

.NET Core: Developing Cross-Platform Web Apps with ASP.NET Core – Workshop*PLUS*

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v3.0

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Module 4: Views

Module Overview

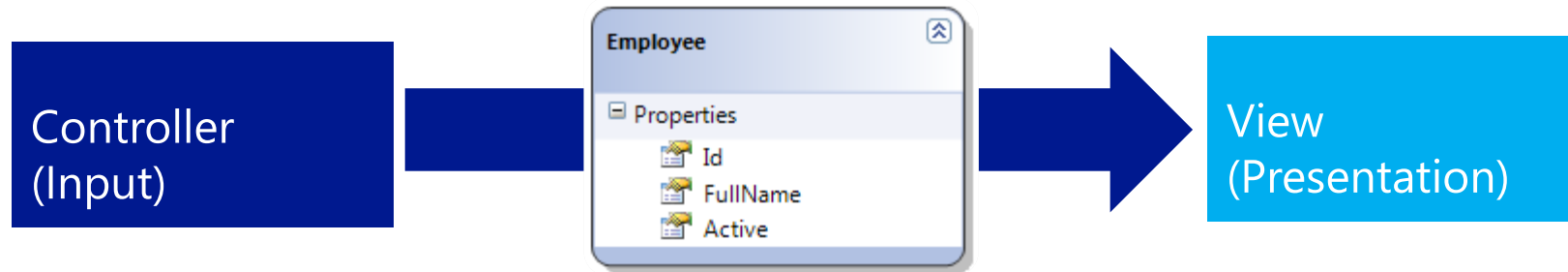
Module 4: Views

Section 1: View Fundamentals

Lesson: Role of Views

View

- Components that display the application's user interface
- Responsible for transforming a model into a format presentable to user
 - For web pages, View transforms the model contents to HTML

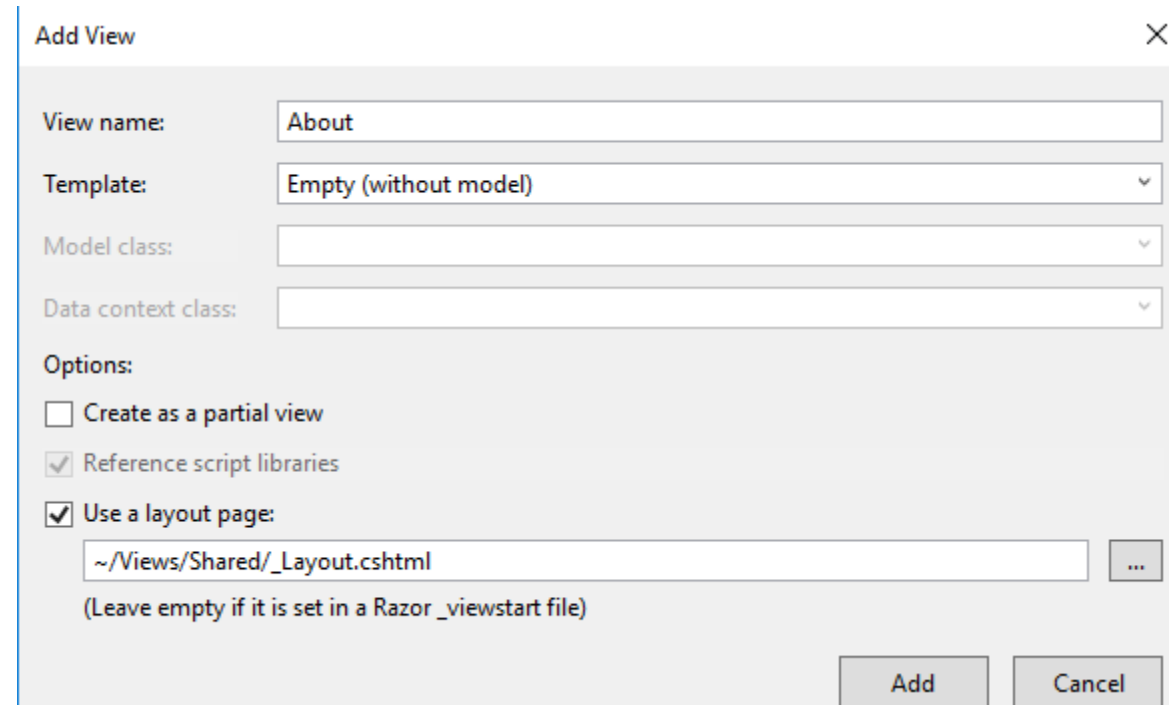


Role of a View

- View takes model data as input, and outputs it in user presentable form (for example, HTML)
- Example:
 1. User sends a URL request with query string values
 2. Controller is triggered against the request
 3. Controller handles query-string values
 4. Controller passes the values to the model
 5. Model uses the value to query the database and returns the results
 6. Controller selects a View to render the UI
 7. Controller returns the View to requesting browser

View Creation

- Views are named according to view engine
 - Razor: *.cshtml or *.vbhtml (for classic asp.net)
 - View can be created through:
 - Solution Explorer
 - Action Method



The screenshot shows the 'Add View' dialog box with the following fields and options:

- View name:** Text box containing 'About'.
- Template:** Dropdown menu showing 'Empty (without model)'.
- Model class:** Empty dropdown menu.
- Data context class:** Empty dropdown menu.
- Options:**
 - ☐ Create as a partial view
 - ☒ Reference script libraries
 - ☒ Use a layout page:
 - Text box containing '~/Views/Shared/_Layout.cshtml' and a browse button '...'.
 - Text below: '(Leave empty if it is set in a Razor _viewstart file)'.

At the bottom right are 'Add' and 'Cancel' buttons.

Specifying Views

- Select View using default convention

```
public ActionResult About()
{
    ViewBag.Message = "Your app description page.";
    return View();
}
```

Views > Home > About.cshtml

- Select a particular view

```
public ActionResult About()
{
    ViewBag.Message = "Your app description page.";
    return View("AboutCompany");
}
```

Views > Home >
AboutCompany.cshtml

- Select view from a different directory structure

```
public ActionResult About()
{
    ViewBag.Message = "Your app description page.";
    return View("~/Views/Home/Company/About.cshtml");
}
```

Views > Home > Company >
About.cshtml

Module 4: Views

Section 1: View Fundamentals

Lesson: Passing Data to Views

ViewData

- Represents a container to pass data from a Controller to View and vice versa
- ViewData exposes an instance of *ViewDataDictionary*
- Data passed from Controller to View using ViewData
 - `ViewData["color"] = "Red";`
- Data accessed from View
 - `@ViewData ["color"]`

ViewBag

- Represents a dynamic wrapper around ViewData
 - `ViewData["Color"] > ViewBag.Color`
- ViewBag only works with valid C# identifiers
 - `ViewData["Car Color"] = "Red";`
- ViewBag dynamic value cannot be used in extension methods
 - ~~`@Html.TextBox("Name", ViewBag.Color);`~~
 - `@Html.TextBox("Name", ViewData["Color"]);`

TempData

- Temporary Data
- Passing data between the current and next HTTP requests
- Data passed from Controller to View using TempData
 - `TempData["color"] = "Red";`
- Data accessed from View
 - `@TempData["color"]`
- TempData object could yield results differently than expected because the next request origin cannot be guaranteed!

Strongly Typed Views

- Page that derives from `System.Web.Mvc.ViewPage<TModel>`
- Strongly typed to the type `TModel`
- Contains `Model` property
- Enables compile time code checking

Strongly Typed View

Controller

```
public ActionResult Detail() {  
    ...  
    return View(person);  
}
```

View

```
@model App.Models.Person  
@Model.Name  
@Model.Age
```

vs.

Standard View

Controller

```
public ActionResult Detail() {  
    ...  
    return View();  
}
```

View

```
@ViewData["Name"]  
@ViewData["Age"]
```

Partial View

- Reusable component filled with content and code
 - Theoretically plays the same role as *web controls* in ASP.NET web pages
- Useful in various scenarios:
 - Logon dialog box
 - Time widget to display time on all views of the application
- Can be rendered inside layout or regular views
- Uses ViewData and ViewBag to share data
- Partial view render:

```
<div>  
    @Html.Partial("_FeaturedProduct")  
</div>
```


Partial View (continued)

Add View [X]

View name:

Template:

Model class:

Data context class:

Options:

- ☒ Create as a partial view
- ☒ Reference script libraries
- ☒ Use a layout page:
 ...
(Leave empty if it is set in a Razor _viewstart file)



```
<section id="personDetail">  
    @Html.Partial("_PersonPartial")  
</section>
```

Module 4: Views

Section 1: View Fundamentals

Lesson: View Components

View Component

- Similar to partial views (Partial View does not have a “code-behind”)
- Introduced in ASP.NET MVC Core
- Responds like a mini-controller, responsible for rendering a chunk
- Example scenarios for use:
 - Dynamic navigation menus
 - Tag cloud (where it queries the database)
 - Logon panel
 - Shopping cart
 - Sidebar content on a blog
- Does not use model binding; takes input data parameter

View Component [Class]

- Derive from *ViewComponent*
- Decorate with *[ViewComponent]* attribute
- Derive from a class with *[ViewComponent]* attribute
- Class name ending with the suffix *ViewComponent*
- Public, non-nested, and non-abstract class like Controllers

```
using System.Linq;
using Microsoft.AspNetCore.Mvc;
using TodoList.Models;

namespace TodoList.ViewComponents
{
    public class PriorityListViewComponent : ViewComponent
    {
        private readonly ApplicationDbContext db;

        public PriorityListViewComponent(ApplicationDbContext context)
        {
            db = context;
        }

        public IActionResult Invoke(int maxPriority)
        {
            var items = db.TODOItems.Where(x => x.IsDone == false &&
                x.Priority <= maxPriority);

            return View(items);
        }
    }
}
```

PriorityListViewComponent.cs

View Component [View]

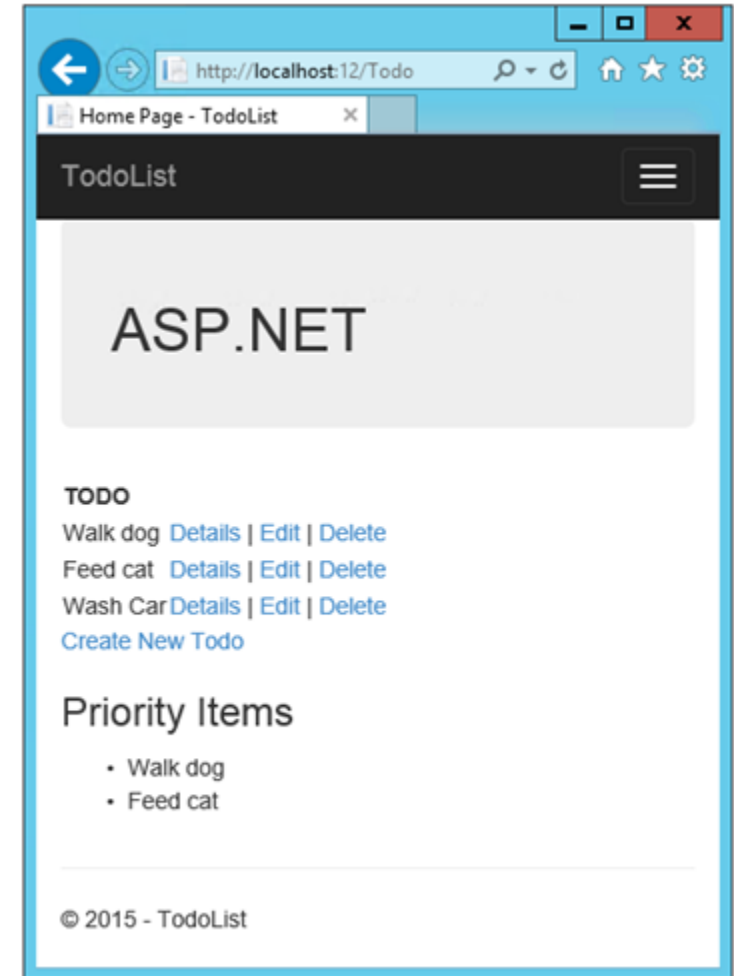
```
@model IEnumerable<ToDoList.Models.TODOItem>

<h3>Priority Items</h3>
<ul>
  @foreach (var todo in Model)
  {
    <li>@todo.Title</li>
  }
</ul>
```

Views\ToDo\Components\PriorityList\Default.cshtml

```
<div class="col-md-2">
  @await Component.InvokeAsync("PriorityList")
</div>
```

Views\todo\index.cshtml



View using View Component

Asynchronous View Component

```
public class PriorityListViewComponent : ViewComponent
{
    private readonly ApplicationDbContext db;

    public PriorityListViewComponent(ApplicationDbContext context)
    {
        db = context;
    }

    // Synchronous Invoke removed.

    public async Task<IViewComponentResult> InvokeAsync(int maxPriority, bool isDone)
    {
        var items = await GetItemsAsync(maxPriority, isDone);
        return View(items);
    }

    private Task<IQueryable<TodoItem>> GetItemsAsync(int maxPriority, bool isDone)
    {
        return Task.FromResult(GetItems(maxPriority, isDone));
    }

    private IQueryable<TodoItem> GetItems(int maxPriority, bool isDone)
    {
        var items = db.TODOItems.Where(x => x.IsDone == isDone &&
            x.Priority <= maxPriority);

        string msg = "Priority <= " + maxPriority.ToString() +
            " && isDone == " + isDone.ToString();
        ViewBag.PriorityMessage = msg;

        return items;
    }
}
```


Demo: View Components

Module 4: Views

Section 2: Razor View Engine

Lesson: Razor View Engine

View Engines

- ASP.NET MVC comes with Razor view engine by default
 - ASPX view engine not supported by ASP.NET Core MVC
- Other view engines:
 - Brail
 - NDjango
 - NHaml
 - NVelocity
 - SharpTiles
 - Spark
 - StringTemplate
 - XSLT

Razor View Engine

- Clean, lightweight, and simple view engine for ASP.NET MVC
- Default view engine for ASP.NET MVC 3.0 onwards
- Minimizes the amount of syntax and extra characters
- Reduces syntax between code and view markup
- Full IntelliSense support in Visual Studio

Razor View

```
Sample.cshtml  ➤ ✕  
@{  
    Layout = "~/Views/Shared/_Layout.cshtml";  
}  
  
<!DOCTYPE html>  
  
<html>  
  <head>  
    <meta name="viewport" content="width=device-width" />  
    <title>Sample View</title>  
  </head>  
  <body>  
    <div>  
      <h1>@ViewBag.Message</h1>  
      <p>This is a sample view.</p>  
      @section featured {  
        We are offering 90% discount on diamond sale.  
      }  
    </div>  
  </body>  
</html>
```

Code Expressions

- '@' sign used for transition from markup to code and back
- @@ used as an escape sequence

```
@{  
    string message = "This is a sample text message.";  
}  
<span>@message</span>  
<span>abc@@microsoft.com</span>
```


Code Blocks

- Razor supports code blocks within a view
- Code blocks may automatically be transformed into markup



```
@{  
    int[] items = new int[] {1, 2, 3, 4, 5};  
}  
<ul>  
    @foreach(int i in items){  
        <li>product_@i</li>  
    }  
</ul>
```

Razor vs. Web Forms

Razor Syntax	Web Forms Syntax
Implicit code expression <code>@model.Message</code>	<code> <=: model.Message %> </code>
Explicit code expression <code>ISBN@(isbn)</code>	<code>ISBN<=: isdn %></code>
Unencoded code expression <code> @Html.Raw(model.AlertMessage) </code>	<code><: Html.Raw(model.AlertMessage) %></code> Or <code><%= Model.Message %></code>
Code block <code>@{ int x = 567; string s = "Microsoft"; }</code>	<code><% int x = 567; string s = "Microsoft"; %></code>

Razor vs. Web Forms (continued)

Razor Syntax	Web Forms Syntax
<p>Code and markup</p> <pre>@foreach(var item in items) { Item No.@item.Id }</pre>	<pre><% foreach(var item in items){ %> Item <%= @item.Id %> <% } %></pre>
<p>Code and plain text</p> <pre>@if(showMessage) { <text> Text Message. </text> }</pre> <p>Or</p> <pre>@if(showMessage) { @:Text Message. }</pre>	<pre><% if(showMessage) { %> Text Message. <% } %></pre>

Razor vs. Web Forms (continued)

Razor Syntax	Web Forms Syntax
<p>Comments</p> <p>@*</p> <p>Multi-line comment</p> <p>Product name: @ViewBag.Product</p> <p>*@</p>	<p><!--</p> <p>Multi-line comment</p> <p>Product name: @ViewBag.Product</p> <p>--></p>

Demo: Razor View Engine

HTML Encoding

- Razor expressions are always HTML encoded!
 - Defense against Cross-Site Scripting (XSS) attack, etc.

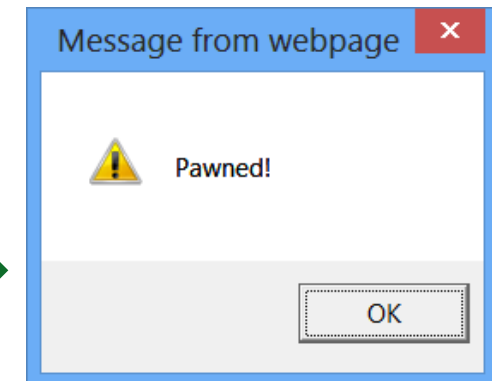
```
@{string alert = "<script>alert('Pawnd!')</script>";}
<span>@alert</span>
```



```
<script>alert('Pawnd!')</script>
```

- Use Html.Raw() for showing HTML markup

```
@{string alert = "<script>alert('Pawnd!')</script>";}
<span>@Html.Raw(alert)</span>
```



Demo: Importance of HTML Encoding

Demo: Model Binding

Module 4: Views

Section 2: Razor View Engine

Lesson: Layouts and Sections

Layouts

- Layouts are to views what Master Pages are to web pages in ASP.NET
- Layout defines a common template for ASP.NET MVC site
- @RenderBody() defines placeholder for view body

_ViewStart.cshtml

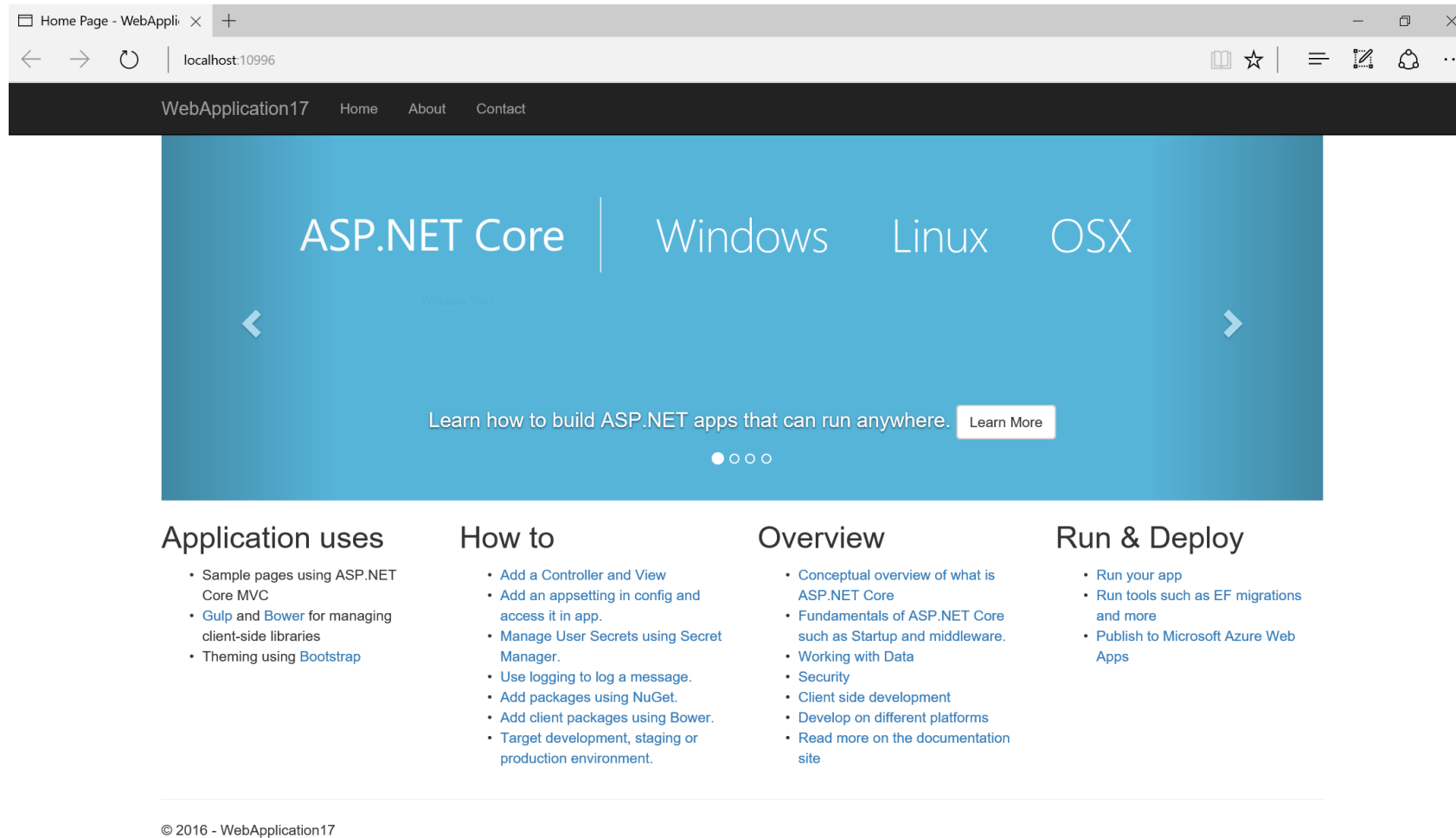
```
@{  
    Layout = "~/Views/Shared/_Layout.cshtml";  
}
```



_Layout.cshtml

```
<!DOCTYPE html>  
<html lang="en">  
    <head>  
        <meta charset="utf-8" />  
        <title>@ViewBag.Title - My ASP.NET MVC Application</title>  
        <link href="~/favicon.ico" rel="shortcut icon" type="image/x-icon" />  
        <meta name="viewport" content="width=device-width" />  
        @Styles.Render("~/Content/css")  
        @Scripts.Render("~/bundles/modernizr")  
    </head>  
    <body>  
        <header>  
            <div class="content-wrapper">  
                <div class="float-left">  
                    <p class="site-title">@Html.ActionLink("your logo here", "Index", "Home")</p>
```

Layouts – Default ASP.NET MVC Template



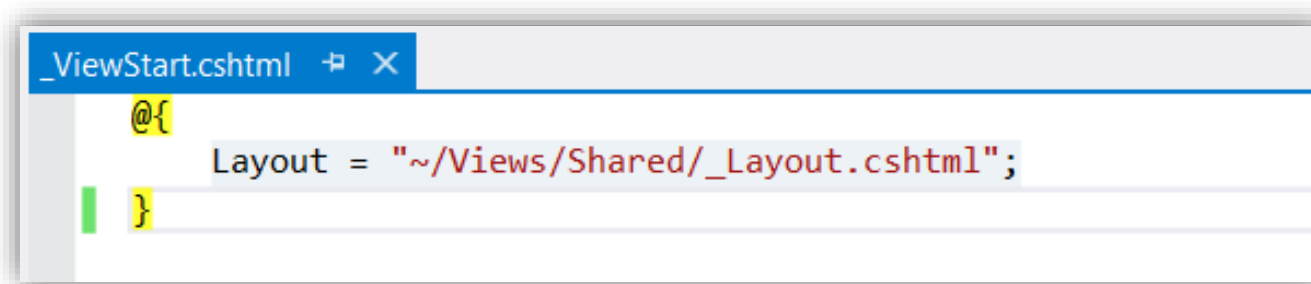
Layout Sections

- Layout may have multiple sections
- View must provide content for all layout sections, unless explicitly made optional
- @RenderSection(...) defines placeholder for layout sections

```
</header>
<div id="body">
  @RenderSection("featured", required: false)
  <section class="content-wrapper main-content clear-fix">
    @RenderBody()
  </section>
</div>
<footer>
  <div class="content-wrapper">
    <div class="float-left">
      <p>&copy; @DateTime.Now.Year - My ASP.NET MVC Application</p>
    </div>
  </div>
</footer>
```

ViewStart

- _ViewStart.cshtml is used to include the same layout in all views by default
- Default layout can be overridden for specific views
 - Blank layout property means no layout has been defined

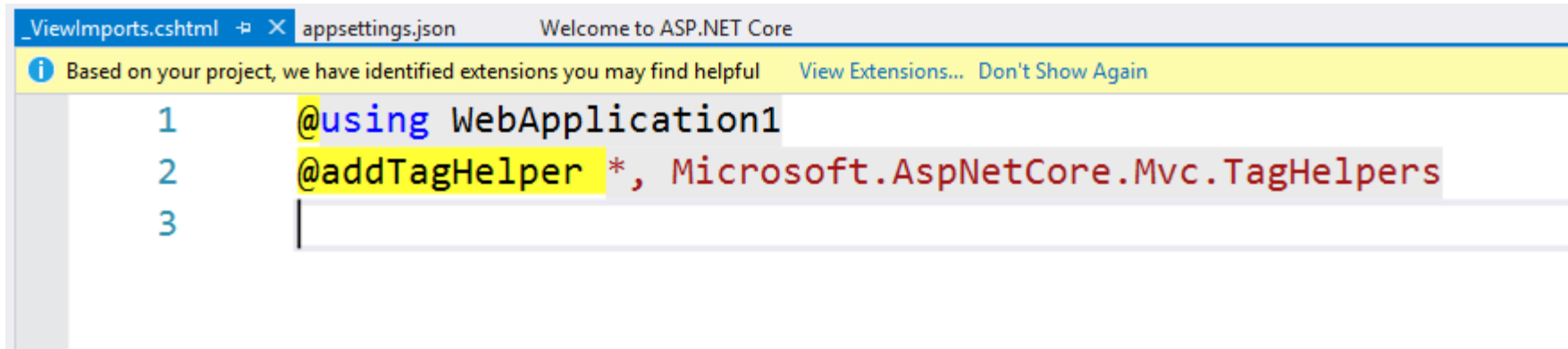


```
_ViewStart.cshtml
@{
    Layout = "~/Views/Shared/_Layout.cshtml";
}
```

_ViewStart.cshtml

View Imports

- _ViewImports.cshtml is used to import all the namespaces used by Views
- Views can add specific views in respective files
- Tag Helper global scope is set here

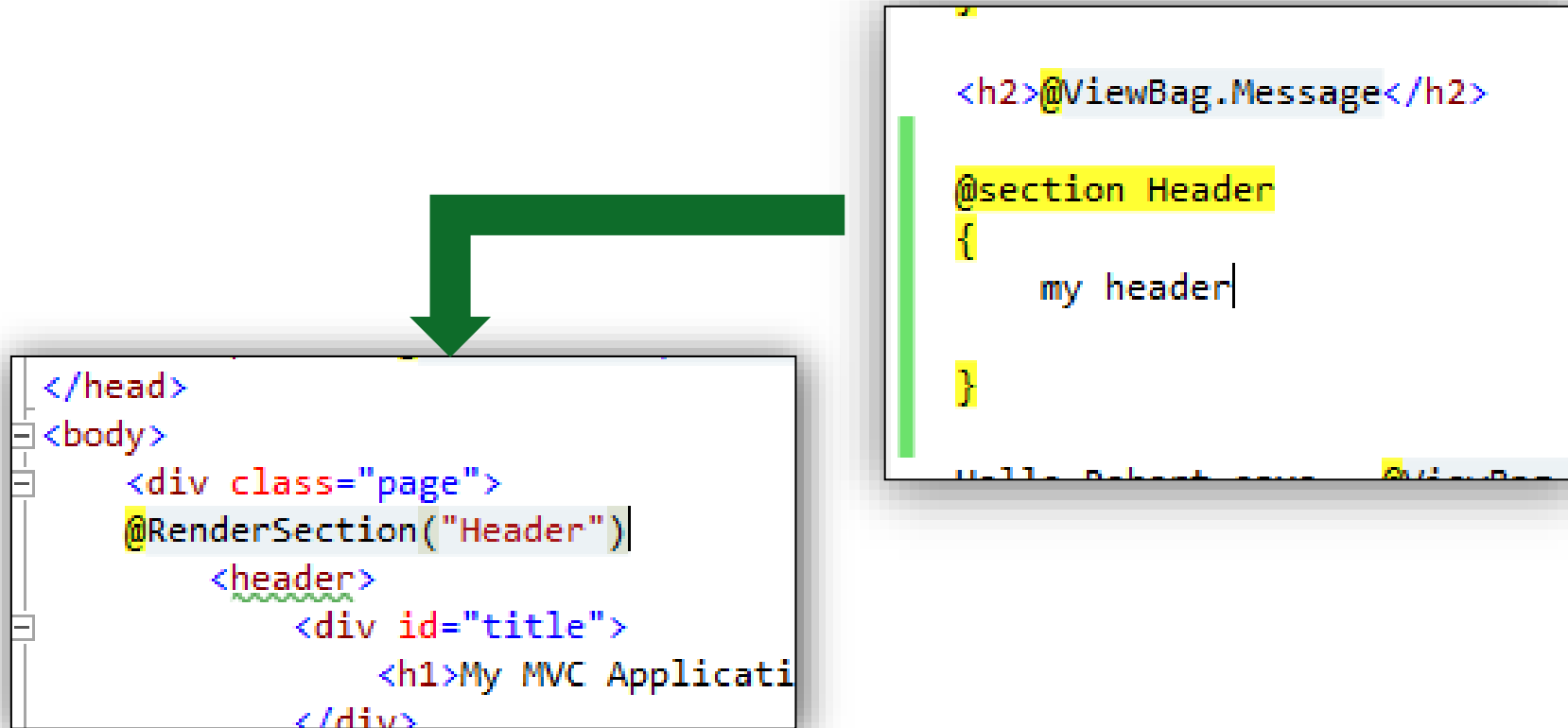


```
_ViewImports.cshtml  appsettings.json  Welcome to ASP.NET Core
Based on your project, we have identified extensions you may find helpful  View Extensions...  Don't Show Again
1  @using WebApplication1
2  @addTagHelper *, Microsoft.AspNetCore.Mvc.TagHelpers
3  
```

_ViewImports.cshtml

Sections

- A view can define only the sections that are referred to in the layout



Demo: Razor View Engine

Module 4: Views

Section 2: Razor View Engine

Lesson: HTML Helpers, Display, and Editor Templates

HTML Helpers

- Inline can be used only from the view in which they are declared

```
@helper CreateList(string[] items) {  
    <ul>  
        @foreach (string item in items) {  
            <li>@item</li>  
        }  
    </ul>  
}  
  
Cars: <p/>  
@CreateList(ViewBag.Cars)  
  
<p />  
Repeat that: <p />  
@CreateList(ViewBag.Cars)
```

HTML Helpers (continued)

- External helpers are like regular extension methods and it takes the first parameter to HtmlHelper object

```
public static MvcHtmlString GetUL(this HtmlHelper html, string[] items)
{
    TagBuilder tag = new TagBuilder("ul");

    foreach (string item in items)
    {
        TagBuilder itemTag = new TagBuilder("li");
        itemTag.SetInnerText(item);
        tag.InnerHtml += itemTag.ToString();
    }

    return new MvcHtmlString(tag.ToString());
}
```

Built-in HTML Helpers

- `Html.CheckBox("myCheckbox", false)`
- `Html.Hidden("myHidden", "val")`
- `Html.RadioButton("myRadiobutton", "val", true)`
- `Html.Password("myPassword", "val")`
- `Html.TextArea("myTextarea", "val", 5, 20, null)`
- `Html.TextBox("myTextbox", "val")`

```
@Html.TextBox("MyTextBox", "MyValue",  
    new { @class = "my-ccs-class", mycustomattribute = "my-value" })
```

Built-in Display Templates

- EmailAddress
- HiddenInput
- HTML
- Text and Raw
- URL
- Collection
- Boolean
- Decimal
- String
- Object

Built-in Editor Templates

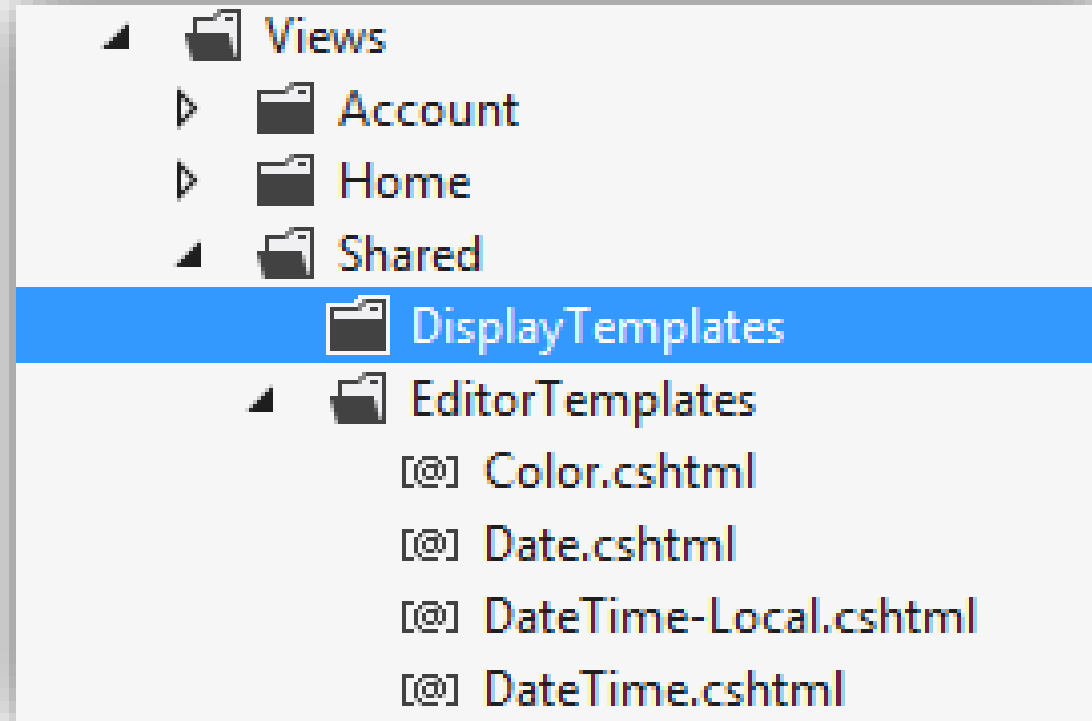
- HiddenInput
- MultilineText
- Password
- Text
- Collection
- Boolean
- Decimal
- String
- Object

```
@Html.TextArea("multiLineText")
```



this is a text area!!!

Display and Editor Templates



Demo: Editor

Module 4: Views

Section 2: Razor View Engine

Lesson: Tag Helpers

Tag Helpers

- Enable the server-side code to participate in creating and rendering the HTML elements in Razor
- HTML-friendly development experience
- Rich IntelliSense environment for creating HTML and Razor markup
- Produces maintainable code using information available on server
 - ImageTagHelper appends version number to image name to resolve caching
- Visual Studio Tooling enabled by **Microsoft.AspNetCore.Tooling.Razor** NuGet package

HTML helpers vs Tag Helpers

- Tag Helper

```
<input asp-for="UserName" />
```

- HTML Helper

```
@Html.EditorFor(l => l.UserName)
```

- Result

```
<input name="UserName" class="text-box single-line"  
id="UserName" type="text" value="">
```

Tag Helper Scope

- *@addTagHelper* makes Tag Helpers available
 - Including it in *_ViewImports.cshtml* makes them available in all the views

```
_ViewImports.cshtml  X Program.cs
@using WebApplication17
@addTagHelper *, Microsoft.AspNetCore.Mvc.TagHelpers
@addTagHelper *, AuthoringTagHelper
```

- *@removeTagHelper* removed a previously added Tag Helper
- *@tagHelperPrefix* specifies tag prefix to enable Tag helper support

```
@tagHelperPrefix "th:"
<div class="form-group">
  <th:label asp-for="Password" class="col-md-2 control-label"></th:label>
  <div class="col-md-10">
    <input asp-for="Password" class="form-control" />
    <th:span asp-validation-for="Password" class="text-danger"></th:span>
  </div>
</div>
```

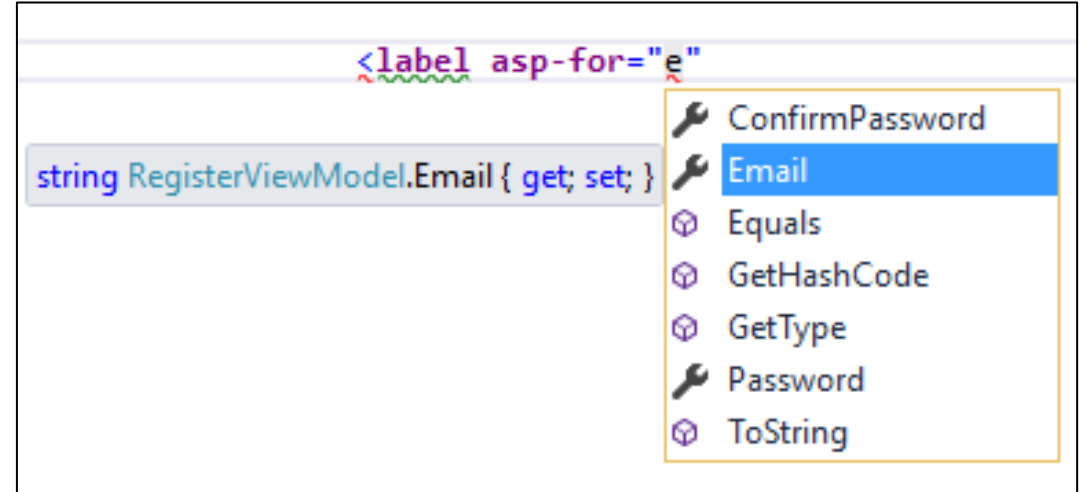
Microsoft.AspNet.Mvc.TagHelpers

- Default Tag Helpers in **Microsoft.AspNetCore.Mvc.TagHelpers** package
 - Anchor
 - Cache
 - Image
 - Input
 - Validation
 - Link
 - Select
 - Label
 - Form – Automatically adds AntiForgery token
 - Custom
- Source Code:
<https://github.com/aspnet/Mvc/tree/dev/src/Microsoft.AspNetCore.Mvc.TagHelpers>

Tag Helpers vs. HTML Helper

- **Tag Helper**

- IntelliSense
- Distinct font and clean code
- Assists in writing robust and maintainable code
- No need to learn C# syntax for UX designers



Tag Helper

- **HTML Helper**

- Lack of full IntelliSense support
- Crowded code
- Lack of maintainability, for example, image caching
- C# knowledge is required

```
@Html.Label("FirstName", "First Name:", new {@class="caption"})
```

HTML Helper

Register View with HTML Helpers

```
@using (Html.BeginForm("Register", "Account", FormMethod.Post, new { @class = "form-horizontal" })
{
    @Html.AntiForgeryToken()
    <h4>Create a new account.</h4>
    <hr />
    @Html.ValidationSummary("", new { @class = "text-danger" })
    <div class="form-group">
        @Html.LabelFor(m => m.Email, new { @class = "col-md-2 control-label" })
        <div class="col-md-10">
            @Html.TextBoxFor(m => m.Email, new { @class = "form-control" })
        </div>
    </div>
    <div class="form-group">
        @Html.LabelFor(m => m.Password, new { @class = "col-md-2 control-label" })
        <div class="col-md-10">
            @Html.PasswordFor(m => m.Password, new { @class = "form-control" })
        </div>
    </div>
    <div class="form-group">
        @Html.LabelFor(m => m.ConfirmPassword, new { @class = "col-md-2 control-label" })
        <div class="col-md-10">
            @Html.PasswordFor(m => m.ConfirmPassword, new { @class = "form-control" })
        </div>
    </div>
    <div class="form-group">
        <div class="col-md-offset-2 col-md-10">
            <input type="submit" class="btn btn-default" value="Register" />
        </div>
    </div>
}
```

Register View with Tag Helpers

```
<form asp-controller="Account" asp-action="Register" method="post" class="form-horizontal">
  <h4>Create a new account.</h4>
  <hr />
  <div asp-validation-summary="ValidationSummary.All" class="text-danger"></div>
  <div class="form-group">
    <label asp-for="Email" class="col-md-2 control-label"></label>
    <div class="col-md-10">
      <input asp-for="Email" class="form-control" />
      <span asp-validation-for="Email" class="text-danger"></span>
    </div>
  </div>
  <div class="form-group">
    <label asp-for="Password" class="col-md-2 control-label"></label>
    <div class="col-md-10">
      <input asp-for="Password" class="form-control" />
      <span asp-validation-for="Password" class="text-danger"></span>
    </div>
  </div>
  <div class="form-group">
    <label asp-for="ConfirmPassword" class="col-md-2 control-label"></label>
    <div class="col-md-10">
      <input asp-for="ConfirmPassword" class="form-control" />
      <span asp-validation-for="ConfirmPassword" class="text-danger"></span>
    </div>
  </div>
  <div class="form-group">
    <div class="col-md-offset-2 col-md-10">
      <button type="submit" class="btn btn-default">Register</button>
    </div>
  </div>
</form>
```

Label Tag Helper

```
public class SimpleViewModel
{
    [Display(Name = "Email Address")]
    public string Email { get; set; }
}
```

```
<label asp-for="Email"></label>
```

```
<label for="Email">Email Address</label>
```

Select Tag Helper

```
public class SimpleViewModel
{
    public IEnumerable<string> CountryCodes { get; set; }
}
```

```
<select
    asp-for="CountryCodes"
    asp-items="ViewBag.Countries">
</select>
```

```
<select name="CountryCodes"
        id="CountryCodes"
        multiple="multiple">
    <option selected="selected" value="CA">
        Canada
    </option>
    <option value="USA">United States</option>
    <option value="--">Other</option>
</select>
```

Form Tag Helper

```
<form asp-controller="Account"  
      asp-action="Login"  
      asp-route-customparam="myvalue"></form>
```

```
<form action="/Account/Login?customparam=myvalue" method="post">  
  <input name="RequestVerificationToken" type="hidden"  
value="CfDJ8AFtmUdx-  
b5MkQvAyGYbjFmMGSMv0Fmk7gG4RqGX1kNV6yqKqj6fgqn0h4TLT6ZnWSaqtAbKkg  
pEB20lvfkC2i0KZKIqt3tJ4Jij8DjmatTrZo-  
DKVOLww0zj3kB8VKpFwc0rQMjaJTTC_gVv5f0vAg">  
</form>
```

Automatic Anti-Forgery Token!

Link Tag helper

```
<a asp-controller="Product"  
    asp-action="Display"  
    asp-route-id="@ViewBag.ProductId">  
    View Details  
</a>
```

```
<a href="/Product/Display/1">View Details</a>
```

Custom Tag Helper

```
[HtmlTargetElement("div", Attributes = "svg-shape")]
```

0 references

```
public class SvgShape : TagHelper
```

```
{
```

```
    [HtmlAttributeName("svg-shape")]
```

1 reference

```
    public string Shape { get; set; }
```

0 references

```
    public override void Process(TagHelperContext context, TagHelperOutput output)
```

```
    {
```

```
        string html = null;
```

```
        switch(Shape)
```

```
        {
```

```
            case "circle":
```

```
                html = "<svg width='100' height='100'><circle cx='50' cy='50' r='40' stroke='green' stroke-width='4' fill='yellow' /></svg>";
```

```
                break;
```

```
            case "star":
```

```
                html = "<svg width='300' height='200'><polygon points='100,10 40,198 190,78 10,78 160,198' style='fill:lime;stroke:purple;stroke-width:5;f:"
```

```
                break;
```

```
        }
```

```
        output.Content.AppendHtml(html);
```

```
    }
```

```
}
```

Custom Tag Helper

```
@addTagHelper "*", WebApplication3"
```

```
<div svg-shape="circle" ></div>
```


Tag Helper vs. Web Server Control

- **Tag Helper**

- No knowledge of browser
- Only participates in rendering of an element
- Has no Document Object Model (DOM)
- Can only modify content of HTML elements, it is scoped to

- **Web Server Control**

- Automatic browser detection
- Declared and invoked on a page
- Adds functionality to DOM
- Behavior may affect other parts of the page

Demo: Tag Helpers

Module 4: Views

Section 2: Razor View Engine

Lesson: Service Injection in Views

Service Injection in Views

- **@inject** used for injecting dependencies in Views
- Service needs to be registered first with Inversion of Controller (IoC) container

```
public void ConfigureServices(IServiceCollection services)
{
    // Code removed for brevity.
    // Add MVC services to the services container.
    services.AddMvc();
    services.AddTransient<TodoList.Services.StatisticsService>();
}
```

- *@inject* markup code at the top of view

```
@inject TodoList.Services.StatisticsService Statistics
```

Injected Service Definition and Consumption

```
namespace TodoList.Services
{
    public class StatisticsService
    {
        private readonly ApplicationDbContext db;

        public StatisticsService(ApplicationDbContext context)
        {
            db = context;
        }

        public async Task<int> GetCount()
        {
            return await Task.FromResult(db.TODOItems.Count());
        }

        public async Task<int> GetCompletedCount()
        {
            return await Task.FromResult(
                db.TODOItems.Count(x => x.IsDone == true));
        }

        public async Task<double> GetAveragePriority()
        {

```

Services\StatisticsService.cs

```
@* Markup removed for brevity *@
<div>@Html.ActionLink("Create New Todo", "Create", "Todo") </div>
</div>
<div class="col-md-4">
    @await Component.InvokeAsync("PriorityList", 4, true)
    <h3>Stats</h3>
    <ul>
        <li>Items: @await Statistics.GetCount()</li>
        <li>Completed:@await Statistics.GetCompletedCount()</li>
        <li>Average Priority:@await Statistics.GetAveragePriority()</li>
    </ul>
</div>
</div>
```

Views\ToDo\Index.cshtml

Demo: Service Injection in Views

Module 4: Views

Section 3: Scaffolding

Lesson: Scaffold Templates

Scaffold Templates - I

- Allows view generation based on selected model type
 - *Empty*: Empty view
 - *Create*: View for creating new instance of a model
 - *Delete*: View for deleting a model instance
 - *Details*: View for showing model instance details
 - *Edit*: View for editing model instance details
 - *List*: View for listing model instances

Scaffold Templates - II

Add View [X]

View name:

Template:

Model class:

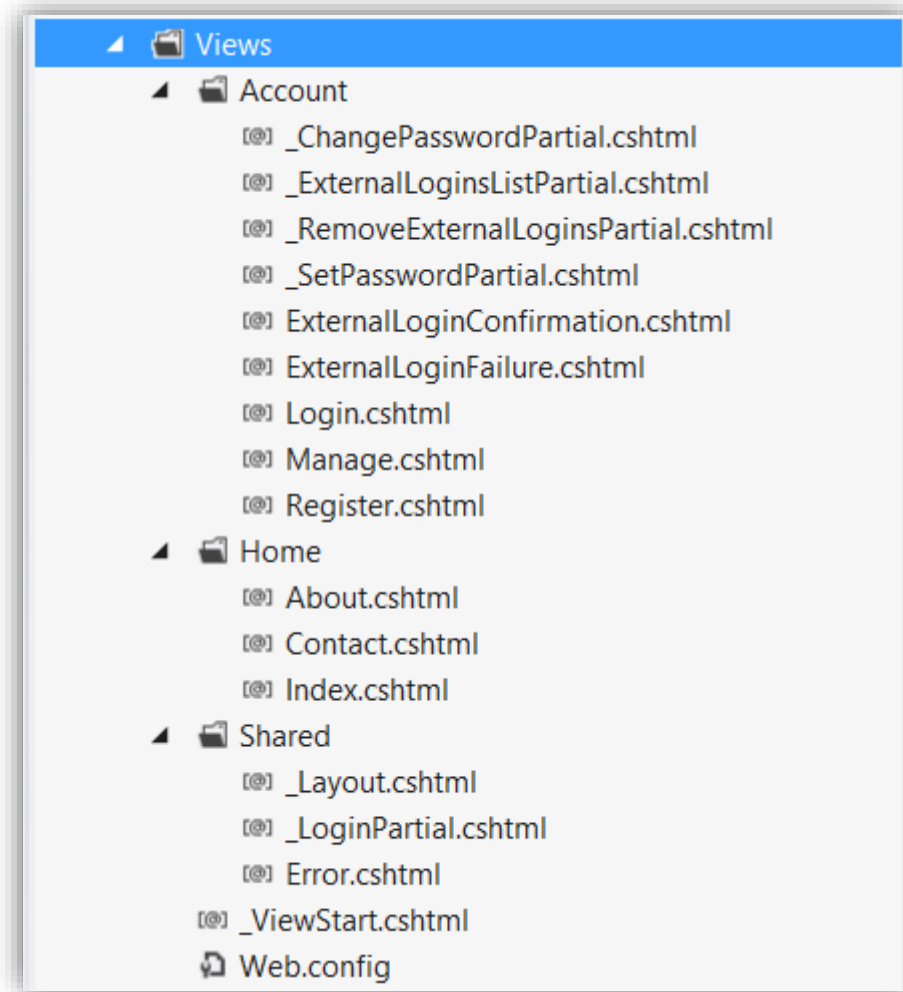
Data context class:

Options:

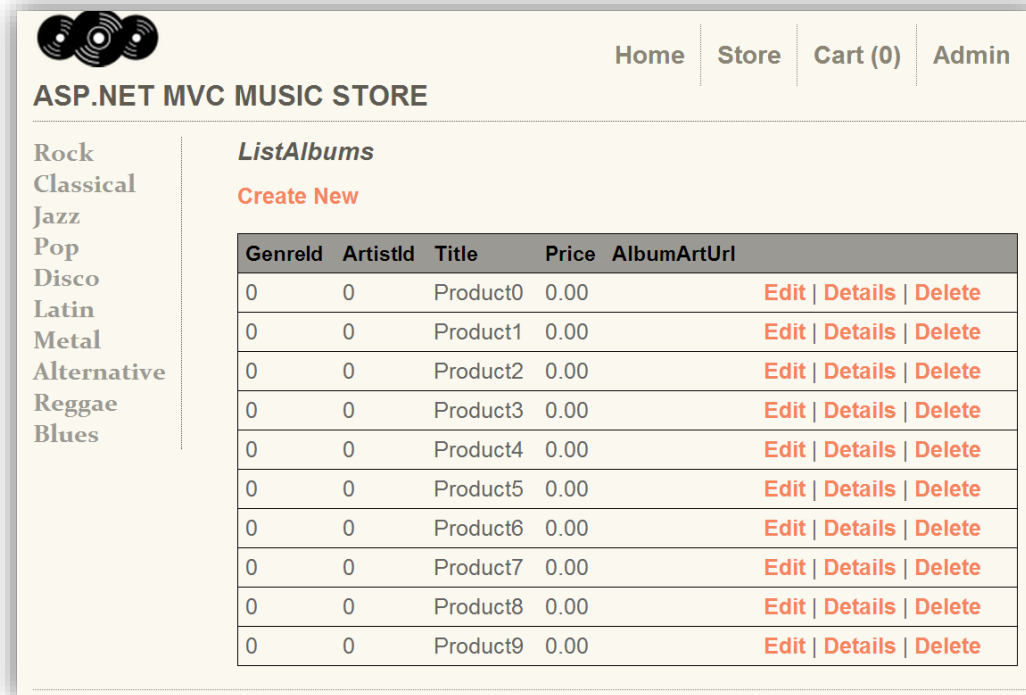
- ☐ Create as a partial view
- ☒ Reference script libraries
- ☒ Use a layout page:
 ...

(Leave empty if it is set in a Razor _viewstart file)

Default View Organization



Scaffolding Templates - III



A screenshot of an ASP.NET MVC application titled "ASP.NET MVC MUSIC STORE". The page has a navigation bar with links for Home, Store, Cart (0), and Admin. On the left, there is a sidebar menu with music genres: Rock, Classical, Jazz, Pop, Disco, Latin, Metal, Alternative, Reggae, and Blues. The main content area is titled "ListAlbums" and includes a "Create New" link. Below this is a table listing 10 products, each with columns for GenreId, ArtistId, Title, Price, and AlbumArtUrl. Each row contains a product ID (0-9), the same genre and artist IDs (0), a title (Product0-Product9), a price of 0.00, and a link to edit, details, or delete the product.

GenreId	ArtistId	Title	Price	AlbumArtUrl
0	0	Product0	0.00	Edit Details Delete
0	0	Product1	0.00	Edit Details Delete
0	0	Product2	0.00	Edit Details Delete
0	0	Product3	0.00	Edit Details Delete
0	0	Product4	0.00	Edit Details Delete
0	0	Product5	0.00	Edit Details Delete
0	0	Product6	0.00	Edit Details Delete
0	0	Product7	0.00	Edit Details Delete
0	0	Product8	0.00	Edit Details Delete
0	0	Product9	0.00	Edit Details Delete

View shown in browser

<http://localhost:26641/home/list>

View code generated through scaffolding

```
</th>
<th></th>
</tr>
foreach (var item in Model) {
    <tr>
        <td>
            @Html.DisplayFor(modelItem => item.GenreId)
        </td>
        <td>
            @Html.DisplayFor(modelItem => item.ArtistId)
        </td>
        <td>
            @Html.DisplayFor(modelItem => item.Title)
        </td>
        <td>
            @Html.DisplayFor(modelItem => item.Price)
        </td>
        <td>
            @Html.DisplayFor(modelItem => item.AlbumArtUrl)
        </td>
```

Module 4: Views

Section 6: Localization



View Localization

- [IViewLocalizer](#) service provides localized strings for a [view](#).

```
_Layout.cshtml  X
1  @using Microsoft.AspNetCore.Mvc.Localization
2  @inject IViewLocalizer Localizer
3
4  <!DOCTYPE html>
5  <html>
6  <head>...</head>
22 <body>
23   <div class="navbar navbar-inverse navbar-fixed-top">
24     <div class="container">
25       <div class="navbar-header">...</div>
34       <div class="navbar-collapse collapse">
35         <ul class="nav navbar-nav">
36           <li><a asp-area="" asp-controller="Home" asp-action="Index">@Localizer["Home"]</a></li>
37           <li><a asp-area="" asp-controller="Home" asp-action="About">@Localizer["About"]</a></li>
38           <li><a asp-area="" asp-controller="Home" asp-action="Contact">@Localizer["Contact"]</a></li>
39           <li><a asp-area="" asp-controller="Home" asp-action="SetRussianLanguage">Set Russian language in cookies</a></li>
40         </ul>
41       </div>
42     </div>
43   </div>
```

View Localization configuration

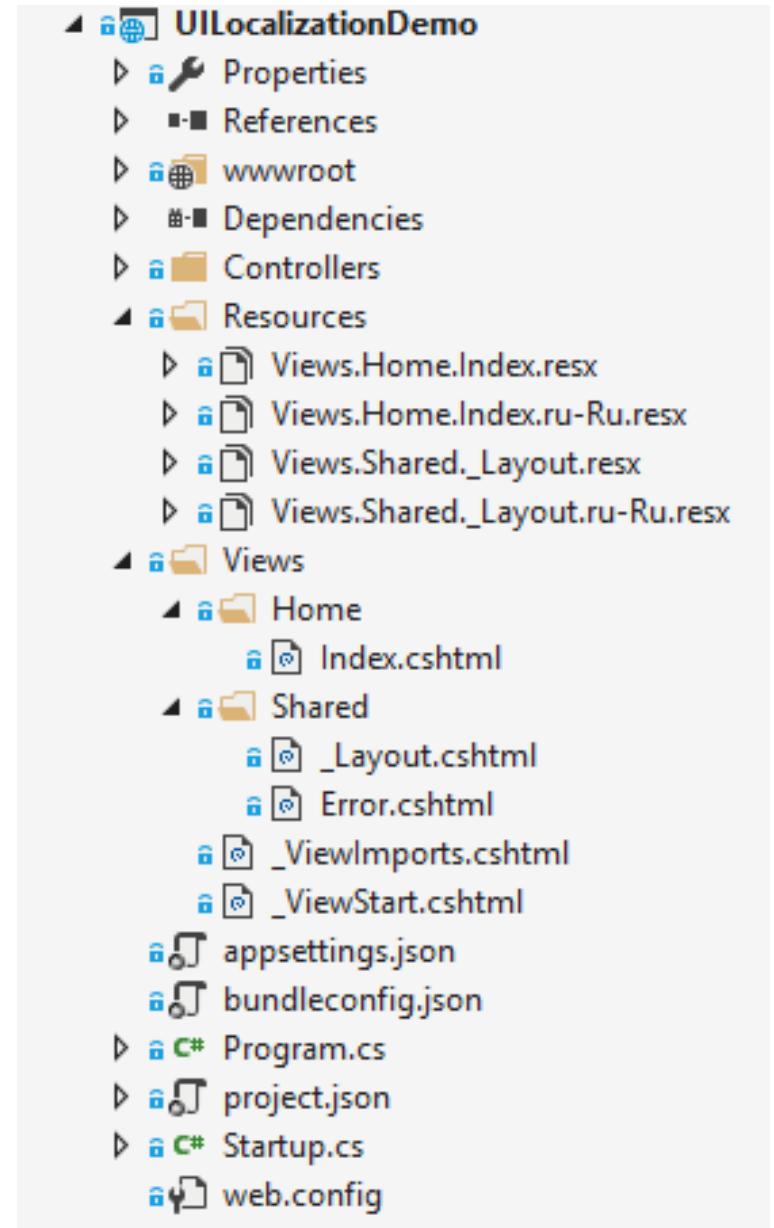
- Configure service
 - `services.AddLocalization(options => options.ResourcesPath = "Resources");`
- Configure default culture
 - `app.UseRequestLocalization(new RequestLocalizationOptions`
 - `{`
 - `DefaultRequestCulture = new RequestCulture("en-US"),`
 - `// Formatting numbers, dates, etc.`
 - `SupportedCultures = supportedCultures,`
 - `// UI strings that we have localized.`
 - `SupportedUICultures = supportedCultures`
 - `});`
- Create Resources folder in a project and all necessary resource files for all supported languages

Culture

- What is it en-US ?
 - en is a language
 - US is a culture
- Alternative English cultures:
 - en-AU English - Australia
 - en-BZ English - Belize
 - en-CA English - Canada
 - en-CB English - Caribbean
 - en-IE English - Ireland
 - en-JM English - Jamaica
 - en-NZ English - New Zealand
 - en-PH English - Philippines
 - en-ZA English - South Africa
 - en-TT English - Trinidad and Tobago
 - en-GB English - United Kingdom
 - en-US English - United States
 - en-ZW English - Zimbabwe

View Localization mechanics

- Localization of Index view of home Controller.
 - Full path to a view by default: Views/Home/Index.cshtml
- Asp.Net Core will automatically map view to a resx file
 - Views/Home/Index.cshtml -> Views.Home.Index.resx
- Views.Home.Index.resx location for default language.
 - To additional language we need additional resx files with similar name:
 - For Russian language - Views.Home.Index.ru-Ru.resx
- You can implement IViewLocalizer interface to realize another behavior.



Determining Request Culture

- Query String
 - Default key is `culture` (<http://localhost:5000/?culture=en-CA&culture=fr-FR>)
- Using a Cookie
 - Default Cookie name `.AspNetCore.Culture`
- Accept-Language Header
 - Header name : `Accept-Language: de-DE, en-US;q=0.8, fr-FR;q=0.7`
- Custom Request Culture Providers
 - Implement `IRequestCultureProvider` interface

Demo: Localization

Module Summary

- In this module, you learned:
 - Views and their role in MVC pattern
 - Partial and strongly typed views
 - View engines and Razor view engine
 - Tag Helpers
 - View Components
 - Service Injection in Views
 - Scaffolding
 - HTML5 Markup Elements and Controls
 - Bootstrap



Lab: Views



