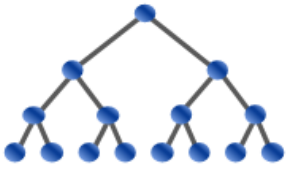

USACO 2025 JANUARY CONTEST, BRONZE
PROBLEM 3. COW CHECKUPS

Return to Problem List

Contest has ended.

Log in to allow submissions in analysis mode

English (en)

****Note: We suggest using a language other than Python to earn full credit on this problem.****

Farmer John's N ($1 \leq N \leq 7500$) 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 of 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. For each $c = 0 \ldots N$, help FJ find the number of distinct operations (l, r) that result in exactly c cows being checked. Two operations (l_1, r_1) and (l_2, r_2) are different if $l_1 \neq l_2$ or $r_1 \neq r_2$.

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 $N+1$ lines with the i-th line containing the number of distinct operations (l, r) that result in $i-1$ cows being checked.

SAMPLE INPUT:

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

SAMPLE OUTPUT:

```
3
3
0
0
```

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 any of the cows' locations.

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.

SAMPLE INPUT:

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

SAMPLE OUTPUT:

0
3
0
3

The three possible operations that cause 3 cows to be checked are ($l = 1, r = 1$), ($l = 2, r = 2$), and ($l = 3, r = 3$).

SAMPLE INPUT:

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

SAMPLE OUTPUT:

```
0
6
14
6
2
0
0
0
```

The two possible operations that cause 4 cows to be checked are ($l = 4, r = 5$) and ($l = 5, r = 7$).

SCORING:

- Inputs 4-6: $N \leq 100$
- Inputs 7-13: No additional constraints

Problem credits: Chongtian Ma and Haokai Ma

Contest has ended. No further submissions allowed.