

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

Output:

+-----+ | customer\_id | +-----+ | 101 | | 104 | +-----+

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

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