

HOME TOP CATALOG CONTESTS GYM PROBLEMSET GROUPS RATING EDU API CALENDAR HELP

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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	Сору
5 2 5 -4 4 3 -5	
4 3	
3 -1	
output	Сору
8	
11	
7	
input	Сору
4 2	
-2 -1 -5 -4	
1 3	
3 2	
output	Сору
0	
3	
3	

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