Counting Paths

Lab Exam 2

Computer Programming
Date: 25 November, 2019

Problem Code: **P3 [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 downwards 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 $10^9 + 7$.
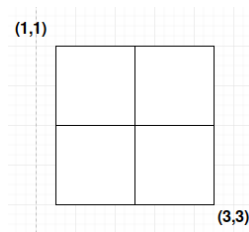

Figure 1: Example of a 3x3 grid

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
$1 \le N, K \le 10^3$
$1 \le x, y \le N$

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