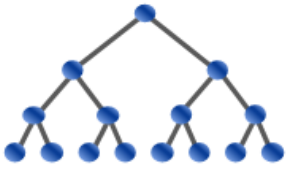

USACO 2025 JANUARY CONTEST, SILVER
PROBLEM 1. COW CHECKUPS

Return to Problem List

Contest has ended.

Log in to allow submissions in analysis mode

English (en)

Farmer John's N ($1 \leq N \leq 5 \cdot 10^5$) cows are standing in a line, with cow 1 at the front of the line and cow N at the back of the line. FJ's cows also come in many different species. He denotes each species with an integer from 1 to N. The i'th cow from the front of the line is of species a_i ($1 \leq a_i \leq N$).

FJ is taking his cows to a checkup at a local bovine hospital. However, the bovine veterinarian is very picky and wants to perform a checkup on the i'th cow in the line, only if it is species b_i ($1 \leq b_i \leq N$).

FJ is lazy and does not want to completely reorder his cows. He will perform the following operation **exactly once**.

- Select two integers l and r such that $1 \leq l \leq r \leq N$. Reverse the order of the cows that are between the l-th cow and the r-th cow in the line, inclusive.

FJ wants to measure how effective this approach is. Find the sum of the number of cows that are checked by the veterinarian over all $N(N+1)/2$ possible operations.

INPUT FORMAT (input arrives from the terminal / stdin):

The first line contains an integer N.

The second line contains $a_1, a_2, \ldots, a_N$.

The third line contains $b_1, b_2, \ldots, b_N$.

OUTPUT FORMAT (print output to the terminal / stdout):

Output one line with the sum of the number of cows that are checked by the veterinarian over all possible operations.

SAMPLE INPUT:

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

SAMPLE OUTPUT:

```
3
```

If FJ chooses $(l = 1, r = 1)$, $(l = 2, r = 2)$, or $(l = 3, r = 3)$ then no cows will be checked. Note that those operations do not modify the location of the cows.

The following operations result in one cow being checked.

- $l = 1, r = 2$: FJ reverses the order of the first and second cows so the species of each cow in the new lineup will be $[3, 1, 2]$. The first cow will be checked.
- $l = 2, r = 3$: FJ reverses the order of the second and third cows so the species of each cow in the new lineup will be $[1, 2, 3]$. The second cow will be checked.
- $l = 1, r = 3$: FJ reverses the order of the first, second, and third cows so the species of each cow in the new lineup will be $[2, 3, 1]$. The third cow will be checked.

The total number of cows checked over all six operations is $0 + 0 + 0 + 1 + 1 + 1 = 3$.

SAMPLE INPUT:

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

SAMPLE OUTPUT:

```
12
```

There are three possible operations that cause 3 cows to be checked: $(l = 1, r = 1)$, $(l = 2, r = 2)$, and $(l = 3, r = 3)$. The remaining operations each result in 1 cow being checked. The total number of cows checked over all six operations is

$3+3+3+1+1+1=12$.

SAMPLE INPUT:

```
7
1 3 2 2 1 3 2
3 2 2 1 2 3 1
```

SAMPLE OUTPUT:

```
60
```

SCORING:

- Input 4: $N \leq 100$
- Input 5: $N \leq 5000$
- Inputs 6-9: a_i, b_i are all generated uniformly at random in the range $[1, N]$
- Inputs 10-15: a_i, b_i are all generated uniformly at random in the range $[1, 2]$
- Inputs 16-23: No additional constraints.

Problem credits: Chongtian Ma, Haokai Ma, and Alex Liang

Contest has ended. No further submissions allowed.