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 array containing $Size - 1$ sorted integers and 1 unsorted integer e in the rightmost cell

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!

Current Buffer (saved locally, editable) C++14

```
#include <cmath>
#include <cstdio>
#include <vector>
#include <iostream>
#include <algorithm>
using namespace std;


int main() {
    /* Enter your code here. Read input from STDIN. Print output to STDOUT */
    int size;
    cin >>size;
    int a[size];
    for(int i=0;i<size;i++)
        cin >>a[i];

    int ele=a[size-1];

    for(int i=size-1;i>=0;i--)
    {
        if(ele<a[i-1])
        {
            a[i]=a[i-1];
            for(int j=0;j<size;j++)
                cout << a[j]<<" ";
        //cout << endl;
        }
        else

        {
            a[i]=ele;
            for(int j=0;j<size;j++)
                cout << a[j]<<" ";
            break;
        }
        cout << endl;

    }

    return 0;
}

```

Line: 33 Col: 33

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

You've earned 30.00 points! Next Challenge