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E. Turtle vs. Rabbit Race: Optimal Trainings

time limit per test: 5 seconds memory limit per test: 256 megabytes input: standard input output: standard output

Isaac begins his training. There are n running tracks available, and the i-th track ($1 \le i \le n$) consists of a_i equal-length sections.

Given an integer u ($1 \le u \le 10^9$), finishing each section can increase Isaac's ability by a certain value, described as follows:

- Finishing the 1-st section increases Isaac's performance by u.
- Finishing the 2-nd section increases Isaac's performance by u-1.
- Finishing the 3-rd section increases Isaac's performance by u=2.
- ..
- Finishing the k-th section ($k \geq 1$) increases Isaac's performance by u+1-k. (The value u+1-k can be negative, which means finishing an extra section decreases Isaac's performance.)

You are also given an integer l. You must choose an integer r such that $l \leq r \leq n$ and Isaac will finish **each** section of **each** track $l, l+1, \ldots, r$ (that is, a total of $\sum_{i=l}^r a_i = a_l + a_{l+1} + \ldots + a_r$ sections).

Answer the following question: what is the optimal r you can choose that the increase in Isaac's performance is maximum possible?

If there are multiple r that maximize the increase in Isaac's performance, output the $\mathbf{smallest}$ r.

To increase the difficulty, you need to answer the question for q different values of l and u.

Input

The first line of input contains a single integer t ($1 \le t \le 10^4$) — the number of test cases.

The descriptions of the test cases follow.

The first line contains a single integer n ($1 \le n \le 10^5$).

The second line contains n integers a_1, a_2, \ldots, a_n $(1 \le a_i \le 10^4)$.

The third line contains a single integer q ($1 \le q \le 10^5$).

The next q lines each contain two integers l and u ($1 \le l \le n, 1 \le u \le 10^9$) — the descriptions to each query.

The sum of n over all test cases does not exceed $2 \cdot 10^5$. The sum of q over all test cases does not exceed $2 \cdot 10^5$.

Output

For each test case, output q integers: the i-th integer contains the optimal r for the i-th query. If there are multiple solutions, output the **smallest** one.

Example

input

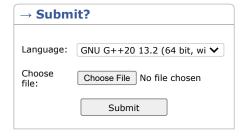
Finished Practice

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```
3 1 4 1 5 9
3
1 8
2 7
5 9
10
1
1 1
5 10 9 6 8 3 10 7 3
8 56
1 12
9 3
1 27
5 45
5
7 9 2 5 2
10
1 37
2 9
3 33
4 32
4 15
2 2
4 2
2 19
3 7
2 7
10
9 1 6 7 6 3 10 7 3 10
10 43
3 23
9 3
6 8
5 14
output
                                                                                  Сору
3 4 5
9 2 9 4 9
5 2 5 5 5 2 4 5 4 2
```

10 6 9 7 7 **Note**

For the 1-st query in the first test case:

- By choosing r=3, Isaac finishes $a_1+a_2+a_3=3+1+4=8$ sections in total, hence his increase in performance is
 - $u + (u 1) + \dots + (u 7) = 8 + 7 + 6 + 5 + 4 + 3 + 2 + 1 = 36.$ By choosing r = 4 is acclinishes $a_1 + a_2 + a_3 + a_4 = 3 + 1 + 4 + 1 = 9$ sec
- By choosing r=4, Isaac finishes $a_1+a_2+a_3+a_4=3+1+4+1=9$ sections in total, hence his increase in performance is $u+(u-1)+\ldots+(u-8)=8+7+6+5+4+3+2+1+0=36$.

Both choices yield the optimal increase in performance, however we want to choose the **smallest** r. So we choose r=3.

For the 2-nd query in the first test case, by choosing r=4, Isaac finishes $a_2+a_3+a_4=1+4+1=6$ sections in total, hence his increase in performance is $u+(u-1)+\ldots+(u-5)=7+6+5+4+3+2=27$. This is the optimal increase in performance.

For the 3-rd query in the first test case:

- By choosing r=5, Isaac finishes $a_5=5$ sections in total, hence his increase in performance is $u+(u-1)+\ldots+(u-4)=9+8+7+6+5=35$.
- By choosing r=6, Isaac finishes $a_5+a_6=5+9=14$ sections in total, hence his increase in performance is

$$u + (u - 1) + \ldots + (u - 13) = 9 + 8 + 7 + 6 + 5 + 4 + 3 + 2 + 1 + 0 + (-1) + (-2) + (-3) + (-4) = 35$$

Both choices yield the optimal increase in performance, however we want to choose the ${
m smallest}\ r.$ So we choose r=5.

Hence the output for the first test case is [3,4,5].

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