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 $p_1, p_2, \ldots, p_n$ ($0 \leq p_k \leq n$) 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 $q_1, q_2, \ldots, q_n$ ($0 \leq q_k \leq n$) 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
```