

## A. Memory and Crow

time limit per test: 2 seconds

memory limit per test: 256 megabytes

input: standard input

output: standard output

There are  $n$  integers  $b_1, b_2, \dots, b_n$  written in a row. For all  $i$  from 1 to  $n$ , values  $a_i$  are defined by the crows performing the following procedure:

- The crow sets  $a_i$  initially 0.
- The crow then adds  $b_i$  to  $a_i$ , subtracts  $b_{i+1}$ , adds the  $b_{i+2}$  number, and so on until the  $n$ th number. Thus,  $a_i = b_i - b_{i+1} + b_{i+2} - b_{i+3} \dots$

Memory gives you the values  $a_1, a_2, \dots, a_n$  and he now wants you to find the initial numbers  $b_1, b_2, \dots, b_n$  written in the row? Can you do it?

### Input

The first line of the input contains a single integer  $n$  ( $2 \leq n \leq 100\,000$ ) — the number of integers written in the row.

The next line contains  $n$ , the  $i$ 'th of which is  $a_i$  ( $-10^9 \leq a_i \leq 10^9$ ) — the value of the  $i$ 'th number.

### Output

Print  $n$  integers corresponding to the sequence  $b_1, b_2, \dots, b_n$ . It's guaranteed that the answer is unique and fits in 32-bit integer type.

### Examples

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

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

### Note

In the first sample test, the crows report the numbers 6, -4, 8, -2, and 3 when he starts at indices 1, 2, 3, 4 and 5 respectively. It is easy to check that the sequence 2 4 6 1 3 satisfies the reports. For example,  $6 = 2 - 4 + 6 - 1 + 3$ , and  $-4 = 4 - 6 + 1 - 3$ .

In the second sample test, the sequence 1, -3, 4, 11, 6 satisfies the reports. For example,  $5 = 11 - 6$  and  $6 = 6$ .

### Codeforces Round #370 (Div. 2)

Finished

### → Virtual participation

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Start virtual contest

### → Problem tags

implementation

No tag edit access

### → Contest materials

- Announcement 
- Tutorial 