

Problem 3395: Subsequences with a Unique Middle Mode I

Problem Information

Difficulty: Hard

Acceptance Rate: 19.26%

Paid Only: No

Tags: Array, Hash Table, Math, Combinatorics

Problem Description

Given an integer array `nums`, find the number of subsequences of size 5 of `nums` with a **unique middle mode**.

Since the answer may be very large, return it **modulo** $10^9 + 7$.

A **mode** of a sequence of numbers is defined as the element that appears the **maximum** number of times in the sequence.

A sequence of numbers contains a **unique mode** if it has only one mode.

A sequence of numbers `seq` of size 5 contains a **unique middle mode** if the `_middle element_` (`seq[2]`) is a **unique mode**.

Example 1:

Input: `nums = [1,1,1,1,1]`

Output: 6

Explanation:

`[1, 1, 1, 1, 1]` is the only subsequence of size 5 that can be formed, and it has a unique middle mode of 1. This subsequence can be formed in 6 different ways, so the output is 6.

****Example 2:****

****Input:**** nums = [1,2,2,3,3,4]

****Output:**** 4

****Explanation:****

`[1, 2, 2, 3, 4]` and `[1, 2, 3, 3, 4]` each have a unique middle mode because the number at index 2 has the greatest frequency in the subsequence. `[1, 2, 2, 3, 3]` does not have a unique middle mode because 2 and 3 appear twice.

****Example 3:****

****Input:**** nums = [0,1,2,3,4,5,6,7,8]

****Output:**** 0

****Explanation:****

There is no subsequence of length 5 with a unique middle mode.

****Constraints:****

* `5 <= nums.length <= 1000` * `-109 <= nums[i] <= 109`

Code Snippets

C++:

```
class Solution {
public:
    int subsequencesWithMiddleMode(vector<int>& nums) {

    }

};
```

Java:

```
class Solution {  
    public int subsequencesWithMiddleMode(int[] nums) {  
  
    }  
}
```

Python3:

```
class Solution:  
    def subsequencesWithMiddleMode(self, nums: List[int]) -> int:
```