Sereja and D | Problem Code: **SEAD**

https://www.codechef.com/problems/SEAD

Sereja have array that consist of n integers $a_1 \le a_2 \le ... \le a_n$. 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 ($i \le k$) for which $a_i + d \ge a_{i+1}$, $a_{i+1} + d \ge a_{i+2}$, ..., $a_{k-1} + d \ge a_k$, $a_k \le t$ and $a_{k+1} > t$ (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, ..., a_n. Next line contain integer m. Next m lines contain pairs of integers — queries.

Output
For each query output answer.

Constraints

- $1 \le n, m \le 10^5$.
- $1 \le a_i \le 10^6$
- $a_1 \le t \le 10^6$
- $0 \le d \le 10^6$

Example

Input
5
1 2 3 10 50
6
1 1
5 3
11 7
100000 1
1000000 1000000
11 6
Output
1
1
1
5
1
4

For **30 points (tests 0..20)** $1 \le n, m \le 10000$.

For **70 points (tests 21..33)** $1 \le n, m \le 100000$.