

Problem 3401: Find Circular Gift Exchange Chains

Problem Information

Difficulty: **Hard**

Acceptance Rate: 0.00%

Paid Only: No

Problem Description

Table:

SecretSanta

+-----+-----+ | Column Name | Type | +-----+-----+ | giver_id | int | | receiver_id | int
| | gift_value | int | +-----+-----+ (giver_id, receiver_id) is the unique key for this table.

Each row represents a record of a gift exchange between two employees, giver_id represents the employee who gives a gift, receiver_id represents the employee who receives the gift and gift_value represents the value of the gift given.

Write a solution to find the

total gift value

and

length

of

circular chains

of Secret Santa gift exchanges:

A

circular chain

is defined as a series of exchanges where:

Each employee gives a gift to

exactly one

other employee.

Each employee receives a gift

from exactly

one other employee.

The exchanges form a continuous

loop

(e.g., employee A gives a gift to B, B gives to C, and C gives back to A).

Return

the result ordered by the chain length and total gift value of the chain in

descending

order

.

The result format is in the following example.

Example:

Input:

SecretSanta table:

giver_id	receiver_id	gift_value
1	2	20
2	3	30
3	1	40
4	5	25
5	4	35

Output:

chain_id	chain_length	total_gift_value
1	3	90
2	2	60

Explanation:

Chain 1

involves employees 1, 2, and 3:

Employee 1 gives a gift to 2, employee 2 gives a gift to 3, and employee 3 gives a gift to 1.

Total gift value for this chain = $20 + 30 + 40 = 90$.

Chain 2

involves employees 4 and 5:

Employee 4 gives a gift to 5, and employee 5 gives a gift to 4.

Total gift value for this chain = $25 + 35 = 60$.

The result table is ordered by the chain length and total gift value of the chain 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 find_gift_chains(secret_santa: pd.DataFrame) -> pd.DataFrame:
```

Solutions

MySQL Solution:

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