Mirko is practicing arithmetic operations in an interesting way during math class. First, he writes a sequence of integers **A**. Then, underneath the first sequence, he writes another sequence of integers **B** which he gets by replacing every number from the sequence **A** with the average value of all the numbers before the current one, including it.

For example, if the first sequence of integers **A** is equal to

$$1, 3, 2, 6, 8,$$

then the second sequence of integers **B** is going to be

$$\frac{1}{1}, \frac{1+3}{2}, \frac{1+3+2}{3}, \frac{1+3+2+6}{4}, \frac{1+3+2+6+8}{5},$$

in other words

$$1, 2, 2, 3, 4.$$

You are given the second sequence of integers **B**. Determine the first sequence of integers **A** to check Mirko's calculations.

INPUT

The first line of input contains the integer **N** ($1 \leq N \leq 100$), the length of sequence **B**.
The second line of input contains the sequence of **N** space-separated integers B_i ($1 \leq B_i \leq 10^9$).

OUTPUT

The first and only line of output must contain a sequence of **N** space-separated integers A_i.
Please note: The input data will be such that the elements from the sequence **A** are integers ($1 \leq A_i \leq 10^9$).

SAMPLE TESTS

input	input	input
1	4	5
2	3 2 3 5	1 2 2 3 4
output	output	output
2	3 1 5 11	1 3 2 6 8

Clarification of the third sample test: Look at the task description.