Scoping Lab

Perform these labs on your own computer using Visual Studio 2022 to ensure you understand the lessons presented in the corresponding videos and lectures.

Lab 1: Add Protected Properties and Methods

Open the **Person.cs** file and add a new property to hold the last date/time this object was updated.

```
protected DateTime LastModified { get; set; }
```

Add a new method to save the person data to a data store.

```
protected Person Save(Person entity, bool isAdding) {
  LastModified = DateTime.Now;

  if (isAdding) {
    // TODO: Write Code to Insert an Entity Here
  }
  else {
    // TODO: Write Code to Update an Entity Here
  }

  return entity;
}
```

Add two public methods; one to insert a person and one to update a person

```
public Person Insert(Person entity) {
  return Save(entity, true);
}

public Person Update(Person entity) {
  return Save(entity, false);
}
```

Add to Customer Class

Open the Customer.cs file and add the same three methods to the **Customer** class. Notice that you can access the **LastModified** property from the **Customer** class.

```
protected Customer Save(Customer entity, bool isAdding)
{
  LastModified = DateTime.Now;

  if (isAdding) {
    // TODO: Write Code to Insert an Entity Here
  }
  else {
    // TODO: Write Code to Update an Entity Here
  }

  return entity;
}

public Customer Insert(Customer entity) {
  return Save(entity, true);
}

public Customer Update(Customer entity) {
  return Save(entity, false);
}
```

Lab 2: Update Interface

Open the **IPerson.cs** file and add the two public methods Insert() and Update().

You can only define **public** methods and properties in an interface.

```
public abstract Person Insert(Person entity);
public abstract Person Update(Person entity);
```

Try it Out

Run the application and ensure everything still works correctly and displays the same output as in the last lesson.

Lab 3: Static Methods

Right mouse-click on the OOPLab project and add a new classed named **FileHelper.cs**.

Replace the code in this file with the following

```csharp
namespace OOPLab;

public static class FileHelper {
  public static string[] ReadAllLines(string fileName) {
    string[] ret;

    if (File.Exists(fileName)) {
      // Attempt to read all lines in the file
      ret = File.ReadAllLines(fileName);
    }
    else {
      throw new FileNotFoundException($"The file
'{fileName}' does not exist.");
    }

    return ret;
  }
}
```

Right mouse-click on the OOPLab project and a new text file named **Customers.tsv**. To this new file add the following tab separated values.

```
1        Orlando Gee A Bike Store
2        Keith  Harris  Progressive Sports
3        Donna  Carreras   Advanced Bike Components
4        Janet  Gates   Modular Cycle Systems
5        Lucy Harrington Metropolitan Sports Supply
6        Rosmarie Carroll Aerobic Exercise Company
7        Dominic Gash   Associated Bikes
10       Kathleen Garza   Rural Cycle Emporium
11       Katherine   Harding Sharp Bikes
12       Johnny Caprio  Bikes and Motorbikes
```

Click on the **Customers.tsv** file once, then bring up the properties window for that file and change the **Copy to Output Directory** property to **Copy if newer**.

Open the **Customers.cs** file and add a new method named ReadCustomersFromFile().

```csharp
public string[] GetCustomers(string fileName) {
   return FileHelper.ReadAllLines(fileName);
}
```

Open the **Program.cs** file and make it look like the following to read the data from the file.

```csharp
using OOPLab;

Customer entity = new();

string[] lines = entity.GetCustomers(
Directory.GetCurrentDirectory() + "\\Customers.tsv");
foreach (string line in lines) {
  Console.WriteLine(line);
}
```

Try it Out

Run the application and your output should look something like the following:

```
1       Orlando Gee     A Bike Store
2       Keith   Harris  Progressive Sports
3       Donna   Carreras        Advanced Bike Components
4       Janet   Gates   Modular Cycle Systems
5       Lucy    Harrington       Metropolitan Sports
Supply
6       Rosmarie        Carroll Aerobic Exercise Company
7       Dominic Gash    Associated Bikes
10      Kathleen        Garza   Rural Cycle Emporium
11      Katherine       Harding Sharp Bikes
12      Johnny  Caprio  Bikes and Motorbikes
```