

Problem F Function

Time limit: 3 seconds

Memory limit: 256 megabytes

Problem Description

Given a function $f : \{1, \dots, n\} \rightarrow \{1, \dots, n\}$. For an non-negative integer k , we define

$$f^k(x) = \begin{cases} x, & k = 0 \\ f^{k-1}(f(x)), & k > 0 \end{cases}$$

Write a program to evaluation $f^k(x)$ efficiently.

Input Format

The first line of the input contains an integer t ($t \leq 25$). Each test case consists of three parts.

The first part is a line containing two integers n and q separated by a blank. n is no more than 50000, and q is no more than 10000.

The second part is a line containing n integers $f(1), \dots, f(n)$ separated by blanks.

The third part is q lines representing the queries. Each of them consists of two integers k ($0 \leq k \leq 10^9$) and x ($1 \leq x \leq n$).

Output Format

For each query, output $f^k(x)$ on a line.

Sample Input

```
3
3 1
1 2 3
55555555 2
4 2
2 1 4 3
5 4
4 2
5 1
2 3 4 5 1
10 4
```

Sample Output

```
2
3
2
4
```