M3 – Zigzag

Your Ph.D. thesis on properties of integer sequences is coming along nicely. Each chapter is on a different type of sequence. The first covers arithmetic sequences. Subsequently you cover binomial sequences, computable sequences, decreasing sequences, and so on. You have one more chapter to write, on zigzagging sequences.

A sequence is zigzagging if adjacent elements alternate between strictly increasing and strictly decreasing. The first pair of numbers can be either strictly increasing or strictly decreasing.

For a given sequence, find the length of its longest zigzagging subsequence.

Input

The first line of input contains a single integer n ($1 \leqslant n \leqslant 50$), the length of the sequence. The second line contains n space-separated integers, describing the sequence. Every number in the sequence is guaranteed to be between 1 and 50, inclusive.

Output

Print, on a single line, the length of a longest zigzagging subsequence of the input sequence.

Input and output samples

Input:
5 2 1 3 4 2

Output:
4

Input:
10 1 1 1 1 1 1 1 1 1 1

Output:
1