Problem 2320: Count Number of Ways to Place Houses

Problem Information

Difficulty: Medium
Acceptance Rate: 43.38%
Paid Only: No
Tags: Dynamic Programming

Problem Description

There is a street with `n * 2` **plots** , where there are `n` plots on each side of the street. The plots on each side are numbered from `1` to `n`. On each plot, a house can be placed.

Return _the number of ways houses can be placed such that no two houses are adjacent to each other on the same side of the street_. Since the answer may be very large, return it **modulo** `109 + 7`.

Note that if a house is placed on the `ith` plot on one side of the street, a house can also be placed on the `ith` plot on the other side of the street.

Example 1:

Input: n = 1 **Output:** 4 **Explanation:** Possible arrangements: 1. All plots are empty. 2. A house is placed on one side of the street. 3. A house is placed on the other side of the street. 4. Two houses are placed, one on each side of the street.

Example 2:

Input: n = 2 **Output:** 9 **Explanation:** The 9 possible arrangements are shown in the diagram above.

Constraints:

* `1 <= n <= 104`

Code Snippets

C++:

```
class Solution {
public:
int countHousePlacements(int n) {

}
};
```

Java:

```
class Solution {
public int countHousePlacements(int n) {

}
}
```

Python3:

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