Insertion Sort - Part 1

by HackerRank

Problem Submissions Leaderboard Discussions

Sorting
One common task for computers is to sort data. For example, people might want to see all their files on a computer sorted by size. Since sorting is a simple problem with many different possible solutions, it is often used to introduce the study of algorithms.

Insertion Sort
These challenges will cover *Insertion Sort*, a simple and intuitive sorting algorithm. We will first start with an already sorted list.

Insert element into sorted list
Given a sorted list with an unsorted number e in the rightmost cell, can you write some simple code to *insert* e into the array so that it remains sorted?

Print the array every time a value is shifted in the array until the array is fully sorted. The goal of this challenge is to follow the correct order of insertion sort.

Guideline: You can copy the value of e to a variable and consider its cell "empty". Since this leaves an extra cell empty on the right, you can shift everything over until V can be inserted. This will create a duplicate of each value, but when you reach the right spot, you can replace it with e.

Input Format
There will be two lines of input:

- $Size$ - the size of the array
- Arr - the unsorted array of integers

Output Format
On each line, output the entire array every time an item is shifted in it.

Constraints
$1 \leq Size \leq 1000$
$-10000 \leq e \leq 10000, e \in Arr$

Sample Input

```
5
2 4 6 8 3
```

Sample Output

```
2 4 6 8 8
2 4 6 6 8
2 4 4 6 8
2 3 4 6 8
```

Explanation

3 is removed from the end of the array.
In the 1^{st} line $8 > 3$, so 8 is shifted one cell to the right.
In the 2^{nd} line $6 > 3$, so 6 is shifted one cell to the right.

In the 3^{rd} line $4 > 3$, so 4 is shifted one cell to the right.
In the 4^{th} line $2 < 3$, so 3 is placed at position 2.

Task

Complete the method insertionSort which takes in one parameter:

- Arr - an array with the value e in the right-most cell.

Next Challenge

In the next Challenge, we will complete the insertion sort itself!

Submissions: 69646
Max Score: 30
Difficulty: Easy

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Current Buffer (saved locally, editable) C#

```
using System;
using System.Collections.Generic;
using System.IO;
class Solution {
    static void printArray(int[] arr)
        {
            for (int i = 0; i < arr.Length; i++)
            {
                Console.Write(arr[i] + " ");
            }
            Console.WriteLine();
        }

        static void insertionSort(int[] ar)
        {
            for (int i = 1; i < ar.Length; i++)
            {
                int indice = i;

                while (indice > 0 && ar[indice - 1] > ar[indice])
                {

                    int temp = ar[indice];
                    ar[indice] = ar[indice - 1];

                    printArray(ar);

                    ar[indice - 1] = temp;

                    indice--;
                }

            }

            printArray(ar);
        }
/* Tail starts here */
    static void Main(String[] args) {

           int _ar_size;
           _ar_size = Convert.ToInt32(Console.ReadLine());
           int [] _ar =new int [_ar_size];
           String elements = Console.ReadLine();
           String[] split_elements = elements.Split(' ');
           for(int _ar_i=0; _ar_i < _ar_size; _ar_i++) {
                  _ar[_ar_i] = Convert.ToInt32(split_elements[_ar_i]);
           }

           insertionSort(_ar);
    }
}
```

Line: 40 Col: 10

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

Congrats, you solved this challenge!

- ✔ Test Case #0
- ✔ Test Case #1
- ✔ Test Case #2
- ✔ Test Case #3

Next Challenge