

## A. Fibonotci

time limit per test: 2 seconds  
memory limit per test: 256 megabytes  
input: standard input  
output: standard output

Fibonotci sequence is an integer recursive sequence defined by the recurrence relation

$$F_n = s_{n-1} \cdot F_{n-1} + s_{n-2} \cdot F_{n-2}$$

with

$$F_0 = 0, F_1 = 1$$

Sequence  $s$  is an infinite and almost cyclic sequence with a cycle of length  $N$ . A sequence  $s$  is called almost cyclic with a cycle of length  $N$  if, for  $i \geq N$ , except for a finite number of values  $s_i$ , for which  $(i \geq N)$ .

Following is an example of an almost cyclic sequence with a cycle of length 4:

$$s = (5, 3, 8, 11, 5, 3, 7, 11, 5, 3, 8, 11, \dots)$$

Notice that the only value of  $s$  for which the equality does not hold is  $s_6$  ( $s_6 = 7$  and  $s_2 = 8$ ). You are given  $s_0, s_1, \dots, s_{N-1}$  and all the values of sequence  $s$  for which  $(i \geq N)$ .

Find .

### Input

The first line contains two numbers  $K$  and  $P$ . The second line contains a single number  $N$ . The third line contains  $N$  numbers separated by spaces, that represent the first  $N$  numbers of the sequence  $s$ . The fourth line contains a single number  $M$ , the number of values of sequence  $s$  for which . Each of the following  $M$  lines contains two numbers  $j$  and  $v$ , indicating that and  $s_j = v$ . All  $j$ -s are distinct.

- $1 \leq N, M \leq 50000$
- $0 \leq K \leq 10^{18}$
- $1 \leq P \leq 10^9$
- $1 \leq s_i \leq 10^9$ , for all  $i = 0, 1, \dots, N-1$
- $N \leq j \leq 10^{18}$
- $1 \leq v \leq 10^9$
- All values are integers

### Output

Output should contain a single integer equal to .

### Examples

input
10 8 3 1 2 1 2 7 3 5 4
output
4