A Simple Problem with Integers

Language: Default

Time Limit: 5000MS   **Memory Limit:** 131072K

Total Submissions: 145597   **Accepted:** 45278

Case Time Limit: 2000MS

Description

You have N integers, $A_1, A_2, \ldots, A_N$. You need to deal with two kinds of operations. One type of operation is to add some given number to each number in a given interval. The other is to ask for the sum of numbers in a given interval.

Input

The first line contains two numbers N and Q. $1 \le N, Q \le 100000$.
The second line contains N numbers, the initial values of $A_1, A_2, \ldots, A_N$. $-1000000000 \le A_i \le 1000000000$.
Each of the next Q lines represents an operation.
"C a b c" means adding c to each of $A_a, A_{a+1}, \ldots, A_b$. $-10000 \le c \le 10000$.
"Q a b" means querying the sum of $A_a, A_{a+1}, \ldots, A_b$.

Output

You need to answer all Q commands in order. One answer in a line.

Sample Input

```
10 5
1 2 3 4 5 6 7 8 9 10
Q 4 4
Q 1 10
Q 2 4
C 3 6 3
Q 2 4
```

Sample Output

```
4
```

```
55
9
15
```

Hint

The sums may exceed the range of 32-bit integers.

Source

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