

# Cost Balancing



Anita and her friends represented with IDs from **1** to ***m*** went on a trip, Anita has ID number **1**. Now, they are back home and need to balance their expenses.

During the trip, they had many transactions but didn't pay equally all the time. The total expense should be balanced in a way such that, everyone pays an equal amount. Given the information of transactions, Anita needs to find who owes and who gets money.

There will be ***n*** transactions, each consists of a person's name and the amount of money he/she paid. Note that, the required payment for all might be fractional. To avoid this situation, Anita decided to pay some extra money (if needed) so that everybody has to pay a whole amount after that.

For example, if an amount of **100** units is split across **3** people(A, B and C) each has a share of 33.33 per person. To make the amount a whole number A decides to pay **1** extra unit, thus making her share to be **34** and for B and C share becomes **33** each.

## Input Format

The first line contains two space-separated integers ***n*** and ***m***, denoting total number of transactions and total number of friends in the group.

Each of the next ***n*** lines contains two space-separated integers, first one is the ID of the friend and second one denotes the amount paid.

## Constraints

- $1 \leq m \leq n \leq 50$
- $0 \leq \text{amount of money} \leq 10^3$
- ID numbers will be all the numbers from 1 to ***m***.

## Output Format

For each ID from **1** to ***m*** print a line with two space separated integers, first one is the ID of the friend and second one is the amount that person owes or gets.

## Sample Input 0

```
7 5
1 200
2 200
3 100
4 10
5 54
5 54
3 100
```

## Sample Output 0

```
1 54
2 57
3 57
4 -133
5 -35
```

## Explanation 0

Total spending of each friend is:-

IDAmount

ID Amount

1 200

2 200

3 200

4 10

5 108

Sum of Transactions =  $200 + 200 + 200 + 10 + 108 = 718$

The equity would be =  $\frac{718}{5\text{persons}} = 143.6$

**Everybody will pay a whole part**, so everybody will have to pay **143** and the total payment would be =  $5 \times 143 = 715$ . Anita will pay the extra amount of  $718 - 715 = 3$  to balance the cost.

Required payment for everybody,

Anita =  $143 + 3 = 146$

Rest of all = 143

Finally(shown in required output order):

ID Amount Final Amount

1 200 - 14654

2 200 - 14357

3 200 - 14357

4 10 - 143 -133

5 108 -143 -35