Problem 3339: Find the Number of K-Even Arrays

Problem Information

Difficulty: Medium
Acceptance Rate: 59.93%
Paid Only: Yes
Tags: Dynamic Programming

Problem Description

You are given three integers `n`, `m`, and `k`.

An array `arr` is called **k-even** if there are **exactly** `k` indices such that, for each of these indices `i` (`0 <= i < n - 1`):

* `(arr[i] * arr[i + 1]) - arr[i] - arr[i + 1]` is _even_.

Return the number of possible **k-even** arrays of size `n` where all elements are in the range `[1, m]`.

Since the answer may be very large, return it **modulo** `109 + 7`.

Example 1:

Input: n = 3, m = 4, k = 2

Output: 8

Explanation:

The 8 possible 2-even arrays are:

* `[2, 2, 2]` * `[2, 2, 4]` * `[2, 4, 2]` * `[2, 4, 4]` * `[4, 2, 2]` * `[4, 2, 4]` * `[4, 4, 2]` * `[4, 4, 4]`

Example 2:

Input: n = 5, m = 1, k = 0

Output: 1

Explanation:

The only 0-even array is `[1, 1, 1, 1, 1]`.

Example 3:

Input: n = 7, m = 7, k = 5

Output: 5832

Constraints:

* `1 <= n <= 750` * `0 <= k <= n - 1` * `1 <= m <= 1000`

Code Snippets

C++:

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

}
};
```

Java:

```
class Solution {
public int countOfArrays(int n, int m, int k) {

}
}
```

Python3:

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