6508 Permutation Graphs

A graph G is defined as a tuple of the set of vertices V and the set of edges E, i.e. $G = (V, E)$. The two sets, V and E, are usually given explicitly. For some graphs, however, these sets are given implicitly. A permuation graph is such a graph, where the set of edges is given implicitly.

For instance, consider two permutations (2, 5, 4, 1, 3) and (1, 5, 3, 2, 4) of the numbers {1, 2, 3, 4, 5}. If we draw line segments connecting the corresponding numbers between two parallel lines, containing the vertices in the two permutation orders, we can find six intersecting pairs of line segments as shown in Figure 1.

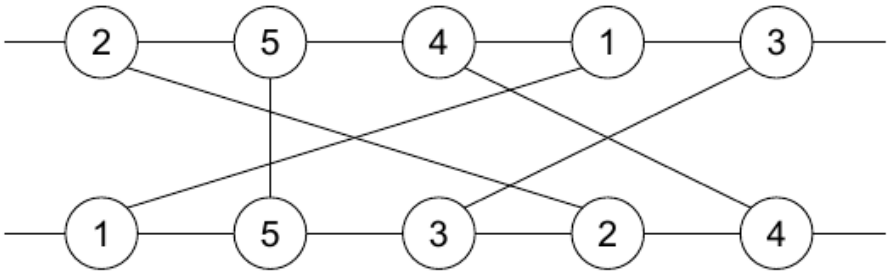

Figure 1: Six intersecting pairs of line segments given two permutations

The intersecting pairs define a permutation graph. Its vertices are the numbers and its edges are the intersecting pairs. In this example, $V = \{1, 2, 3, 4, 5\}$ and $E = \{(1, 2), (1, 4), (1, 5), (2, 3), (2, 5), (3, 4)\}$. This kind of graphs is called a permutation graph. The two permutations above define the permutation graph as shown in Figure 2.

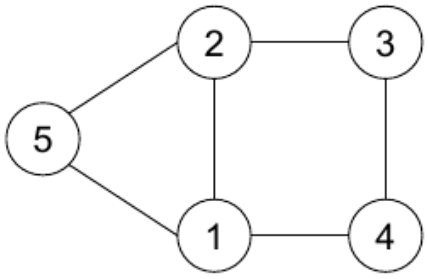

Figure 2: The permutation graph defined by two permutations (2, 5, 4, 1, 3) and (1, 5, 3, 2, 4)

The problem is to find the number of edges of the permutation graph given two permutations of the same set of numbers $\{1, 2, \ldots, n\}$ for some n. For instance, if the two permutations (2, 5, 4, 1, 3) and (1, 5, 3, 2, 4) are given as input, your program should print 6.

Input

Your program is to read from standard input. The input consists of T test cases. The number of test cases T is given in the first line of the input. From the second line, each test case is given. A test case consists of three lines. The first line of a test case contains n, the upper bound of the elements of the set $\{1, 2, \ldots, n\}$ for which the permutations are to be defined. The second and the third lines of the test case contain two permutations. The permutations are given as a sequence of natural numbers in $\{1, 2, \ldots, n\}$ separated by one space. The largest possible number n of a permutation is less than or equal to 100,000 ($1 \leq n \leq 100,000$).

Output

Your program is to write to standard output. Print exactly one line for each test case. The line should contain the number of edges for the permutation graph corresponding to each test case.

The following shows sample input and output for three test cases.

Sample Input

```
3
5
2 5 4 1 3
1 5 3 2 4
7
5 6 7 1 2 3 4
5 6 7 1 2 3 4
7
1 5 3 4 2 7 6
7 1 5 3 4 2 6
```

Sample Output

```
6
0
5
```