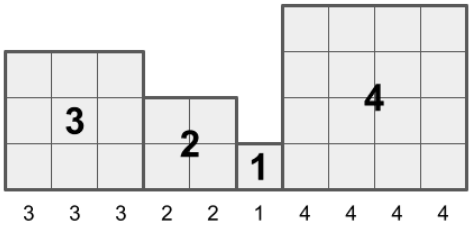
Histogram Sequence 3

Input file:	`standard input`
Output file:	`standard output`
Time limit:	2 seconds
Memory limit:	1024 megabytes

Consider the histogram composed of n squares with side lengths $a_1, a_2, \cdots, a_n$. Let's call the sequence $(a_1, a_2, \cdots, a_n)$ the histogram sequence of this histogram.

Let's consider the height of each column in this histogram. The first a_1 columns will each have height a_1, the following a_2 columns will each have height a_2, ... and the last a_n columns will each have height a_n. Now, let us define the height sequence $(b_1, b_2, \cdots, b_{a_1+a_2+\cdots+a_n})$ where b_j $(1 \leq j \leq a_1 + a_2 + \cdots + a_n)$ is the height of the j-th column.

For example, the histogram with $(3, 2, 1, 4)$ as its histogram sequence has $(3, 3, 3, 2, 2, 1, 4, 4, 4, 4)$ as its height sequence.



Write a program to find the histogram sequence given the height sequence.

Input

The first line contains a single integer m $(1 \leq m \leq 10^6)$ representing the length of the height sequence $\{b_i\}$ is given.

The second line of the input contains m integers, the height sequence. Specifically, the i-th integer in the line is b_i $(1 \leq b_i \leq m)$.

The input is designed such that the provided height sequence corresponds to a valid histogram sequence.

Output

Output n integers on a single line, $a_1, a_2, \cdots, a_n$ where $(a_1, a_2, \cdots, a_n)$ is the histogram sequence corresponding to the given height sequence. If there are multiple answers, any one of them will be accepted.

Examples

standard input	standard output
10 3 3 3 2 2 1 4 4 4 4	3 2 1 4
5 2 2 2 2 1	2 2 1