

Operations

2024/2025 SEASON – SIXTH ROUND



Nasko made a great *kozunak* for Easter. There was only one rule – anyone who solves the task can try the *kozunak*. The task is as follows: Given N integers - a_1, a_2, \dots, a_N . The following operation is performed until no numbers are left in the sequence – the number with the smallest absolute value in the sequence is taken. If there are several such numbers, the one with the smallest index is taken. Then, the closest number to the right with the opposite sign is taken. The subsegment is expanded in this way to the right, as long as there are still numbers that could be added. This process is then applied to the left of the initially selected number – the closest number to the left with the opposite sign of the leftmost number is taken. The subsegment is expanded to the left as long as possible.

From the absolute value of each number in the constructed subsequence, we subtract the absolute value of the initially selected number, meaning negative numbers increase and positive numbers decrease. If any number becomes 0, it is removed from the sequence.

The cost of one operation is the absolute value of the selected number in each iteration. Nasko asks for the total cost of all operations. Yoan managed to quickly devise a solution and confirms that the *kozunak* is excellent. Give it a try!

Input

The first line of the file **operations.in** consists of the integer N . The second line contains N integers - a_1, a_2, \dots, a_N , describing the numbers in the sequence.

Output

In the file **operations.out** print the total cost.

Constraints

$$N = 2 * 10^6$$

$$-10^3 \leq a_i \leq 10^3$$

Time limit: 0.2 sec.

Memory limit: 256 MB

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Sample test

Input (operations.in)	Output (operations.out)
6 4 1 3 -5 2 -1	8

Sample test explanation

The operations on the sequence go as follows: $4 \underline{1} 3 -5 2 -1 \xrightarrow{1} 4 3 -4 \underline{1} \xrightarrow{1} 4 \underline{2} -3 \xrightarrow{2} 4 -\underline{1} \xrightarrow{1} \underline{3} \xrightarrow{3}$ the end. All elements that are part of the current operation are colored in green. The underlined numbers are the initially chosen numbers. Above the arrows the costs of the operations are denoted. The total cost is $1 + 1 + 2 + 1 + 3 = 8$.