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:

$1 \implies 1$
$2 \implies 1\ 2$
$3 \implies 1\ 3\ 2$
$4 \implies 1\ 4\ 3\ 2$

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:

$$\overbrace{1\ 4\ 3\ 2}^{4}$$

At the second step:

$$\overbrace{1}^{1}\ \overbrace{1\ 4\ 3\ 2}^{4}\ \overbrace{1\ 3\ 2}^{3}\ \overbrace{1\ 2}^{2}$$

At the third step:

$$\overbrace{1}^{1}\ \overbrace{1}^{1}\ \overbrace{1\ 4\ 3\ 2}^{4}\ \overbrace{1\ 3\ 2}^{3}\ \overbrace{1\ 2}^{2}\ \overbrace{1}^{1}\ \overbrace{1\ 3\ 2}^{3}\ \overbrace{1\ 2}^{2}\ \overbrace{1}^{1}\ \overbrace{1\ 2}^{2}$$

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 ($2 \le n \le 10^5$), s ($1 \le s \le 5$) and q ($1 \le q \le 2 \cdot 10^5$), 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 ($1 \le p \le n$). 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 ($1 \le k \le n$) and a ($1 \le a \le 10^9$, 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 1 4 3 2 1 6 2 20 4 1 3 5 2 9 1 16	3 6 0 1 2 8