

Solitaris

Problem ID: solitaris

Greg is an intergalactic adventurer and biologist who is always on the hunt to discover new species. He is currently on the planet of Solitaris, which is said to be inhabited by a mythical creature. Greg has heard that the creature is most likely to reside in low-altitude areas, whether it be on land or in water.

Greg has noted all the places where the mythical creature has allegedly been spotted by other travelers. More importantly, he has noted the altitude of all these places. Greg regularly goes on expeditions in different areas of Solitaris. To make his expeditions less time-consuming, Greg plans to prepare each expedition by finding the point with the lowest altitude in the given area, since this is where the creature is most likely to be found.

You are also interested in the mythical creature and have offered to help Greg in his search. Greg therefore sends you a list of the altitude of all the points where the creature has been spotted. Greg agrees with you that every time he starts a new expedition, he sends you an interval between the first and last point he can search in the area he is going to, and your task is to find the lowest altitude in that range so Greg knows where to search.

This task is slightly complicated by the fact that Solitaris' terrain is ever-changing. When Greg landed on the planet it was completely flat, meaning that all points of interest in the list you received from him have the same altitude. However, frequent earthquakes cause the altitude of different points on the planet to change. Greg has promised to send you a message every time an earthquake causes any of the points in his list to change in altitude.

Input

The first line of input consists of three integers. Firstly, the number of points of interest, $1 \leq N \leq 100\,000$. Secondly, the number of earthquakes and/or expeditions, $1 \leq O \leq 100\,000$. Thirdly, the initial altitude of all points of interest, $-10\,000 \leq S \leq 10\,000$. The first line of input is followed by O lines each consisting of an operation, either “quake” or “expedition”:

- A “quake” is followed by 2 integers i and v . $1 \leq i \leq N$ is the point that has changed in altitude and $-10\,000 \leq v \leq 10\,000$ is the new altitude.
- An “expedition” is followed by 2 integers, s and e , which represent the start and end point of interest in the expedition. The following can be assumed about the size of s and e : $1 \leq s \leq e \leq N$.

Output

Output for each expedition the lowest altitude in the given interval on a new line. That is, output the altitude of the point where the creature is most likely to be found in that area.

Sample Input 1

```
9 5 5
quake 2 -175
quake 4 3
expedition 1 6
expedition 3 4
expedition 2 6
```

Sample Output 1

```
-175
3
-175
```

Sample Input 2

```
6 6 789
expedition 3 4
quake 3 -300
expedition 3 4
expedition 5 6
quake 4 -3002
expedition 1 6
```

Sample Output 2

```
789
-300
789
-3002
```