

Counting Paths

Lab Exam 2 - Batch 1

Computer Programming

Date: 23 October, 2019

Problem Code: **B1P2** [20 Marks]

Problem Statement: You are given a $N \times N$ grid starting from $(1,1)$ to (N,N) . You start at $(1,1)$ and have to go to (N,N) by only moving upwards or to the right. However, you have K points which are blocked and you are not allowed to pass through them. You are required to count the total number of valid paths that exist from $(1,1)$ to (N,N) . Since this number can be large, report it modulo $10^9 + 7$.

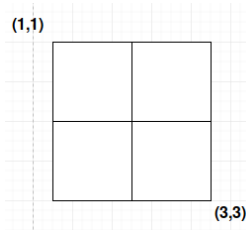


Figure 1: Example of a 3x3 grid

Input

First line of input is N and K , denoting the size of the grid and the number of blocked points respectively. The next K lines have 2 integers x and y the locations of the blocked points.

Output

You should output a single integer denoting the total number of paths modulo $10^9 + 7$

Constraints

$$1 \leq N, K \leq 10^3$$

$$1 \leq x, y \leq N$$

Subtasks

Subtask 1(8 marks): $K = 0$ (i.e no points are blocked)

Subtask 2(12 marks): Original Constraints

Time Limit: 1 sec

Memory Limit: 256 MB

Sample Test Case

Input	Output
3 2 1 2 2 3	2