

Binary Indexed Tree Test

Xyene is doing a contest. He comes across the following problem:

You have an array of N ($1 \leq N \leq 100\,000$) elements, indexed from 1 to N . There are M ($1 \leq M \leq 500\,000$) operations you need to perform on it.

Each operation is one of the following:

- **C** x v Change the x -th of the array to v .
- **S** l r Output the sum of all the elements from the l -th to the r -th index, inclusive.
- **Q** v Output how many elements are less than or equal to v in the array.

At any time, every element in the array is between 1 and 100 000 (inclusive).

Xyene knows that one fast solution uses a Binary Indexed Tree. He practices that data structure every day, but still somehow manages to get it wrong. Will you show him a working example?

Input Specification

The first line has N and M .

The second line has N integers, the original array.

The next M lines each contain an operation in the format described above.

Output Specification

For each **S** or **Q** operation, output the answer on its own line. Note that you may need to use 64-bit integers to store the answer.

Sample Input

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

Sample Output

```
8
12
21
12
7
9
6
```