Optimal Strategy

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	512 megabytes

Ena and Mizuki are playing a game.

There are n items in front of them, numbered from 1 to n. The value of the i-th item is a_i. Ena and Mizuki take turns to move, while Ena moves first. In a move, the player chooses an item that has not been taken and takes it away. The game ends when all items are taken away. The goal of either player is to maximize the sum of values of items they have taken away.

Given that both players move optimally, how many possible game processes are there? Since the number may be too large, you should output it modulo 998 244 353.

Two processes are considered different if there exists some integer i $(1 \le i \le n)$ such that the indices of items taken away in the i-th move are different.

Input

The first line contains an integer n $(1 \le n \le 10^6)$.

The second line contains n integers $a_1, a_2, \ldots, a_n$ $(1 \le a_i \le n)$.

Output

Output the answer.

Examples

standard input	standard output
3 1 2 2	4
6 1 3 2 2 3 1	120
12 1 1 4 5 1 4 1 9 1 9 8 10	28800

Note

In the first example, there are four possible processes:

- $[1, 2, 3]$.
- $[1, 3, 2]$.
- $[2, 3, 1]$.
- $[3, 2, 1]$.

Here $[a, b, c]$ means that in the first move Ena takes away the a-th item, in the second move Mizuki takes away the b-th item, and in the final move Ena takes away the c-th item.

Note that $[2, 1, 3]$ is not a possible process, since the second move is not optimal for Mizuki.