

Postorder

Given the pre order traversal and in-order traversal of a binary tree. Build and print the post-order traversal of the given tree.

Input

The first line contains N as the number of vertices ($N \leq 80\,000$).

The second line contains N numbers, which are preorder browsing lists.

The third line contains N numbers as the inorder browse list.

Output

Print out the postorder traversal .

Example

Input:

```
6
0 4 2 3 5 1
4 0 5 3 2 1
```

Output:

```
4 5 3 1 2 0
```

