

Problem M. Moves You Need to Make

Input file: *standard input*
 Output file: *standard output*
 Time limit: 2 seconds
 Memory limit: 512 mebibytes

You are given a permutation.

A move is one of the following:

1. Swap two adjacent elements.
2. Swap the first and the last elements. Can be used at most once.

What is the minimum number of moves you need to make to sort the given permutation?

Input

The first line contains a single integer n ($1 \leq n \leq 3 \cdot 10^5$), the length of the permutation.

The second line contains n integers a_i ($1 \leq a_i \leq n$), the permutation itself.

Output

Output a single integer — the minimum number of moves you need to make to sort the given permutation.

Examples

standard input	standard output
1 1	0
2 1 2	0
3 3 2 1	1
4 4 2 1 3	2
5 4 1 5 3 2	4
6 1 5 3 4 2 6	5
7 3 2 1 7 6 5 4	9
8 4 2 6 1 5 3 7 8	8
9 9 8 7 6 5 4 3 2 1	22
10 8 2 9 5 1 7 10 4 6 3	17
11 7 2 3 9 11 1 8 6 4 10 5	23
12 3 10 6 2 4 12 7 8 5 1 11 9	18