DMOPC '19 Contest 7 P5 - Soriya's Programming Project

Time limit: 3.0s **Memory limit:** 128M

For her current programming project, Soriya needs to first construct the array a which has length N. However, to entertain herself, she decides to add the elements in the order described by the permutation p. That is, for her ith insertion, she will add the element a_{p_i} to its position in the array. Since Soriya has nothing better to do with her life, she wonders: how many inversions will the array a have after each insertion? An inversion is a pair of indices (i, j) such that $1 \leq i < j \leq N$ and $a_i > a_j$.

Input Specification

The first line contains the positive integer N.
The second line consists of N positive integers, the array $a_1, a_2, \ldots, a_N$.
The third line consists of N positive integers, the permutation $p_1, p_2, \ldots, p_N$.

Output Specification

Output N lines, the ith of which containing a single integer, the number of inversions after Soriya adds her ith element.

Constraints

In all subtasks,
$1 \leq N \leq 500\,000$
$1 \leq a_i, p_i \leq N$

Subtask 1 [15%]

$p_i = i$ for $1 \leq i \leq N$

Subtask 2 [25%]

$1 \leq a_i \leq 2$

Subtask 3 [60%]

No additional constraints.

Sample Input 1

```
5
4 3 1 2 3
1 2 3 4 5
```

Sample Output 1

```
0
1
3
5
6
```

Sample Input 2

```
5
4 3 1 2 3
3 5 1 4 2
```

Sample Output 2

```
0
0
2
3
6
```