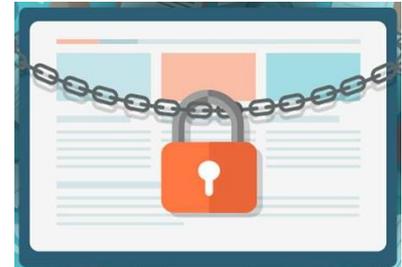


Problem H

Save My Files!

Time Limit: 1 second

Alice's computer is infected by a malware. Her personal files are encrypted, thus she cannot read the content of any document. Within only 5 hours, you should find a way to restore her files, otherwise, these files will be encrypted forever.



You know that the author of the malware in Alice's computer loves to play with permutations of a set of N integers. An integer $x \in \{1, 2, \dots, N\}$ is mapped into $\pi(x) \in \{1, 2, \dots, N\}$. Of course, $\pi(x) \neq \pi(y)$ for $x \neq y$. All permutations of a set of N integers $\{1, 2, \dots, N\}$ are sorted in lexical order.

You know that the malware in Alice's computer uses a very simple encryption method - **Permutation Cipher**: an integer $x \in \{1, 2, \dots, N\}$ is encrypted into $\pi(x) \in \{1, 2, \dots, N\}$.

You also know that this malware only uses **Self-Reversible Permutation**. A permutation is called Self-Reversible Permutation if it satisfies the following condition:

$$\pi(\pi(x)) = x \text{ for all } x \in \{1, 2, \dots, N\}$$

You should recover the permutation π that was used to encrypt Alice's files.

Luckily, you find that the malware in her computer left a secret file containing a secret sequence of numbers $A = (a_1, a_2, \dots, a_N)$, a permutation of the set of N integers from 1 to N . The secret permutation π is the Self-Reversible Permutation with the **smallest lexical order**, and its lexical order must be greater than the lexical order of the sequence A .

Input

The first line contains an integer N ($2 \leq N \leq 100$).

The second line contains N distinct integers a_1, a_2, \dots, a_N , a permutation of $\{1, 2, \dots, N\}$.

Output

Display in one line N distinct integers $\pi(1), \pi(2), \dots, \pi(N)$ of the permutation that was used to encrypt Alice's files. In any test case, you can always find such permutation.

Sample Input

Sample Output

5	3 2 1 4 5
3 1 2 4 5	

Explanation: In the output of this example, $\pi(\pi(3)) = \pi(1) = 3$; $\pi(\pi(2)) = \pi(2) = 2$...