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CUSTOM INVOCATION STEP 1 STEP 2 STEP 3 STEP 4 | THEORY PRACTICE | SUBMIT SUBMISSIONS HACKS STANDINGS ITMO Academy: pilot course » Segment Tree, part 1 » Step 4 » Practice

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 imes 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

3 4 4 0 1 0 0 2 1 1 2
2 1 1 2
1 2
0 0
0 0 0 2
1 0
1 0 0 2
1 4 2 3 1 3
2 3
1 3
2 2
output
0 2
0 0
0 2
0 2 0 1
0 1 0 0
2 1
2 1 1 2

→ Submit? Language: GNU G++20 13.2 (64 bit, win **∨** Choose Choose File No file chosen file: Submit

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