Problem 1931: Painting a Grid With Three Different Colors

Problem Information

Difficulty: Hard
Acceptance Rate: 77.91%
Paid Only: No
Tags: Dynamic Programming

Problem Description

You are given two integers `m` and `n`. Consider an `m x n` grid where each cell is initially white. You can paint each cell **red** , **green** , or **blue**. All cells **must** be painted.

Return _the number of ways to color the grid with**no two adjacent cells having the same color**_. Since the answer can be very large, return it **modulo** `109 + 7`.

Example 1:

Input: m = 1, n = 1 **Output:** 3 **Explanation:** The three possible colorings are shown in the image above.

Example 2:

Input: m = 1, n = 2 **Output:** 6 **Explanation:** The six possible colorings are shown in the image above.

Example 3:

Input: m = 5, n = 5 **Output:** 580986

Constraints:

* `1 <= m <= 5` * `1 <= n <= 1000`

Code Snippets

C++:

```
class Solution {
public:
int colorTheGrid(int m, int n) {

}
};
```

Java:

```
class Solution {
public int colorTheGrid(int m, int n) {

}
}
```

Python3:

```
class Solution:
def colorTheGrid(self, m: int, n: int) -> int:
```