

# The Disgruntled Professor (prob6)

## The Problem

Professor Failmall believes he has discovered a case of cheating on his recent exam, and in his foul mood, decides to exact revenge on his poor students! His  $N$  students were all sitting in a row during the exam, and the sequence of scores they earned from left to right is described by an array  $S[1..N]$ . Professor Failmall is convinced that a contiguous block of one or more students in the middle of the row cheated, whose scores are a subarray of the form  $S[i..j]$  with  $i > 1$  and  $j < N$ . He is not exactly sure which block of students cheated, but to apply as much punishment to his entire class, he decides that he wants to remove a subarray  $S[i..j]$  with  $i > 1$  and  $j < N$  such that the average of the remaining exam scores is as low as possible. Please compute the smallest possible average he can achieve by doing this. Print your answer rounded to 3 decimal digits.

BOUNDS:  $3 \leq N \leq 100,000$ ; for each  $i$ :  $1 \leq S[i] \leq 10,000$

## Input

$N$ , followed by  $S[1..N]$  each on a separate line

## Output

The answer rounded to 3 decimal places.

## Sample Input

```
5
5
1
7
8
2
```

## Sample Output

```
2.667
```

*Here, the optimal solution is to remove the subarray containing 7 and 8, leaving 5, 1, and 2, whose average is  $8/3$ .*