
Sorting a permutation

P77983_en

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Given a permutation of $\{1, \dots, n\}$, you must sort it in increasing order. The only operation allowed is to reverse the first i elements of the current permutation, for any $2 \leq i \leq n$.

For instance, in one step we can transform $[3, 5, 2, 4, 1]$ into $[5, 3, 2, 4, 1]$, $[2, 5, 3, 4, 1]$, $[4, 2, 5, 3, 1]$ and $[1, 4, 2, 5, 3]$.

Given a permutation, what is the minimum number of steps to sort it?

Input

Input consists of several permutations, each with an n between 1 and 18, followed by n different numbers between 1 and n .

Output

For every permutation, print the minimum number of operations to sort it.

Sample input

```
3 1 2 3
2 2 1
1 1
4 2 1 4 3
6 1 3 2 6 5 4
8 4 1 7 8 3 6 5 2
18 11 17 3 10 14 1 18 5 9 6 13 15 4 8 2 12 16 7
```

Sample output

```
0
1
0
3
5
7
19
```

Problem information

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