

Bubble Sort Style

You are given a permutation \mathbf{p} of the integers from 1 to n . You want to sort this permutation by mimicking the idea of Bubble Sort. Basically, in one operation you select two adjacent elements p_i and p_{i+1} such that $p_i > p_{i+1}$ and swap them. Unlike Bubble Sort, when there are multiple possible choices of index i , you choose one of them with equal probability (not the smallest one like in Bubble Sort). If there is no such index i , the sorting operation is done.

The cost of swapping the elements p_i and p_{i+1} is $p_i - p_{i+1}$. You are asked to calculate the expected total value of cost of sorting the given permutation in modulo $10^9 + 7$.

Input Format

The first line of the input contains an integer n .

The second line contains n integers p_1, p_2, \dots, p_n .

Constraints

$1 \leq n \leq 10^6$

$1 \leq p_i \leq n$

It is guaranteed that \mathbf{p} is a permutation of the integers from 1 to n .

Output Format

Print a single line containing an integer: the expected total cost modulo $10^9 + 7$.

Formally, it can be shown that the expected total cost can be represented as a fraction $\frac{p}{q}$ for some coprime non-negative integers p and q . For example, if the expected total cost is an integer, then we just have $q = 1$.

You have to print the value $p \cdot q^{-1} \bmod (10^9 + 7)$

Sample Input 0

5

1 2 3 4 5

Copy

Sample Output 0

0

Copy

Sample Input 1

Submit Solution

✓ **Points:** 1

⌚ **Time limit:** 1.0s

Java 8: 4.0s

Python: 8.0s

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Copy

5
1 2 5 3 4

Sample Output 1

3

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