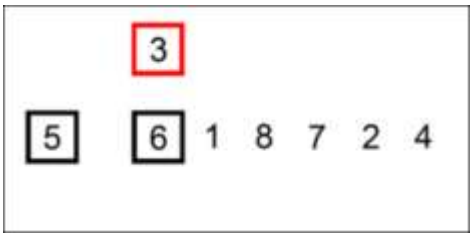
C# Advanced Lab - Algorithms

This document defines **algorithmic problems** from the "Advanced C#" Course @ Software University. You are presented with some problems and certain steps you need to take in order to accomplish the tasks.

Problem 3. Insertion Sort

Insertion Sort Algorithm

You can see an **animated** version of the algorithm in detail here: *http://upload.wikimedia.org/wikipedia/commons/0/0f/Insertion-sort-example-300px.gif*

Your task is to implement the Insertion Sort algorithm using C#. The solution of the algorithm is as follows:

- Start from **`i = 1`** and iterate to the **last element**
  - If **`A[i-1]`** is **larger** than **`A[i]`**:
    - Start shifting all previous elements (**`i-1`**, **`i-2`**, **`i-3`**, etc.) **larger** than the **`A[i]`** to the right
    - Do the above until **`A[i-n]`** is smaller or equal to **`A[i]`**

Constraints

- The input list will hold integers in the range [–2147483648 … 2147483647].
- You are **NOT allowed** to use **`Array.Sort()`**, **`.OrderBy()`** or similar methods. Write **your own** Insertion Sort algorithm.

Example

Input	Output
`5 1 19 12 3 6 10 2`	`1 2 3 5 6 10 12 19`
`0 1 2 3 4 5 6 6 7 8`	`0 1 2 3 4 5 6 6 7 8`
`0 -1 0 -1 -1 0 -2 3 -1 -3 5 -1`	`-3 -2 -1 -1 -1 -1 -1 0 0 0 3 5`