Haitang and Rock Paper Scissors

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

Haitang is playing a Rock Paper Scissors match with n rivals in a row.

Before the match starts, Haitang can predict the shapes they form as a sequence a, where $a_i = 0, 1, 2$ indicates rock, paper, and scissors. However, she can't form the same shape in any two contiguous games.

In a match containing n games, the total score is calculated as follows:

- When Haitang wins the game, she gains 1 point.
- When the game is tied, nothing happens.
- When Haitang loses the game, she loses everything and the whole match ends immediately.

You are given a sequence b of length n, where $b_i \in \{-1, 0, 1, 2\}$. There are $3^{\text{number of -1}}$ ways to replace each -1 by $0, 1, 2$ to generate the sequence a.

Haitang will play all matches with every possible a. You need to print the sum of the maximum points Haitang could gain in each match.

Print the answer modulo 998244353.

Input

The first line contains an integer n ($1 \le n \le 2000$) — the length of sequence b.

The second line contains n integers b_i ($b_i \in \{-1, 0, 1, 2\}$).

Output

The only line contains an integer — the answer modulo 998244353.

Examples

standard input	standard output
4 -1 0 1 2	11
7 0 -1 1 2 -1 1 0	49