Task A. Increasing Priority (1 point)

The maximum heap is given and requests are executed on it.

The query is given by two integers i and x. It is required to increase the value of the i-th element of the heap by x and perform *SiftUp* to restore the heap.

Input format

The first line contains the heap size N ($1 \leq N \leq 10^5$).

The second line introduces the heap itself – N different integers, each of which modulo does not exceed 10^9. It is guaranteed that these numbers make up the correct maximum heap.

The third line introduces the number M ($0 \leq M \leq 10^5$) – the number of requests.

The following M lines introduce the queries themselves, one per line.

It is guaranteed that $1 \leq i \leq N$, $x \geq 0$, the new value of the heap element does not exceed 10^9 and differs from the current values of all other elements of the heap.

Output format

As a response to the query, it is required to display one number in a separate line – the number of the heap element in which the changed element turned out after *SiftUp*.

In addition, after all the requests have been completed, it is necessary to display the heap in its final state.

Sample input:

```
6
12 6 8 3 4 7
2
5 11
3 6
```

Sample output:

```
1
3
15 12 14 3 6 7
```