Problem 3052: Maximize Items

Problem Information

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

Problem Description

Table:

Inventory

+----------------+---------+ | Column Name | Type | +----------------+---------+ | item_id | int | | item_type | varchar | | item_category | varchar | | square_footage | decimal | +----------------+---------+ item_id is the column of unique values for this table. Each row includes item id, item type, item category and sqaure footage.

Leetcode warehouse wants to maximize the number of items it can stock in a

500,000

square feet warehouse. It wants to stock as many

prime

items as possible, and afterwards use the

remaining

square footage to stock the most number of

non-prime

items.

Write a solution to find the number of

prime

and

non-prime

items that can be

stored

in the

500,000

square feet warehouse. Output the item type with

prime_eligible

followed by

not_prime

and the maximum number of items that can be stocked.

Note:

Item

count

must be a whole number (integer).

If the count for the

not_prime

category is

0

, you should

output

0

for that particular category.

Return

the result table ordered by item count in

descending order

.

The result format is in the following example.

Example 1:

Input:

Inventory table: +---------+---------------+---------------+----------------+ | item_id | item_type | item_category | square_footage | +---------+---------------+---------------+----------------+ | 1374 | prime_eligible | Watches | 68.00 | | 4245 | not_prime | Art | 26.40 | | 5743 | prime_eligible | Software | 325.00 | | 8543 | not_prime | Clothing | 64.50 | | 2556 | not_prime | Shoes | 15.00 | | 2452 | prime_eligible | Scientific | 85.00 | | 3255 | not_prime | Furniture | 22.60 | | 1672 | prime_eligible | Beauty | 8.50 | | 4256 | prime_eligible | Furniture | 55.50 | | 6325 | prime_eligible | Food | 13.20 | +---------+---------------+---------------+----------------+

Output:

+----------------+-------------+ | item_type | item_count | +----------------+-------------+ | prime_eligible | 5400 | | not_prime | 8 | +----------------+-------------+

Explanation:

- The prime-eligible category comprises a total of 6 items, amounting to a combined square footage of 555.20 (68 + 325 + 85 + 8.50 + 55.50 + 13.20). It is possible to store 900 combinations of these 6 items, totaling 5400 items and occupying 499,680 square footage. - In the not_prime category, there are a total of 4 items with a combined square footage of 128.50. After deducting the storage used by prime-eligible items (500,000 - 499,680 = 320), there is room for 2 combinations of non-prime items, accommodating a total of 8 non-prime items within the available 320 square footage. Output table is ordered by item count in descending 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 maximize_items(inventory: pd.DataFrame) -> pd.DataFrame:
```

Solutions

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