FeetS

Astro lost his right leg again during a mission. Now he needs to go to the Alley of Legs to get a new one. The alley is a table made up of N rows and M columns.

Astro is currently in the upper left corner which is numbered (1;1). To the right of him is cell (1;2) and below him is cell (2;1) and so forth. In the Alley there are Q legs and leg number i is in cell $(x_i;y_i)$. Astro also knows that there aren't any two legs in the same cell.

Because it is custom for a person to not stick around in the Alley of Legs more than necessary, Astro is planning to take a shortest path to cell (N;M), where the exit is. That means he can only move down or right. Since the legs are radioactive, they stick to Astro as soon as he enters the cell. He's tried walking with more than one leg, but he doesn't like it. That's why he wants to take only one leg before he leaves the Alley.

For given N,M,Q and the coordinates x_i,y_i of the legs, find the amount of shortest paths from (1;1) to (N;M) , which go through **exactly one** leg. Print the number modulo 77726557.

Input

The first line of the file **feetS.in** contains N,M and Q – the amount of rows and columns in the Alley and the amount of legs. Each of the next Q lines contain two numbers x_i , y_i – the coordinates of the leg.

Output

On the only line of the file **feetS.out** print 1 number – the desired number of paths modulo 77726557.

Constrains

$1 \leq N, M \leq 10^6$

$0 \leq Q \leq 3000$

$1 \leq x_i \leq N$

$1 \leq y_i \leq M$

Time Limit: 0.75 sec.

Memory Limit: 256 MB.

FeetS

2024/2025 SEASON – SIXTH ROUND
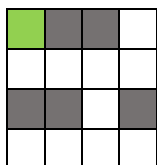
Sample Tests
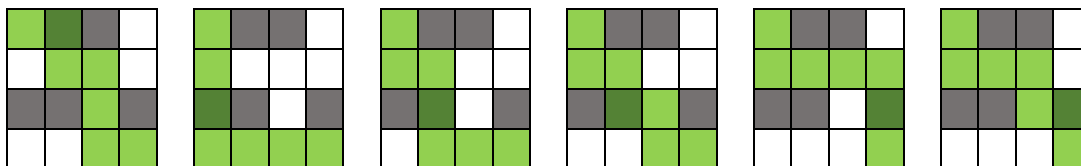
Input (feetS.in)	Output (feetS.out)
4 4 5 3 1 3 4 1 3 1 2 3 2	6
1234 1432 6 967 1208 1175 1270 1213 42 750 1405 314 93 879 1411	13987245

Sample Explanations

The legs are marked in gray and Astro is in green. The alley in the first test looks like this:

The 6 paths are:

In the second test, the answer isn't the actual number, but it by modulo 77726557.