Problem F
Factor-Free Tree

Problem ID: factorfree
CPU Time limit: 9 seconds
Memory limit: 1024 MB

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A *factor-free tree* is a rooted binary tree where every node in the tree contains a positive integer value that is coprime with all of the values of its ancestors. Two positive integers are coprime if their greatest common divisor equals 1.

The *inorder sequence* of a rooted binary tree can be generated recursively by traversing first the left subtree, then the root, then the right subtree. See Figure 1 below for the inorder sequence of one factor-free tree.

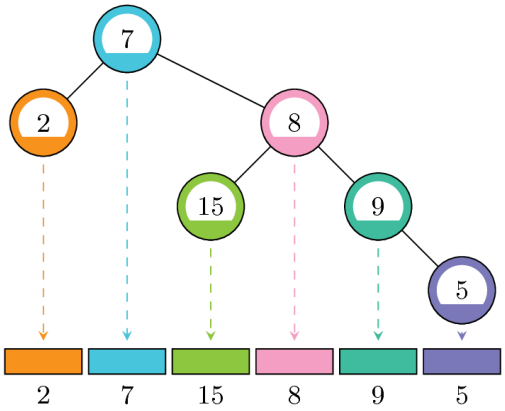

Figure 1: Illustration of Sample 1. The tree is factor-free; for example, the value of the node marked "5" is coprime with all of the values of its ancestors, marked "9", "8", and "7".

Given a sequence $a_1, a_2, \ldots, a_n$, decide if it is the inorder sequence of some factor-free tree and if so construct such a tree.

Input

The input consists of:

- One line with one integer n ($1 \leq n \leq 10^6$), the length of the sequence.
- One line with n integers $a_1, \ldots, a_n$ ($1 \leq a_i \leq 10^7$ for each i), the elements of the sequence.

Output

If there exists a factor-free tree whose inorder sequence is the given sequence, output n values. For each value in the sequence, give the 1-based index of its parent, or 0 if it is the root. If there are multiple valid answers, print any one of them.

If no such tree exists, output "`impossible`" instead.

Sample Input 1

```
6
2 7 15 8 9 5
```

Sample Output 1

```
2 0 4 2 4 5
```

Sample Input 2

```
6
2 7 15 8 9 6
```

Sample Output 2

```
impossible
```