curr_year_spend	prev_year_spend	yoy_rate
2019	123424	1500.60	NULL	NULL
2020	123424	1000.20	1500.60	-33.35
2021	123424	1246.44	1000.20	24.62
2022	123424	2145.32	1246.44	72.12

Explanation:

For product ID 123424:

In 2019:

Current year's spend is 1500.60

No previous year's spend recorded

YoY growth rate: NULL

In 2020:

Current year's spend is 1000.20

Previous year's spend is 1500.60

YoY growth rate: $((1000.20 - 1500.60) / 1500.60) * 100 = -33.35\%$

In 2021:

Current year's spend is 1246.44

Previous year's spend is 1000.20

YoY growth rate: $((1246.44 - 1000.20) / 1000.20) * 100 = 24.62\%$

In 2022:

Current year's spend is 2145.32

Previous year's spend is 1246.44

YoY growth rate: $((2145.32 - 1246.44) / 1246.44) * 100 = 72.12\%$

Note:

Output table is ordered by

product_id

and

year

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_yoy_growth(user_transactions: pd.DataFrame) -> pd.DataFrame:
```

Solutions

MySQL Solution:

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