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 $(1,\ 2,\ ...,\ N)$).

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
P_1 P_2 ... P_N
Q_1 Q_2 ... Q_N
```

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