

Diamonds from space

<https://szkopul.edu.pl/problemset/problem/DiamondsFromSpace/site/?key=statement>

Alex and space

The company "Alex & sons corporation" decided to conquer the cosmos. Alex, the company's president, unfortunately does not have enough money to send his own shuttle to the moon. He has almost enough money - but still he needs to collect some. He decided to ask for the financial support of his employees, which can be even one million!

Alex, as the experienced manager, knows that nothing motivates employees as a share in profit. That is why he would like to know how much the individual branches of his company have supported his undertaking.

Kamil and time

Alex turned to Kamil, a colleague from school, to write a program that would report how much money particular branch paid for the space project.

Kamil is currently running the IT startup "Faster not possible". He used to write code in C ++, but unfortunately, he does not have time. Due to the memories of old times, he asked you, the best employee in the company "Faster you can't", to write the appropriate code.

Your mission

As you can see, your mission is extremely important. Alex is sure the shuttle will bring tons of diamonds from the moon. Kamil does not want to fail his former colleague. Employees count on shares. All eyes are turned on you!

Your task

Write program that will

- book employee payments
- write out reports

Input

In the first line there 2 numbers separated by space:

$1 \leq m \leq 10^6$ meaning number of employees in "Alex & sons corporation"

$1 \leq r \leq 10^6$ meaning number requests

In the following r lines, there are following instructions:

Request type 1:

W a b value

which means that each employee from number a to number b paid money equal *value*.

Request type 2:

P a b

which means that we have to write out sum of money that all employees from number a to number b has paid.

You can assume that:

$1 \leq a, b \leq 10^6$

Also, sum of all payments will not exceed 10^9 .

Output

Your program shall write out sum of payments for questions type P.

Example

Input

```
4 6
W 1 4 1
P 1 4
P 4 4
W 4 4 10
P 1 4
P 4 4
```

Wyjście

```
4
1
14
11
```

Author: Daniel Olkowski