# Lab: Generics

You can check your solutions here: <https://judge.softuni.bg/Contests/3183/Additional-Exercises>.

# Part I: Generics

## Box of T

**NOTE**: You need a public StartUp class with the namespace BoxOfT.

Create a class **Box<>** that can store anything. It should have two public methods:

* void Add(element) – adds an element on the top of the list.
* element Remove() – removes the topmost element.
* int Count { get; }

### Examples

|  |
| --- |
| public static void Main()  {  Box<int> box = new Box<int>();  box.Add(1);  box.Add(2);  box.Add(3);  Console.WriteLine(box.Remove());  box.Add(4);  box.Add(5);  Console.WriteLine(box.Remove());  } |

### Hints

Use the syntax Box<T> to create a generic class

## Generic Array Creator

**NOTE**: You need a public StartUp class with the namespace GenericArrayCreator.

Create a class ArrayCreator with a method and a single overload to it:

* static T[] Create(int length, T item)

The method should return an array with the given length and every element should be set to the given default item.

### Examples

|  |
| --- |
| static void Main(string[] args)  {  string[] strings = ArrayCreator.Create(5, "Pesho");  int[] integers = ArrayCreator.Create(10, 33);  } |

# Part II: Generic Constraints

## Generic Scale

**NOTE**: You need a public StartUp class with the namespace GenericScale.

Create a class **EqualityScale<T>** that holds two elements - **left** and **right**. The scale should receive the elements through its single constructor:

* EqualityScale(T left, T right)

The scale should have a single method:

* bool AreEqual()

The greater of the two elements is the heavier. The method should return true if the elements are equal.

# Part III: Change Solution to Generic

## Make Your CustomArrayList Class Generic

Use the class CustomArrayList from the solution of the Implementing Array List lesson and modify your code to **use generics**.

Use the default keyword, it returns the default value of type parameter. For example:

|  |
| --- |
| arr[Count - 1] = null; |

Will become:

|  |
| --- |
| arr[Count - 1] = default(T); |

### Hints

This is how your generic class CustomArrayList<T> may look like:

