

Assignment 3.2 Practice Problem 2 (Split the Bill)

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In [2]: grp_num, = map(int, input("Enter # of People: ").split())
transaction_num = int(input("Enter # of Transactions : "))
# keep the balance of all people in grp in check, must be all 0 in the end
balance = [0 for i in range(grp_num)]

# id and transaction input
for t in range(transaction_num):
    transaction_id = input("Enter transaction name: ")
    paid_by, split_as = map(int, input("# of Payee and Payer: ").split())

    for i in range(paid_by):
        p_id, amount = map(int, input("Person ID and Amount: ").split())
        balance[p_id - 1] -= amount

    for i in range(split_as):
        p_id, amount = map(int, input("Person ID and Amount: ").split())
        balance[p_id - 1] += amount

result = [] # "the shortest path"
payee = 0

for payer in range(grp_num):
    if balance[payer] > 0:
        current_bal = balance[payer]
        while current_bal > 0 and payee < grp_num:
            if balance[payee] >= 0:
                payee += 1
                continue
            minimum_bal = min(current_bal, abs(balance[payee]))
            current_bal -= minimum_bal # update remaining balance transfer
            balance[payee] += minimum_bal # adds minimum_bal to balance[payee]
            result.append([payer + 1, payee + 1], minimum_bal) # adds to res

print("\nResult:")
for i in range(len(result)):
    print(result[i][0][0], result[i][0][1], result[i][1])
```

```
Enter # of People: 6
Enter # of Transactions : 5
Enter transaction name: #itsmylife
# of Payee and Payer: 2 3
Person ID and Amount: 1 25
Person ID and Amount: 3 15
Person ID and Amount: 4 10
Person ID and Amount: 5 25
Person ID and Amount: 6 5
Enter transaction name: #itsnow
# of Payee and Payer: 1 4
Person ID and Amount: 4 100
Person ID and Amount: 1 25
Person ID and Amount: 2 25
Person ID and Amount: 3 25
Person ID and Amount: 4 25
Enter transaction name: #ornever
# of Payee and Payer: 2 2
Person ID and Amount: 5 30
Person ID and Amount: 3 10
Person ID and Amount: 1 25
Person ID and Amount: 4 15
Enter transaction name: #iaintgonna
# of Payee and Payer: 1 3
Person ID and Amount: 2 150
Person ID and Amount: 1 50
Person ID and Amount: 2 50
Person ID and Amount: 3 50
Enter transaction name: #liveforever
# of Payee and Payer: 2 2
Person ID and Amount: 5 13
Person ID and Amount: 6 25
Person ID and Amount: 4 25
Person ID and Amount: 1 13
```

Result:

```
1 2 75
1 4 13
3 4 12
3 5 18
3 6 20
```