# D. First element at least X - 2

time limit per test: 1 second
memory limit per test: 1024 megabytes
input: standard input
output: standard output

In this task, you need to add to the segment tree the operation of finding for the given $x$ and $l$ the minimum index $j$ such that $j \geq l$ and $a[j] \geq x$.

## Input

The first line contains two integers $n$ and $m$ ($1 \leq n, m \leq 100000$), the size of the array and the number of operations. The next line contains $n$ numbers $a_i$, the initial state of the array ($0 \leq a_i \leq 10^9$). The following lines contain the description of the operations. The description of each operation is as follows:

- 1 $i$ $v$: change the item with index $i$ to $v$ ($0 \leq i < n, 0 \leq v \leq 10^9$).
- 2 $x$ $l$: find the minimum index $j$ such that $j \geq l$ and $a[j] \geq x$ ($0 \leq x \leq 10^9, 0 \leq l < n$). If there is no such element, print $-1$. Indices start from 0.

## Output

For each operation of the second type, print the answer for the query.

## Example

**input** Copy

```
5 7
1 3 2 4 3
2 3 0
2 3 2
1 2 5
2 4 1
2 5 4
1 3 7
2 6 1
```

**output** Copy

```
1
3
2
-1
3
```