.NET 9 App Dev Hands-On Workshop

Blazor Lab 4 – Data Services

This lab adds data services to the `AutoLot.Blazor` project. Before starting this lab, you must have completed Blazor Lab 3.

Part 1: Add the Data Service and Interfaces

Step 1: Add the service interfaces.

- Add the following to the `GlobalUsings.cs` file in the `AutoLot.Blazor` project:

```
global using AutoLot.Blazor.Models.Entities;
global using AutoLot.Blazor.Models.Entities.Base;
global using AutoLot.Blazor.Models.ViewModels;
```

- In the `Services` folder in the `AutoLot.Blazor` project, add a new folder named `Interfaces`. In this folder, add a new folder named Base and add a new interface named `IDataServiceBase,` and update it to the following:

```
namespace AutoLot.Blazor.Services.Interfaces.Base;
public interface IDataServiceBase<TEntity> where TEntity : BaseEntity
{
  Task<TEntity> GetEntityAsync(int id);
  Task<TEntity> AddEntityAsync(TEntity entity);
  Task<TEntity> UpdateEntityAsync(int id, TEntity entity);
  Task DeleteEntityAsync(TEntity entity);
  Task<List<TEntity>> GetAllEntitiesAsync();
}
```

- Add the following to the `GlobalUsings.cs` file:

```
global using AutoLot.Blazor.Services.Interfaces;
global using AutoLot.Blazor.Services.Interfaces.Base;
```

- In the `Interfaces` folder, add two interface files: `ICarDataService.cs` and `IMakeDataService.cs`. Update the code to the following listings:

```
//ICarDataService.cs
namespace AutoLot.Blazor.Services.Interfaces;
public interface ICarDataService : IDataServiceBase<Car>
{
  Task<List<Car>> GetByMakeAsync(int makeId);
}

//IMakeDataService.cs
namespace AutoLot.Blazor.Services.Interfaces;
public interface IMakeDataService : IDataServiceBase<Make>
{
}
```

Step 2: Add the BaseDataService class

- Create a folder named `Base` in the `Services` folder. In the `Base` folder, add a new class named `BaseDataService.cs`. Update the code to the following:

```
namespace AutoLot.Blazor.Services.Base;
public class BaseDataService
{
  protected static List<Make> Makes =
  [
    new() { Id = 1, Name = "VW" },
    new() { Id = 2, Name = "Ford" },
    new() { Id = 3, Name = "Saab" },
    new() { Id = 4, Name = "Yugo" },
    new() { Id = 5, Name = "BMW" },
    new() { Id = 6, Name = "Pinto" }
  ];
  protected List<Car> CarList =
  [
    new() { Id = 1, MakeId = 1, Color = "Black", PetName = "Zippy", Price = "$45,000.00",
      MakeNavigation = Makes.First(m => m.Id == 1) },
    new() { Id = 2, MakeId = 2, Color = "Rust", PetName = "Rusty", Price = "$45,000.00",
      MakeNavigation = Makes.First(m => m.Id == 2) },
    new(){Id = 3, MakeId = 3, Color = "Black", PetName = "Mel", Price = "$45,000.00",
      MakeNavigation = Makes.First(m => m.Id == 3) },
    new(){ Id = 4, MakeId = 4, Color = "Yellow", PetName = "Clunker", Price = "$45,000.00",
      MakeNavigation = Makes.First(m => m.Id == 4) },
    new() { Id = 5, MakeId = 5, Color = "Black", PetName = "Bimmer", Price = "$45,000.00",
      MakeNavigation = Makes.First(m => m.Id == 5) },
    new() { Id = 6, MakeId = 5, Color = "Green", PetName = "Hank", Price = "$45,000.00",
      MakeNavigation = Makes.First(m => m.Id == 5) },
    new() { Id = 7, MakeId = 5, Color = "Pink", PetName = "Pinky", Price = "$45,000.00",
      MakeNavigation = Makes.First(m => m.Id == 5) },
    new() { Id = 8, MakeId = 6, Color = "Black", PetName = "Pete", Price = "$45,000.00",
      MakeNavigation = Makes.First(m => m.Id == 6) },
    new() { Id = 9, MakeId = 4, Color = "Brown", PetName = "Brownie", Price = "$45,000.00",
      MakeNavigation = Makes.First(m => m.Id == 4) },
    new() { Id = 10, MakeId = 1, Color = "Rust", PetName = "Lemon", IsDrivable = false,
      Price = "$45,000.00", MakeNavigation = Makes.First(m => m.Id == 1) }
];
}
```

- Add the following to the `GlobalUsings.cs` file:

```
global using AutoLot.Blazor.Services.Base;
```

Step 3: Implement the Car data service.

- Create a new class named `CarDataService` in the `Services` folder and update it to the following:

```
namespace AutoLot.Blazor.Services;
public class CarDataService : BaseDataService, ICarDataService
{
  public async Task<Car> GetEntityAsync(int id)
    => await Task.FromResult(CarList.FirstOrDefault(c => c.Id == id));

  public async Task<Car> AddEntityAsync(Car entity)
  {
    entity.Id = CarList.Max(x => x.Id) + 1;
    entity.MakeNavigation = Makes.First(m => m.Id == entity.MakeId);
    CarList.Add(entity);
    return await Task.FromResult(entity);
  }

  public async Task<Car> UpdateEntityAsync(int id, Car entity)
  {
    entity.MakeNavigation = Makes.First(m => m.Id == entity.MakeId);
    return await Task.FromResult(entity);
  }

  public async Task DeleteEntityAsync(Car entity)
  {
    var carToRemove = CarList.FirstOrDefault(c => c.Id == entity.Id);
    if (carToRemove is not null)
    {
      CarList.Remove(carToRemove);
    }
    await Task.CompletedTask;
  }

  public async Task<List<Car>> GetAllEntitiesAsync() => await Task.FromResult(CarList);

  public async Task<List<Car>> GetByMakeAsync(int makeId)
    => await Task.FromResult(CarList.Where(x => x.MakeId == makeId).ToList());
}
```

Step 4: Add the Make data service implementation.

- Add a new class named `MakeDataService.cs` in the Services folder and update the code to the following:

```
namespace AutoLot.Blazor.Services;
public class MakeDataService : BaseDataService, IMakeDataService
{
  public async Task<Make> GetEntityAsync(int id)
    => await Task.FromResult(Makes.FirstOrDefault(c => c.Id == id));
  public async Task<Make> AddEntityAsync(Make entity)
  {
    entity.Id = Makes.Max(x => x.Id)+1;
    Makes.Add(entity);
    return await Task.FromResult(entity);
  }
  public async Task<Make> UpdateEntityAsync(int id, Make entity) => await Task.FromResult(entity);
  public async Task DeleteEntityAsync(Make entity)
  {
    var carToRemove = Makes.FirstOrDefault(c => c.Id == entity.Id);
    if (carToRemove is not null)
    {
      Makes.Remove(carToRemove);
    }
    await Task.CompletedTask;
  }
  public async Task<List<Make>> GetAllEntitiesAsync() => await Task.FromResult(Makes);
}
```

Part 2: Configure AutoLot.Blazor

Step 1: Add the AppSettings files

- Add three JSON files named appsettings.json, appsettings.Development.json , and appsettings.Staging.json to the **wwwroot** folder of the AutoLot.Blazor project. Update the files to the following:

```
//appsettings.json
{
  "DealerInfo": {
    "DealerName": "Skimedic's Used Cars",
    "City": "West Chester",
    "State": "Ohio"
  }
}

//appsettings.Development.json
{
  "DealerInfo": {
    "DealerName": "Skimedic's Used Cars Development Site",
    "City": "West Chester",
    "State": "Ohio"
  }
}

//appsettings.Staging.json
{
  "DealerInfo": {
    "DealerName": "Skimedic's Used Cars Staging Site",
    "City": "West Chester",
    "State": "Ohio"
  }
}
```

- Add the following to the AutoLot.Blazor.csproj file:

```
<ItemGroup>
  <Content Update="wwwroot\appsettings.json">
    <CopyToOutputDirectory>Always</CopyToOutputDirectory>
  </Content>
  <Content Update="wwwroot\appsettings.*.json">
    <CopyToOutputDirectory>Always</CopyToOutputDirectory>
  </Content>
</ItemGroup>
```

Step 2: Update the Program.cs File

- Add the following three lines to the `Program.cs` file just before the call to `RunAsync()`:

```
builder.Services.AddScoped<ICarDataService, CarDataService>();
builder.Services.AddScoped<IMakeDataService, MakeDataService>();
builder.Services.Configure<DealerInfo>(builder.Configuration.GetSection(nameof(DealerInfo)));

await builder.Build().RunAsync();
```

Summary

This lab added shared services and configured them into the application using the configuration system.

Next Steps

The next lab will focus on working with the UI, Pages, and components.