Task 4: `BananaFarm`

After Kraw the Krow has distributed radioactive bananas to cows in Cow Village, Moosa the cow is now addicted to eating bananas. In fact, he is not the only cow that appreciates bananas. Kraw the Krow's radioactive bananas has influenced the entire cow species such that every cow now eats nothing but bananas. Although Kraw the Krow claims to have a lot of bananas, he still has a limited supply of bananas. Thus, at the present rate of cows consuming bananas, it is predicted that those bananas will run out in the near future.

In order to replenish the stockpile of bananas, the cows have decided to setup banana plantations. The banana plantation consists of N trees planted on a line from left to right. They are numbered from 1 to N from the leftmost tree through the rightmost tree. Each tree has a number of bananas growing on them and the ith tree would have B_i bananas. Radiation has caused these bananas to be mutated. As such, these mutated bananas can have up to 10^9 bananas per tree when planted in the banana plantation. Of course, there cannot be a negative number of bananas on the banana tree. Seems like mutation is not always a bad thing after all!

The harvest season is approaching and the cows have just one problem. Bananas grow on trees and they are not tall enough to reach it. Moosa's parents, Cow Pei and Cow Bu have come up with an ingenious plan to co-operate with Rar the Cat and his feline friends. The plan involves cats climbing banana trees to harvest the fruit. However, Rar the Cat and his feline friends would like something in return for their efforts.

After much deliberation, Rar the Cat has shortlisted P plans. The ith plan involves C_i cats harvesting trees labelled S_i to E_i inclusive. However, each cat can only harvest one tree at one time. Hence, only C_i trees would be harvested between the trees labelled S_i to E_i. Obviously, the cats would harvest the C_i trees within the range that would yield the largest total number of harvested bananas. Do note that since the harvesting is still in the planning stage, no bananas are actually harvested and the ith banana tree will always have B_i bananas for every single plan.

As part of the agreement, the cats would be rewarded some bananas. This amount depends on which trees the cats decide to climb, and is equal to the minimum number of bananas found in one of those trees they decide to climb. For example, consider 3 cats that are part of a plan to harvest a group of four trees, consisting of 1, 2, 3, and 5 bananas, respectively. If the three cats decide to climb the trees containing 2, 3, and 5 bananas, their reward would be 2 bananas. Otherwise, if they climb the tree containing a 1 banana and two other trees, their reward would only be 1 banana. The cats are smart, thought, and they will always decide to climb the trees that would maximize their reward. Thus, for the example above they will always climb the trees with 2, 3, and 5 bananas, and gets a reward of two bananas.

Since Rar the Cat is smart, he guarantees that the number of cats in each plan, C_i, will be positive and not exceed the number of trees in the range to be harvested. Also, all S_i will be less than or equal to E_i. However, he is not smart enough to calculate how many bananas each plan will earn the cats. As such, your task is to tell Rar the Cat the amount of bananas the cats will be rewarded with for each plan Rar the Cat has.
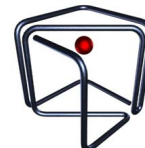
Input

Your program must read from standard input.

The first line of input will contain 2 integers, N and P.

The next line of input will contain N integers. The ith integer would be B_i, the bananas available for harvesting on the ith tree.

The subsequent P lines of input will contain 3 integers each, S_i, E_i followed by C_i, describing the ith plan whereby C_i cats would be harvesting banana trees with labels S_i to E_i inclusive.

Output

Your program must output to standard output only.

For each plan, you are to output how many bananas the cats would be rewarded with, one on each line.

Subtasks

Your program will be tested on sets of input instances that satisfies the following restrictions:

1. (13 marks) $0 < N, P \le 100,000$. However, all $S_i = 1$ and all $E_i = N$. In other words, all plans will involve harvesting all the trees in the plantation.

2. (12 marks) $0 < N, P \le 100,000$. However, all $S_i = 1$ and $C_i = 1$. In other words, all plans will only involve one cat and trees 1 to E_i inclusive.

3. (21 marks) $0 < N, P \le 100,000$. However, all $C_i = 1$. In other words, all plans will only involve one cat.

4. (21 marks) $0 < N, P \le 100,000$. However, all $C_i \le 2$. In other words, all plans will only involve one or two cats.

5. (33 marks) $0 < N, P \le 100,000$. No other restrictions apply.

Sample Testcase 1

This testcase is only valid for subtasks 1 and 5 only.

Input	Output
10 5	8
1 4 2 8 5 2 3 5 3 4	4
1 10 1	5
1 10 4	2
1 10 3	1
1 10 9	
1 10 10	

All the plans described will be harvesting all the banana trees in the plantation.

The first plan has only 1 cat, hence only tree 4 (with 8 bananas) would be harvested. Hence, the cats will get 8 bananas as their reward.

The second plan involves 4 cats. Either trees 4, 5, 8 and 2 or trees 4, 5, 8 and 10 will be harvested. In both scenarios, 8, 5, 5, 4 bananas will be harvested from the respective trees. Hence, the cats will get the lowest number of bananas, 4 as their reward.

The third plan involves 3 cats. Trees 4, 5 and 8 with bananas 8, 5 and 5 respectively would be harvested. The cats will hence be rewarded with 5 bananas.

The fourth plan involves 9 cats. All the trees except tree 1 will be harvested. Hence, the cats will be rewarded with 2 bananas.

The last plan involves 10 cats. All the banana trees will be harvested. Their reward will thus be equivalent to the minimum number of bananas on all the trees, which is 1.

Sample Testcase 2

This testcase is only valid for subtasks 2, 3, 4 and 5 only.

Input	Output
10 5	1
1 4 2 8 5 2 3 5 3 4	4
1 1 1	4
1 2 1	8
1 3 1	8
1 4 1	
1 5 1	

Sample Testcase 3

This testcase is only valid for subtasks 3, 4 and 5 only.

Input	Output
10 5	4
1 4 2 8 5 2 3 5 3 4	8
1 2 1	5
1 7 1	4
5 8 1	5
9 10 1	
7 10 1	

Sample Testcase 4

This testcase is only valid for subtasks 4 and 5 only.

Input	Output
10 5	1
1 4 2 8 5 2 3 5 3 4	2
1 2 2	5
1 3 2	3
5 8 2	4
9 10 2	
7 10 2	

Sample Testcase 5

This testcase is only valid for subtask 5 only.

Input	Output
10 5	1
1 4 2 8 5 2 3 5 3 4	3
1 1 1	4
2 7 4	2
5 10 3	1
2 10 8	
1 10 10	