

Problem L. Count Order

Time limit 2000 ms

Mem limit 1048576 kB

Problem Statement

We have two permutations P and Q of size N (that is, P and Q are both rearrangements of $(1, 2, \dots, N)$).

There are $N!$ possible permutations of size N . Among them, let P and Q be the a -th and b -th lexicographically smallest permutations, respectively. Find $|a - b|$.

Notes

For two sequences X and Y , X is said to be lexicographically smaller than Y if and only if there exists an integer k such that $X_i = Y_i$ ($1 \leq i < k$) and $X_k < Y_k$.

Constraints

- $2 \leq N \leq 8$
- P and Q are permutations of size N .

Input

Input is given from Standard Input in the following format:

```
N
P1 P2 ... PN
Q1 Q2 ... QN
```

Output

Print $|a - b|$.

Sample 1

Input	Output
3 1 3 2 3 1 2	3

There are 6 permutations of size 3: (1, 2, 3), (1, 3, 2), (2, 1, 3), (2, 3, 1), (3, 1, 2), and (3, 2, 1). Among them, (1, 3, 2) and (3, 1, 2) come 2-nd and 5-th in lexicographical order, so the answer is $|2 - 5| = 3$.

Sample 2

Input	Output
8 7 3 5 4 2 1 6 8 3 8 2 5 4 6 7 1	17517

Sample 3

Input	Output
3 1 2 3 1 2 3	0