Generic Collections 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: Change Customer Array to List

Open the **CustomerRepository.cs** file and modify the ProcessCustomerLines() method to return a List<Customer>.

```
private List<Customer> ProcessCustomerLines(string[]
lines) {
  List<Customer> ret = new();

  foreach (string item in lines) {
    string[] entity = item.Split('\t');

    Customer cust = new() {
      CustomerId = Convert.ToInt32(entity[0]),
      FirstName = entity[1],
      LastName = entity[2],
      CompanyName = entity[3]
    };
    ret.Add(cust);

    CustomerProcessed?.Invoke(this,
      new() {
        CustomerObject = cust
      });
  }

  return ret;
}
```

Modify GetCustomers() Method

Change the GetCustomers() method to return a List<Customer> instead of an array of customers.

```
public List<Customer> GetCustomers(string fileName) {
  List<Customer> ret = null;

  try {
    string[] lines = FileHelper.ReadAllLines(fileName);
    ret = ProcessCustomerLines(lines);
  }
  catch (FileNotFoundException ex) {
    Console.WriteLine(ex.ToString());
  }
  catch (Exception ex) {
    Console.WriteLine(ex.ToString());
  }

  return ret;
}
```

Try it Out

Open the **Program.cs** file and modify the code to look like the following:

```
using OOPLab;

CustomerRepository repo = new();

List<Customer> customers =
repo.GetCustomers(Directory.GetCurrentDirectory() +
"\\Customers.tsv");

foreach (Customer cust in customers) {
  Console.WriteLine(cust);
}
```

Run the application and view the output.

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

Lab 2: Find a Specific Customer

Open the **Program.cs** file and add code to locate a customer by the **CustomerId** property.

```
using OOPLab;

CustomerRepository repo = new();

List<Customer> customers =
repo.GetCustomers(Directory.GetCurrentDirectory() +
"\\Customers.tsv");

Customer entity = customers.Find(row => row.CustomerId
== 2);
Console.WriteLine();
Console.WriteLine(entity);
```

Try it Out

Run the program and view the output.

```
Customer ID: 2 - Progressive Sports: Harris, Keith
```

Lab 3: Extract a Subset of Customers

Open the **Program.cs** file and add code to retrieve only those customers where the **CompanyName** property contains the string "Bike".

```
using OOPLab;

CustomerRepository repo = new();

List<Customer> customers =
repo.GetCustomers(Directory.GetCurrentDirectory() +
"\\Customers.tsv");

Console.WriteLine();
foreach (Customer cust in customers.Where(row =>
row.CompanyName.Contains("Bike"))) {
  Console.WriteLine(cust);
}
```

Try it Out

Run the program and view the output.

```
Customer ID: 1 - A Bike Store: Gee, Orlando
Customer ID: 3 - Advanced Bike Components: Carreras,
Donna
Customer ID: 7 - Associated Bikes: Gash, Dominic
Customer ID: 11 - Sharp Bikes: Harding, Katherine
Customer ID: 12 - Bikes and Motorbikes: Caprio, Johnny
```