

## Problem K: Kernel Knights

Time limit: 2 s

Memory limit: 512 MiB

Jousting is a medieval contest that involves people on horseback trying to strike each other with wooden lances while riding at high speed. A total of  $2n$  knights have entered a jousting tournament –  $n$  knights from each of the two great rival houses. Upon arrival, each knight has challenged a single knight from the other house to a duel.

A *kernel* is defined as some subset  $S$  of knights with the following two properties:

- No knight in  $S$  was challenged by another knight in  $S$ .
- Every knight not in  $S$  was challenged by some knight in  $S$ .

Given the set of the challenges issued, find one kernel. It is guaranteed that a kernel always exists.

### Input

The first line contains an integer  $n$  ( $1 \leq n \leq 100\,000$ ) – the number of knights of each house. The knights from the first house are denoted with integers 1 through  $n$ , knights from the second house with integers  $n + 1$  through  $2n$ .

The following line contains integers  $f_1, f_2, \dots, f_n$  – the  $k$ -th integer  $f_k$  is the index of the knight challenged by knight  $k$  ( $n + 1 \leq f_k \leq 2n$ ).

The following line contains integers  $s_1, s_2, \dots, s_n$  – the  $k$ -th integer  $s_k$  is the index of the knight challenged by knight  $n + k$  ( $1 \leq s_k \leq n$ ).

### Output

Output the indices of the knights in the kernel on a single line. If there is more than one solution, you may output any one.

### Example

**input**

```
4
5 6 7 7
1 3 2 3
```

**output**

```
1 2 4 8
```