Minimum Swaps 2 ★

Problem Submissions Leaderboard Editorial

You are given an unordered array consisting of consecutive integers ∈ [1, 2, 3, ..., n] without any duplicates. You are allowed to swap any two elements. Find the minimum number of swaps required to sort the array in ascending order.

Example

$arr = [7, 1, 3, 2, 4, 5, 6]$

Perform the following steps:

```
i  arr                  swap (indices)
0  [7, 1, 3, 2, 4, 5, 6]  swap (0,3)
1  [2, 1, 3, 7, 4, 5, 6]  swap (0,1)
2  [1, 2, 3, 7, 4, 5, 6]  swap (3,4)
3  [1, 2, 3, 4, 7, 5, 6]  swap (4,5)
4  [1, 2, 3, 4, 5, 7, 6]  swap (5,6)
5  [1, 2, 3, 4, 5, 6, 7]
```

It took 5 swaps to sort the array.

Function Description

Complete the function minimumSwaps in the editor below.

minimumSwaps has the following parameter(s):

- int arr[n]: an unordered array of integers

Returns

- int: the minimum number of swaps to sort the array

Input Format

The first line contains an integer, n, the size of arr.

The second line contains n space-separated integers $arr[i]$.

Constraints

- $1 \leq n \leq 10^5$
- $1 \leq arr[i] \leq n$

Sample Input 0

```
4
4 3 1 2
```

Sample Output 0

```
3
```

Explanation 0

Given array $arr : [4, 3, 1, 2]$

After swapping $(0, 2)$ we get $arr : [1, 3, 4, 2]$

After swapping $(1, 2)$ we get $arr : [1, 4, 3, 2]$

After swapping $(1, 3)$ we get $arr : [1, 2, 3, 4]$

So, we need a minimum of 3 swaps to sort the array in ascending order.

Sample Input 1

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

Sample Output 1

```
3
```

Explanation 1

Given array $arr : [2, 3, 4, 1, 5]$
After swapping $(2, 3)$ we get $arr : [2, 3, 1, 4, 5]$
After swapping $(0, 1)$ we get $arr : [3, 2, 1, 4, 5]$
After swapping $(0, 2)$ we get $arr : [1, 2, 3, 4, 5]$
So, we need a minimum of 3 swaps to sort the array in ascending order.

Sample Input 2

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

Sample Output 2

```
3
```

Explanation 2

Given array $arr : [1, 3, 5, 2, 4, 6, 7]$
After swapping $(1, 3)$ we get $arr : [1, 2, 5, 3, 4, 6, 7]$
After swapping $(2, 3)$ we get $arr : [1, 2, 3, 5, 4, 6, 7]$
After swapping $(3, 4)$ we get $arr : [1, 2, 3, 4, 5, 6, 7]$
So, we need a minimum of 3 swaps to sort the array in ascending order.

Change Theme JavaScript (Node.js)

```
function swap(arr, i, j){
    const stored = arr[i];
    arr[i] = arr [j];
    arr[j] = stored;
}
// Complete the minimumSwaps function below.
function minimumSwaps(arr) {
    const arr2 = arr.slice().sort((a, b) => a - b);
    const indexes = new Map();
    arr.forEach((v, i) => indexes.set(v, i));
    let swaps = 0;
    arr.forEach((v, i) => {
        if (v !== arr2[i]) {
            swaps++;
            arr[indexes.get(arr2[i])] = v;
            arr[i] = arr2[i];
            indexes.set(v, indexes.get(arr2[i]));
        }
    });
    return swaps;
}

function main() {
```

```
59      const ws = fs.createWriteStream(process.env.OUTPUT_PATH);
```

Line: 57 Col: 1

Upload Code as File | Test against custom input | Run Code | Submit Code

Congratulations!

You have passed the sample test cases. Click the submit button to run your code against all the test cases.

Sample Test case 0

Sample Test case 1

Sample Test case 2

Input (stdin) Download

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

Your Output (stdout)

```
1  3
```

Expected Output Download

```
1  3
```