Use LINQ to Select Data Within Collections

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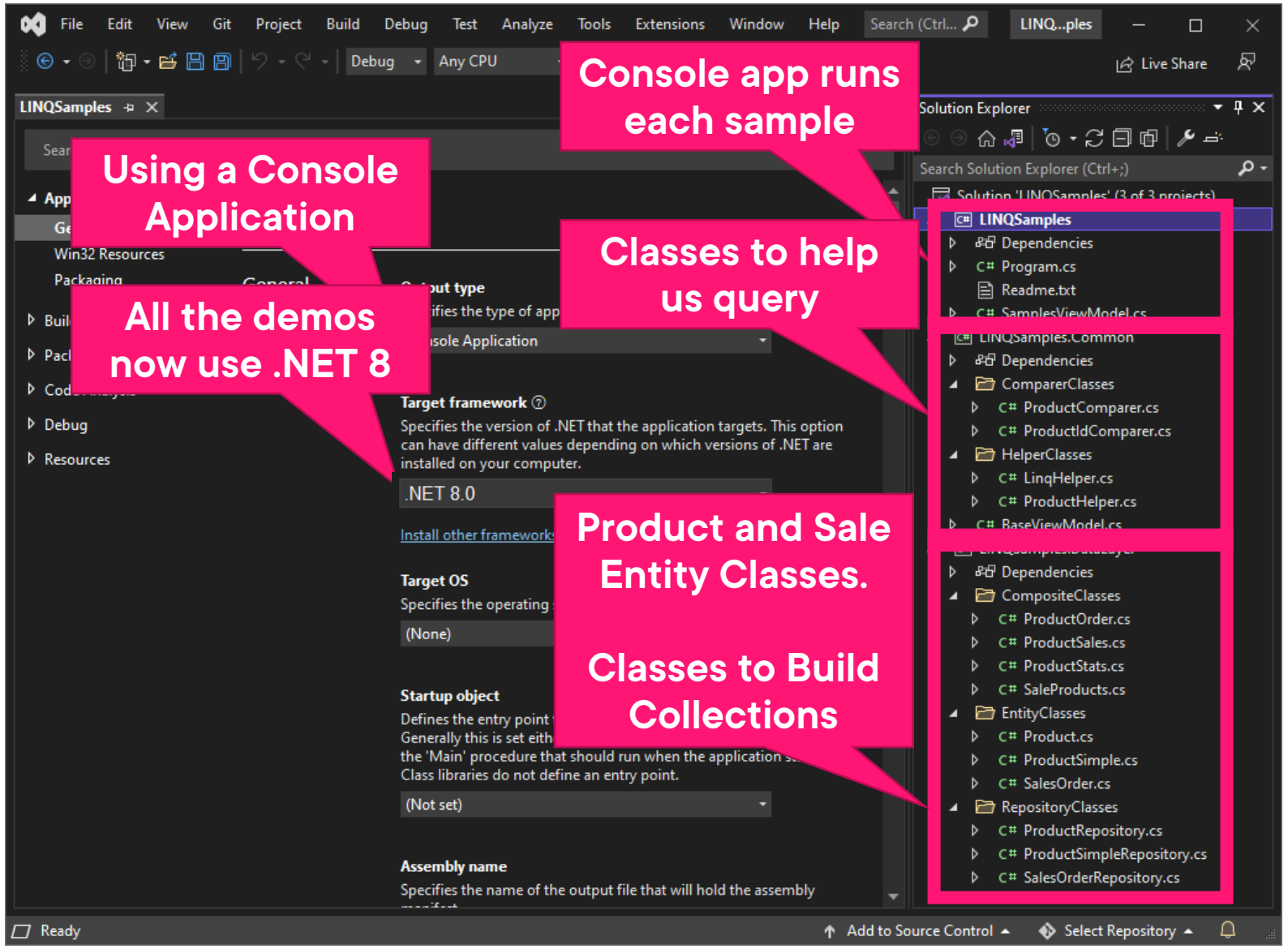
Module Goals

- An overview of the console application
- Selecting all data
- Selecting specific columns
- Building an anonymous class

The Demo Classes

Sample Console Application



Product Entity Class

```
public partial class Product {
  public int ProductID { get; set; }
  public string Name ...
  public string Color ...
  public decimal StandardCost ...
  public decimal ListPrice ...
  public string Size ...
}
```

- Represents a "Product"

- Each property would have a { get; set; }
- Eliminated here for brevity

Product Repository Class

```
public partial class ProductRepository
{
  public static List<Product> GetAll() {
    return new List<Product> {
      new Product {
        ProductID = 680,
        Name = "HL Road Frame",
        Color = "Black",
        StandardCost = 1059.31M,
        ListPrice = 1431.50M,
        Size = "58",
      },

   // MORE CODE HERE
}
```

- Class to retrieve collection of product data
- Method to retrieve all products from a data source
- Using hard-coded values for this course

View Model Base Class

```
public class ViewModelBase {
  public void GetProducts() {
   return ProductRepository.GetAll();
  }

  public void GetSales() {
   return SalesOrderRepository.GetAll();
  }

  public Display*() {
  }
}
```

- Base class used by SamplesViewModel class
- Method to retrieve set of Product objects
- Method to retrieve set of SalesOrder objects
- Overloaded methods to display Products, SalesOrder objects, as well as many different lists

SamplesViewModel Class

```
public class SamplesViewModel :
ViewModelBase {

  public void GetAllQuery() {
  }


  public void GetAllMethod() {
  }
}
```

- View model class used to teach LINQ samples
- One method to illustrate LINQ query syntax
- One method to illustrate LINQ method syntax

SamplesViewModel Method

```
public List<Product> GetAllQuery()
{
  List<Product> products =
    GetProducts();
  List<Product> list;

  // Write Query Syntax Here
  list = (from prod in products
          select prod).ToList();

  return list;
}
```

- Method returns a set of data
- Build a collection to query
- Create variable to hold results
- Write a query using LINQ methods
- Return the results

Program.cs

```
using LINQSamples;

// Create instance of view model
SamplesViewModel vm = new();

// Call Sample Method
var result = vm.GetAllQuery();

// Display Results
vm.Display(result);
```

- Bring in LINQSamples namespace
- Create instance of sample view model class
- Call the sample method you just wrote
- Display results in console

Selecting

Demo

Select all items using LINQ

Sample Methods

```
public List<Product> GetAllQuery() {
  List<Product> products =
    GetProducts();

  List<Product> list = new();
  ... REST OF CODE HERE
}
```

```
public List<Product> GetAllMethod() {
  List<Product> products =
    GetProducts();

  List<Product> list = new();
  ... REST OF CODE HERE
}
```

- There are many methods in the SamplesViewModel class

- Set the 'list' variable to new() so all methods can compile
- Once you set 'list' to the results of the query, you can eliminate the '= new()'

Sample Methods

```
public List<Product> GetAllQuery() {
  List<Product> products =
    GetProducts();

  return (from prod in products)
     .ToList()
}
```

- In a real-world scenario, you can eliminate the 'list' variable

- Simply return the results of the query

- While training, I will be showing you the results of the 'list' variable in the debugger, so it makes it easier to add the variable in this course

Why Show Query and Method Syntax?

Some queries must be done with the method syntax

You may run across samples or articles where the author used one or the other

So, you should know both methods

Demo

Get a single column

Demo

Get specific columns

Demo

Build an anonymous class

Module Summary

- Query syntax is readable, if a little verbose
- Method syntax is very compact
- Can select single properties
- Can select multiple properties
- Project new columns using anonymous classes

Up Next:

Use LINQ to Order Data