COMP212 Programming 3
2020F - Lab4

Goals:

In this assignment, you will learn the use of system-defined generic class/interface and creation of user-defined generic method.

Rubric: **Total marks = 10, Weight = 10%**

Evaluation Focus:

- Correct implementation of requirements
- Explanation of solution when asked
- Answer questions on the relevant/related topic when asked

Instructions:

1. You are supposed to use Visual Studio 2019. You can use the free Community edition.

2. Go to **eCentennial** > Assessments > Assignment > Click lab4

3. In the lab4 page, you have two items:
   a. the document `comp212.2020F.lab4.pdf` (the one that you are reading now)
   b. the zip file named **`lab4.zip`**. Download this zip file in a folder.

4. Unzip the file **`lab4.zip`**. Once unzipped, the root folder should be **`lab4`**.

5. In the folder **`lab4`**, there should be a Visual Studio solution file **`lab4.sln`**. Also, in the folder **`lab4`**, there is a folder **`Proj1`**. Go inside folder **`Proj1.`** Make sure there are **no** folders named **`bin`** and **`obj`**. If bin and obj folders exist, **delete** both.

6. Start Visual Studio. Open the solution file **`lab4.sln`** in Visual Studio.

7. Once the solution file opens, you should see one project **`Proj1`** in the **Solution Explorer** of visual studio.

8. Under project **`Proj1`**, there is an item **`Program.cs.`** We will focus on the item **`Program.cs`** for our assignment.

This question tests your ability of creating a generic method from scratch. It also tests your ability to figure out the usage of system-defined generic class and its associated methods from the Microsoft website https://docs.microsoft.com.

Write a method named **`search`**. The method performs a search for an element in a list. If the element exists in the list, the method returns the index of the element in the list. If the element does not exist in the list, the method returns -1. While developing this method you MUST use the system-defined method **`CompareTo`**. For the **`CompareTo`** to work for comparing values of generic type you would need to add a constraint to the generic type in the method header. The constraint is specified as part of the method header using the clause "**where T : IComparable<T>**" (without quotes). An example usage of the clause "**where T : IComparable<T>**" is shown below using a method header:

```
public string myMethod<T1, T2>(T1 a, T2 b, T2 c)
            where T2 : IComparable<T2>
{
    //method's body
}
```

When you run **Proj1**, you should see the following output.

```
The element exists at index 2
The element exists at index -1
The element exists at index 1
The element exists at index -1
```

Submission of Assignment:

1. **Submit the solution to lab4 drop-box by drop-box deadline.**
2. Make sure there is one project folder **`Proj1`** under the Visual Studio solution folder **`lab4`**.
3. In Visual Studio, in Solution Explorer, right-click on the solution **`lab4`** and select **Clean Solution**.
4. Compress the Visual Studio solution folder **`lab4`** and all its contents into a single zip file. This will be your submission file. You MUST name your submission file according to the following rule:
   `groupNumber_COMP212_labNumber.zip`
   Example: group1_COMP212_lab4.zip

5. **Next, submit above zip file on eCentennial** through the **Assignment** link.