

Permutations

Input file: *standard input*
Output file: *standard output*
Time limit: 1 second
Memory limit: 2048 MB

You are given a permutation of length N . At each step, you choose two **distinct** positions uniformly at random and swap the values at those positions.

What is the expected number of steps until the permutation becomes sorted?

Input

The first line of the input contains a single integer N ($1 \leq N \leq 12$), the length of the permutation.

The second line contains N integers $p[1], \dots, p[N]$ representing the permutation. It is guaranteed that p is a permutation of $1, \dots, N$.

Output

Output a single floating-point number representing the expected number of steps until the permutation becomes sorted.

Your answer is considered correct if the absolute error does not exceed 10^{-3} .

Example

standard input	standard output
3 2 3 1	6.000
4 1 2 3 4	0.000