Problem C. Ezzat and Two Subsequences

Time limit 1000 ms
Mem limit 262144 kB

Ezzat has an array of n integers **(maybe negative)**. He wants to split it into two **non-empty** subsequences a and b, such that every element from the array belongs to exactly one subsequence, and the value of $f(a) + f(b)$ is the maximum possible value, where $f(x)$ is the average of the subsequence x.

A sequence x is a subsequence of a sequence y if x can be obtained from y by deletion of several (possibly, zero or all) elements.

The average of a subsequence is the sum of the numbers of this subsequence divided by the size of the subsequence.

For example, the average of $[1, 5, 6]$ is $(1 + 5 + 6)/3 = 12/3 = 4$, so $f([1, 5, 6]) = 4$.

Input

The first line contains a single integer t ($1 \le t \le 10^3$)— the number of test cases. Each test case consists of two lines.

The first line contains a single integer n ($2 \le n \le 10^5$).

The second line contains n integers $a_1, a_2, \ldots, a_n$ ($-10^9 \le a_i \le 10^9$).

It is guaranteed that the sum of n over all test cases does not exceed $3 \cdot 10^5$.

Output

For each test case, print a single value — the maximum value that Ezzat can achieve.

Your answer is considered correct if its absolute or relative error does not exceed 10^{-6}.

Formally, let your answer be a, and the jury's answer be b. Your answer is accepted if and only if $\frac{|a-b|}{\max(1,|b|)} \le 10^{-6}$.

Sample 1

Input	Output
4 3 3 1 2 3 -7 -6 -6 3 2 2 2 4 17 3 5 -3	4.500000000 -12.500000000 4.000000000 18.666666667

Note

In the first test case, the array is $[3, 1, 2]$. These are all the possible ways to split this array:

- $a = [3], b = [1, 2]$, so the value of $f(a) + f(b) = 3 + 1.5 = 4.5$.
- $a = [3, 1], b = [2]$, so the value of $f(a) + f(b) = 2 + 2 = 4$.
- $a = [3, 2], b = [1]$, so the value of $f(a) + f(b) = 2.5 + 1 = 3.5$.

Therefore, the maximum possible value 4.5.

In the second test case, the array is $[-7, -6, -6]$. These are all the possible ways to split this array:

- $a = [-7], b = [-6, -6]$, so the value of $f(a) + f(b) = (-7) + (-6) = -13$.
- $a = [-7, -6], b = [-6]$, so the value of $f(a) + f(b) = (-6.5) + (-6) = -12.5$.

Therefore, the maximum possible value -12.5.