#### **QuickMaffs Permutation Puzzle**

#### sahuang

#### 1 Problem Statement

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QuickMaffs Yesterday at 10:06 PM
i am not playing vsctf

QuickMaffs Yesterday at 9:41 PM
theres no way i would go through the effort
of actually doing any vsctf challenges

QuickMaffs 06/04/2024 12:32 PM
whens vsctf

QuickMaffs 05/27/2024 1:45 PM
i will solo vsctf
```

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

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

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.