W

An array of numbers is said to be **W-shaped** if it meets the following conditions:

1. It consists of four segments in decreasing order, increasing order, decreasing order, increasing order.
2. The ordering is not strict, so increasing and decreasing segments may include consecutive equal elements.
3. Every two consecutive segments have a common endpoint.
4. Every segment contains at least two distinct values.

For example, the array (3 1 2 1 1 4) is W-shaped, since it consists of the segments (3 1), (1, 2), (2 1 1), (1 4). The array (3 1 2 2 2 4) is **not** W-shaped. It could be broken into the segments (3 1), (1 2), (2 2 2), (2 4), however the segment (2 2 2) does not contain two distinct values.

Given an array of N integers, how many distinct permutations of the array are W-shaped? Two permutations of the array, (p_1 p_2 ... p_N) and (q_1 q_2 ... q_N), are considered distinct if there exists a position $1 \le i \le N$ where $p_i \neq q_i$. In the example above, (3 1 2 1 1 4) should only be counted once, because permuting the three 1's does not create distinct permutations.

Input data

The first line contains N. The second line contains the N values of the array, separated by spaces.

Output data

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Print a single number: the number of distinct W-shaped permutations, modulo 1,000,000,007.

Limits and constraints

- $5 \le N \le 300{,}000$
- Array values are integers between 1 and 1,000,000 inclusive.
- Time limit: 0.6
- Memory limit: 512 MB

Subtasks

Test cases will be **scored individually**.

Subtask	Percentage of ≠points	Additional input constraints
1	20%	There are only two distinct values among the *N* elements.
2	30%	All the *N* elements have distinct values.
3	50%	none

Example

Input	Output	Explanation
5 3 1 4 2 3	6	The six distinct W-shaped permutations are: 3 1 3 2 4 3 1 4 2 3 3 2 3 1 4 3 2 4 1 3 4 1 3 2 3 4 2 3 1 3
7 1 2 2 2 3 4 4	72	