

# Events 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: Create Customer Objects from the TSV File

Open the **Customer.cs** file and add a new method.

```
private Customer[] ProcessCustomerLines(string[] lines)
{
    Customer[] ret;
    ArrayList customers = 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]
        };
        customers.Add(cust);
    }

    // Convert ArrayList to Array
    ret = (Customer[])customers.ToArray(typeof(Customer));

    return ret;
}
```

Replace the GetCustomers() method with the code shown below.

```
public Customer[] GetCustomers(string fileName) {
    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 where you previously wrote the code to loop over the string array, write the following:

```
using OOPLab;

Customer entity = new();

Customer[] customers =
    entity.GetCustomers(Directory.GetCurrentDirectory() +
        "\\Customers.tsv");
foreach (Customer cust in customers) {
    Console.WriteLine(cust);
}
```

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

```
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: Raise Event from ProcessCustomerLines() Method

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

```
namespace OOPLab;

public class CustomerEventArgs : EventArgs {
    public Customer CustomerObject { get; set; }
}
```

Open the **Customer.cs** file and add a declaration for a new event.

```
public event EventHandler<CustomerEventArgs>
CustomerProcessed;
```

Locate the ProcessCustomerLines() method and immediately after the line of code that adds a new customer object to the customers ArrayList, add the following

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

Open the **Program.cs** file and replace all the code with the following:

```
using OOPLab;

Customer entity = new();
entity.CustomerProcessed += Entity_CustomerProcessed;

void Entity_CustomerProcessed(object sender,
CustomerEventArgs e) {
    Console.WriteLine(e.CustomerObject);
}

Customer[] customers =
    entity.GetCustomers(Directory.GetCurrentDirectory()
        + "\\Customers.tsv");
```

## Try it Out

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

```
Customer ID: 1 - A Bike Store: Gee, Orlando
Customer ID: 2 - Progressive Sports: Harris, Keith
Customer ID: 3 - Advanced Bike Components: Carreras,
Donna
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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
```