

# 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