Average Students

Problem Statement

In CS3697, the professor wants the students to work in pairs in quiz 2. Each student must be in one group only. KG, one of the students, thinks that, if there is a really strong group, they will perform way better than other groups. Then the professor will be disappointed by them (as there is comparison).
Therefore, students want to form the groups in the way that the **knowledge level** difference between the "best" group and the "worst" group is as small as possible.

Input

There are multiple test cases. For each test case, there is an integer N, representing the size of the class (1<N<51). You may assume that the number of people in the class is even. And then, there are N integers on the next line, each integer represents the **knowledge level** of a student. A **knowledge level** of a group is the sum of the **knowledge level** of students in the same group.

The input ends with EOF

Output

For each case, print the minimum **knowledge level** difference between the "best" group and the "worst" group.

Samples

Input	Output
4 2 6 4 3 6 1 1 1 1 1 1 8 4 2 4 2 1 3 3 7 14 5 1 8 8 13 7 6 2 1 9 5 11 3 4	1 0 2 3

Explanation:
First case: we can make:
group 1(best) = 2+6, group 2(worst) = 4+3 , so the difference = 8-7 = 1