

Programación Competitiva

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1. Minimal Falling Path Sum II

Given a square grid of integers `arr`, a *falling path with non-zero shifts* is a choice of exactly one element from each row of `arr`, such that no two elements chosen in adjacent rows are in the same column.

Return the minimum sum of a falling path with non-zero shifts.

Input: a Output:

`[[1,2,3],`

`[4,5,6],`

`[7,8,9]]`

Minimal Falling Path Sum II

- ▶ <https://leetcode.com/problems/minimum-falling-path-sum-ii/>

2. Climbing Stairs

You are climbing a stair case. It takes n steps to reach to the top.

Each time you can either climb 1 or 2 steps. In how many distinct ways can you climb to the top?

Input: $n = 3$

Output: 3

Explanation: There are three ways to climb to the top.

1. 1 step + 1 step + 1 step
2. 1 step + 2 steps
3. 2 steps + 1 step

2. Climbing Stairs

<https://leetcode.com/problems/climbing-stairs/>

3. Min Cost Climbing Chairs

You are given an integer array `cost` where `cost[i]` is the cost of *i*th step on a staircase. Once you pay the cost, you can either climb one or two steps.

You can either start from the step with index 0, or the step with index 1.

Return the minimum cost to reach the top of the floor.

Input: `cost = [1, 100, 1, 1, 1, 100, 1, 1, 100, 1]`

Output: 6

Explanation: `[1, 100, 1, 1, 1, 100, 1, 1, 100, 1]`

Min Cost Climbing Chairs

<https://leetcode.com/problems/min-cost-climbing-stairs/>

4. Unique Path II:

- ▶ A robot is located at the top-left corner of a $m \times n$ grid.
- ▶ The robot can only move either down or right at any point in time. The robot is trying to reach the bottom-right corner of the grid

Input: `obstacleGrid = [[0,0,0],
 [0,1,0],
 [0,0,0]]`

Output: 2

Explanation: There is one obstacle in the middle of the 3x3 grid above.

There are two ways to reach the bottom-right corner:

1. Right -> Right -> Down -> Down
2. Down -> Down -> Right -> Right

Unique Path II:

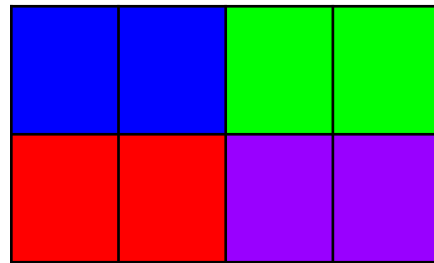
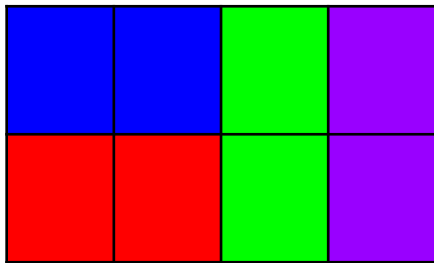
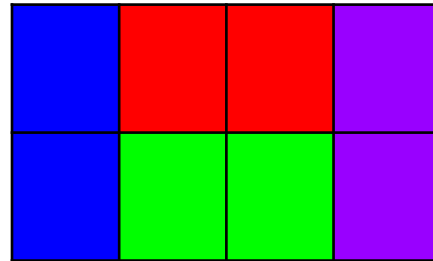
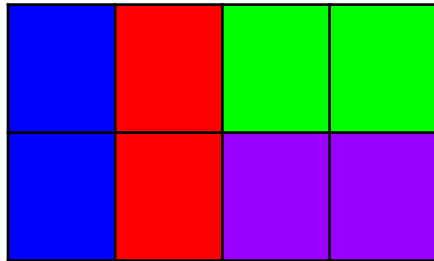
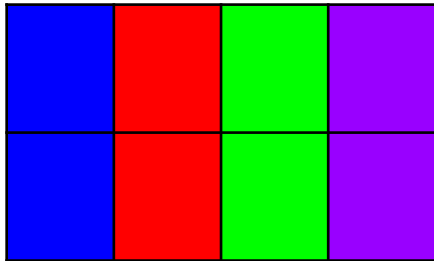
- ▶ <https://leetcode.com/problems/unique-paths-ii/>

5. Tiling

Using only 1 by 2 dominos, how many ways are there to fill a 2 by N board.

Tiling

Using only 1 by 2 dominos, how many ways are there to fill a 2 by N board.



6. Number of Longest Increasing Subsequence

- ▶ Given an integer array `nums`, return the length of the longest strictly increasing subsequence.
- ▶ A subsequence is a sequence that can be derived from an array by deleting some or no elements without changing the order of the remaining elements. For example, `[3,6,2,7]` is a subsequence of the array `[0,3,1,6,2,2,7]`

Input: `nums = [10,9,2,5,3,7,101,18]`

Output: 4

Explanation: The longest increasing subsequence is `[2,3,7,101]`, therefore the length is 4.

Number of Longest Increasing Subsequence

- ▶ <https://leetcode.com/problems/longest-increasing-subsequence/>