# p p

# Minimum Swaps 2 ☆

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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. You need to find the minimum number of swaps required to sort the array in ascending order.

For example, given the array arr = [7, 1, 3, 2, 4, 5, 6] we 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. It must return an integer representing the minimum number of swaps to sort the array. minimumSwaps has the following parameter(s):

• arr: an unordered array of integers

#### Input Format

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

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

#### Constraints

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

### **Output Format**

Return the minimum number of swaps to sort the given array.

### 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]

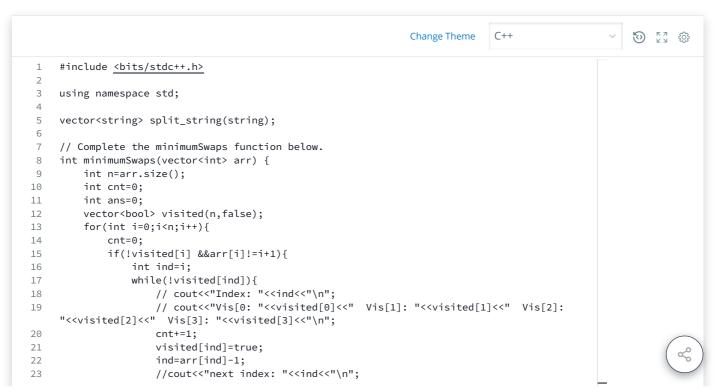
After swapping (1,2) we get arr: [1,4,3,2]

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
  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
  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 (\mathbf{3},\mathbf{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.
```



```
}//cout<<"cnt: "<<cnt<<"\n";
 26
                    ans+=cnt-1;
 27
 28
               visited[i]=true;
 29
 30
           return ans;
 31
 32
     }
 33
 34
      int main()
 35
      { …
 62
 63
      vector<string> split_string(string input_string) \{\cdots
 64
 91
                                                                                                             Line: 25 Col: 15
oldsymbol{1} Upload Code as File oxedsymbol{\square} Test against custom input
                                                                                                             Submit Code
                                                                                              Run Code
 Congratulations
                                                                                                      Next Challenge
 You solved this challenge. Would you like to challenge your friends?
 ⊘ Test case 0
                            Compiler Message
                             Success
 ⊘ Test case 1
                           Input (stdin)
                                                                                                                 Download
 ⊘ Test case 2
                               4 3 1 2
 \odot Test case 3 	riangle
                            Expected Output
                                                                                                                 Download
```

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