

.NET 10 App Dev Hands-On Lab

MVC Lab 4 – Layout, GDPR

This lab adds support for client-side libraries, updates the `_Layout.cshtml` file, and adds GDPR support. Before starting this lab, you must have completed MVC Lab 3.

Part 1: Manage Client-Side Libraries

Step 1: Install Library Manager

- [Visual Studio] Library Manager is part of Visual Studio 2022.
- [Command Line] **Install** the Library Manager CLI Tooling as a global tool:

```
dotnet tool install --global Microsoft.Web.LibraryManager.Cli --version 3.0.71
```

- [Command Line] **Update** (if already installed) the Library Manager CLI Tooling as a global tool:

```
dotnet tool update --global Microsoft.Web.LibraryManager.Cli --version 3.0.71
```

- You can check for a more recent version here:

<https://www.nuget.org/packages?q=microsoft.web.librarymanager.cli>

Step 2: Delete the lib directory from wwwroot

- Delete the `wwwroot\lib` folder. It will be replaced with files using the library manager.

Step 3: Add the libman.json file

- [Visual Studio] Right-click on the `AutoLot.Mvc` project and select **Manage Client-Side Libraries**. This adds the `libman.json` file to the root of the project. The default is to restore libraries when the project is built. If you want to change this, right-click on the `libman.json` file and select “Disable client-side libraries on build”.
- [Command Line] Create a new `libman.json` file with the following command:

```
libman init
```

Step 4: Update the libman.json file

- Update the libman.json file to the following JSON:

```
{
  //https://api.cdnjs.com/libraries?output=human
  //https://api.cdnjs.com/libraries/jquery?output=human
  "version": "3.0",
  "defaultProvider": "cdnjs",
  "defaultDestination": "wwwroot/lib",
  "libraries": [
    {
      "library": "jquery@3.7.1",
      "destination": "wwwroot/lib/jquery",
      "files": [ "jquery.js", "jquery.min.js" ]
    },
    {
      "library": "jquery-validate@1.21.0",
      "destination": "wwwroot/lib/jquery-validation",
      "files": [ "jquery.validate.js", "jquery.validate.min.js", "additional-methods.js",
"additional-methods.min.js" ]
    },
    {
      "library": "jquery-validation-unobtrusive@4.0.0",
      "destination": "wwwroot/lib/jquery-validation-unobtrusive",
      "files": [ "jquery.validate.unobtrusive.js", "jquery.validate.unobtrusive.min.js" ]
    },
    {
      "library": "twitter-bootstrap@5.3.8",
      "destination": "wwwroot/lib/bootstrap",
      "files": [
        "css/bootstrap.css", "css/bootstrap.min.css",
        "js/bootstrap.js", "js/bootstrap.min.js"
      ]
    },
    {
      "library": "font-awesome@6.7.2",
      "destination": "wwwroot/lib/font-awesome/",
      "files": [
        "css/all.min.css", "css/all.css",
        "js/all.js", "js/all.min.js",
        "sprites/regular.svg", "sprites/solid.svg",
        "webfonts/fa-solid-900.ttf", "webfonts/fa-solid-900.woff2",
        "webfonts/fa-regular-400.ttf", "webfonts/fa-regular-400.woff2"
      ]
    },
    {
      "library": "popper.js@2.11.8",
      "destination": "wwwroot/lib/popper.js/",
      "files": [
        "umd/popper.min.js", "umd/popper.js"
      ]
    }
  ]
}
```

Step 5: Update the client-side libraries

- [Visual Studio] Right-click on the libman.json file and select Restore Client-Side Libraries.
- [Command Line]

```
libman restore
```

Part 2: Update the Layout and Partial Views

Step 1: Add the Head Partial

- Create a new folder named `Partials` under the `Views\Shared` folder.
- Create a new view file named `_Head.cshtml` in the `Views\Shared\Partials` folder. Update the content to the following:

```
<head>
  <meta charset="utf-8" />
  <meta name="viewport" content="width=device-width, initial-scale=1.0" />
  <title>@ViewData["Title"] - AutoLot.Mvc</title>
  <environment include="Development,Local">
    <link rel="stylesheet" href="~/lib/bootstrap/css/bootstrap.css" asp-append-version="true" />
    <link rel="stylesheet" href="~/lib/font-awesome/css/all.css" asp-append-version="true"/>
  </environment>
  <environment exclude="Development,Local">
    <link rel="stylesheet" asp-fallback-href="~/lib/bootstrap/css/bootstrap.min.css"
      href="https://cdnjs.cloudflare.com/ajax/libs/bootstrap/5.3.8/css/bootstrap.min.css"
      asp-fallback-test-class="h6" asp-fallback-test-property="font-weight"
      asp-fallback-test-value="500"
      integrity="sha512-
2bBQCjcnw658Lho4n1XJcc6WkV/UxpE/sAokbXPxQNGqmNdQrWqtW26Ns9kFF/yG792pKR1Sx8/Y1Lf1XN4GKA=="
      crossorigin="anonymous" referrerpolicy="no-referrer" />
    <link rel="stylesheet" href="~/lib/font-awesome/css/all.min.css" asp-append-version="true"/>
  </environment>
  <link rel="stylesheet" href="~/css/site.css" asp-append-version="true"/>
  <link rel="stylesheet" href="~/AutoLot.Mvc.styles.css" asp-append-version="true" />
</head>
```

Step 2: Add the JavaScript Files Partial

- Create a new view file named `_JavaScriptFiles.cshtml` in the `Views\Shared\Partials` folder. Update the content to the following:

```
<environment include="Development,Local">
  <script src="~/lib/jquery/jquery.js" asp-append-version="true"></script>
  <script src="~/lib/popper.js/umd/popper.js" asp-append-version="true"></script>
  <script src="~/lib/bootstrap/js/bootstrap.js" asp-append-version="true"></script>
  <script src="~/lib/font-awesome/js/all.js" asp-append-version="true"></script>
</environment>
<environment exclude="Development,Local">
  <script src="https://cdnjs.cloudflare.com/ajax/libs/jquery/3.7.1/jquery.min.js"
    asp-fallback-src="~/lib/jquery/jquery.min.js" asp-fallback-test="window.jQuery"
    integrity="sha512-
v2CJ7UaYy4JwqLDIrZUI/4hqeoQieOmAZNXBeQyjo21dadnwR+8ZaIJVT8EE2iyI61OV8e6M8PP2/4hpQINQ/g=="
    crossorigin="anonymous" referrerpolicy="no-referrer"></script>
  <script src="https://cdnjs.cloudflare.com/ajax/libs/popper.js/2.11.8/umd/popper.min.js"
    asp-fallback-src="~/lib/popper.js/umd/popper.min.js" asp-fallback-test="window.Popper"
    integrity="sha512-
TPh2Oxlg1zp+kz3nFA0C5vVC6leG/6mm1z9+mA81MI5eaUVqasPLO8Cuk4gMF4gUfP5etR73rgU/8PNMsSesoQ=="
    crossorigin="anonymous" referrerpolicy="no-referrer"></script>
  <script src="https://cdnjs.cloudflare.com/ajax/libs/twitter-bootstrap/5.3.8/js/bootstrap.min.js"
    asp-fallback-src="~/lib/bootstrap/js/bootstrap.bundle.min.js"
    asp-fallback-test="window.bootstrap"
    integrity="sha512-
nKXmKvJyiGQy343jatzQlzzDprfllyB5c+tkCzGP3Uq67v+lmzfznZui/ZT+fc6ITZfSC5HhaBKUIvr/nTLCV+7F+Q=="
    crossorigin="anonymous" referrerpolicy="no-referrer"></script>
  <script src="~/lib/font-awesome/js/all.min.js" asp-append-version="true"></script>
</environment>
<script src="~/js/site.js" asp-append-version="true"></script>
```

Step 3: Add the Menu Partial

- Create a new view file named `_Menu.cshtml` in the `Views\Shared\Partials` folder. Update the content to the following:

```
@inject IOptionsMonitor<DealerInfo> _dealerInfoMonitor
@{
    var dealerInfo = _dealerInfoMonitor.CurrentValue;
}
<nav class="navbar navbar-expand-sm bg-white border-bottom box-shadow mb-3">
    <div class="container-fluid">
        <a class="navbar-brand" asp-area="" asp-controller="Home" asp-action="Index">
            @dealerInfo.DealerName
        </a>
        <button class="navbar-toggler" type="button" data-bs-toggle="collapse"
            data-bs-target=".navbar-collapse" aria-controls="navbarSupportedContent"
            aria-expanded="false" aria-label="Toggle navigation">
            <span class="navbar-toggler-icon"></span>
        </button>
        <div class="navbar-collapse collapse d-sm-inline-flex justify-content-between">
            <ul class="navbar-nav flex-grow-1">
                <li class="nav-item dropdown">
                    <a class="nav-link dropdown-toggle text-dark" data-bs-toggle="dropdown">
                        Inventory <i class="fa fa-car" style="color: #63E6BE;"></i>
                    </a>
                </li>
                <li class="nav-item">
                    <a class="nav-link text-dark" asp-area="" asp-controller="Home" asp-action="Privacy">
                        Privacy <i class="fa-solid fa-user-secret" style="color: #aba0a0;"></i>
                    </a>
                </li>
            </ul>
        </div>
    </div>
</nav>
```

Step 4: Update the `_Layout.cshml` file

- In the Views\Shared directory, update `_Layout.cshml` file to the following:

```
@inject IWebHostEnvironment _env
```

```
<!DOCTYPE html>
<html lang="en">
<partial name="_Head"/>
<body>
<header>
  <partial name="_Menu"/>
</header>
<div class="container">
  <main role="main" class="pb-3">
    @RenderBody()
  </main>
</div>
<footer class="border-top footer text-muted">
  <div class="container">
    &copy; 2025 - AutoLot.Mvc - @_env.EnvironmentName
    <a asp-area="" asp-controller="Home" asp-action="Privacy">
      Privacy <i class="fa-solid fa-user-secret" style="color: #aba0a0;"></i>
    </a>
  </div>
</footer>
<partial name="_JavaScriptFiles" />
@await RenderSectionAsync("Scripts", required: false)
</body>
</html>
```

Step 5: Update the _ValidationScripts.cshml partial file

- Update the _ValidationScriptsPartial.cshtml view to the following:

```
<environment include="Development,Local">
  <script src="~/lib/jquery-validation/jquery.validate.js" asp-append-version="true"></script>
  <script src="~/lib/jquery-validation-unobtrusive/jquery.validate.unobtrusive.js"
    asp-append-version="true"></script>
</environment>
<environment exclude="Development,Local">
  <script crossorigin="anonymous" referrerpolicy="no-referrer"
    src="https://cdnjs.cloudflare.com/ajax/libs/jquery-validate/1.21.0/jquery.validate.min.js"
    asp-fallback-src="~/lib/jquery-validation/jquery.validate.min.js"
    asp-fallback-test="window.jQuery && window.jQuery.validator" integrity="sha512-
KFHXdr2oObHKI9w4Hv1XPkc898mE4kgYx58oqsc/JqqdLMDI4YjOLzom+EMlW8HFUd0QfjfAvxSL6sEq/a42fQ==">
  </script>
  <script crossorigin="anonymous" referrerpolicy="no-referrer"
    src="https://cdnjs.cloudflare.com/ajax/libs/jquery-validation-
unobtrusive/4.0.0/jquery.validate.unobtrusive.min.js"
    asp-fallback-src="~/lib/jquery-validation-unobtrusive/jquery.validate.unobtrusive.min.js"
    asp-fallback-test="window.jQuery && window.jQuery.validator &&
window.jQuery.validator.unobtrusive" integrity="sha512-
xq+Vm8jC94ynOikewaQXMEkJIOBp7iArs3IhFWSWdRT3Pq8wFz46p+ZDFAR7kHnSFf+zUv52B3prRYnbDRdgog==">
  </script>
</environment>
```

Part 3: Global Display Templates

Step 1: Add the DateTime DisplayTemplate

Create a new folder named DisplayTemplates under the Views\Shared folder and add a Partial View named DateTime.cshtml in the new folder and update the markup to the following:

```
@model DateTime?
@if (Model == null)
{
  @:Unknown
}
else
{
  if (ViewData.ModelMetadata.IsNullableValueType)
  {
    @:@(Model.Value.ToString("d"))
  }
  else
  {
    @:@(((DateTime)Model).ToString("d"))
  }
}
```

Part 4: GDPR Support

Step 1: Add GDPR support to Program.cs

- Add the following global using statements to the GlobalUsings.cs file in the AutoLot.Mvc project:

```
global using Microsoft.AspNetCore.Http.Features;
global using AutoLot.Mvc.Controllers;
global using AutoLot.Services.Utilities;
```

- In the top-level statements in Program.cs, just after the call to AddControllersWithView(), add the following to add GDPR services to the DI container:

```
builder.Services.Configure<CookiePolicyOptions>(options =>
{
    // This lambda determines whether user consent for non-essential cookies is
    // needed for a given request.
    options.CheckConsentNeeded = context => true;
    options.MinimumSameSitePolicy = SameSiteMode.None;
});
// The TempData provider cookie is not essential. Make it essential
// so TempData is functional when tracking is disabled.
builder.Services.Configure<CookieTempDataProviderOptions>(
    options => { options.Cookie.IsEssential = true; });
builder.Services.AddSession(options => { options.Cookie.IsEssential = true; });
```

- Add GDPR support to the HTTP pipeline by adding the following line of code before the call to UseStaticFiles():

```
app.UseCookiePolicy();
app.useWebOptimizer();
```


Step 2: Add the `_CookieConsent` Partial file

- Create a new view file named `_CookieConsent.cshtml` in the `Views\Shared\Partials` folder. Update the content to the following:

```
@{
    var consentFeature = Context.Features.Get<ITrackingConsentFeature>();
    var showBanner = !consentFeature?.CanTrack ?? false;
    var cookieString = consentFeature?.CreateConsentCookie();
}
@if (showBanner)
{
    <div id="cookieConsent" class="alert alert-info alert-dismissible fade show" role="alert">
        Use this space to summarize your privacy and cookie use policy. <a asp-area="" asp-
        controller="Home" asp-action="Privacy">Learn More</a>.
        <button type="button" class="accept-policy" data-bs-dismiss="alert" aria-label="Close" data-
        cookie-string="@cookieString">
            <span aria-hidden="true">Accept</span>
        </button>
        <button type="button" class="btn-close" data-bs-dismiss="alert" aria-label="Close">
        </button>
    </div>
    <script>
    (function () {
        var button = document.querySelector("#cookieConsent button[data-cookie-string]");
        button.addEventListener("click", function (event) {
            document.cookie = button.dataset.cookieString;
            window.location =
            '@Url.Action(nameof(HomeController.Index),nameof(HomeController).RemoveControllerSuffix())';
        }, false);
    })();
    </script>
}
```

Step 3: Add the Partial to the `_Layout`

- Add the following lines into the `_Layout.cshtml` page:

```
<div class="container">
    <partial name="Partials/_CookieConsent"/>
    <main role="main" class="pb-3">
        @RenderBody()
    </main>
</div>
```

Step 4: Update `_Menu.cshtml`

- Add the following two lines into the Razor block at the top of `_Menu.cshtml`:

```
@{
    var dealerInfo = _dealerInfoMonitor.CurrentValue;
    var consentFeature = Context.Features.Get<ITrackingConsentFeature>();
    var showBanner = !consentFeature?.CanTrack ?? false;
}
```

- Add the following Razor block after the closing `` For the Privacy menu item (the views will be created in a later lab):

```
@if (showBanner)
{
    <li class="nav-item">
        <a class="nav-link text-dark" asp-controller="Home" asp-action="GrantConsent" title="Accept
Cookie Policy">Accept Cookie Policy <i class="fas fa-cookie-bite"></i></a>
    </li>
}
else
{
    <li class="nav-item">
        <a class="nav-link text-dark" asp-controller="Home" asp-action="WithdrawConsent" title="Revoke
Cookie Policy">Revoke Cookie Policy <i class="fas fa-cookie"></i></a>
    </li>
}
```

Step 5: Update the HomeController for GDPR

- Add the GrantConsent action method:

```
[HttpGet]
public IActionResult GrantConsent()
{
    HttpContext.Features.Get<ITrackingConsentFeature>().GrantConsent();
    return RedirectToAction(nameof(Index), nameof(HomeController).RemoveControllerSuffix(),
        new {area = ""});
}
```

- Add the WithdrawConsent action method:

```
[HttpGet]
public IActionResult WithdrawConsent()
{
    HttpContext.Features.Get<ITrackingConsentFeature>().WithdrawConsent();
    return RedirectToAction(nameof(Index), nameof(HomeController).RemoveControllerSuffix(),
        new {area = ""});
}
```

Summary

In this lab, you finished the added support for client-side libraries, updated the layout, and provided GDPR support.

Next steps

In the next part of this tutorial series, you will create the Menu View Component and custom Tag Helpers.