→ Submit?

Language: GNU G++20 13.2 (64 bit, win

Choose file: Choose File No file chosen

Submit

A. Segment with the Maximum Sum

time limit per test: 1 second

memory limit per test: 1024 megabytes

input: standard input

output: standard output

In this problem, you need to write a segment tree to find the segment with the maximum sum.

Input

The first line contains two numbers n and m ($1 \le n, m \le 100000$), the size of the array and the number of operations. The next line contains n numbers a_i, the initial state of the array ($-10^9 \le a_i \le 10^9$). The following lines contain the description of the operations. The description of each operation is as follows: i v, assign the value v to the element with index i ($0 \le i < n$, $-10^9 \le v \le 10^9$).

Output

Print $m + 1$ lines: the maximum sum of numbers on a segment before all operations and after each operation. Please note that this segment may be empty (so the sum on it will be equal to 0).

Examples

input	Copy
5 2 5 -4 4 3 -5 4 3 3 -1	

output	Copy
8 11 7	

input	Copy
4 2 -2 -1 -5 -4 1 3 3 2	

output	Copy
0 3 3	