Ostriches

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	256 megabytes

In a savanna, there is a group of n ostriches standing in a line near a waterhole to quench their thirst. Their heights $h_1, h_2, \ldots, h_n$ are given in the exact order in which they stand by the waterhole. A researcher decided to use this opportunity to photograph the ostriches.

The researcher can take a photo of any consecutive group of ostriches. A photo is considered **beautiful** if it contains exactly one ostrich with the highest height, which exceeds the heights of all other ostriches in the photo.

The researcher needs to photograph exactly m ostriches and minimize the number of photos taken. Naturally, he wants all his photos to be beautiful. Additionally, each ostrich must appear in at most one photo. However, the researcher is not yet sure about the value of m, so he became curious about the solution for q different values of m. Help the researcher find the optimal way to take photos for each of these cases.

Input

The first line contains a single integer n ($1 \le n \le 5 \times 10^5$) — the number of ostriches.

The second line contains n integers $h_1, h_2, \ldots, h_n$ ($1 \le h_i \le n$) — the heights of the ostriches in the exact order they are lined up.

The third line contains a single integer q ($1 \le q \le 5 \times 10^5$) — the number of cases.

Each of the next q lines contains a single integer m ($1 \le m \le n$) — the number of ostriches to photograph.

Output

You have to output q lines, each containing a single integer — the minimum number of beautiful photos required for each case.

Scoring

This problem contains 7 subtasks.

Subtask	Additional Constraints	Points
0	Examples	0
1	$q = 1, m = n$	11
2	$n \le 20, q \le 20$	11
3	Every number x ($1 \le x \le n$) appears at most twice among $h_1, h_2, \ldots, h_n$	11
4	$n \le 100, q \le 100$	15
5	$n \le 5000, q \le 5000$	18
6	$q = 1$	13
7	—	21

Example

standard input	standard output
6 1 2 1 2 1 2 3 2 5 6	1 2 3

Note

Let's consider an example.

In the first case, $m = 2$. One photo can capture the ostriches with indexes $[1, 2]$.

In the second case, $m = 5$. The first photo can capture the ostriches with indexes $[1, 2, 3]$, and the second photo can capture the ostriches with indexes $[4, 5]$.

In the third case, $m = 6$. For example, three photos can be taken: $[1, 2]$, $[3, 4, 5]$, and $[6]$. There are also other ways to take 3 photos in this case.