Sorting: Bubble Sort ★

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Consider the following version of Bubble Sort:

```
for (int i = 0; i < n; i++) {

    for (int j = 0; j < n - 1; j++) {
        // Swap adjacent elements if they are in decreasing order
        if (a[j] > a[j + 1]) {
            swap(a[j], a[j + 1]);
        }
    }

}
```

Given an array of integers, sort the array in ascending order using the Bubble Sort algorithm above. Once sorted, print the following three lines:

1. `Array is sorted in numSwaps swaps.`, where $numSwaps$ is the number of swaps that took place.
2. `First Element: firstElement`, where $firstElement$ is the first element in the sorted array.
3. `Last Element: lastElement`, where $lastElement$ is the last element in the sorted array.

Hint: To complete this challenge, you must add a variable that keeps a running tally of all swaps that occur during execution.

Example

$a = [6, 4, 1]$

```
swap   a
0     [6,4,1]
1     [4,6,1]
2     [4,1,6]
3     [1,4,6]
```

The steps of the bubble sort are shown above. It took 3 swaps to sort the array. Output is:

```
Array is sorted in 3 swaps.
First Element: 1
Last Element: 6
```

Function Description

Complete the function countSwaps in the editor below.

countSwaps has the following parameter(s):

- int a[n]: an array of integers to sort

Prints

Print the three lines required, then return. No return value is expected.

Input Format

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

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

Constraints

- $2 \leq n \leq 600$
- $1 \leq a[i] \leq 2 \times 10^6$

Output Format

Sample Input 0

```
STDIN   Function
-----   --------
3      a[] size n = 3
1 2 3   a = [1, 2, 3]
```

Sample Output 0

```
Array is sorted in 0 swaps.
First Element: 1
Last Element: 3
```

Explanation 0

The array is already sorted, so 0 swaps take place.

Sample Input 1

```
3
3 2 1
```

Sample Output 1

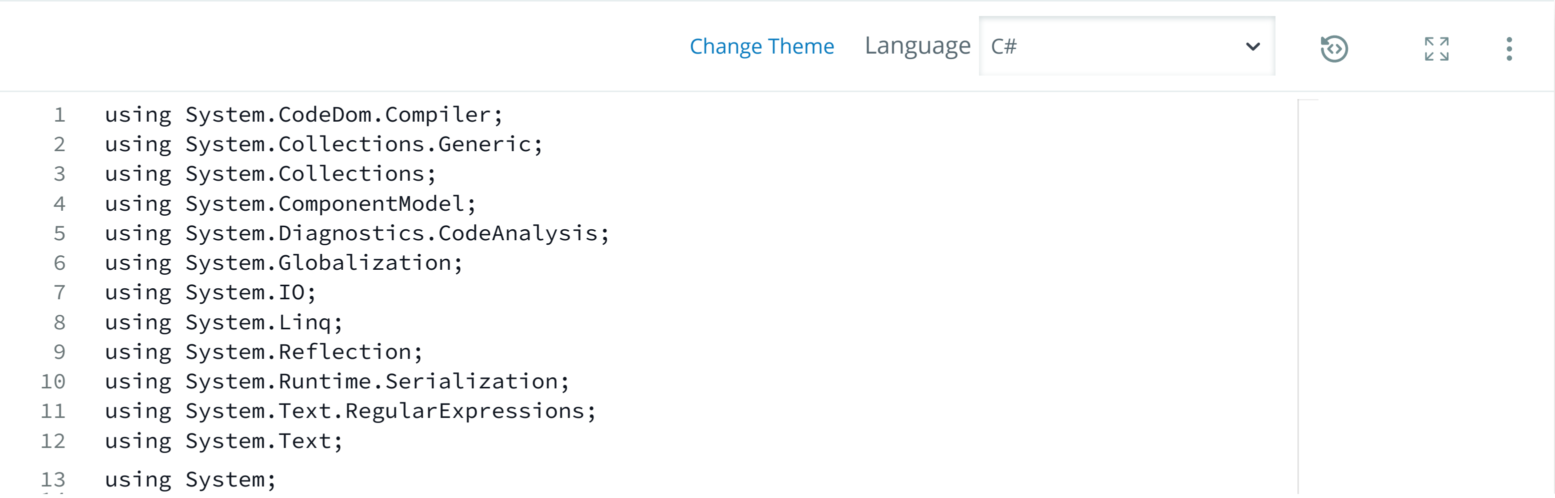
```
Array is sorted in 3 swaps.
First Element: 1
Last Element: 3
```

Explanation 1

The array is not sorted, and its initial values are: $\{3, 2, 1\}$. The following 3 swaps take place:

1. $\{3, 2, 1\} \rightarrow \{2, 3, 1\}$
2. $\{2, 3, 1\} \rightarrow \{2, 1, 3\}$
3. $\{2, 1, 3\} \rightarrow \{1, 2, 3\}$

At this point the array is sorted and the three lines of output are printed to stdout.



```
using System.CodeDom.Compiler;
using System.Collections.Generic;
using System.Collections;
using System.ComponentModel;
using System.Diagnostics.CodeAnalysis;
using System.Globalization;
using System.IO;
using System.Linq;
using System.Reflection;
using System.Runtime.Serialization;
using System.Text.RegularExpressions;
using System.Text;
using System;
```

```
class Result
{

    /*
     * Complete the 'countSwaps' function below.
     *
     * The function accepts INTEGER_ARRAY a as parameter.
     */

    public static void countSwaps(List<int> a)
    {
        var swaps = 0;
            var length = a.Count;
```

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