

Problem 576: Out of Boundary Paths

Problem Information

Difficulty: Medium

Acceptance Rate: 48.30%

Paid Only: No

Tags: Dynamic Programming

Problem Description

There is an $m \times n$ grid with a ball. The ball is initially at the position $[startRow, startColumn]$. You are allowed to move the ball to one of the four adjacent cells in the grid (possibly out of the grid crossing the grid boundary). You can apply **at most** $maxMove$ moves to the ball.

Given the five integers m , n , $maxMove$, $startRow$, $startColumn$, return the number of paths to move the ball out of the grid boundary. Since the answer can be very large, return it **modulo** $10^9 + 7$.

Example 1:



Input: $m = 2, n = 2, maxMove = 2, startRow = 0, startColumn = 0$ **Output:** 6

Example 2:



Input: $m = 1, n = 3, maxMove = 3, startRow = 0, startColumn = 1$ **Output:** 12

Constraints:

$1 \leq m, n \leq 50$ $0 \leq maxMove \leq 50$ $0 \leq startRow < m$ $0 \leq startColumn < n$

Code Snippets

C++:

```
class Solution {  
public:  
    int findPaths(int m, int n, int maxMove, int startRow, int startColumn) {  
  
    }  
};
```

Java:

```
class Solution {  
    public int findPaths(int m, int n, int maxMove, int startRow, int  
        startColumn) {  
  
    }  
}
```

Python3:

```
class Solution:  
    def findPaths(self, m: int, n: int, maxMove: int, startRow: int, startColumn:  
        int) -> int:
```