

Binary Permutation

Input file: standard input
Output file: standard output
Time limit: 1 second
Memory limit: 256 megabytes

A permutation is a sequence of length n consisting of integers from 1 to n , in which all the numbers occur exactly once. For example, [1], [3, 5, 2, 1, 4], and [1, 3, 2] are permutations, whereas [2, 3, 2], [4, 3, 1], and [0] are not.

You are given an array A_1, A_2, \dots, A_N consisting of N integers. Each integer is 0 or 1. Find the number of permutations P of size N such that the following conditions hold:

- $P_1 < P_2 > P_3 < P_4 \dots$
- $A_{P_i} \equiv i \pmod{2}$, for all $(1 \leq i \leq N)$.

Because the number of such permutations can be very large, print the answer modulo 998244353.

Input

The first line contains an integer N ($1 \leq N \leq 10^6$).

The second line contains N space separated integers A_i - the elements of the array. It's guaranteed that $A_i \in \{0, 1\}$.

Output

Output a single line containing the number of permutations satisfying the conditions modulo 998244353.

Examples

standard input	standard output
2 1 0	1
1 0	0
7 1 1 0 1 0 1 0	8