→ Submit?

Language: GNU G++20 13.2 (64 bit, win

Choose file: Choose File No file chosen

Submit

B. Cryptography

time limit per test: 2 seconds

memory limit per test: 1024 megabytes

Given n matrices $A_1, A_2, \ldots, A_n$ of size 2×2. You need to calculate the product of the matrices $A_i, A_{i+1}, \ldots, A_j$ for several queries. All calculations are performed modulo r.

Input

The first line of the input file contains integers r ($1 \le r \le 10\,000$), n ($1 \le n \le 200\,000$), and m ($1 \le m \le 200\,000$). The following n blocks are two lines each containing two integers, the matrix descriptions. Then follow m pairs of integers from 1 to n, requests for a product on a segment.

Output

Print m blocks of two lines, two integers in each: products on segments. Separate blocks with an empty string. All calculations are performed modulo r.

Example

input Copy

```
3 4 4
0 1
0 0

2 1
1 2

0 0
0 2

1 0
0 2

1 4
2 3
1 3
2 2
```

output Copy

```
0 2
0 0

0 2
0 1

0 1
0 0

2 1
1 2
```