

## Problem F: Free Figurines

Time limit: 1 s

Memory limit: 512 MiB

A *matryoshka doll* is a set of wooden figurines of increasing sizes that can be nested one inside the other. They are nested by placing a figurine inside a larger figurine which is, in turn, placed inside a yet larger figurine, etc. We may never place more than one figurine *directly* inside another figurine, no matter the sizes of the figurines involved.

We are currently playing with a set of  $n$  figurines denoted by integers 1 through  $n$  in the order of increasing size. If a figurine  $a$  is placed directly inside a figurine  $b$  we say that  $b$  is a *parent* of  $a$ , and if a figurine has no parent we call it *free*. A *configuration* of the whole set can be described by specifying the current parent of each figurine.

We are allowed to perform the following steps while playing:

- Place a free figurine inside a larger free figurine that is currently empty.
- Open a non-empty free figurine and take out the figurine placed directly inside.

Find the minimal number of steps to obtain the given target configuration from the given initial configuration.

### Input

The first line contains an integer  $n$  ( $1 \leq n \leq 100\,000$ ) — the number of figurines.

The following line contains a sequence of  $n$  integers  $p_1, p_2, \dots, p_n$  ( $0 \leq p_k \leq n$ ) describing the initial configuration. The  $k$ -th integer  $p_k$  is 0 if the figurine  $k$  is free, or the parent of figurine  $k$  otherwise.

The following line contains a sequence of  $n$  integers  $q_1, q_2, \dots, q_n$  ( $0 \leq q_k \leq n$ ) describing the target configuration in the same format.

You may assume that both configurations are valid: a figurine is always smaller than its parent and no two figurines have the same parent.

### Output

Output a single integer — the minimal number of steps.

### Example

**input**

```
7
3 5 4 0 7 0 0
3 5 0 6 7 0 0
```

**output**

```
2
```

**input**

```
6
2 5 4 0 0 0
2 6 4 5 0 0
```

**output**

```
3
```