The House Sorting

**[ MED ][ THS ]**

**Problem:**

A new year begins at Hogwarts, and the new students await the dreaded sorting procedure that will decide the lives they will spend for the next 7 years. The sorting hat wants to divide the list of **N** students into 4 houses **A, B, C** and **D,** with no limitation on the number of students in each house.

Now, each student has a score based on his Honesty, Willpower, Academics, Friendliness, Cunning, Athletics etc, which can be denoted by . The hat wants each house to be having students with desired values, in such a way that

**[ sum(A) - sum(B) ] + [ sum(C) -sum(D) ]**

is maximum possible. This equation gives the overall **quality score** of students of Hogwarts.

Also, all these parts must be sequential, which means that A comes before B, B comes before C, and C comes before D. A student must obviously belong to only one house, and none of the students can be left out. Can you help the hat to determine the maximum possible quality score?

**Input:**

* The first line contains an integer number N
* The second line contains N space separated integers denoting scores

**Output:**

Print the maximum quality score that is possible when you choose optimal division of houses.

**Constraints:**

* 1 ≤ N ≤ 1000
* -100 ≤  ≤ 100

**Example:**

**Sample Input 1:**

10

-6 -4 -7 0 7 9 8 3 8 7

**Sample Output 1:**

59

**Sample Input 2:**

4

-1 1 -2 -2

**Sample Output 2:**

6

**Sample Input 1 Explanation:**

-6 -4 -7 0 7 9 8 3 8 7

A = [ ] => Sum = 0

B = [-6,-4,-7] => Sum = -17

C = [0,7,9,8,3,8,7] => Sum = 42

D = [ ] => Sum = 0

Total sum = 0-(-17) + 42-0 = 59

**Problem Setter:**

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