COCI '15 Contest 3 #5 Nekameleoni

Time limit: 1.4s **Memory limit:** 512M

> Hey! I have an awesome task with chameleons, 5th task for Saturday's competition.
>
> Go ahead...

(...)

> That's too difficult, I have an easier one, they won't even solve that one.
>
> You are given an array of N integers from the interval $[1, K]$. You need to process M queries. The first type of query requires you to change a number in the array to a different value, and the second type of query requires you to determine the length of the shortest contiguous subarray of the current array that contains all numbers from 1 to K.
>
> Hm, I can do it in $\mathcal{O}(N^6)$. What's the limit for N?

Input Specification

The first line of input contains the integers N, K and M $(1 \leq N, M \leq 100\,000, 1 \leq K \leq 50)$. The second line of input contains N integers separated by space, the integers from the array. After that, M queries follow, each in one of the following two forms:

- `1 p v` - change the value of the p^{th} number into v $(1 \leq p \leq N, 1 \leq v \leq K)$
- `2` - what is the length of the shortest contiguous subarray of the array containing all the integers from 1 to K

In test cases worth 30% of total points, it will hold $1 \leq N, M \leq 5\,000$.

Output Specification

The output must consist of the answers to the queries of the second type, each in its own line.

If the required subarray doesn't exist, output `-1`.

Sample Input 1

```
4 3 5
2 3 1 2
2
1 3 3
2
1 1 1
2
```

Sample Output 1

```
3
-1
4
```

Sample Input 2

```
6 3 6
1 2 3 2 1 1
2
1 2 1
2
1 4 1
1 6 2
2
```

Sample Output 2

```
3
3
4
```