



Problem C

Drinking Contest

Time limit: 1 second

Memory limit: 2048 megabytes

Problem Description

H1de is on a trip to Germany for a short visit with his friends there, but visiting friends wasn't his main goal. It was around the end of September, when Oktoberfest, the most famous beer festival in the world takes place.

After drinking an unholy amount of beer, H1de started wandering around the fest, until he ran into a Drinking Contest. The rules are simple: there are n glasses of beer with different capacities arranged in a row on a long table. Contestants should start from the first glass; also, skipping glasses is considered as cheating. The winner is the person who consumes the most glasses without vomiting. The contest would be running once a day for the rest of Oktoberfest, so H1de decided to participate every day until his departure.

To make the contest a bit more interesting, the organizers would slightly change the capacity of a certain glass every next day, setting the capacity of the x -th glass in to y units, and the amount H1de can drink may also change from day to day as well. Determine how many unit of beer at most he can enjoy and not vomit to death for each day.

Input Format

The first line contains two integers n and k which represent the size of the beer array and the initial amount H1de can drink. The following line contains n integers a_1, a_2, \dots, a_n which are the initial contents of the beer array. The next line contains one integer q which is the number of days H1de will be joining the contest. Finally, there are q lines describing the changes for each day. Each line is either in the format $1 \ x \ y$ or $2 \ v$, representing either changing the value of a_x to y or setting the value of k to v , respectively.

Output Format

q lines of output are required, each line with one integer indicateing the most units of beer H1de could enjoy and not suffer from eternal pain for vomiting each day.

Technical Specification

- $1 \leq n, q \leq 2 \times 10^5$
- $1 \leq x \leq n$
- $\forall i \in [1, N], 1 \leq a_i, k, y, val \leq 10^9$

Sample Input 1

5 16



```
4 3 5 7 2
6
1 2 2
2 10
2 20
1 2 8
1 1 21
1 1 4
```

Sample Output 1

```
11
6
20
17
0
17
```