

Problem 3657: Find Loyal Customers

Problem Information

Difficulty: Medium

Acceptance Rate: 0.00%

Paid Only: No

Problem Description

Table:

customer_transactions

```
+-----+-----+ | Column Name | Type | +-----+-----+ | transaction_id | int  
| | customer_id | int | | transaction_date | date | | amount | decimal | | transaction_type | varchar  
| +-----+-----+ transaction_id is the unique identifier for this table. transaction_type  
can be either 'purchase' or 'refund'.
```

Write a solution to find

loyal customers

. A customer is considered

loyal

if they meet ALL the following criteria:

Made

at least

3

purchase transactions.

Have been active for

at least

30

days.

Their

refund rate

is less than

20%

.

Refund rate

is the proportion of transactions that are refunds, calculated as the number of refund transactions divided by the total number of transactions (purchases plus refunds).

Return

the result table ordered by

customer_id

in

ascending

order

.

The result format is in the following example.

Example:

Input:

customer_transactions table:

transaction_id	customer_id	transaction_date	amount	transaction_type
1	101	2024-01-05	150.00	purchase
2	101	2024-01-15	200.00	purchase
3	101	2024-02-10	180.00	purchase
4	101	2024-02-20	250.00	purchase
5	102	2024-01-10	100.00	purchase
6	102	2024-01-12	120.00	purchase
7	102	2024-01-15	80.00	refund
8	102	2024-01-18	90.00	refund
9	102	2024-02-15	130.00	purchase
10	103	2024-01-01	500.00	purchase
11	103	2024-01-02	450.00	purchase
12	103	2024-01-03	400.00	purchase
13	104	2024-01-01	200.00	purchase
14	104	2024-02-01	250.00	purchase
15	104	2024-02-15	300.00	purchase
16	104	2024-03-01	350.00	purchase
17	104	2024-03-10	280.00	purchase
18	104	2024-03-15	100.00	refund

Output:

customer_id	101	104
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Explanation:

Customer 101

:

Purchase transactions: 4 (IDs: 1, 2, 3, 4)

Refund transactions: 0

Refund rate: 0/4 = 0% (less than 20%)

Active period: Jan 5 to Feb 20 = 46 days (at least 30 days)

Qualifies as loyal

Customer 102

:

Purchase transactions: 3 (IDs: 5, 6, 9)

Refund transactions: 2 (IDs: 7, 8)

Refund rate: $2/5 = 40\%$ (exceeds 20%)

Not loyal

Customer 103

:

Purchase transactions: 3 (IDs: 10, 11, 12)

Refund transactions: 0

Refund rate: $0/3 = 0\%$ (less than 20%)

Active period: Jan 1 to Jan 3 = 2 days (less than 30 days)

Not loyal

Customer 104

:

Purchase transactions: 5 (IDs: 13, 14, 15, 16, 17)

Refund transactions: 1 (ID: 18)

Refund rate: $1/6 = 16.67\%$ (less than 20%)

Active period: Jan 1 to Mar 15 = 73 days (at least 30 days)

Qualifies as loyal

The result table is ordered by customer_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 find_loyal_customers(customer_transactions: pd.DataFrame) ->
pd.DataFrame:
```

Solutions

MySQL Solution:

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