



Problem D Gifted Kids

Ayu and Bayu are two gifted kids. At a very young age when other kids are barely starting to learn to read, Ayu and Bayu are already able to count to a large number. In particular, Ayu, the younger one is able to count up to 200 000, while Bayu, the older one, is able to perform a summation up to 10^{11} on his mind alone.

Willy, an undergraduate student who major in computer science, is sceptical about the fact that there are two young kids who are able to perform such tasks. He challenges the kids, with permission from Ayu and Bayu's parents, of course.

Willy prepares N writable walls arranged on a single line and sequentially indexed from 1 (leftmost) to N (rightmost). Each wall initially has one written number on it. Then, Willy asks the kids to perform Q tasks one by one in the given order. Each task is one of these two types.

- Type 1. Given two integers L and R ($1 \leq L \leq R \leq N$), Ayu should write the number 1 on wall L , 2 on wall $L+1$, 3 on wall $L+2$, and so on until wall R . In other words, Ayu should write the number K on wall $K+L-1$ for all $K = 1..R-L+1$. All written numbers on each wall are never erased; they are simply stacked up with the existing number on the same wall.
- Type 2. Given an integer X ($1 \leq X \leq N$), Bayu should sum all the numbers written on wall X and report the result to Willy.

For example, let there be $N = 10$ walls and the initial numbers from wall 1 to wall 10 are 4, 2, 2, 3, 7, 5, 6, 9, 1, 3, respectively. Let's say Willy gives the kids $Q = 6$ tasks in the following order (A for Type 1 and B for Type 2): A 3 7, B 6, A 5 10, A 1 8, B 6, and B 3.

```
initial : 4 2 2 3 7 5 6 9 1 3
A 3 7 :      1 2 3 4 5
-----
sum : 4 2 3 5 10 9 11 9 1 3    >> B 6 = 9
A 5 10 :          1 2 3 4 5 6
A 1 8 : 1 2 3 4 5 6 7 8
-----
sum : 5 4 6 9 16 17 21 21 6 9    >> B 6 = 17, B 3 = 6
```



In this example, the numbers reported by Bayu are 9, 17, and 6, respectively.

Willy is overwhelmed with this challenge so he asks for your help. In particular, your task is to simulate this challenge and tell Willy what are the numbers reported by Bayu.

Input

Input begins with two integers N Q ($1 \leq N, Q \leq 200\,000$) representing the number of walls and the number of tasks, respectively.

The next line contains N integers W_i ($0 \leq W_i \leq 10^9$) representing the number initially written on each wall, respectively.

The next Q lines each represents one task of the following types.

- A L R ($1 \leq L \leq R \leq N$) – This corresponds to the Type 1 task.
- B X ($1 \leq X \leq N$) – This corresponds to the Type 2 task.

It is guaranteed that there exists at least one task of Type 2.

Output

For each task of Type 2 in the input order, output in a single line the sum of all numbers written on the respective wall.

Sample Input #1

```
10 6
4 2 2 3 7 5 6 9 1 3
A 3 7
B 6
A 5 10
A 1 8
B 6
B 3
```

Sample Output #1

```
9
17
6
```



Sample Input #2

```
4 4
8 3 2 6
A 1 3
B 3
A 2 4
B 3
```

Sample Output #2

```
5
7
```

Explanation for the sample input/output #2

The following is the integers written on each wall after each query of the first type.

```
initial : 8 3 2 6
A 1 3 : 1 2 3
-----
sum : 9 5 5 6 >> B 3 = 5
A 2 4 : 1 2 3
-----
sum : 9 6 7 9 >> B 3 = 7
```

Sample Input #3

```
10 3
1 2 3 4 5 6 7 8 9 10
B 3
A 1 10
B 10
```

Sample Output #3

```
3
20
```