Module 04: Views

Student Lab Manual

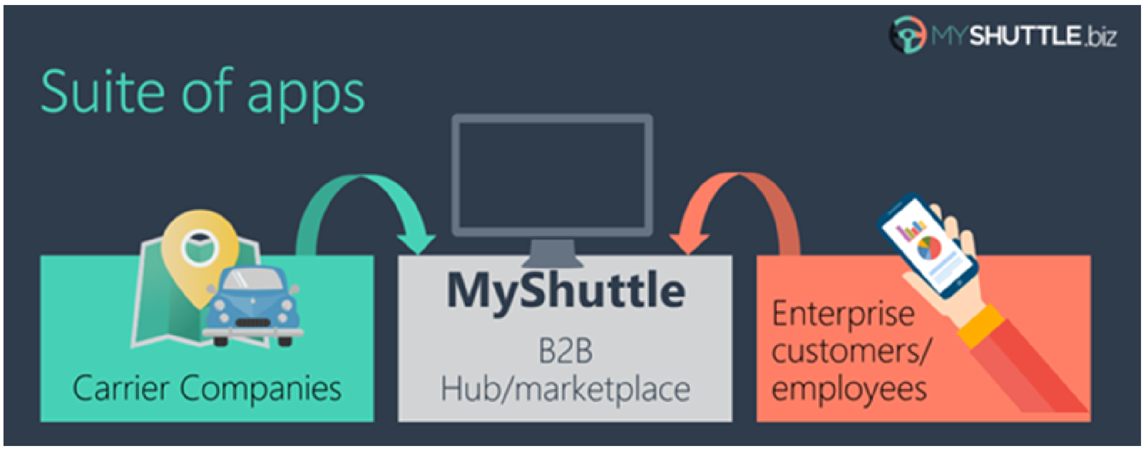
Instructor Edition (Book Title Hidden Style)

Lab 4: Creating Views

Introduction

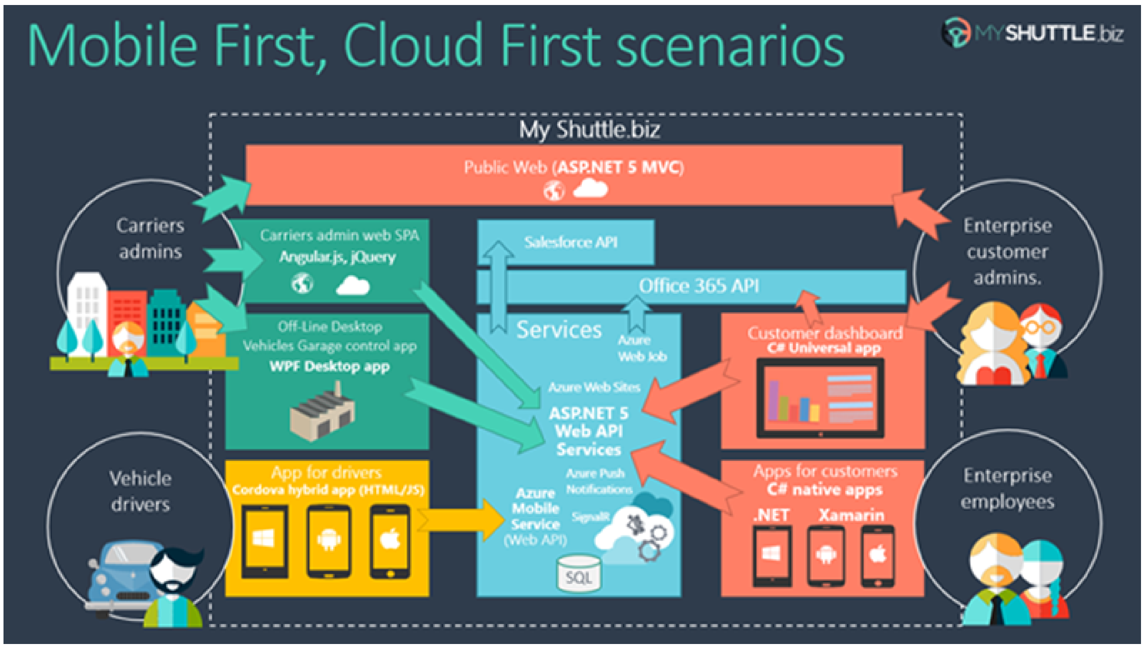
The aim of this exercise is to explore the role of views, how to create views and learn Razor syntax.

MyShuttle is a B2B highly scalable multi-tenant software as a service (SaaS) solution that targets corporate scenarios in which carrier companies offer transport services to enterprise customers.



This multi-tenant SaaS system would allow any number of carrier companies who must be syndicated with the system, to provide their services (cabs/shuttles) directly to any number of customer-enterprises/companies who would also be registered in the MyShuttle.biz system. The final outcome is that any employee in those customer companies would be able to request a cab/shuttle at any time in any place/city without worrying about how to pay. Everything would take place between their company and the carrier company for that ride.

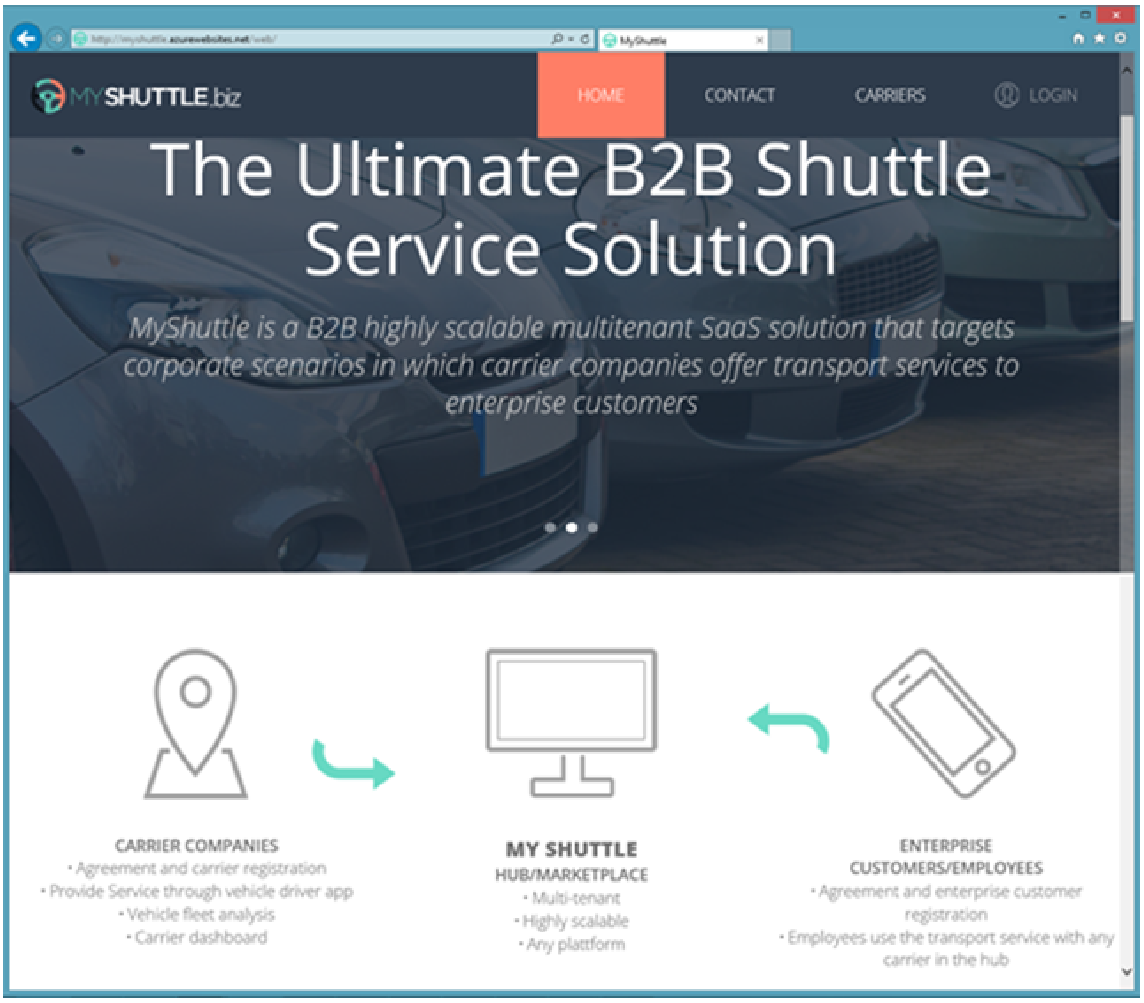
The global scenario is described in the following image:



There are two web applications in the above scenario:

Public Website:

It is a typical public website. Its main purpose is to show information about the business but in a modern and clean way. It provides a responsive design and even if you resize the browser, you can see how it would also be perfectly valid for mobile devices, like a smartphone.



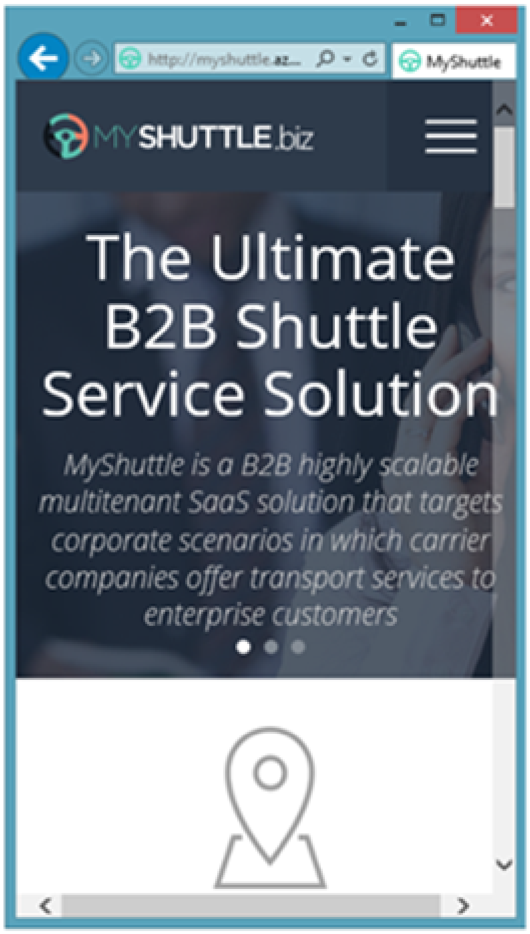
The Ultimate B2B Shuttle Service Solution

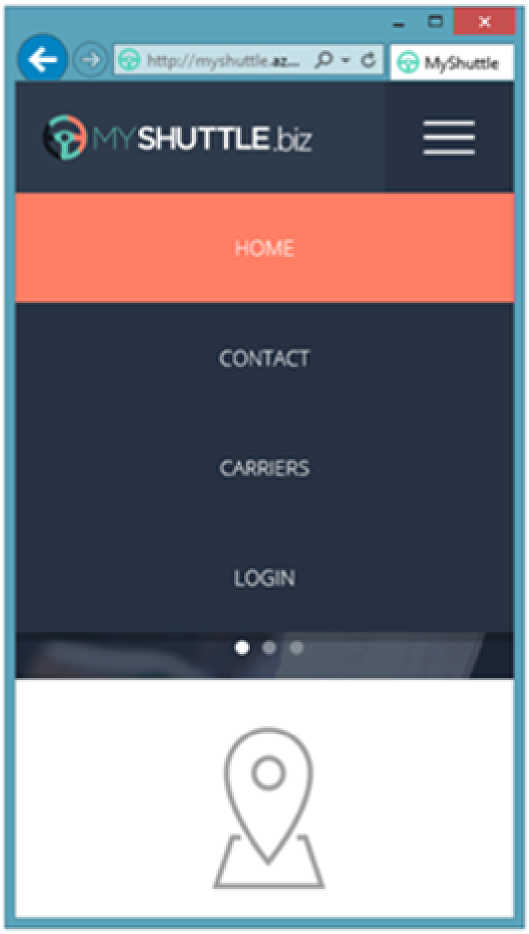
MyShuttle is a B2B highly scalable multitenant SaaS solution that targets corporate scenarios in which carrier companies offer transport services to enterprise customers

CARRIER COMPANIES
- Agreement and carrier registration
- Provide Service through vehicle driver app
- Vehicle fleet analysis
- Carrier dashboard

MY SHUTTLE
HUB/MARKETPLACE
- Multi-tenant
- Highly scalable
- Any plattform

ENTERPRISE
CUSTOMERS/EMPLOYEES
- Agreement and enterprise customer registration
- Employees use the transport service with any carrier in the hub

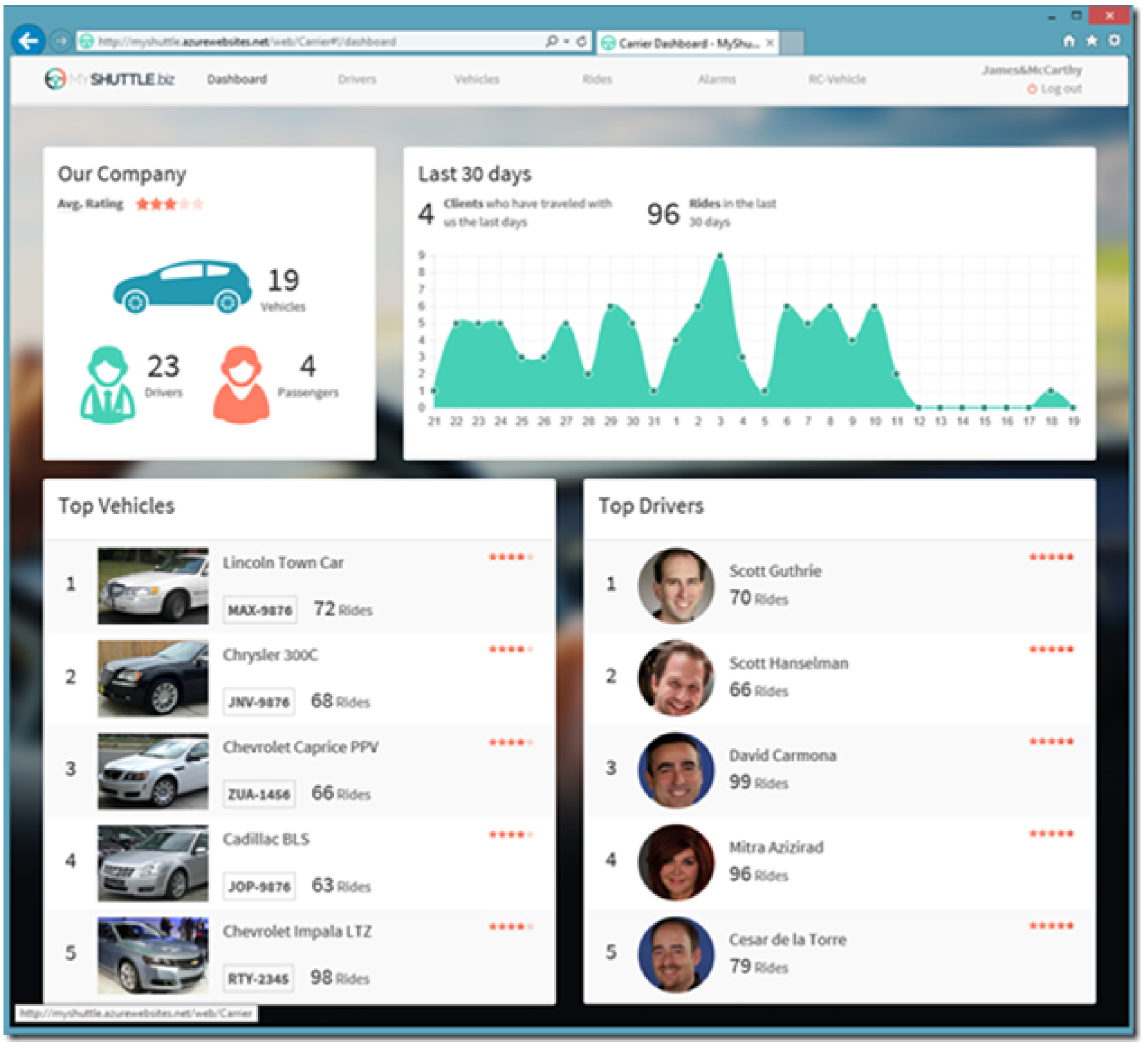

http://myshuttle.az...
MyShuttle
MYSHUTTLE.biz
The Ultimate B2B Shuttle Service Solution
MyShuttle is a B2B highly scalable multitenant SaaS solution that targets corporate scenarios in which carrier companies offer transport services to enterprise customers



Private Web Application:

The second application is a Web Single Page Application (SPA), which you can access by logging in from the public website. However, in reality it is like a different web application, simulating a private web application especially made for the Carriers' administrators.

This application is a data-driven and CRUD app so you can create and update information about your drivers, vehicles, etc. This application consumes the ASP.NET Core Web API Services using client-side frameworks.


http://myshuttle.azurewebsites.net/web/Carrier#/dashboard
Carrier Dashboard - MyShu...
MyShuttle.biz
Dashboard
Drivers
Vehicles
Rides
Alarms
RC-Vehicle
James&McCarthy
Log out

Our Company

Avg. Rating ★★★

19 Vehicles

23 Drivers

4 Passengers

Last 30 days

4 Clients who have traveled with us the last days

96 Rides in the last 30 days

Top Vehicles

1	Lincoln Town Car	MAX-9876	72 Rides	★★★★
2	Chrysler 300C	JNV-9876	68 Rides	★★★★
3	Chevrolet Caprice PPV	ZUA-1456	66 Rides	★★★★
4	Cadillac BLS	JOP-9876	63 Rides	★★★★
5	Chevrolet Impala LTZ	RTY-2345	98 Rides	★★★★

Top Drivers

1	Scott Guthrie	70 Rides	★★★★★
2	Scott Hanselman	66 Rides	★★★★★
3	David Carmona	99 Rides	★★★★★
4	Mitra Azizirad	96 Rides	★★★★★
5	Cesar de la Torre	79 Rides	★★★★★

http://myshuttle.azurewebsites.net/web/Carrier

In this series of labs, you will build the public website and some parts of the private web application above.

Overview

The Model View Controller (MVC) architectural pattern separates an application into three main components:

- **Models:** Model objects are the parts of the application that implement the domain logic. Often, model objects also retrieve and store model state in a database
- **Views:** Views are the components that display the application's User Interface (UI). Typically, this UI is created from the model data. An example would be an edit view of a Products table that displays text boxes, drop-down lists, and checkboxes based on the current state of a Product object.
- **Controllers:** Controllers are the components that handle user interaction, manipulate the model, and ultimately select a view to render the UI. In an MVC application, the view only displays information; the controller handles and responds to user input and interaction.

The MVC pattern helps you to create applications that separate the different aspects of the application (input logic, business logic, and UI logic), while providing a loose coupling between these elements. This separation helps you manage complexity when you build an application, because it enables you to focus on one aspect of the implementation at a time. In addition to managing complexity, the MVC pattern makes it easier to test applications than it is to test a traditional ASP.NET Web application, encouraging the use of Test-Driven Development (TDD) for creating an application.

Then, the ASP.NET MVC framework provides an alternative to the ASP.NET Web-forms pattern for creating MVC-based Web applications. The ASP.NET MVC framework is a lightweight, highly testable presentation framework that (as with Web-forms-based applications) is integrated with existing ASP.NET features, such as master pages and membership-based authentication.

In addition, the loose coupling between the three main components of an MVC application also promotes parallel development. For instance, one developer can work on the view, a second developer can work on the controller logic, and a third developer can focus on the business logic in the model.

Objectives

After completing this lab, you will be able to:

- Understand the basic principles of MVC.
- Learn how to implement a view in Razor view engines.
- Learn how to pass data from controllers to views.
- Learn how to implement GET, POST scenarios.

Scenario

In this scenario, we will explore MVC Views.

System Requirements

To complete this lab, you need:

- Microsoft Visual Studio 2019 or higher
- Microsoft SQL Server (any edition)

Estimated Time to Complete This Lab

60-90 minutes

Exercise 1: Explore ASP .NET MVC View Files Structure

Objectives

In this exercise, you will:

- Create a new ASP.NET MVC application in Visual Studio 2019.
- Explore the view organization within the Views folder of Visual Studio project.

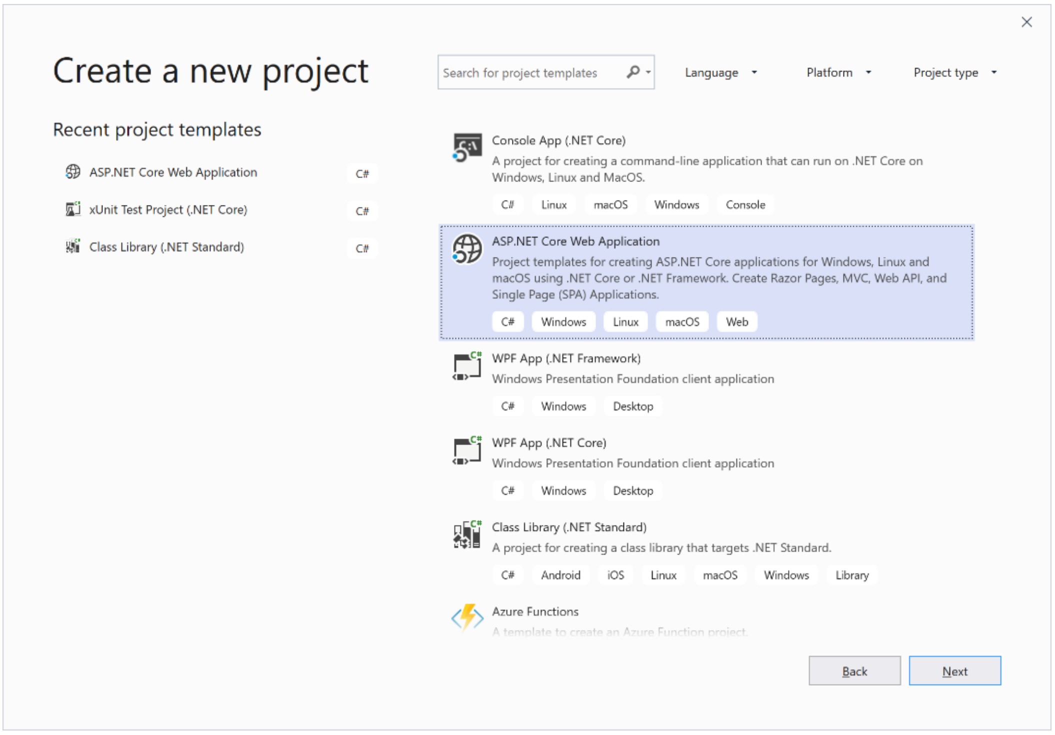
Scenario

We are going to take a break from the MyShuttle project. We're going to start by creating a new MVC application and exploring view organization.

Task 1: Creating a new project

1. Open **Visual Studio 2019**.
2. Create a new project.

3. Choose the **ASP.NET Core Web Application** template.



Create a new project

Search for project templates | Language | Platform | Project type

Recent project templates

- ASP.NET Core Web Application — C#
- xUnit Test Project (.NET Core) — C#
- Class Library (.NET Standard) — C#

Console App (.NET Core)
A project for creating a command-line application that can run on .NET Core on Windows, Linux and MacOS.
C# Linux macOS Windows Console

ASP.NET Core Web Application
Project templates for creating ASP.NET Core applications for Windows, Linux and macOS using .NET Core or .NET Framework. Create Razor Pages, MVC, Web API, and Single Page (SPA) Applications.
C# Windows Linux macOS Web

WPF App (.NET Framework)
Windows Presentation Foundation client application
C# Windows Desktop

WPF App (.NET Core)
Windows Presentation Foundation client application
C# Windows Desktop

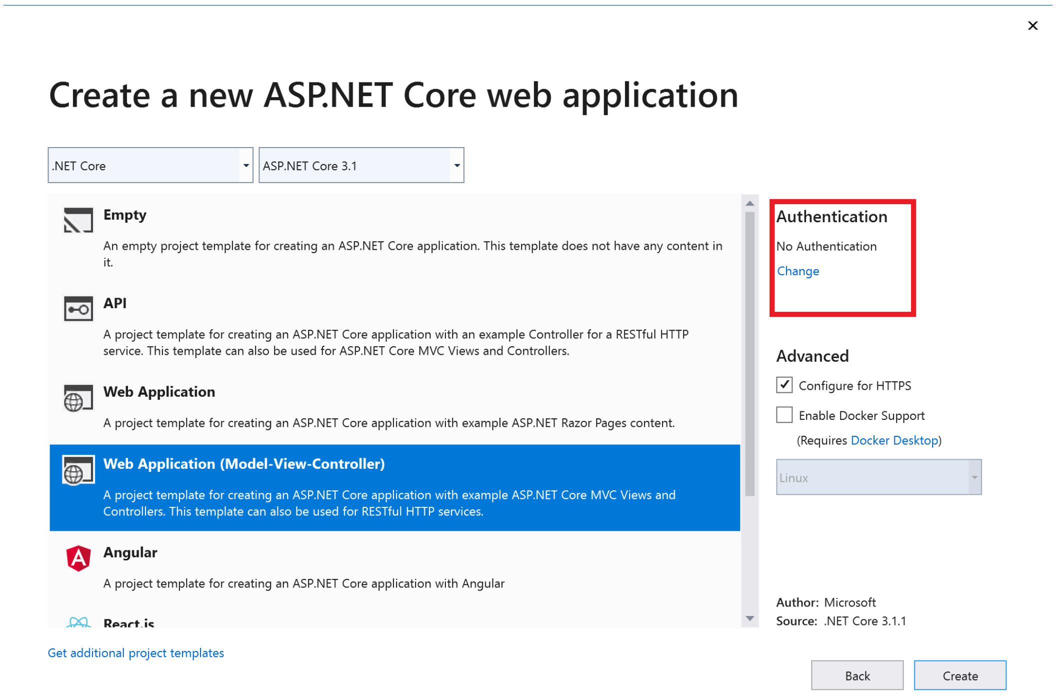
Class Library (.NET Standard)
A project for creating a class library that targets .NET Standard.
C# Android iOS Linux macOS Windows Library

Azure Functions
A template to create an Azure Function project.

Back | Next

4. Name the project *ViewsLab* and click **Create**.

5. Select **Web Application (Model-View-Controller)** project template. Choose **Individual User Accounts** for application authentication.



Create a new ASP.NET Core web application

.NET Core | ASP.NET Core 3.1

Empty
An empty project template for creating an ASP.NET Core application. This template does not have any content in it.

API
A project template for creating an ASP.NET Core application with an example Controller for a RESTful HTTP service. This template can also be used for ASP.NET Core MVC Views and Controllers.

Web Application
A project template for creating an ASP.NET Core application with example ASP.NET Razor Pages content.

Web Application (Model-View-Controller)
A project template for creating an ASP.NET Core application with example ASP.NET Core MVC Views and Controllers. This template can also be used for RESTful HTTP services.

Angular
A project template for creating an ASP.NET Core application with Angular

React.js

Get additional project templates

Authentication
No Authentication
Change

Advanced
☑ Configure for HTTPS
☐ Enable Docker Support
(Requires Docker Desktop)
Linux

Author: Microsoft
Source: .NET Core 3.1.1

Back | Create

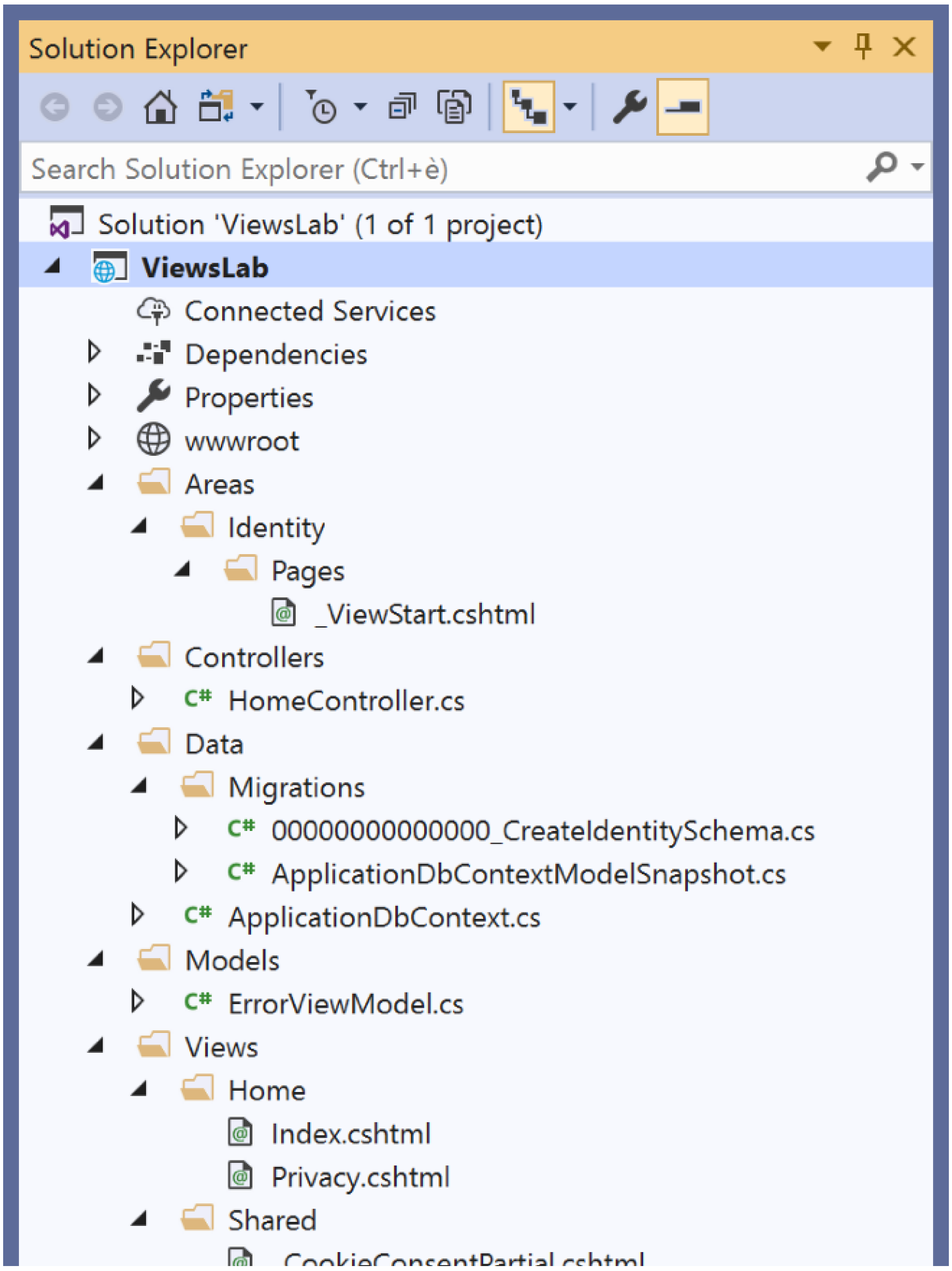
And choose **Store user accounts in-app** from the drop-down.

6. Click **Create**.

1. Double-click any controller class or a view to see its codebase.

   Note that the Home controller is included in the project by default. The **HomeController** handles the default first view of the web application.

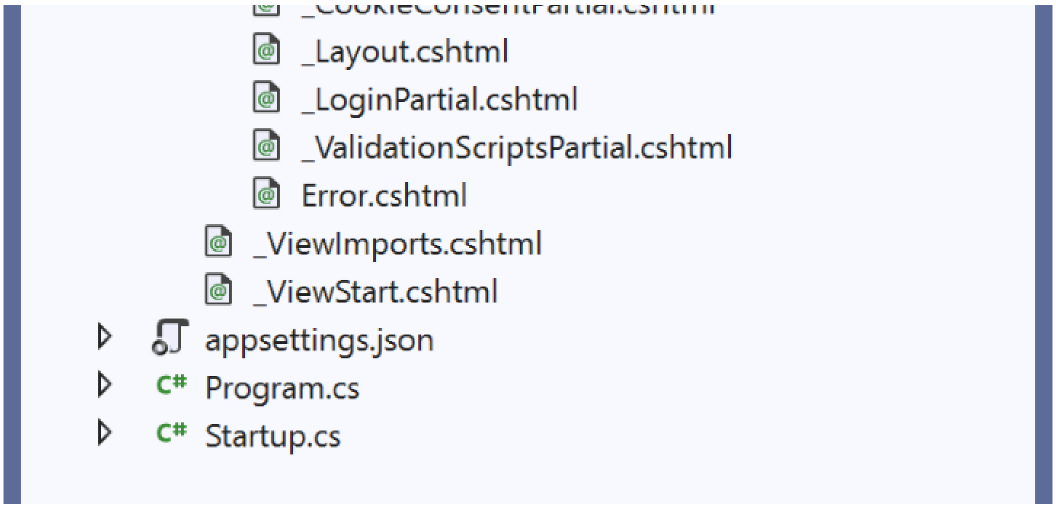
   Also notice here that all views used by **HomeController** are in **Views** > **Home** folder. This is the default convention, but it can be overridden.



Solution Explorer

Search Solution Explorer (Ctrl+è)

Solution 'ViewsLab' (1 of 1 project)
ViewsLab
Connected Services
Dependencies
Properties
wwwroot
Areas
Identity
Pages
_ViewStart.cshtml
Controllers
HomeController.cs
Data
Migrations
00000000000000_CreateIdentitySchema.cs
ApplicationDbContextModelSnapshot.cs
ApplicationDbContext.cs
Models
ErrorViewModel.cs
Views
Home
Index.cshtml
Privacy.cshtml
Shared
CookieConsentPartial.cshtml


_CookieConsentPartial.cshtml
_Layout.cshtml
_LoginPartial.cshtml
_ValidationScriptsPartial.cshtml
Error.cshtml
_ViewImports.cshtml
_ViewStart.cshtml
appsettings.json
Program.cs
Startup.cs

Exercise 2: View Creation and Data Passage

In the typical workflow of an MVC Web application, controller action methods handle an incoming Web request. These action methods use the incoming parameter values to execute application code, and retrieve or update data model objects from a database. They then select a view that renders a response to a browser.

In an MVC application, the views are the components responsible for displaying the application's user interface. Views are intended exclusively for encapsulating presentation logic. They should not contain any application logic or database retrieval code. Views render the appropriate UI by using this **View Data class**, which is a MVC view-related data object that the controller provides when it calls the method to render the view.

If ASPX view engine is used, the views use .aspx, .ascx, and .master files, as well as any other files that are related to rendering views. Views use .cshtml or .vbhtml if Razor engine is used. The Views folder contains a folder for each controller that is named with the controller prefix.

Objectives

In this exercise, you will:

- Explore Views
- Explore Razor view engine

Scenario

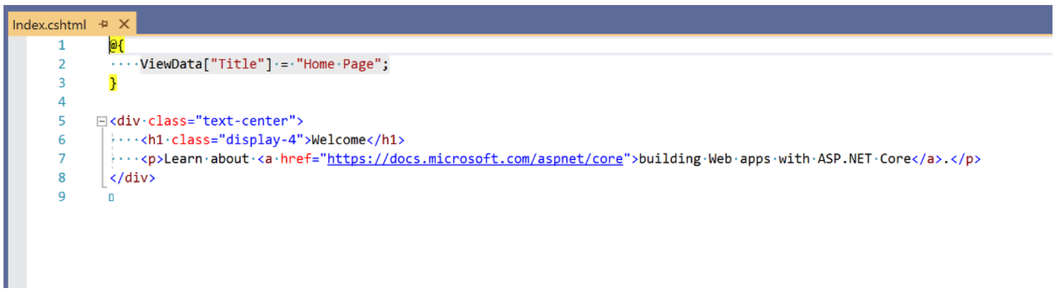
Razor is the default view engine but MVC supports multiple view engines.

Task 1: Exploring Razor

Continuing with our ViewsLab project:

1. Click on **Views > Home > Index.cshtml**.

   This is the first view displayed when the application runs. This Index view is created by default when we create our project with the *Web Application (Model-View-Controller)* project template.



Index.cshtml

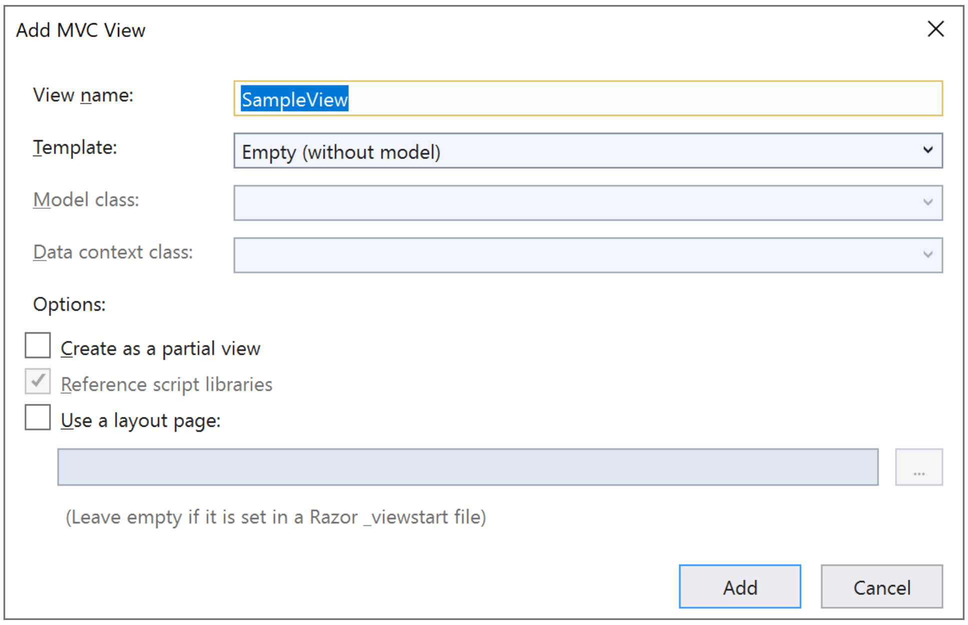
```
@{
    ViewData["Title"] = "Home Page";
}

<div class="text-center">
    <h1 class="display-4">Welcome</h1>
    <p>Learn about <a href="https://docs.microsoft.com/aspnet/core">building Web apps with ASP.NET Core</a>.</p>
</div>
```

2. To create a view, you can do it either through the Solution Explorer or action method code. When a view is created in the context of action method (by right-clicking action method signature), the view is created specifically for that particular action method.

   Let's create a view through **Solution Explorer**.

   - From the **Views** folder, right-click **Home** folder > **Add** > **View...**.
   - Name it **SampleView.cshtml**.



Add MVC View

View name: SampleView

Template: Empty (without model)

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)

3. The view created looks like below. It is very different from the Index view:

   Note: By default, the created view uses a layout for implementing a universal look throughout the website or web application. You can always point to a different layout file globally or per view. The layout specification is located in the _ViewStart.cshtml file.

4. Replace the view code with the following:

```
@{
    ViewBag.Title = "My View Sample";
}
```

```
<h2>@ViewBag.Title</h2>
```

5. After the view is created, a controller action method can use it.

   If you want to return the view, **SampleView.cshtml**, from Index action method of HomeController, you need to ensure that the view file is placed under **Views > Home** folder.

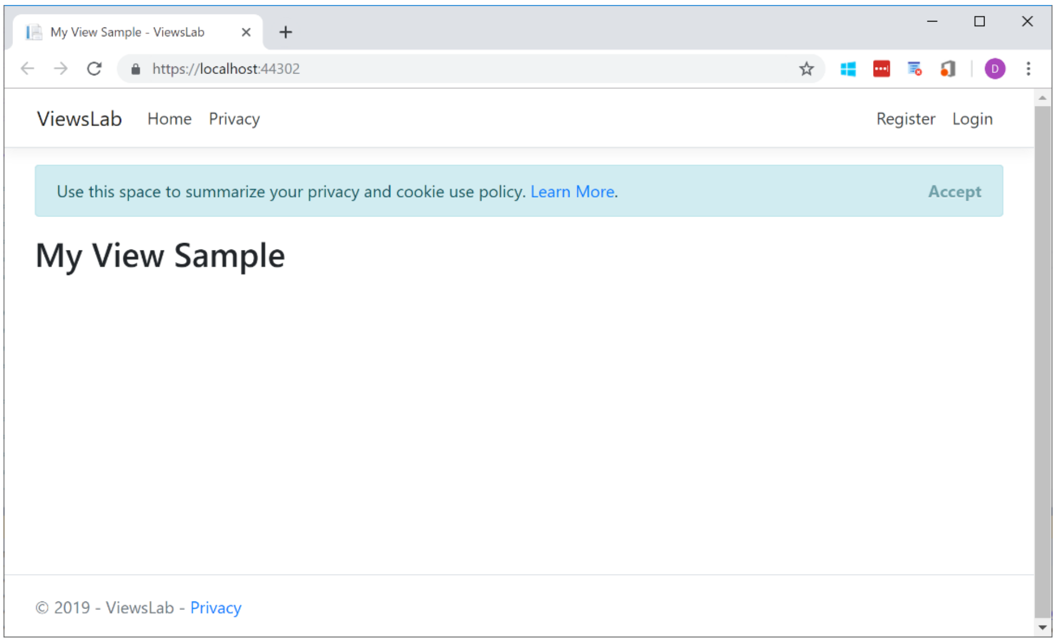
6. In the **HomeController.cs / Index()**, modify the *Index()* action method to specifically return the **SampleView.cshtml** view. Currently it returns the *Index.cshtml* view.

```
public class HomeController : Controller
{
    public IActionResult Index()
    {
        return View("SampleView");
    }

    // Code excluded for brevity
}
```

7. Run the application.

   The default view should now return the **SampleView** view as shown below:



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My View Sample

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8. Modify the **HomeController.cs / Index()** method as shown below.

```
public IActionResult Index()
{
    ViewBag.Message = "I am learning ASP.NET Core MVC";
    return View("SampleView");
}
```

> *The controller manipulates a model and selects a view to display the model. Hence, it needs to pass the model data to the view to display it. There are several ways to do so. One way is to use* ***ViewData****. ViewData is a container to pass data from a Controller to View.*
>
> *A simpler way to pass data is to use* ***ViewBag****. ViewBag is a dynamic wrapper around ViewData. Since it is dynamic, it only supports keys that form a valid identifier in the language. For example, 'My Message' is not a valid key, but MyMessage will work.*

9. Show the passed data in **SampleView.cshtml**. Access **ViewBag** data in the view.

   ```
   <h3>@ViewBag.Message</h3>
   ```

10. As you may already have noticed, you can add **C#** syntax code to a page by using the **@** character. This is called Razor syntax. The **@** character starts inline expressions, single statement blocks, and multi-statement blocks.

    Add the following at the end of **SampleView.cshtml**.

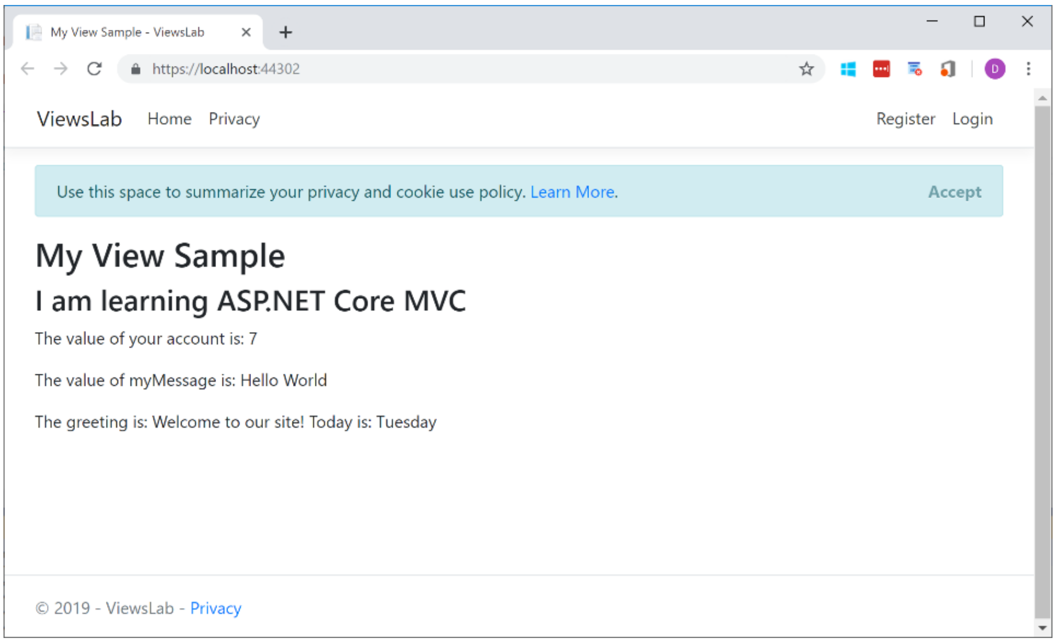
~~~
``` html
<!-- Single statement blocks -->
@{ var total = 7; }
@{ var myMessage = "Hello World"; }

<!-- Inline expressions -->
<p>The value of your account is: @total </p>
<p>The value of myMessage is: @myMessage</p>

<!-- Multi-statement block -->
@{
    var greeting = "Welcome to our site!";
    var weekDay = DateTime.Now.DayOfWeek;
    var greetingMessage = greeting + " Today is: " + weekDay;
}

<p>The greeting is: @greetingMessage</p>
```
~~~

11. Open the **Privacy.cshtml** file under the *Views/Home* folder. And type the following code:

    ```
    @for (int i = 0; i < 5; i++)
    {
        <blockquote>Message @i</blockquote>
    }
    ```

12. Start debugging by clicking the **IIS Express** button.

13. **SampleView** view will look like following:


My View Sample - ViewsLab

https://localhost:44302

ViewsLab Home Privacy Register Login

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My View Sample

I am learning ASP.NET Core MVC

The value of your account is: 7

The value of myMessage is: Hello World

The greeting is: Welcome to our site! Today is: Tuesday

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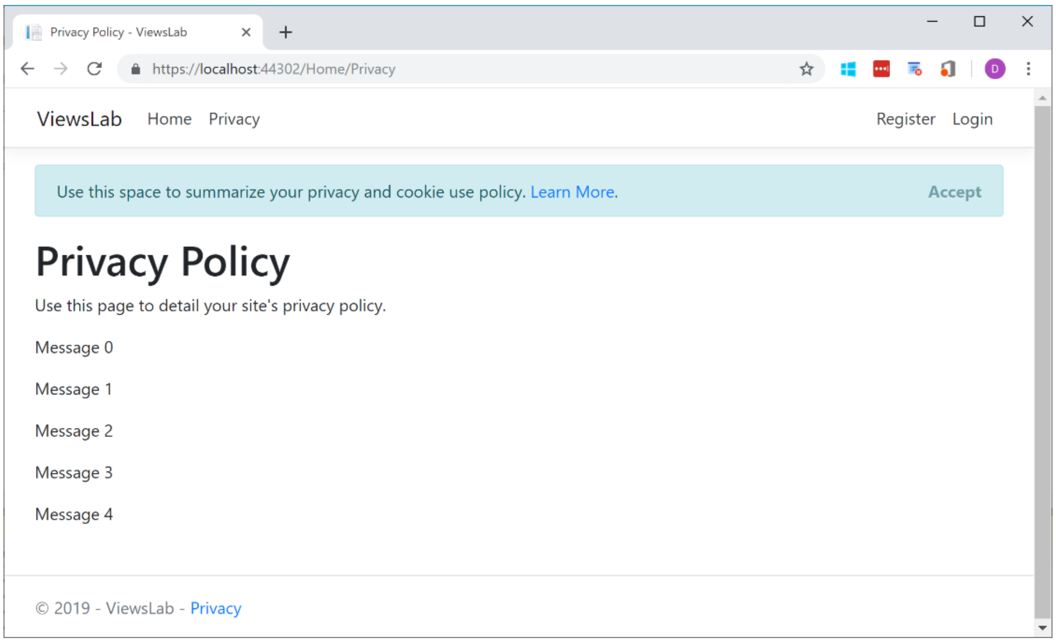
14. Navigate to **Privacy** view. Notice the simplicity of Razor for rendering the list on the page:


Privacy Policy - ViewsLab

https://localhost:44302/Home/Privacy

ViewsLab Home Privacy Register Login

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Privacy Policy

Use this page to detail your site's privacy policy.

Message 0

Message 1

Message 2

Message 3

Message 4

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Exercise 3: Strongly Typed Views

Objectives

In this exercise, you will:

- Learn how to create strongly typed view against a model.

Scenario

Strongly typed views allow for easier binding to models through the controllers.

Task 1: Create a Model and Bind It to a View

1. In the **ViewsLab** project created earlier, add a new model.

    - Right-click the **Models** folder > **Add** > **New Item**.
    - Choose **Class** from available templates
    - Name it **MovieModel.cs**

2. Remove all code snippets and paste the following code into **MovieModel.cs**:

```
using System;

namespace ViewsLab.Models
{
    public class Movie
    {
        public int ID { get; set; }
        public string Title { get; set; }
        public DateTime ReleaseDate { get; set; }
    }
}
```

3. In the **HomeController.cs / Privacy ()** method, change the Privacy action method as follows. First we create a movie object, and then we pass the movie object to the View method.

```
public IActionResult Privacy()
{
    ViewData["Message"] = "Your application description page.";

    ViewsLab.Models.Movie movie = new ViewsLab.Models.Movie
    {
        ID = 1,
        Title = "Follow the Wind",
        ReleaseDate = new DateTime(2017, 01, 21)
    };

    return View(movie);
}
```

4. Make the Privacy view strongly typed. To do that, open the **View / Home / Privacy.cshtml** file and add at the top of the page a reference to the Movie model namespace:

```
@using ViewsLab.Models

@model Movie
```

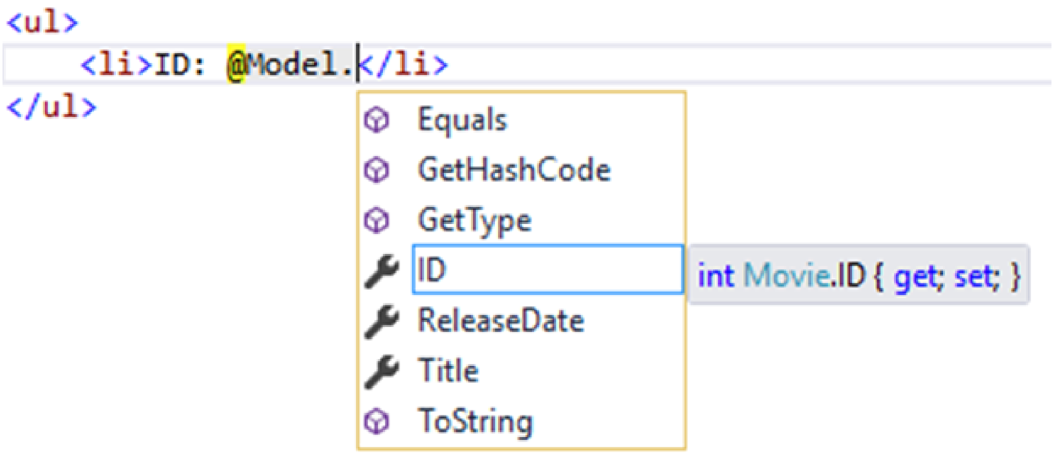
5. Now we should be able to access the Movie object within this view.

    Comment out or remove the for-loop from the previous exercise. And add the follow code snippet in **Privacy.cshtml**.

```
<ul>
    <li>ID: @Model.ID</li>
```

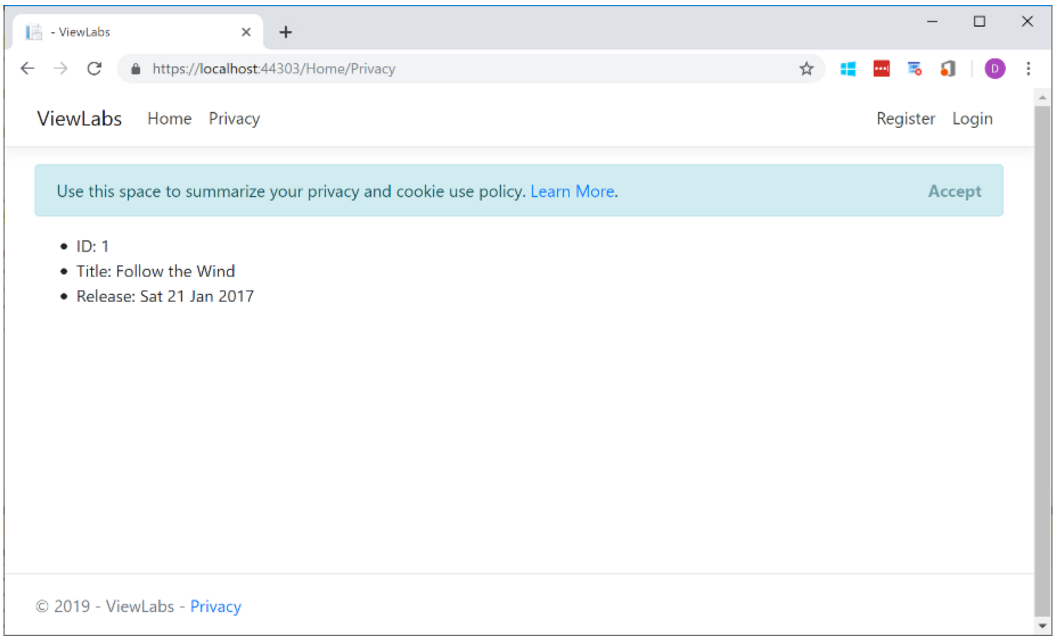
```
      <li>Title: @Model.Title</li>
      <li> Release: @Model.ReleaseDate.ToString("ddd d MMM yyyy", new
System.Globalization.CultureInfo("en-US"))</li>
 </ul>
```

Notice that we have access to IntelliSense in the Views. The page should show the same values that we have instantiated in the **HomeController.cs / Privacy()** action method:



```
<ul>
    <li>ID: @Model.</li>
</ul>
```

6. Run the application and click the **Privacy** menu. You should see the movie information that we have instantiated in the **HomeController**.



- ViewLabs
https://localhost:44303/Home/Privacy
ViewLabs Home Privacy Register Login
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- ID: 1
- Title: Follow the Wind
- Release: Sat 21 Jan 2017

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7. With strongly typed views, we can display dynamic data to the page.

   Let's write html for an input form representing the Movie object properties and labels for name labeling.

   Add the following code to the end of **Privacy.cshtml:**

```
<form>
    <label for="ID">ID: </label>
    <input type="text" id="id" />

    <label for="Title">Title: </label>
    <input type="text" id="title" />

    <label for="ReleaseDate">Release Date: </label>
    <input type="text" id="releasedate" />

    <button type="submit">Submit</button>
</form>
```

8. We have a form but we cannot post the data back to the server yet. The `asp-` attributes are called Tag Helpers. They enable server-side code to help create and render HTML elements in Razor files:

   Modify the above code with the following `asp-` attributes in the `<form>` and `<input>` elements:

```
<form asp-controller="Home" asp-action="Privacy" method="post">
    <label for="ID">ID: </label>
    <input type="text" asp-for="ID" id="id" />

    <label for="Title">Title: </label>
    <input type="text" asp-for="Title" id="title" />

    <label for="ReleaseDate">Release Date: </label>
    <input type="text" asp-for="ReleaseDate" id="releasedate" />

    <button type="submit">Submit</button>
</form>
```

9. To post the data back to the server, we need to create an action method to handle HTTP Post method.

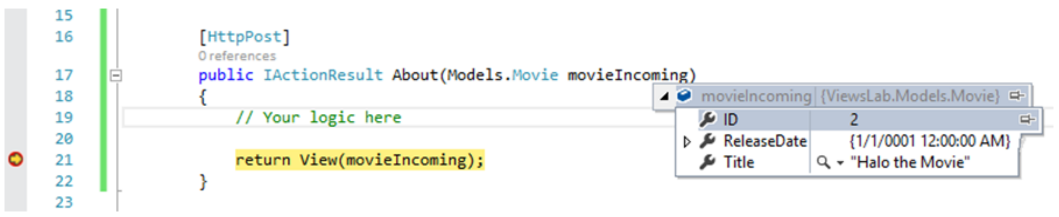
   In **HomeController.cs**, create a *new* **Privacy()** method that takes one parameter:

```
[HttpPost]
public IActionResult Privacy(Models.Movie movieIncoming)
{
    // Your logic here

    return View(movieIncoming);
}
```

10. Let's test our application and the new **Privacy()** method we implemented:

    - Put a breakpoint at the line return `View(movieIncoming);`
    - Debug the application via **IIS Express**
    - Navigate to the **Privacy** page
    - Enter some data in the fields and click the **Submit** button
    - You should then hit the break point. Inspect the object **movieIncoming** being returned:


```
        [HttpPost]
        0 references
        public IActionResult About(Models.Movie movieIncoming)
        {
            // Your logic here

            return View(movieIncoming);
        }
```
```
movieIncoming  {ViewsLab.Models.Movie}
  ID           2
  ReleaseDate  {1/1/0001 12:00:00 AM}
  Title        "Halo the Movie"
```

11. Open **MovieModel.cs**.

    Note how the properties we saw during debug (or in the screenshot above) are the same properties we defined earlier in the *Movie* model.

Exercise 4: Create Index View for MyShuttle app

Objective

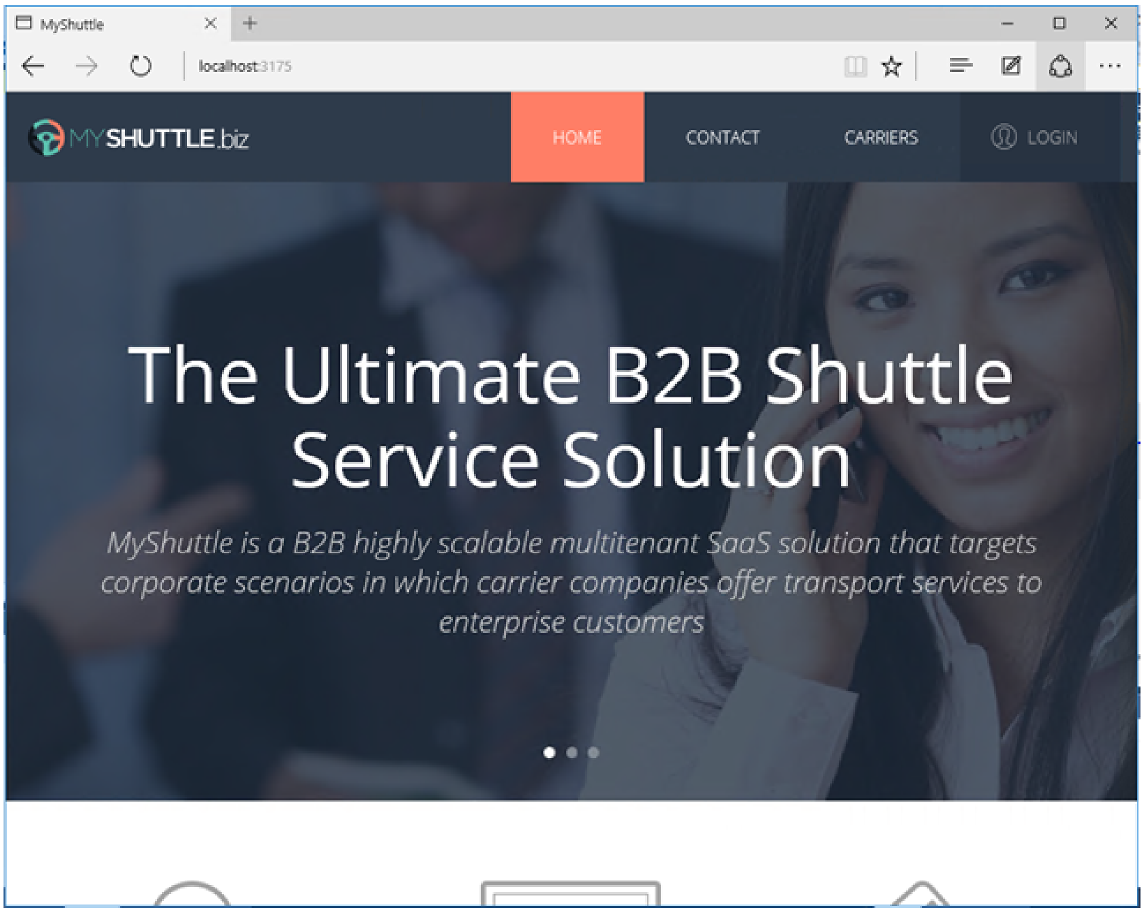
In this exercise, you will:

- Create Index.cshtml View for Home Controller in MyShuttle application.

Task 1: Create layout.cshtml page

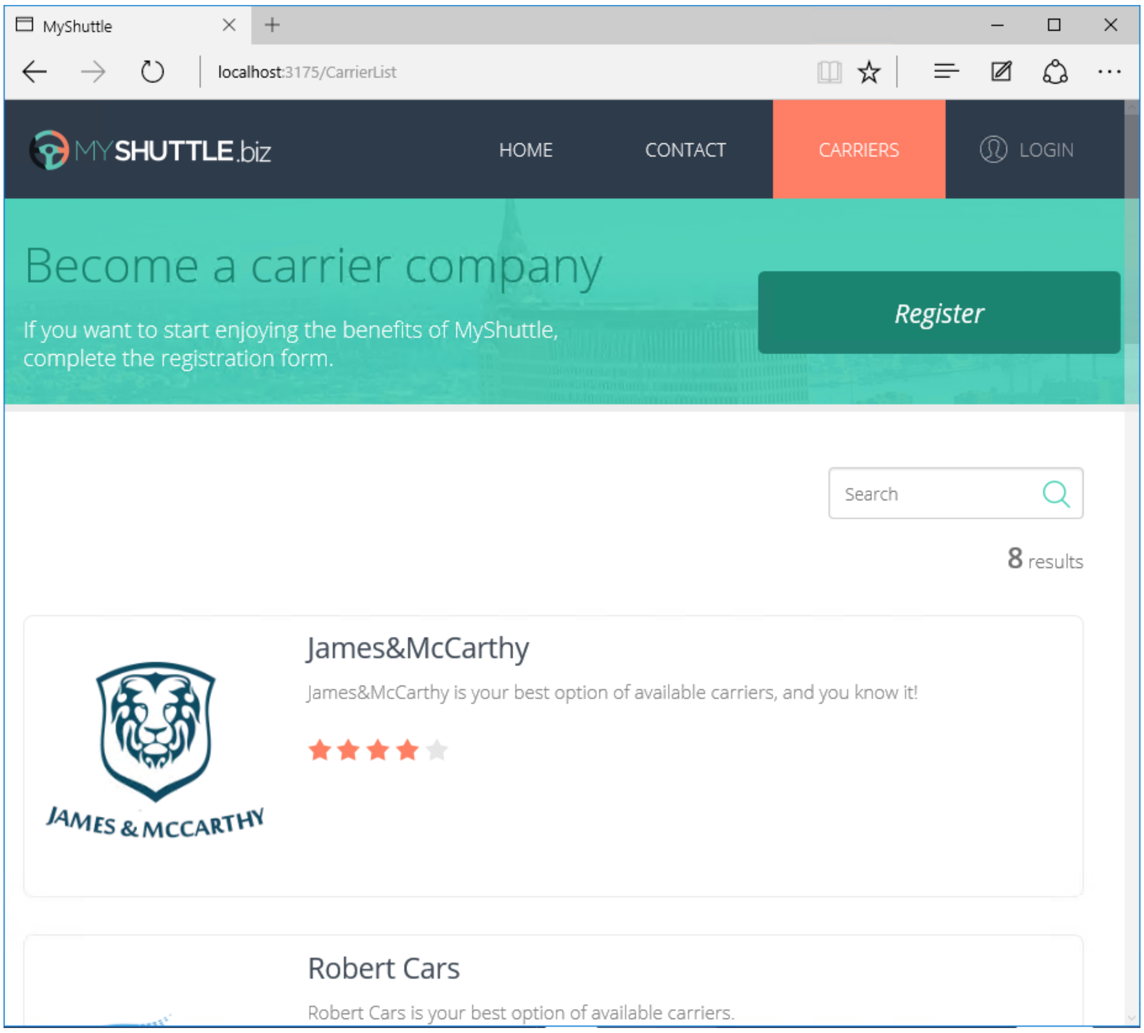
Let's return back to our MyShuttle application.

We are tasked to create the Home and Carriers pages. The company marketing and design teams have come up with the following mock-ups:



The Ultimate B2B Shuttle Service Solution

MyShuttle is a B2B highly scalable multitenant SaaS solution that targets corporate scenarios in which carrier companies offer transport services to enterprise customers



Become a carrier company

If you want to start enjoying the benefits of MyShuttle, complete the registration form.

8 results

James&McCarthy

James&McCarthy is your best option of available carriers, and you know it!

Robert Cars

Robert Cars is your best option of available carriers.

As you may notice, both mock-ups do have lot similarities on the page and their UI is very consistent. We can put the similar UI rendering and features in a Layout page.

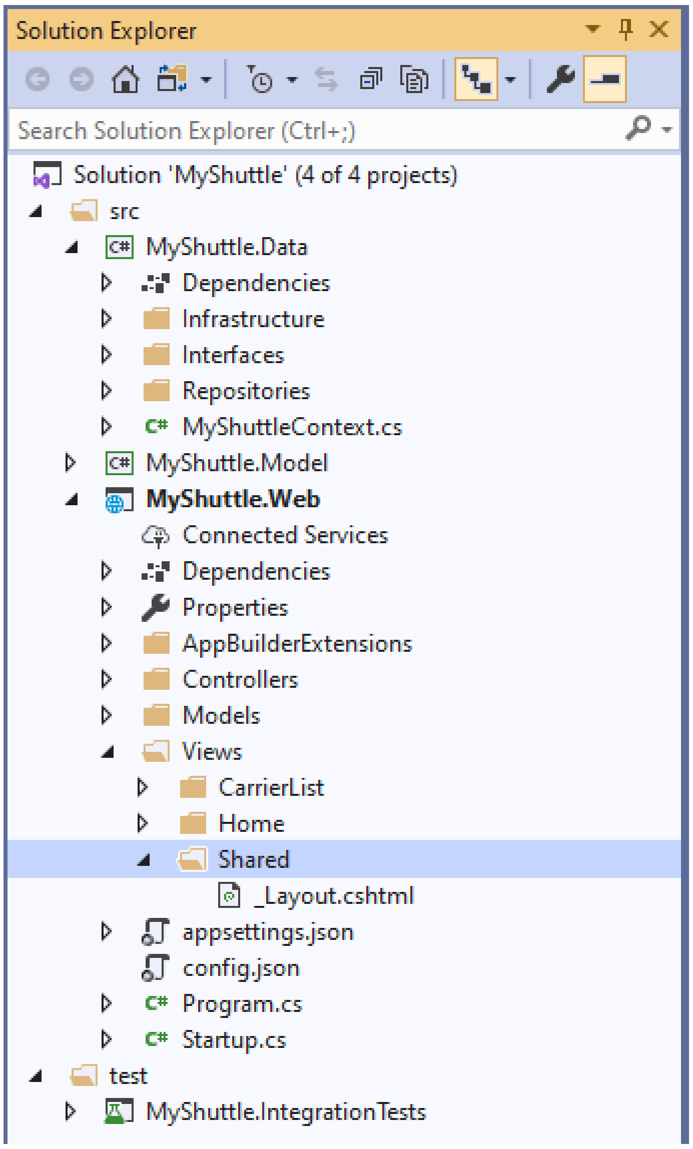
1. Re-open your **MyShuttle** application.

   Or if you were unable to get it to build properly in the previous lab, go to the `.../Labs/Module 04 - Views/Begin` folder in the File Explorer. And use that code as your starting point.

2. Add a new folder to your **MyShuttle.Web / Views** folder. And name it **Shared**.

   This folder will contain views that are commonly used. Partial views are good candidates to be organized in this folder.

3. Right-click the **Shared** folder **> Add > Existing Item**. Navigate to this lab assets location and add the **_Layout.cshtml** file.



A **Razor Layout page** is the equivalent of an ASP.NET Master Page. It defines the structure of a Web page by using **HTML markup**, and defines sections that will be filled with custom content. Web pages linked to a layout will only have to complete the sections with their own HTML. By using layout pages, your site will have a consistent layout and structure.

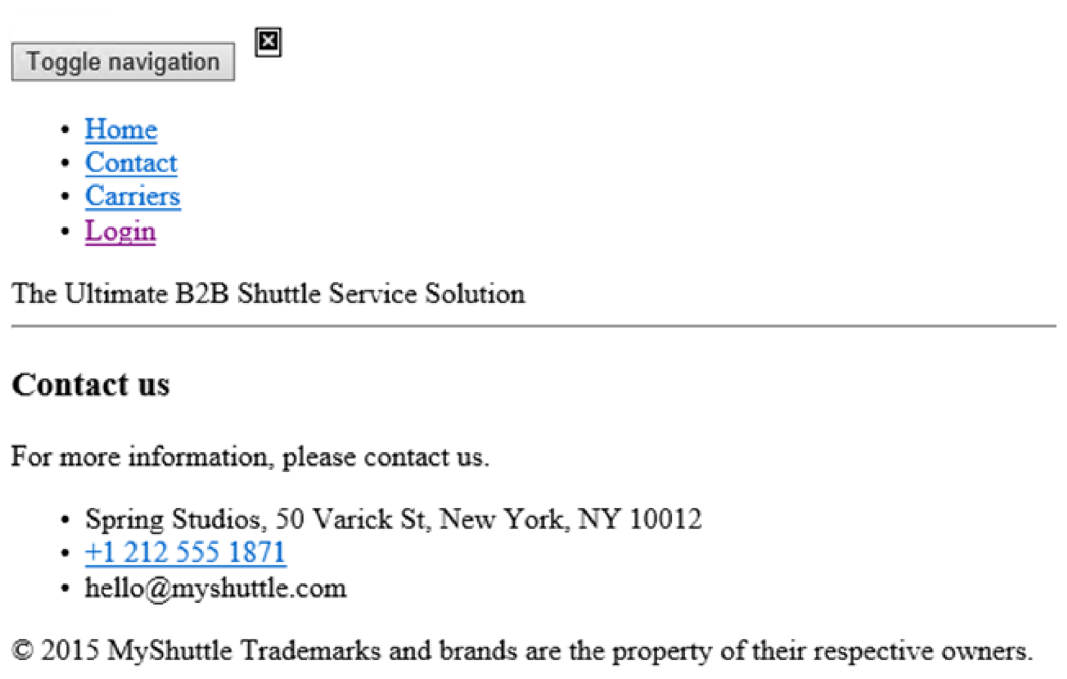
4. Reopen the **Views / Home / Index.cshtml** file. Specify the Layout template that we want to use for this page at the top of the **Index.cshtml** file:

```
@{
    ViewBag.Title = "Home Page";

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

5. Review and understand the Razor and HTML markup for the layout page.

6. Run the application and you should see that the Index page has more markups now.



Toggle navigation

- Home
- Contact
- Carriers
- Login

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Contact us

For more information, please contact us.

- Spring Studios, 50 Varick St, New York, NY 10012
- +1 212 555 1871
- hello@myshuttle.com

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7. However, no style or image has been applied. Those references are specified in the Layout page but they are actually missing from the project. Let us fix this.

   - Navigate to **wwwroot** in the lab's assets folder `/Asset/MyShuttle/wwwroot/...`

   - Copy the static content to your own **wwwroot** folder in the Solution Explorer. Add new folders as needed.

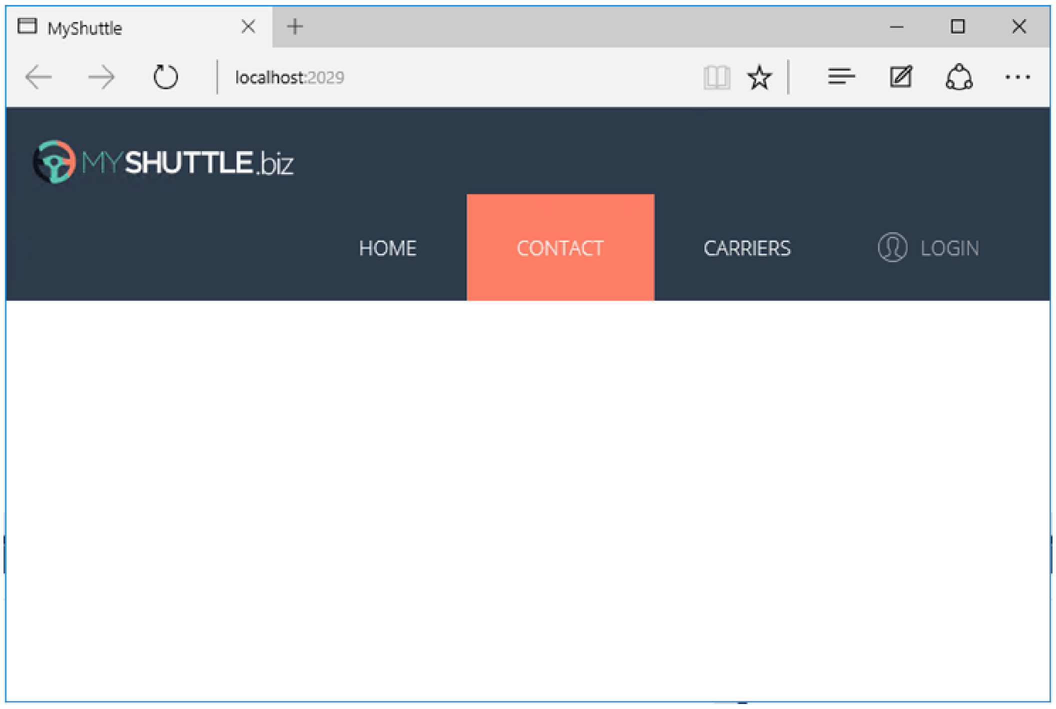
     > *The wwwroot folder is new in ASP.NET Core. All of the static files in your project go into this folder. These are assets that the app will serve directly to clients, including HTML files, CSS files, image files, and JavaScript files.*
     >
     > *The wwwroot folder is the root of your website. That is, **http://hostname/** points to **wwwroot**, all URLs for static content are relative to the wwwroot folder.*
     >
     > *Code files should be placed outside of wwwroot. That includes all of your C# files and Razor files. Having a wwwroot folder keeps a clean separation between code files and static files.*

     Your solution explorer should look like this:

8. Before we run the application, notice that we have NOT yet configured the ability to serve static files in our pipeline. To do this, go to the **Startup.cs / Configure()** method - insert the following line after `app.ConfigureRoutes()` .

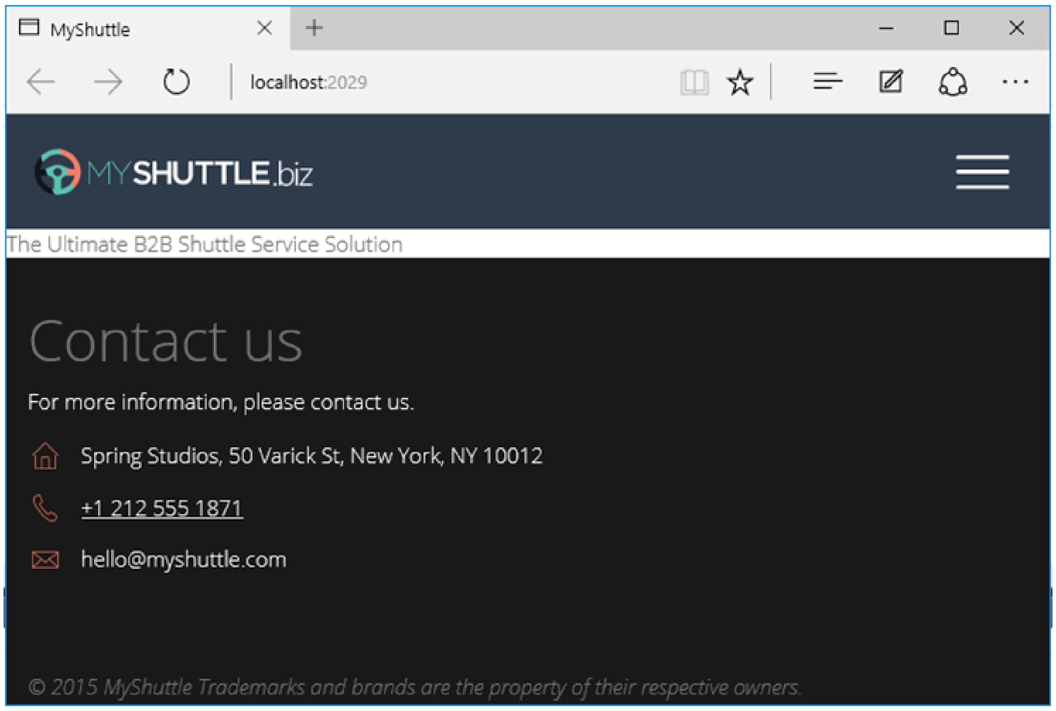
```
app.UseStaticFiles();
```

9. Run the application. But we will see a blank page.



10. Resize the browser to see the "Contact us" information.

    This is definitely not the behavior we want for our application. We will need to fix this in the next exercise.



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Task 2: Modify the index.cshtml Page

1. Take a look at the contents of the **Views / Home / Index.cshtml** file. We will be replacing this file.

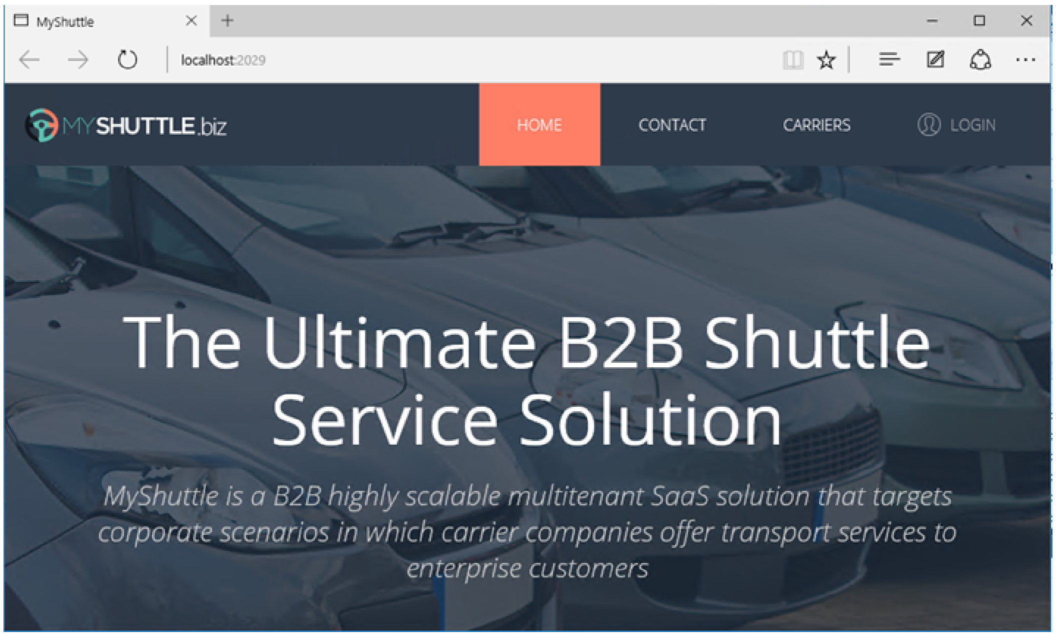
2. Delete the **Index.cshtml** file.

3. Right-click the **Home** folder **> Add > Existing Item**. Navigate to this lab assets location and add the **Index.cshtml** file.

4. Spend some time to check what is implemented in the **Index.cshtml** page.

   As you may have noticed, the markup is mainly decorated with styles and scripts references compared to the old Index.cshtml.

5. Run the application and you will notice that the default view for the Home controller looks completely different and more modern. We will discuss this in details in the Client-Side Development module.


MyShuttle
localhost:2029
MYSHUTTLE.biz
HOME
CONTACT
CARRIERS
LOGIN
The Ultimate B2B Shuttle Service Solution
MyShuttle is a B2B highly scalable multitenant SaaS solution that targets corporate scenarios in which carrier companies offer transport services to enterprise customers

Exercise 5: Create CarrierList View

Objective

In this exercise, you will:

- Create Index.cshtml view for CarrierList controller in MyShuttle application, which will have "register a carrier", "search carrier", and "list of all carrier" functionality.

Task 1: Create _CarrierListPartial.cshtml Page

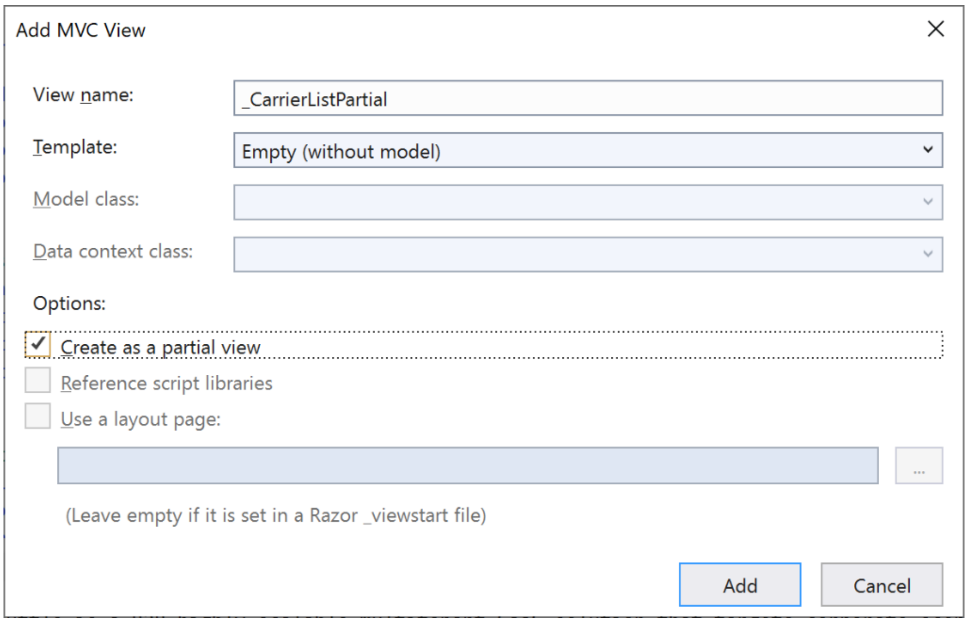
A partial view enables you to define a view that will be rendered inside a parent view. Partial views are implemented as ASP.NET user controls (.ascx).

When a partial view is instantiated, it gets its own copy of the ViewDataDictionary object that is available to the parent view. The partial view therefore has access to the data of the parent view. However, if the partial view updates the data, those updates affect only the partial view's ViewData object. The parent view's data is not changed.

1. Add a new partial view to the **Shared** folder in the **MyShuttle.Web** project

- Right-click **Shared** folder **>** **Add** **>** **View**
- Name the view _**CarrierListPartial**
- Check the box "**Create as partial view"**

  A partial view lets you define a view that will be rendered inside a parent view.


Add MVC View

View name: _CarrierListPartial
Template: Empty (without model)
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)

- Click **Add**

2. We will use the **MyShuttle.Model** for the display of *List of Carriers*. Add the two lines of code from below.

   `List<Carrier>` will be passed from the controller.

```
@using MyShuttle.Model
@model List<Carrier>
```

   Do not copy html markup from this document, because copying from .docx/.pdf could cause issues with source code. Copy it from "assets" folder.

3. We need to display how many Carriers are there in the application.

   So let's create a div and put these count on the right-side of our page. Copy the code below in our _**CarrierListPartial.cshtml** file.

```
<div class="carrier-results text-right">
    <span class="n-results">@Html.Raw(@Model.Count)</span>
    <span class="text-results">results</span>
</div>
```

```
Note how we use `@Model.Count` in the code. Remember how we declared that our model
was `List<Carrier>` at the top of the page.
```

5. Now, we need to iterate over the records in the list and display them. Copy the code below in our **_CarrierListPartial.cshtml** file.

```
 <div class="row margin-zero carrier-info-wrapper">

     @{ var odd = true; }

     @foreach (var Tile in Model)
     {
         <article class="col-md-6 carrier-tile row margin-zero">
             <div class="carrier-info row @(odd ? "" : "even")">
                 <div class="col-xs-3 text-center img-wrapper ">
                     @{
                         var imgSrc = String.Format("data:image/png;base64,
{0}",

                         Convert.ToBase64String(Tile.Picture));
                         <img src="@imgSrc" class=" carrier-pic" />
                     }
                 </div>

                 <div class="col-xs-9">
                     <p class="carrier-name">@Tile.Name</p>
                     <p class="carrier-description">@Tile.Description</p>
                     <div class="customer-rating" data-score="@Tile.RatingAvg">
</div>
                 </div>
             </div>
         </article>

         odd = !odd;
     }

 </div>
```

Note again how we are using the for-each loop to iterate over our `Model` (which is of type `List<Carrier>`) in the code above.

6. This is just a partial page.

   We can run the application AFTER we use this partial page in Index.cshtml page. Let's continue with the next task to add the functionality to register the CarrierPage

Task 2: Create _RegisterCarrierForm.cshtml Page

1. Add a new partial view to the **Shared** folder in the **MyShuttle.Web** project
   - Right-click **Shared** folder **> Add > View**
   - Name the view **_RegisterCarrierForm**
   - Check the box "**Create as partial view"**

     This will be a *partial page* that will go in Index.cshtml page of CarrierList that we will write.

2. We will need to be able to pass the CarrierViewModel model from the controllers - in order to register a new carrier.

   In our **_RegisterCarrierForm.cshtml** partial view, declare the `Model` as type `CarrierViewModel` at the top.

   ```
   @model MyShuttle.Web.Models.CarrierViewModel
   ```

3. Add the HTML mark-up code to get inputs from the user. `@Html.Beginform` writes an opening `<form>` tag to the response. The form uses the **POST** method, and the request is processed by the action method for the view.

   Copy the markup code from the assets folder `...\Assets\MyShuttle\Views\Shared` into the **_RegisterCarrierForm.cshtml** partial view.

4. When done, the file should look something like the screenshot below:

Task 3: Create _SearchPartial.cshtml Page

1. Add a new partial view to the **Shared** folder in the **MyShuttle.Web** project

   - Right-click **Shared** folder **> Add > View**
   - Name the view _**SearchPartial**
   - Check the box "**Create as partial view"**

     This will be a partial page that will go in the Index.cshtml page for the CarrierList controller that we will write for searching a carrier vendor.

2. To implement the search functionality, add the markup code below to our newly created **_SearchPartial.cshtml** file.

   ```
   @model MyShuttle.Web.Models.SearchViewModel

   <div>
       @using (Html.BeginForm("CarrierListFiltered", "Index", FormMethod.Get, new
   { @id = "searchForm", @class = "" }))
       {
           <div class="search-input-wrapper" id="searchBtn"></div>

           @Html.TextBoxFor(m => m.SearchString, new { @id = "searchInput", @type
   = "search", @placeholder = "Search", @class = "form-control search-input" })
       }
   </div>
   ```

Task 4: Create Index.cshtml Page

1. Open the **Views / CarrierList / Index.cshtml** file that you created in the previous lab. Remove all its contents.

2. We will pass the *CarrierListViewModel* model from the CarrierList controller to the CarrierList view. We will also set the Layout property to *Layout.cshtml* page.

Add the code below to the **Views / CarrierList / Index.cshtml** file:

```
@model MyShuttle.Web.Models.CarrierListViewModel

@{
    ViewBag.Title = "Home Page";
    Layout = "/Views/Shared/_Layout.cshtml";
}

<!-- Add the CSS references for the index.cshtml page -->

@section styles{
    <link rel="stylesheet" type="text/css" href="Content/jquery.raty.css"
xmlns="http://www.w3.org/1999/html" />
    <link rel="stylesheet" type="text/css" href="Content/form.css"
xmlns="http://www.w3.org/1999/html" />
    <link rel="stylesheet" type="text/css" href="Content/carriers.css"
xmlns="http://www.w3.org/1999/html" />
    <link rel="stylesheet" type="text/css" href="Content/footer.css"
xmlns="http://www.w3.org/1999/html" />
}
```

3. Next we want to display the search pane and list of all carriers that are available. These are the partial pages *_CarrierListPartial.cshtml* and *_SearchPartial.cshtml* and that we created earlier.

   Add the code below to the **Views / CarrierList / Index.cshtml** file:

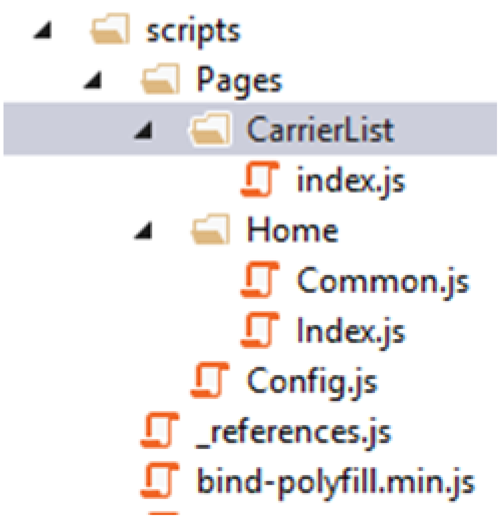
```
<!-- Carrier List -->
<div>
    @await Html.PartialAsync("_RegisterCarrierForm", Model.Carrier)
</div>

<section class="carrier-list">
    <div class="ms-container-fluid full-spaced clearfix text-center ">
        <div class="row carrier-controls margin-zero">
            <div class="col-sm-offset-9 col-sm-3 search-carrier padding-zero">
                @await Html.PartialAsync("_SearchPartial", Model.Search)
            </div>
        </div>
        <div id="listContainer">
            @await Html.PartialAsync("_CarrierListPartial", Model.CarrierList)
        </div>
    </div>
</section>
```

4. Add the scripts section at the end of the **Views / CarrierList / Index.cshtml** file:

```
@section scripts{
    <script charset="UTF-8" type="text/javascript"
src="https://ecn.dev.virtualearth.net/mapcontrol/mapcontrol.ashx?v=7.0&s=1">
</script>
    <script src="Scripts/Pages/CarrierList/index.js"></script>
}
```

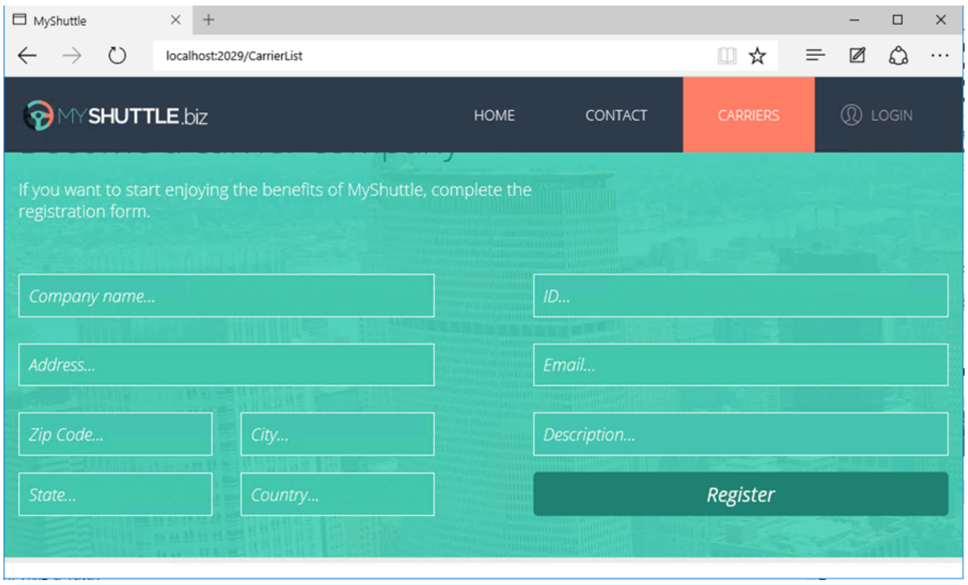
5. We are almost done with our CarrierList's Index View. Make sure we have all the scripts from our lab assets folder in our **wwwroot/scripts** folder



```
scripts
    Pages
        CarrierList
            index.js
        Home
            Common.js
            Index.js
        Config.js
    _references.js
    bind-polyfill.min.js
```

6. Let's test our application.
   - Run the application
   - Click the **Carrier** button in the top navigation bar (*or* navigate to URL: http://localhost:[YOUR LOCALHOST PORT]/CarrierList/Index) to trigger the Index action method of the CarrierList controller.
   - Click *once* on the **Register** button on the page.

     You'll see the input form that we implemented earlier in our _RegisterCarrierForm.cshtml partial view.



If you want to start enjoying the benefits of MyShuttle, complete the registration form.