

Task: DWA

Two Cakes

UFAM Workshop, contest #6. Source file `dwa.*` Available memory: 128 MB.

Two urgent cake orders came to Byteasar's confectionery. As we all know, cakes have layers. The confectionery offers n different kinds of layers and each cake contains exactly one layer of each kind. A cake order specifies a sequence in which the layers are to be placed.

Byteasar hires n confectioners; the i -th confectioner (for $1 \leq i \leq n$) can prepare only a layer of the i -th kind. Each confectioner places his layer in a single minute (during that time he or she can work on a single cake only). Layers of a cake are to be placed one by one, however two cakes can be processed in parallel. How much time will it take to fulfill the two given cake orders, assuming that the cakes are produced in an optimal manner?

Input

The first line of input contains a single integer n ($1 \leq n \leq 1\,000\,000$). Two lines follow containing a description of the first and the second cake order respectively. Each cake order is a sequence of n pairwise distinct integers of value between 1 and n , describing the subsequent layers of the ordered cake starting from the topmost layer.

Output

The first and only line of output should contain a single integer: the number of minutes needed to produce the two ordered cakes

Example

For the input data:

```
3
1 2 3
3 2 1
```

the correct result is:

```
4
```