# PreInPostOrder

Your task is to write a program which recovers a binary tree from two different traversal orders among `PREORDER`, `INORDER`, `POSTORDER`. We assume the keys are positive integers; we reserve 0 to denote the `NULL` pointers, which are also outputted by each traversal. You should implement an algorithm that works in time $O(n^2)$, where $n$ is the size of the input orders.

## Input

The first line contains integer $z$ ($1 \leqslant z \leqslant 2 \cdot 10^9$) – the number of data sets. Each data set is as follows:

The first line contains the names of two different traversal orders and the number $n$ denoting the size of each order. The second and the third line contain the sequence of $n$ integers of the first and the second traversal, respectively.

## Output

You should output the sequence of $n$ integers of the third traversal (distinct from the first and the second one).

## Example

For the input:

```
3
PREORDER INORDER 17
5 3 1 0 0 4 0 0 8 7 6 0 0 0 9 0 0
0 1 0 3 0 4 0 5 0 6 0 7 0 8 0 9 0
INORDER POSTORDER 17
0 1 0 3 0 4 0 5 0 6 0 7 0 8 0 9 0
0 0 1 0 0 4 3 0 0 6 0 7 0 0 9 8 5
PREORDER POSTORDER 17
5 3 1 0 0 4 0 0 8 7 6 0 0 0 9 0 0
0 0 1 0 0 4 3 0 0 6 0 7 0 0 9 8 5
```

the output is:

```
0 0 1 0 0 4 3 0 0 6 0 7 0 0 9 8 5
5 3 1 0 0 4 0 0 8 7 6 0 0 0 9 0 0
0 1 0 3 0 4 0 5 0 6 0 7 0 8 0 9 0
```