

Ambitious XOXO

Obs.:

Este problema utiliza uma árvore chamada "segment tree"
<https://www.geeksforgeeks.org/segment-tree-sum-of-given-range/>

A construção da árvore pode ser baseada na apresentada no "problema do torneio" (vejam os slides da aula) ou em vetor conforme link mencionado acima.

Aproveitem para aprender mais um tipo de árvore!

Life is a Growth

If we stop growing,

Technically and spiritually,

We are as good as DEAD

- Morihei Ueshiba

Our hero *XOXO_Bunnyface* is a programmer. He loves to append his name just after the precious word, "Competitive". He is not much intelligent, nor much logical. But he loves to learn new algorithms and he loves to practice.

The world he is currently living has N algorithms. You will be given an **array of efficiency** of size N , where if the i^{th} element is x , that means the initial efficiency of XOXO on that algorithm is x .

XOXO will do M tasks in this month in order. The tasks will be of two types.

1. **K X.**

That means, the efficiency of XOXO on the k^{th} algorithm will be changed to X . It's not guaranteed that the new value of k^{th} index will be greater than the initial value. The efficiency might also decrease. XOXO is a human being after all.

2. **A B**

There will be a contest arranged on which the efficiency of XOXO will be tested on the algorithms in the range between A and B inclusive. In that case, you have to tell the performance of XOXO on that contest which will be the sum of efficiencies inside that range.

Input

The first input line has two integers N and M : the number of values and tasks. The second line has N integers e_1, e_2, \dots, e_N : the values of the array of efficiency. Finally, there are M lines describing the tasks list. Each line has three integers: either

"1 K X" or "2 A B"

Output

Print the result of each query of type 2.

Constraints:

$1 \leq N, M \leq 2 \cdot 10^5$

$1 \leq e_i, X \leq 10^9$

$1 \leq k \leq N$

$1 \leq A, B \leq N$

Samples:

Input:

5 5

2 3 6 4 8

2 1 4

2 5 5

1 3 1

2 1 4

2 2 4

Output:

15

8

10

8