

.NET 9 App Dev Hands-On Workshop

Blazor Lab 5 –Pages, Navigation, and Validation

This lab adds the application pages and navigation into the AutoLot.Blazor project. Before starting this lab, you must have completed Blazor Lab 4.

Part 1: Update the Main Layout and the Home Page

- Add the following to the `_Imports.razor` file:

```
@using Microsoft.AspNetCore.Components.Sections
```

- Remove the following markup from the `MainLayout.razor` component:
- Remove the following:

```
<div class="top-row px-4">  
  <a href="https://learn.microsoft.com/aspnet/core/" target="_blank">About</a>  
</div>
```

- Add the following to the `MainLayout.razor` Blazor page (new line in bold):

```
<SectionOutlet SectionName="top-bar" />  
<article class="content px-4">  
  @Body  
</article>
```

- Clear out the `Home.razor` page and update the file to have two `@page` directives and add in the `DealerInfo` options monitor:

```
@page "/"  
@page "/home"  
@using Microsoft.Extensions.Options  
@inject IOptionsMonitor<DealerInfo> DealerOptionsMonitor  
<h3 class="text-center">@DealerOptionsMonitor.CurrentValue.City,  
  @DealerOptionsMonitor.CurrentValue.State</h3>  
<SectionContent SectionName="top-bar">  
  <h2 class="text-center">@DealerOptionsMonitor.CurrentValue.DealerName</h2>  
</SectionContent>
```

- Replace the "AutoLot.Blazor" text in the `navbar-brand` tag (in the `NavMenu.razor` component) with "Skimedic's Used Cars" (or use your name for fun!) and update the `href` for the new page route:

```
<a class="navbar-brand" href="/home">Skimedic's Used Cars</a>
```

Part 2: Add the Razor Syntax Page

- Create a new Razor component named RazorSyntax in the Pages folder. Update the code to the following:

```
@page "/razor-syntax"
<PageTitle>Razor Syntax</PageTitle>
<title>Razor Syntax</title>
<h3>Razor Syntax</h3>
@for (int i = 0; i < 15; i++)
{
    @:Counter: @i<br/>
}
@{
    //Code Block
    var foo = "Foo";
    var bar = "Bar";
    var htmlString = "<ul><li>one</li><li>two</li></ul>";
}
@foo<br />
@htmlString<br />
@((MarkupString)htmlString)<br />
@foo.@bar<br />
@foo.ToUpper()<br/>
<hr />
@{
    @:Straight Text
    <div>Value:@_entity.Id</div>
    <text>
        Lines without HTML tag
    </text>
    <br />
}
Email Address Handling:
<br />
foo@foo.com
<br />
@@foo
<br />
test@foo
<br />
test@(foo)
<br />
@*
    Multiline Comments
    Hi.
*@
@functions {
    public static IList<string> SortList(IList<string> strings)
    {
        var list = from s in strings orderby s select s;
        return list.ToList();
    }
}
```

```

@{
    var myList = new List<string> { "C", "A", "Z", "F" };
    var sortedList = SortList(myList);
}
@foreach (string s in sortedList)
{
    @s@:nbsp;
}
<hr />
<hr />
The Car named @_entity.PetName is a <span style="color:@_entity.Color">@_entity.Color</span>
@_entity.MakeNavigation.Name
<hr />
@code {
    private readonly Car _entity = new Car
    {
        Id = 4, Color = "Yellow", PetName = "Hank", MakeId = 1, IsDrivable = true,
        DateBuilt = new DateTime(2022,01,01),Price="$100,099.00",
        MakeNavigation = new Make {Id = 1, Name = "BMW"}
    };
}

```

- Add the following to the NavMenu.Razor component:

```

<div class="nav-item px-3">
    <NavLink class="nav-link" href="/razor-syntax" Match="NavLinkMatch.All">
        <span class="fa-solid fa-cut pe-2" aria-hidden="true"></span>Razor Syntax
    </NavLink>
</div>

```

Part 3: Add the Privacy Page

- Add a new Razor component named Privacy.razor in the Pages folder and update the markup and code to the following:

```

@page "/privacy"
@page "/privacy/{RouteParameter}"
<PageTitle>Privacy Policy</PageTitle>
<title>Privacy Policy</title>
<p>Use this page to detail your site's privacy policy.</p>
@if (!string.IsNullOrEmpty(RouteParameter))
{
    <h3>Route Parameter: @RouteParameter</h3>
}
@if (!string.IsNullOrEmpty(QueryStringParameter))
{
    <h3>Query String Parameter: @QueryStringParameter</h3>
}

```

```
@code {
    [Parameter]
    public string RouteParameter { get; set; }

    [Parameter]
    [SupplyParameterFromQuery(Name = "QueryStringParam")]
    public string QueryStringParameter { get; set; }
}
```

- Add the following to the NavMenu.Razor component:

```
<div class="nav-item px-3">
    <NavLink class="nav-link" href="/privacy" Match="NavLinkMatch.All">
        <span class="fa-solid fa-user-secret pe-2" aria-hidden="true"></span>Privacy
    </NavLink>
</div>
```

Part 4: Add the Validation Examples

Step 1: Add the Confirmation Dialog Component

- Add a new Razor component named ConfirmDialog.razor in the Shared folder and update the code to the following:

```
@if (Show)
{
    <div class="p-3 mt-4" style="border:5px solid red">
        <div>
            <div>
                @ChildContent
            </div>
            <div>
                <button @onclick="OnOk">
                    OK
                </button>
            </div>
        </div>
    </div>
}
```

```
@code {
    [Parameter]
    [EditorRequired]
    public bool Show { get; set; }
    [Parameter]
    [EditorRequired]
    public EventCallback OnOk { get; set; }
    [Parameter]
    [EditorRequired]
    public RenderFragment ChildContent { get; set; }
}
```

Step 2: Add the Validation Menu Items

- Add the validation menus to the NavMenu.razor component:

```
<div class="nav-item px-3">
  <NavLink class="nav-link" @onclick="() => _expandValidationSubNav = !_expandValidationSubNav">
    <span class="fa-solid fa-check pe-2" aria-hidden="true"></span>
    Validation
    <span class="fa-solid fa-sort-down ps-1" aria-hidden="true"
hidden="@(_expandValidationSubNav)"></span>
    <span class="fa-solid fa-sort-up ps-1" aria-hidden="true"
hidden="@(!_expandValidationSubNav)"></span>
  </NavLink>
  @if (_expandValidationSubNav)
  {
    <NavLink class="nav-link ps-5" href="/validations/shopping-cart" Match="NavLinkMatch.All">
      <span class="fa-solid fa-cart-shopping pe-2" aria-hidden="true"></span>
      Shopping Cart
    </NavLink>
    <NavLink class="nav-link ps-5" href="/validations/car-validation" Match="NavLinkMatch.All">
      <span class="fa-solid fa-car pe-2" aria-hidden="true"></span>
      Car
    </NavLink>
  }
</div>
```

- Add the following to the @code block:

```
private bool _expandValidationSubNav;
```

Step 3: Add the Shopping Cart Validation Page

- Add a new folder named Validation in the Pages folder, and in that folder, create a new Razor component named ShoppingCartValidation.razor. Update the code to the following:

```
@page "/validations/shopping-cart"
@implements IDisposable
<PageTitle>Shopping Cart Validation</PageTitle>
<h3>Shopping Cart Validation</h3>
<div class="row">
    <EditForm EditContext="@editContext" OnValidSubmit="ProcessOrder" OnInvalidSubmit="StopOrder">
        <DataAnnotationsValidator/>
        <ValidationSummary Model="_entity"/>
        <div>
            <label class="col-form-label" for="@nameof(AddToCartViewModel.Id)">Id</label>
            <InputNumber id="@nameof(AddToCartViewModel.Id)" class="form-control"
                @bind-Value="_entity.Id"/>
            <ValidationMessage For="() => _entity.Id"/>
        </div>
        <div>
            <label class="col-form-label" for="@nameof(AddToCartViewModel.StockQuantity)">
                Stock Quantity
            </label>
            <InputNumber id="@nameof(AddToCartViewModel.StockQuantity)" class="form-control"
                @bind-Value="_entity.StockQuantity"/>
            <ValidationMessage For="() => _entity.StockQuantity"/>
        </div>
        <div>
            <label class="col-form-label" for="@nameof(AddToCartViewModel.ItemId)">ItemId</label>
            <InputNumber id="@nameof(AddToCartViewModel.ItemId)" class="form-control"
                @bind-Value="_entity.ItemId" />
            <ValidationMessage For="() => _entity.ItemId"/>
        </div>
        <div>
            <label class="col-form-label" for="@nameof(AddToCartViewModel.Quantity)">Quantity</label>
            <InputNumber id="@nameof(AddToCartViewModel.Quantity)" class="form-control"
                @bind-Value="_entity.Quantity" />
            <ValidationMessage For="() => _entity.Quantity"/>
        </div>
        <button class="mt-3" type="submit" disabled="@({formInvalid && buttonOneEnabled})">
            @buttonOneLabel
        </button>
        <button class="mt-3" type="submit">Process Order 2</button>
    </EditForm>
    <div class="mt-3 @messageClass">@message</div>
</div>
```

```

@code {
    private const string normalButtonLabel = "Process Order 1";
    private const string processingButtonLabel = "Processing...";
    private bool buttonOneEnabled = true;
    private bool formInvalid = true;
    EditContext editContext;
    private AddToCartViewModel _entity;
    private string message = "";
    private string messageClass = "";
    private string buttonOneLabel = normalButtonLabel;

    protected override void OnInitialized()
    {
        _entity = new AddToCartViewModel();
        editContext = new EditContext(_entity);
        editContext.OnFieldChanged += HandleFieldChanged;
    }

    private void HandleFieldChanged(object sender, FieldChangedEventArgs e)
    {
        if (editContext is null)
        {
            return;
        }

        formInvalid = !editContext.Validate();
        StateHasChanged();
    }

    public void Dispose()
    {
        if (editContext is not null)
        {
            editContext.OnFieldChanged -= HandleFieldChanged;
        }
    }

    public async Task ProcessOrder()
    {
        buttonOneEnabled = false;
        buttonOneLabel = processingButtonLabel;
        await Task.Delay(5000);
        buttonOneLabel = normalButtonLabel;
        message = "Order Processed";
        messageClass = "alert alert-success";
    }

    public void StopOrder()
    {
        message = "Order Stopped";
        messageClass = "alert alert-danger";
    }
}

```

Step 4: Add the Car Validation Page

- Create a new Razor component named `CarValidation.razor` in the `Validations` folder and update the code to the following:

```
@page "/validations/car-validation"
<PageTitle>Car Validation</PageTitle>
<h3>Car Validation</h3>
<div class="row">
  <EditForm Model="_entity" OnValidSubmit="ProcessOrder" OnInvalidSubmit="StopOrder">
    <DataAnnotationsValidator/>
    <ValidationSummary/>
    <div>
      <label class="col-form-label" for="@nameof(Car.Id)">Id</label>
      <InputNumber Id="@nameof(Car.Id)" class="form-control" @bind-Value="_entity.Id"
        DisplayName="Vehicle ID" ParsingErrorMessage="The {0} is Required"/>
      <ValidationMessage For="() => _entity.Id"/>
    </div>
    <div>
      <label class="col-form-label" for="@nameof(Car.PetName)">Pet Name</label>
      <InputText Id="@nameof(Car.PetName)" class="form-control" @bind-Value="_entity.PetName"/>
      <ValidationMessage For="() => _entity.PetName"/>
    </div>
    <div>
      <label class="col-form-label" for="@nameof(Car.MakeId)">Make</label>
      <InputSelect Id="@nameof(Car.MakeId)" class="form-control" @bind-Value="_entity.MakeId">
        @foreach (var item in _makes)
        {
          <option value="@item.Id">@item.Name</option>
        }
      </InputSelect>
      <ValidationMessage For="() => _entity.MakeId"/>
    </div>
    <div>
      <label class="col-form-label" for="@nameof(Car.IsDrivable)">Is Drivable</label>
      <InputCheckbox Id="@nameof(Car.IsDrivable)" @bind-Value="_entity.IsDrivable"/>
      <ValidationMessage For="() => _entity.IsDrivable"/>
    </div>
    <div>
      <label class="col-form-label" for="@nameof(Car.DateBuilt)">Date Built</label>
      <InputDate Id="@nameof(Car.DateBuilt)" class="form-control"
        @bind-Value="_entity.DateBuilt"/>
      <ValidationMessage For="() => _entity.DateBuilt"/>
    </div>
    <div>
      <label class="col-form-label" for="@nameof(Car.Price)">Price</label>
      <InputText Id="@nameof(Car.Price)" class="form-control" @bind-Value="_entity.Price"/>
      <ValidationMessage For="() => _entity.Price"/>
    </div>
    <div class="pt-4">
      <button>Process Car</button>
    </div>
  </EditForm>
</div>
```



```

<ConfirmDialog Show="_showAlert" OnOk="@(() => _showAlert = false)">
  <ChildContent>
    <h1>This will save the content</h1>
    <p>Click OK when ready.</p>
  </ChildContent>
</ConfirmDialog>
</div>

```

```

@code {
  private bool _showAlert = false;
  private Car _entity = new Car
  {
    Id = 4, Color = "Yellow", PetName = "Hank", MakeId = 5, IsDrivable = true,
    DateBuilt = new DateTime(2022, 01, 01), Price = "$99,999.99"
  };
  private List<Make> _makes =>
  [
    new() { Id = 1, Name = "VW" },
    new() { Id = 2, Name = "Ford" },
    new() { Id = 3, Name = "Saab" },
    new() { Id = 4, Name = "Yugo" },
    new() { Id = 5, Name = "BMW" },
    new() { Id = 6, Name = "Pinto" }
  ];
  public void ProcessOrder(EditContext context)
  {
    Console.WriteLine($"$Car is valid: {context.Validate()}");
    _showAlert = true;
  }
  public void StopOrder(EditContext context)
  {
    Console.WriteLine($"Car is invalid {string.Join(", ", context.GetValidationMessages())}");
  }
}

```

Part 5: Add the Inventory SubMenu

Step 1: Create the Makes Submenu Component

- Add a new Razor component named `MakesSubMenu.razor` to the `Layout` folder. Clear out the contents and update it to the following:

```
@if (!_makes.Any())
{
    <div class="text-light px-3">
        <span class="fa-solid fa-spinner pe-2" aria-hidden="true"></span>Loading...
    </div>
}
else
{
    <NavLink class="nav-link ps-5" href="cars/index" Match="NavLinkMatch.All">
        <span aria-hidden="true"></span> All
    </NavLink>
    foreach (var m in _makes)
    {
        var link = $"cars/index/{m.Id}/{m.Name}";
        <NavLink class="nav-link ps-5" href="@link" Match="NavLinkMatch.All">
            <span aria-hidden="true"></span> @m.Name
        </NavLink>
    }
}
@code {
    private List<Make> _makes = [];
    [Inject] private IMakeDataService MakeDataService { get; set; }
    protected override async Task OnInitializedAsync()
    {
        _makes = await MakeDataService.GetAllEntitiesAsync();
    }
}
```

Step 2: Update the NavMenu Component

- Add the following menu item after the Home page menu item:

```
<div class="nav-item px-3">
  <NavLink class="nav-link" @onclick="() => _expandInventorySubNav = !_expandInventorySubNav">
    <span class="fa-solid fa-car pe-2" aria-hidden="true"></span>Inventory
    <span class="fa-solid fa-sort-down ps-1" aria-hidden="true"
hidden="@(_expandInventorySubNav)"></span>
    <span class="fa-solid fa-sort-up ps-1" aria-hidden="true"
hidden="@(!_expandInventorySubNav)"></span>
  </NavLink>
  @if (_expandInventorySubNav)
  {
    <MakesSubMenu></MakesSubMenu>
  }
</div>
```

- Add the following to the @code block:

```
private bool _expandInventorySubNav;
```

Summary

This lab added navigation and some example pages to the client application.

Next Steps

The following lab will build the helpers used by the AutoLot Pages and components.