

IOI Training Camp 2018 Practice Test 5

Sereja Array

Sereja have array that consist of n integers $a_1 \leq a_2 \leq \dots \leq a_n$. Now Sereja have m queries as pair of two integers t and d . Answer for query will be minimal integer i such that exist some k ($i \leq k$) for which $a_i + d \geq a_{i+1}, a_{i+1} + d \geq a_{i+2}, \dots, a_{k-1} + d \geq a_k, a_k \leq t$ and $a_{k+1} \geq t$ (if it exists).

Help Sereja, find the answer for each query.

Input

First line of input contain integer n . Next line contain n integers a_1, a_2, \dots, a_n . Next line contain integer m . Next m lines contain pairs of integers — queries.

Output

For each query output answer.

General Constraints

Unless otherwise mentioned, the following constraints are met throughout all subtasks:

- $1 \leq n, m \leq 10^5$
- $1 \leq a_i \leq 10^6$
- $a_i \leq t \leq 10^6$
- $0 \leq d \leq 10^6$

Subtasks

Subtask 1 (30 Points):

- $1 \leq n, m \leq 10^4$

Subtask 2 (70 Points):

- No further constraints.

Sample Input 1

```
5
1 2 3 10 50
6
1 1
5 3
11 7
100000 1
1000000 1000000
11 6
```

Sample Output 1

1
1
1
5
1
4

Limits

Time: 2 seconds

Memory: 512 MB