E. Square Root of Permutation

A *permutation* of length n is an array containing each integer from 1 to n exactly once. For example, $q = [4, 5, 1, 2, 3]$ is a permutation. For the permutation q the square of permutation is the permutation p that $p[i] = q[q[i]]$ for each $i = 1...\ n$. For example, the square of $q = [4, 5, 1, 2, 3]$ is $p = q^2 = [2, 3, 4, 5, 1]$.

This problem is about the inverse operation: given the permutation p you task is to find such permutation q that $q^2 = p$. If there are several such q find any of them.

Input

The first line contains integer n ($1 \leq n \leq 10^6$) — the number of elements in permutation p.

The second line contains n distinct integers $p_1, p_2, ..., p_n$ ($1 \leq p_i \leq n$) — the elements of permutation p.

Output

If there is no permutation q such that $q^2 = p$ print the number "-1".

If the answer exists print it. The only line should contain n different integers q_i ($1 \leq q_i \leq n$) — the elements of the permutation q. If there are several solutions print any of them.

Examples

input
4
2 1 4 3

output
3 4 2 1

input
4
2 1 3 4

output
-1

input
5
2 3 4 5 1

output
4 5 1 2 3