# 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:** 73998
**Max Score:** 30
**Difficulty:** Easy

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