E. Jeff and Permutation

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

Jeff's friends know full well that the boy likes to get sequences and arrays for his birthday. Thus, Jeff got sequence $p_1, p_2, ..., p_n$ for his birthday.

Jeff hates inversions in sequences. An inversion in sequence $a_1, a_2, ..., a_n$ is a pair of indexes i, j $(1 \le i < j \le n)$, such that an inequality $a_i > a_j$ holds.

Jeff can multiply some numbers of the sequence p by -1. At that, he wants the number of inversions in the sequence to be minimum. Help Jeff and find the minimum number of inversions he manages to get.

Input

The first line contains integer n $(1 \le n \le 2000)$. The next line contains n integers — sequence $p_1, p_2, ..., p_n$ $(|p_i| \le 10^5)$. The numbers are separated by spaces.

Output

In a single line print the answer to the problem — the minimum number of inversions Jeff can get.

Examples

input
2 2 1

output
0

input
9 -2 0 -1 0 -1 2 1 0 -1

output
6