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Points: 313.76 Rank: 45311

Insertion Sort - Part 1

by idlecool

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 1st line $8 > 3$, so 8 is shifted one cell to the right.

In the 2nd line $6 > 3$, so 6 is shifted one cell to the right.

In the 3rd line $4 > 3$, so 4 is shifted one cell to the right.

In the 4th 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: 38711

Max Score: 30

Difficulty: Easy

[More](#)

Current Buffer (saved locally, editable)  

C++   

```
18 #include <map>
19 #include <set>
20 #include <list>
21 #include <cmath>
22 #include <ctime>
23 #include <deque>
24 #include <queue>
25 #include <stack>
26 #include <bitset>
27 #include <cstdio>
28 #include <vector>
29 #include <cstdlib>
30 #include <numeric>
31 #include <sstream>
32 #include <iostream>
33 #include <algorithm>
34 using namespace std;
35
36 void insertionSort(vector<int> ar) {
37     int e = *ar.end();
38
39 }
40
41 int main(void) {
42     vector<int> _ar;
43     int _ar_size;
44     cin >> _ar_size;
45
46     for(int _ar_i=0; _ar_i<_ar_size; _ar_i++) {
47         int _ar_tmp;
48         cin >> _ar_tmp;
49         _ar.push_back(_ar_tmp);
50     }
51
52     insertionSort(_ar);
53
54     return 0;
```

```
55 }  
56
```

Line: 56 Col: 1

[Upload Code as File](#)

Test against custom input

Run Code

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