

F. Pairwise Sums

time limit per test: 2 seconds

memory limit per test: 256 megabytes

input: standard input

output: standard output

You are given an array of n integers. For each element output the sum of itself and the previous element. For the first element, output the sum of the first and the last elements of the array.

Input

The input consists of a single line of space-separated integers. The first number is n ($2 \leq n \leq 50$) — the size of the array. The following n numbers are the elements of the array ($1 \leq a_i \leq 1000$).

Output

Output the sums $a_1 + a_n, a_2 + a_1, \dots, a_n + a_{n-1}$, separated with spaces.

Examples

input
4 1 2 3 4
output
5 3 5 7

input
5 5 46 372 81 9
output
14 51 418 453 90