

Problem G. Permutation CFG

Input file: *standard input*
Output file: *standard output*
Time limit: 7 seconds
Memory limit: 1024 mebibytes

Consider a permutation of the integers 1 to n . Now, consider each number 1 through n to be a non-terminal in a Context-Free Grammar (CFG). Each number k expands a list of the integers from 1 to k in the order of the permutation. For example, if $n = 4$ and the permutation is 1 4 3 2:

$1 \Rightarrow 1$
 $2 \Rightarrow 1\ 2$
 $3 \Rightarrow 1\ 3\ 2$
 $4 \Rightarrow 1\ 4\ 3\ 2$

Now, consider a process of starting with n , and at each step, applying these rules to create a new list of integers. In the above example, at the first step:

$$\begin{array}{c} 4 \\ \underbrace{\hspace{1.5cm}} \\ 1\ 4\ 3\ 2 \end{array}$$

At the second step:

$$\begin{array}{cccc} \underbrace{1} & \underbrace{4} & \underbrace{3} & \underbrace{2} \\ 1 & 1\ 4\ 3\ 2 & 1\ 3\ 2 & 1\ 2 \end{array}$$

At the third step:

$$\begin{array}{cccccccccccc} \underbrace{1} & \underbrace{1} & \underbrace{4} & \underbrace{3} & \underbrace{2} & \underbrace{1} & \underbrace{3} & \underbrace{2} & \underbrace{1} & \underbrace{2} \\ 1 & 1 & 1\ 4\ 3\ 2 & 1\ 3\ 2 & 1\ 2 & 1 & 1\ 3\ 2 & 1\ 2 & 1 & 1\ 2 \end{array}$$

Given a permutation, a number of steps, and a list of queries asking for the number of occurrences of a particular integer in a prefix of the list created by the process, answer all of the queries.

Input

The first line of input contains three integers, n ($2 \leq n \leq 10^5$), s ($1 \leq s \leq 5$) and q ($1 \leq q \leq 2 \cdot 10^5$), where n is the size of the permutation, s is the number of steps to apply the process, and q is the number of queries.

Each of the next n lines contains a single integer p ($1 \leq p \leq n$). This is the permutation, in order. All of the values of p will be distinct.

Each of the next q lines contains two integers k ($1 \leq k \leq n$) and a ($1 \leq a \leq 10^9$, a will not exceed the length of the final list). This is a query for the number of occurrences of the integer k in the first a elements of the list created by the process.

Output

Output q lines, each with a single integer, which are the answers to the queries in the order that they appear in the input.

Example

standard input	standard output
4 3 6	3
1	6
4	0
3	1
2	2
1 6	8
2 20	
4 1	
3 5	
2 9	
1 16	