

C. A Twisty Movement

time limit per test: 1 second

memory limit per test: 256 megabytes

input: standard input

output: standard output

A dragon symbolizes wisdom, power and wealth. On Lunar New Year's Day, people model a dragon with bamboo strips and clothes, raise them with rods, and hold the rods high and low to resemble a flying dragon.

A performer holding the rod low is represented by a 1, while one holding it high is represented by a 2. Thus, the line of performers can be represented by a sequence a_1, a_2, \dots, a_n .

Little Tommy is among them. He would like to choose an interval $[l, r]$ ($1 \leq l \leq r \leq n$), then reverse a_l, a_{l+1}, \dots, a_r so that the length of the longest non-decreasing subsequence of the new sequence is maximum.

A non-decreasing subsequence is a sequence of indices p_1, p_2, \dots, p_k , such that $p_1 < p_2 < \dots < p_k$ and $a_{p_1} \leq a_{p_2} \leq \dots \leq a_{p_k}$. The length of the subsequence is k .

Input

The first line contains an integer n ($1 \leq n \leq 2000$), denoting the length of the original sequence.

The second line contains n space-separated integers, describing the original sequence a_1, a_2, \dots, a_n ($1 \leq a_i \leq 2, i = 1, 2, \dots, n$).

Output

Print a single integer, which means the maximum possible length of the longest non-decreasing subsequence of the new sequence.

Examples

input
4 1 2 1 2
output
4

input
10 1 1 2 2 2 1 1 2 2 1
output
9

Note

In the first example, after reversing $[2, 3]$, the array will become $[1, 1, 2, 2]$, where the length of the longest non-decreasing subsequence is 4.

In the second example, after reversing $[3, 7]$, the array will become $[1, 1, 1, 1, 2, 2, 2, 2, 2, 1]$, where the length of the longest non-decreasing subsequence is 9.