QuickMaffs Permutation Puzzle

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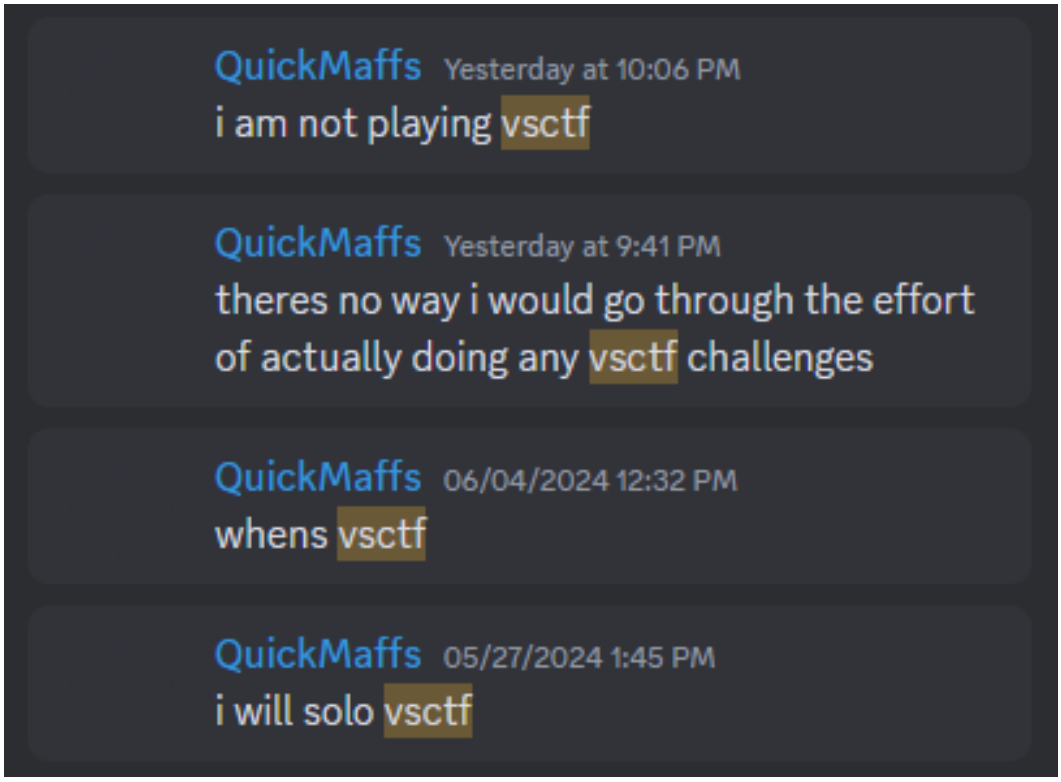
1 Problem Statement



QuickMaffs on vsctf

QuickMaffs, the legendary math whiz of *Friendly Maltese Citizens*, is known for his uncanny ability to troll his teammates with tricky math puzzles. This time, he's come up with a particularly devious permutation problem, and it's up to you to solve it!

Given an integer n ($n \leq 10,000$), QuickMaffs challenges you to find out how many permutations of the numbers 1 through n satisfy the following condition:

$$\forall i \ (2 \leq i \leq n), \begin{cases} a[i-1] < a[i] & \text{if } i \text{ is odd} \\ a[i-1] > a[i] & \text{if } i \text{ is even} \end{cases}$$

Your task is to compute the number of such valid permutations modulo $10^9 + 7$.

2 Input

The input consists of a single integer n indicating the length of the permutation.

3 Output

Output a single integer, the number of valid permutations modulo $10^9 + 7$.

4 Sample

Sample Input	Sample Output
3	2

5 Explanation

Only $(1, 3, 2)$ and $(2, 3, 1)$ are valid.