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Insertion Sort - Part 1

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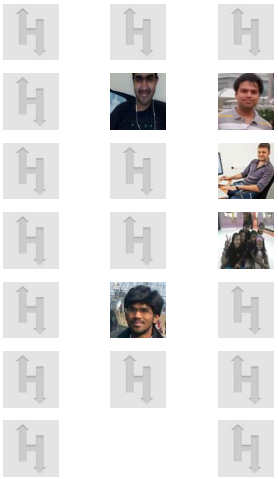

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Sorting

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 V in the right-most cell, can you write some simple code to insert V into the array so 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 V 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 a value with V.

Input Format

There will be two lines of input:

- s - the size of the array
- ar - the sorted array of integers

Output Format

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

Constraints

1<=s<=1000
-10000<=x<= 10000, x ∈ ar

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, 8 is shifted one cell right.
In the 2nd line 6 > 3, 6 is shifted one cell right.
In the 3rd line 4 > 3, 4 is shifted one cell right.
In the 4th line 2 < 3, 3 is placed at position 2.

Task

Complete the method insertionSort which takes in 1 parameter:

- ar - an array with the value V in the right-most cell.

Next Challenge

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

Suggest Edits

Current Buffer *(saved locally, editable)*

C

```c
#include <stdio.h>
#include <string.h>
#include <math.h>
#include <stdlib.h>
#include <assert.h>
void insertionSort(int ar_size, int *  ar) {


}
int main(void) {

   int _ar_size;
scanf("%d", &_ar_size);
int _ar[_ar_size], _ar_i;
for(_ar_i = 0; _ar_i < _ar_size; _ar_i++) {
   scanf("%d", &_ar[_ar_i]);
}

insertionSort(_ar_size, _ar);

   return 0;
}

```

Line: 1 Col: 1

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