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## Sorting a permutation

P62723\_en

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Consider a permutation of the numbers of 1 to  $n$ , for a certain given  $n$ . At every step, you can choose one  $i$  between 1 and  $n$ , and to turn the elements of the first  $i$  positions of the permutation. The aim is to leave the permutation sorted (in increasing or decreasing order).

Write a program that computes the minimal number of necessary steps to sort a given permutation.

### Input

Input consists of a natural  $n > 0$ , followed by a permutation of the numbers from 1 to  $n$ .

### Output

Your program must print the minimal number of necessary steps to sort the permutation, following the format of the instances.

#### Sample input 1

```
6
6 5 4 3 2 1
```

#### Sample output 1

```
0 steps are needed
```

#### Sample input 2

```
5
3 2 1 4 5
```

#### Sample output 2

```
1 steps are needed
```

#### Sample input 3

```
9
3 9 6 5 4 1 2 7 8
```

#### Sample output 3

```
6 steps are needed
```

### Problem information

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Generation : 2013-09-02 14:52:09

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