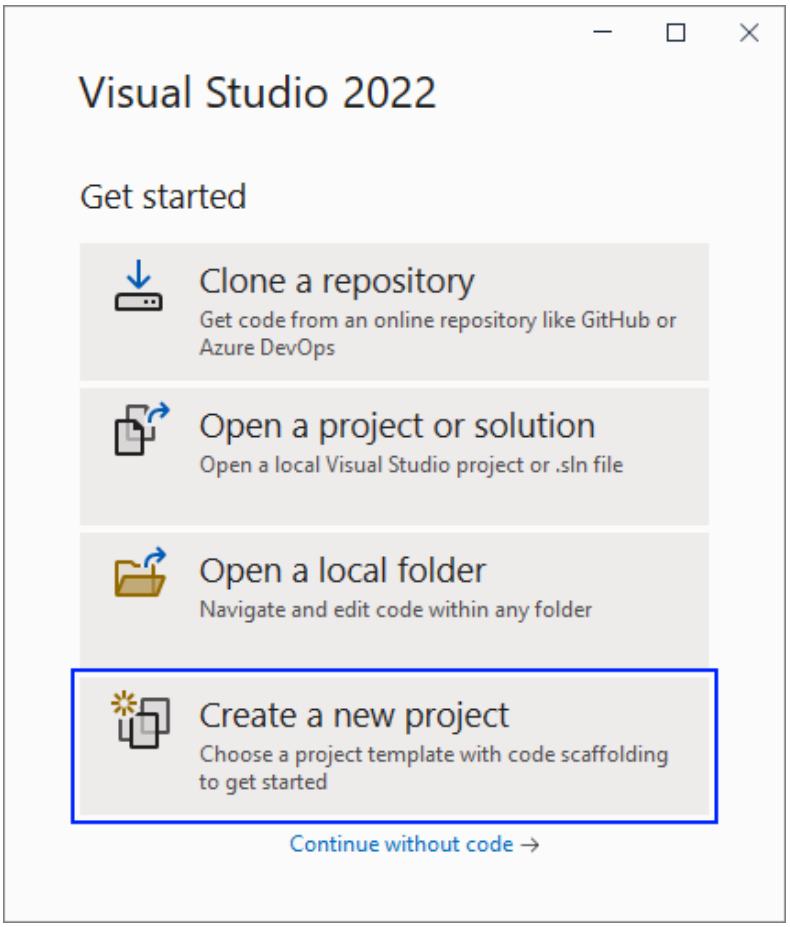
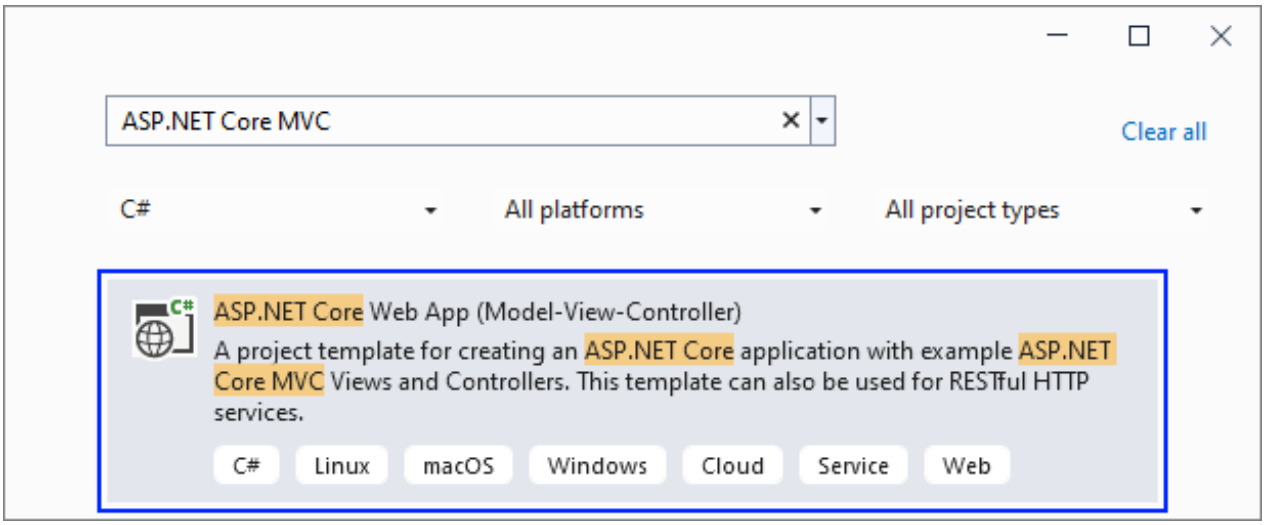
Exercises: ASP.NET Core Introduction

Problems for exercises for the "ASP.NET Core Fundamentals" course @ SoftUni

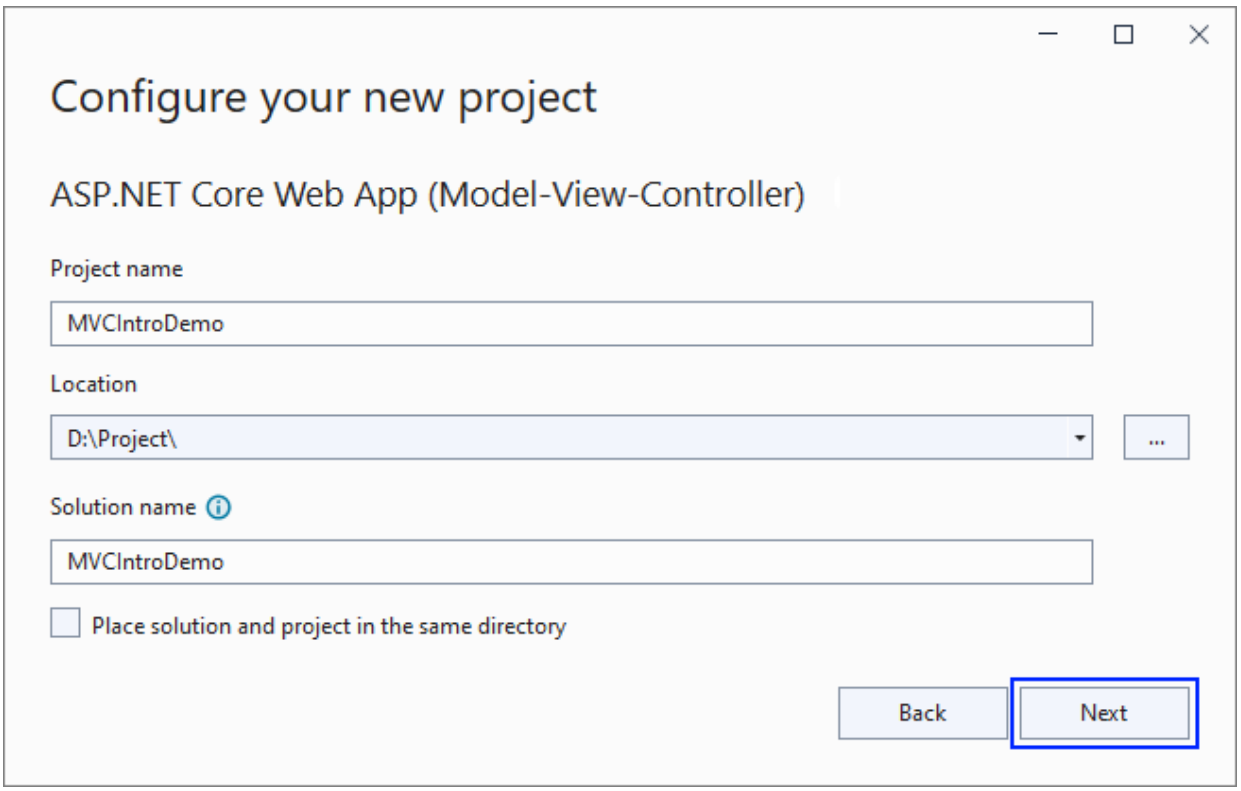
1. Create Simple Pages in an ASP.NET Core App

In this task you should implement the pages from the demo from the slides for this topic. To do so, create a **new ASP.NET Core MVC app**. Open **Visual Studio** and **choose `[Create a new project]`**. On the next step, **choose `[ASP.NET Core Web App (Model-View-Controller)]`** as a **project template**. The steps are shown below:

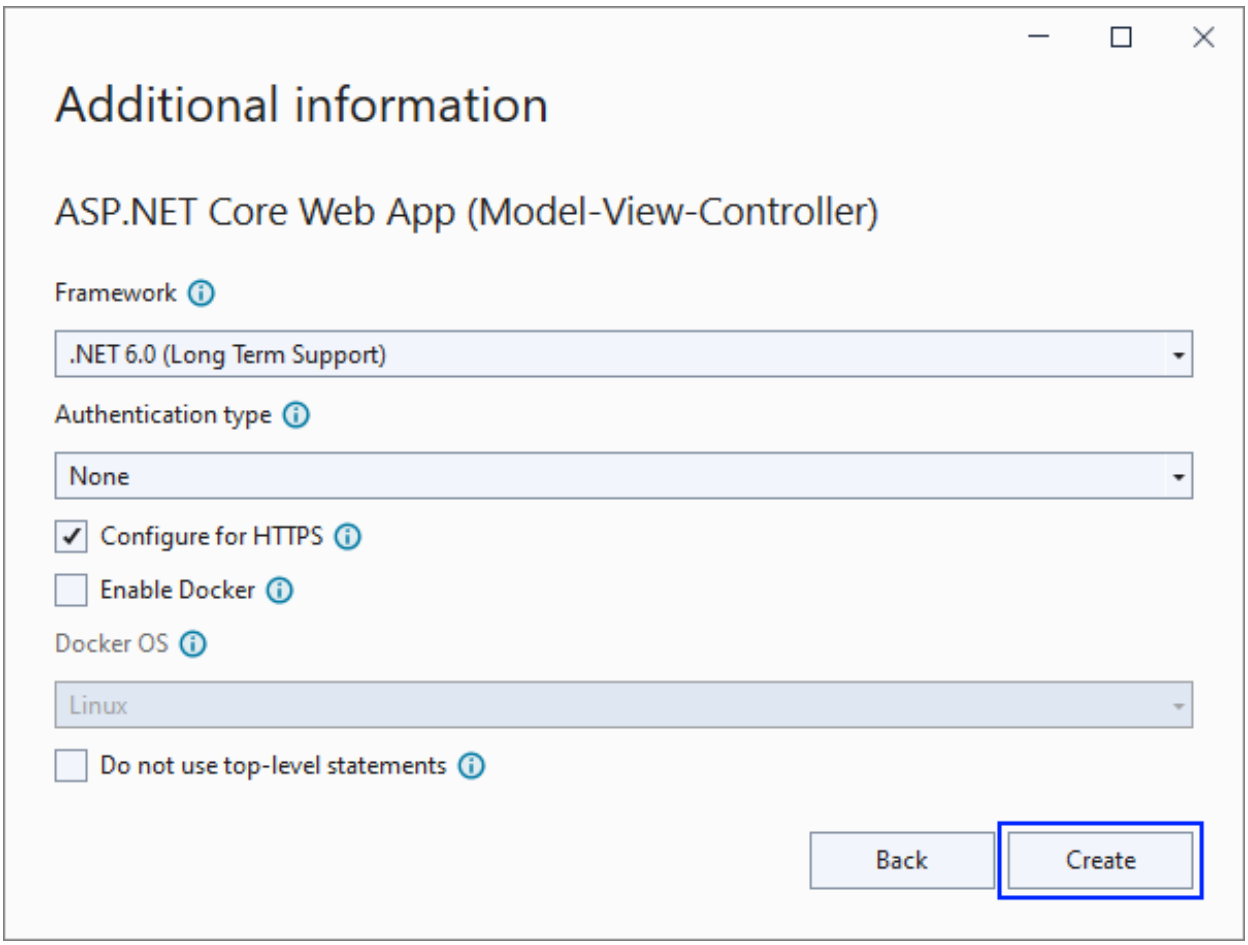




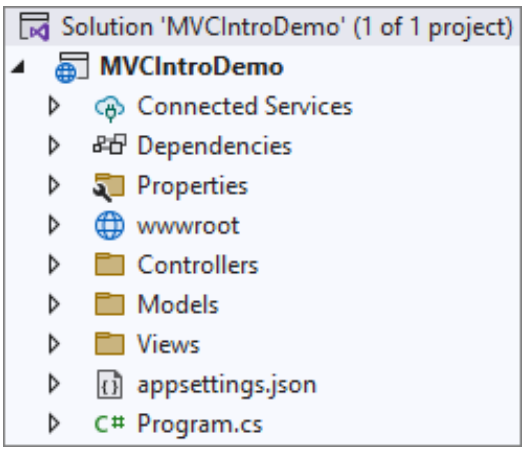
Give a **name** to your project and solution:



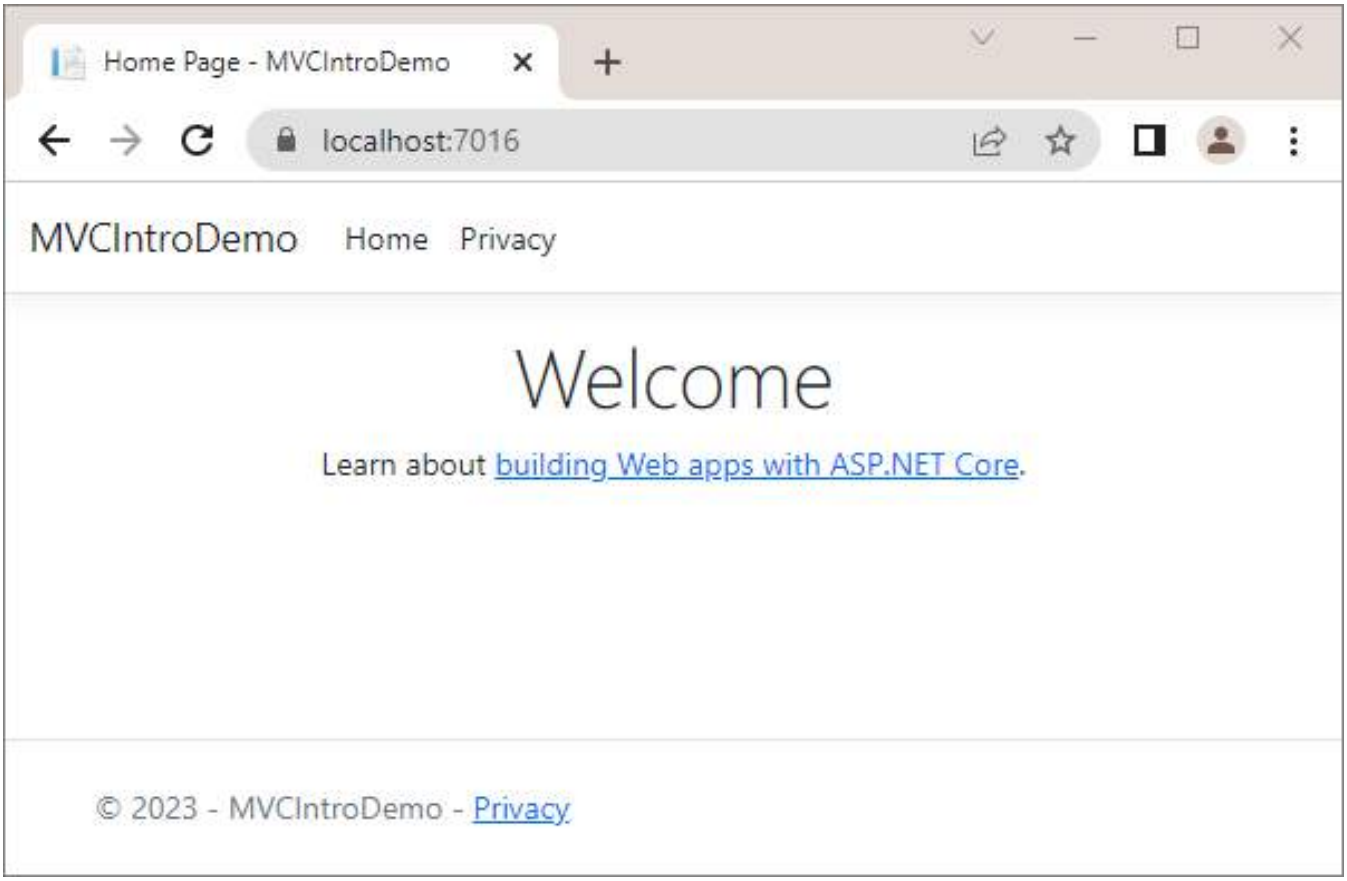
On the next step you should **choose** your target frameworok and click on the **`[Create]` button**:



Now your **app is created** and looks as shown below. Note that it has **folders** for **controllers**, **models** and **views** because of the template we chose:



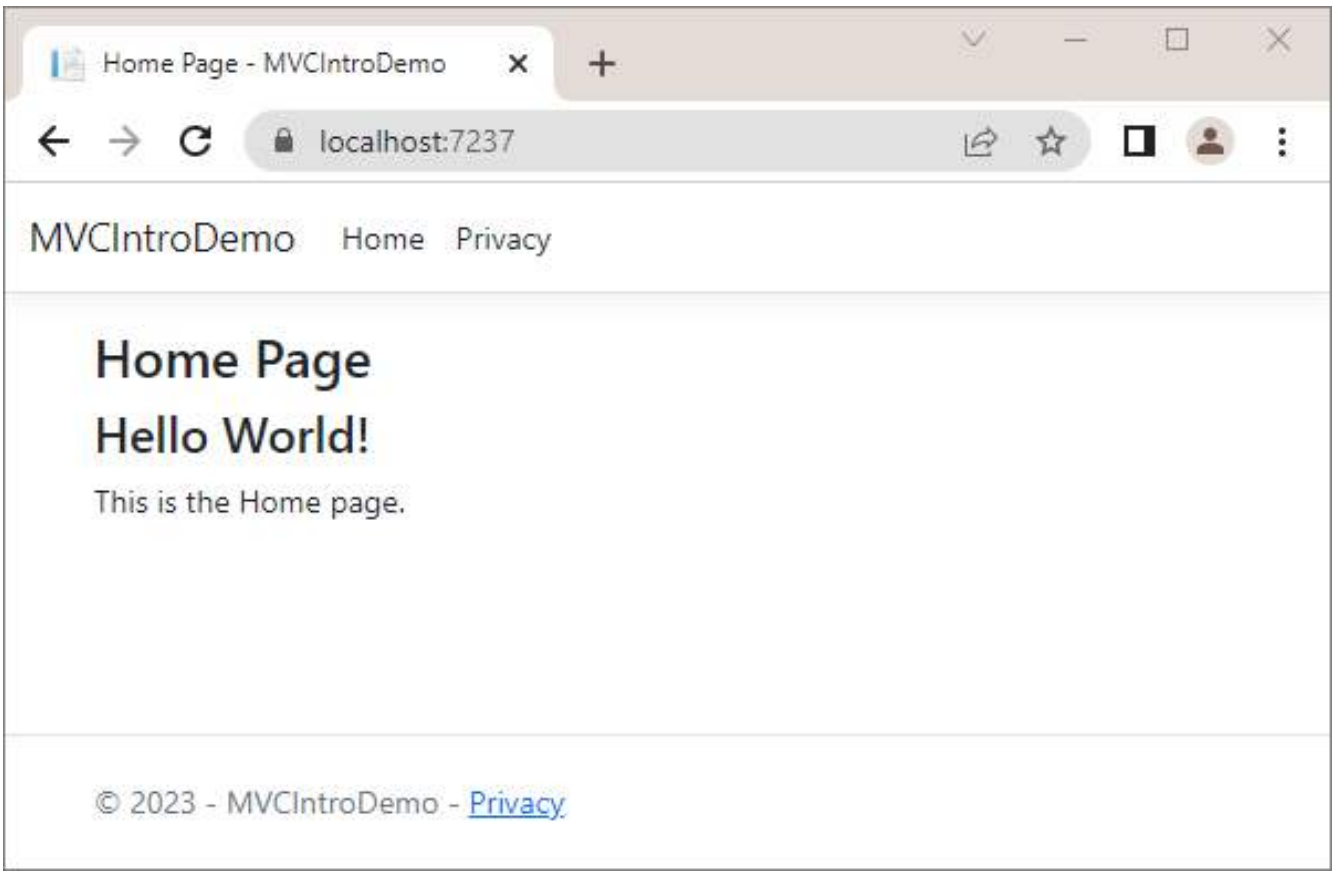
If you **run the app**, you will see the **default** "**Home**" **page**, which is served by the **`HomeController`** in the app:



HomeController Pages

Modify the "Home" Page

Now we want to **modify** the "**Home**" **page** to look like this:



Change the **`Index()` method** of the **`HomeController`** to **change the page**. The **controller action** should return a **view**, as it does already, but also use the **`ViewBag` class** to **create a message**, which will be **used in the view**. Modify the method like this:

```
public class HomeController : Controller
{
    0 references
    public IActionResult Index()
    {
        ViewBag.Message = "Hello World!";
        return View();
    }
```

Now you should modify the **`Index.cshtml` view** in the "**`/Views/Home`**" **folder** to **display the page differently**. Use the **`ViewBag` class** to **get the message** from the controller. Note how the **`Razor` views** allow us to use **C# code** inside **HTML**:

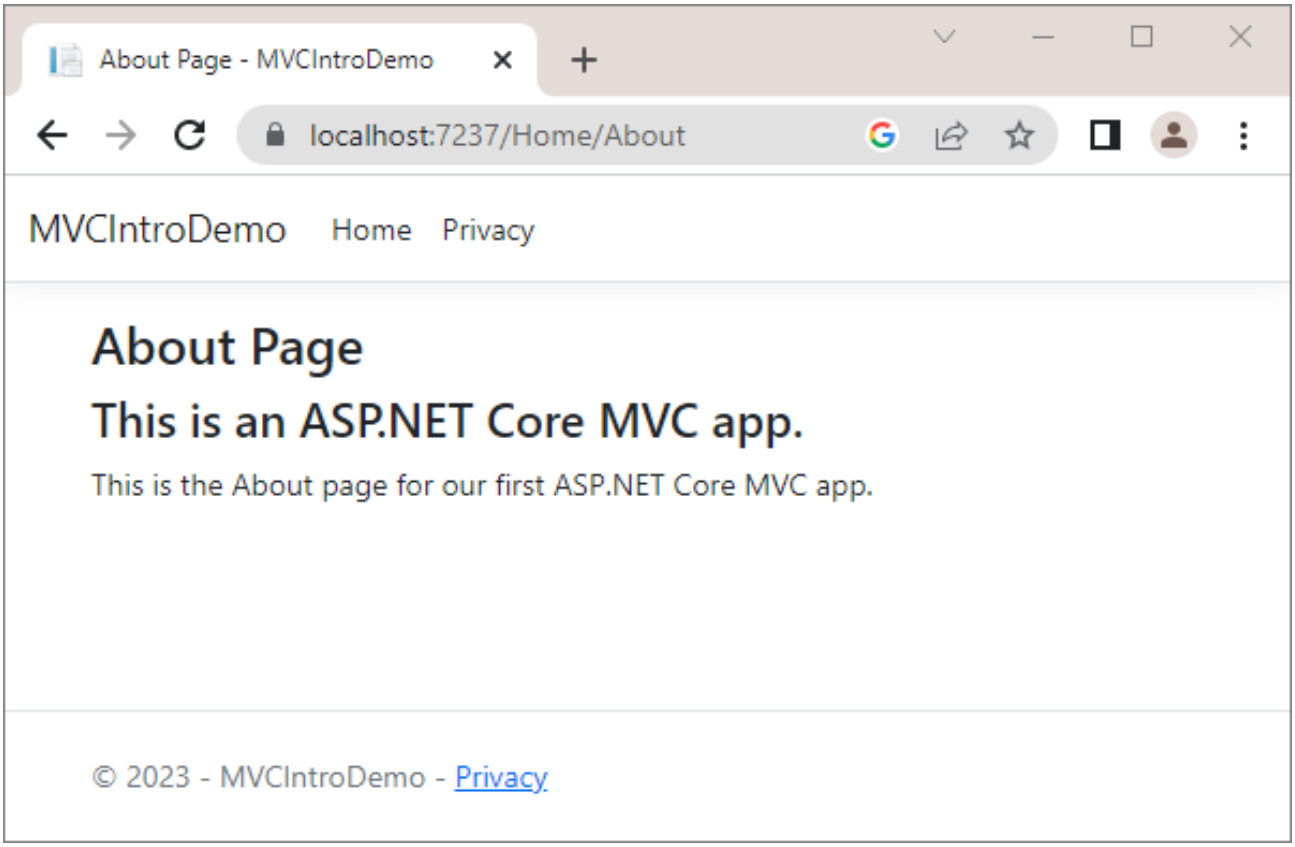
Index.cshtml

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


<h2>@ViewBag.Title</h2>
<h3>@ViewBag.Message</h3>
<p>This is the Home page.</p>
```

Run the app with **`[Ctrl]`** + **`[F5]`** and make sure the "**`Home`**" **page** looks as shown on the screenshot above.

Create the "About" Page

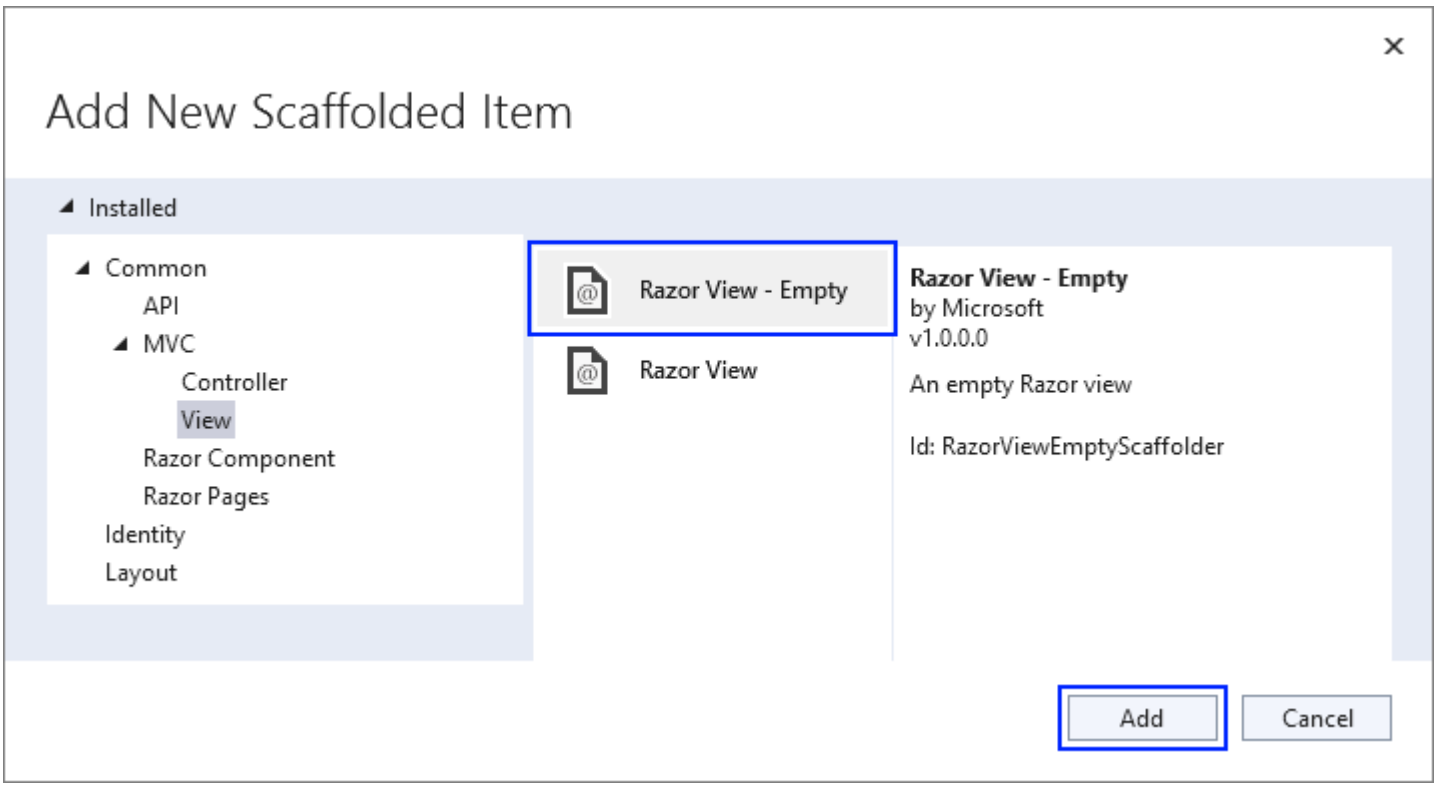
Create an "**About**" **page** in the app, which should look like this:

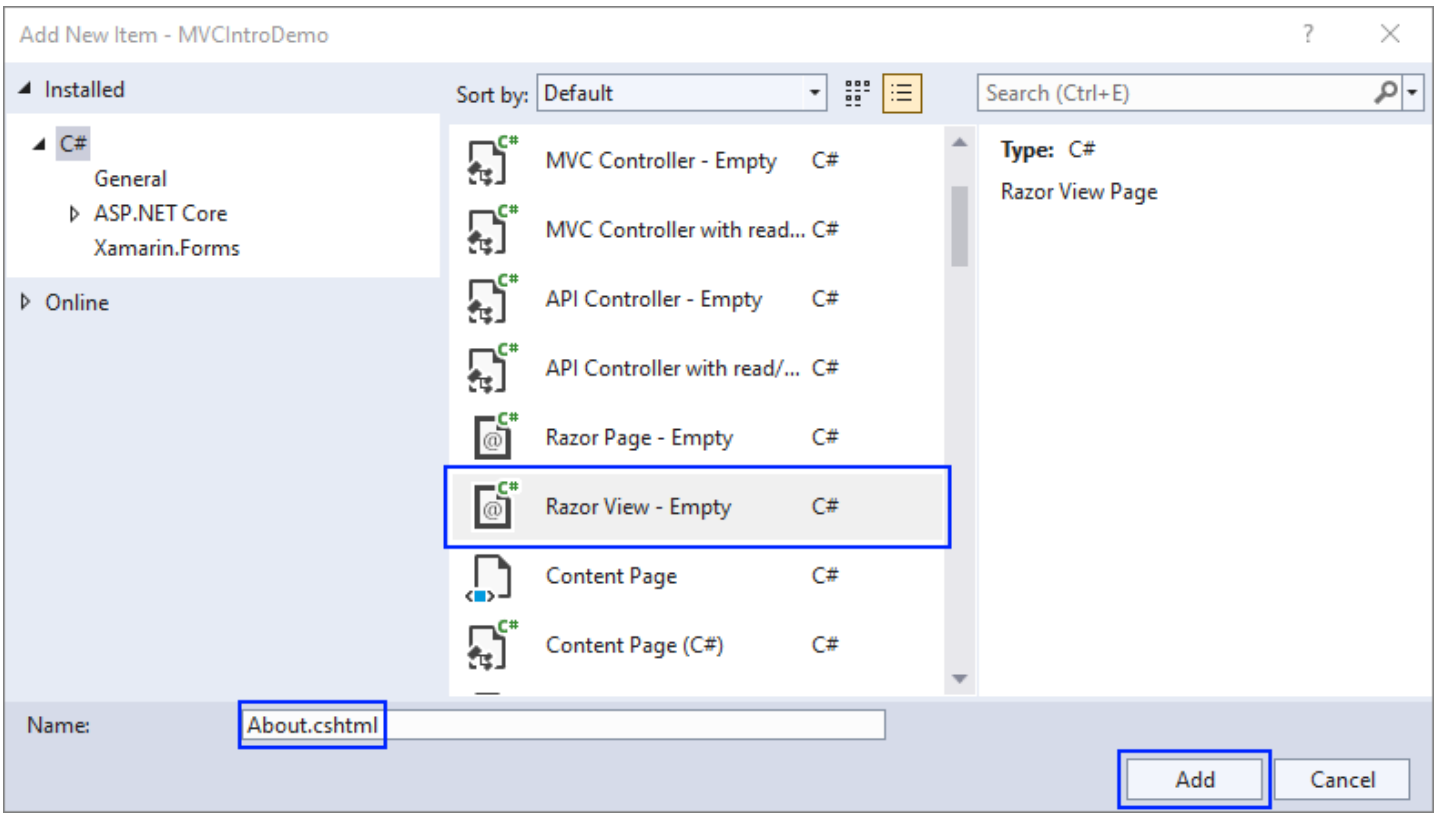


The page should be **accessed on "/Home/About"**. Create an **About() controller action** in the **HomeController class** for the "**About**" **page**. The controller method should return a **view**. It should also use the **ViewBag class** to **pass a message** to the returned view. Write the method like this:

```
public class HomeController : Controller
{
    0 references
    public IActionResult About()
    {
        ViewBag.Message = "This is an ASP.NET Core MVC app.";
        return View();
    }
```

Now you should create an **About.cshtml view** in the "**/Views/Home**" **folder**. To do this, **right-click** on the "**/Views/Home**" folder and **choose [Add] → [View]**:



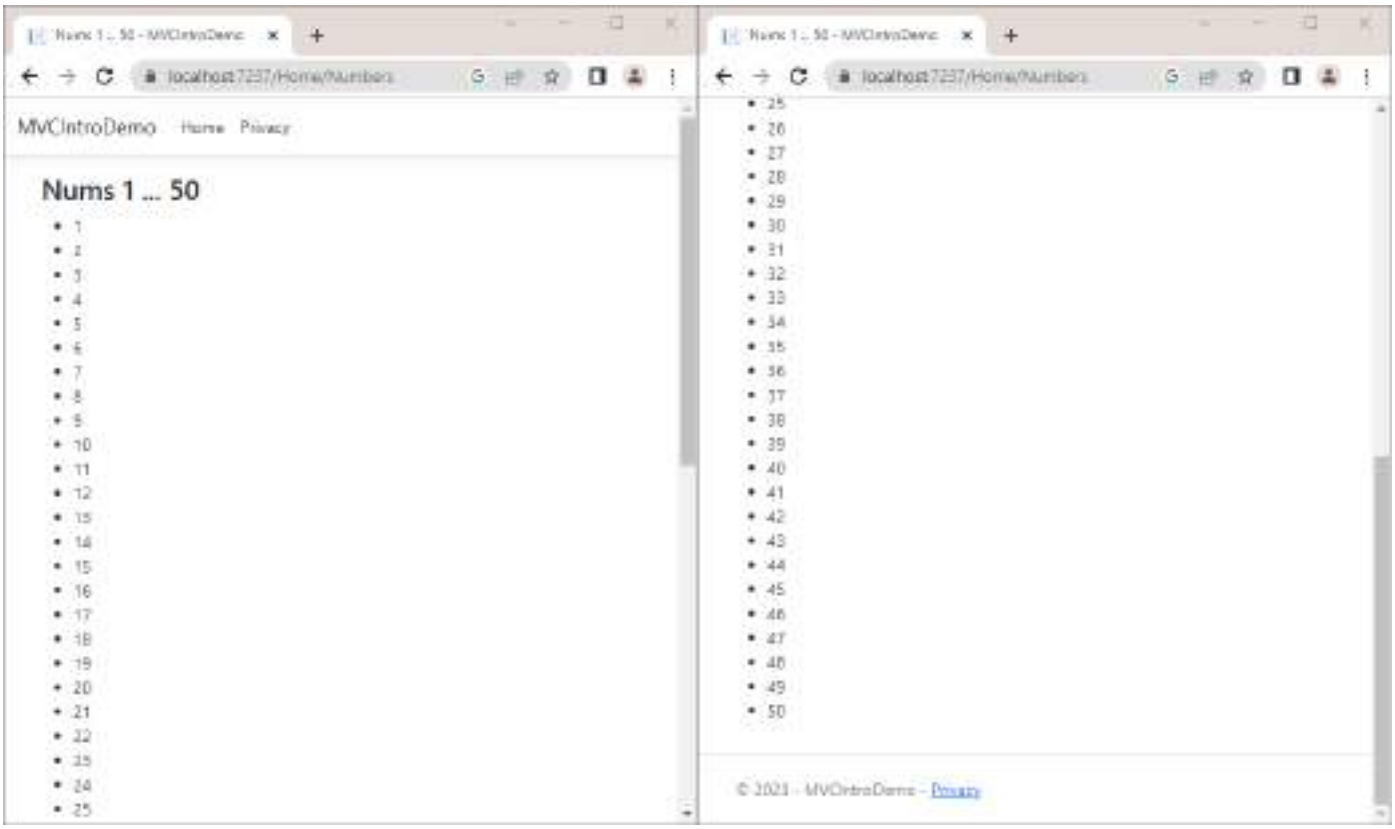


Now the **`About.cshtml` view** should be created. Write it like this:

Look at the "**About**" **page** in the **browser**. You can access it on "**/Home/About**". It should look as shown above.

Create the "Numbers 1…50" Page

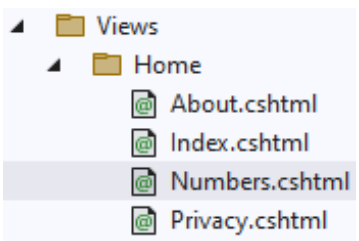
The "**Numbers 1…50**" page should **display the numbers from 1 to 50**. It should be accessed on "**/Home/Numbers**" and shoud look like this:



Create a **Numbers() controller method** in the **HomeController**, which should only **return a view**:

```
public class HomeController : Controller
{
    0 references
    public IActionResult Numbers()
    {
        return View();
    }
```

Create a **Numbers.cshtml view**, which should use a **for loop** to **display each number**. Write the **view** like this:



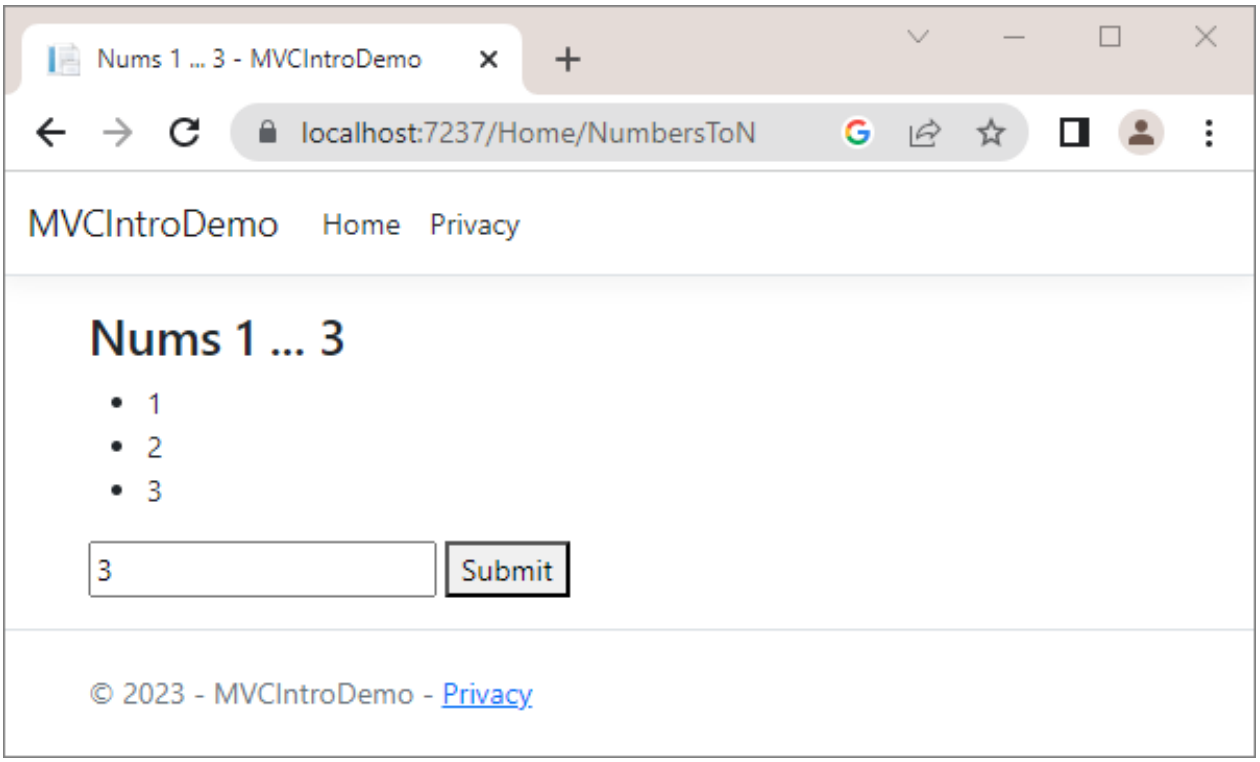
Numbers.cshtml

```
@{
    ViewBag.Title = "Nums 1 ... 50";
}

<h2>@ViewBag.Title</h2>
<ul>
    @for(int i = 1; i <= 50; i++)
    {
        <li>@i</li>
    }
</ul>
```

Make sure the **numbers from 1 to 50 are displayed** on the "**Numbers 1…50**" **page** on "**/Home/Numbers**".

Create the "Numbers 1…N" Page

This page is similar to the previous one but the **user should enter a number N**. Then, only **numbers from 1 to N** should be displayed:



Write a **`NumbersToN()` method** in the **`HomeController`**. It should **accept a count parameter** from the **view** (with **default value** of the parameter **`3`**). Then, it should **add the count number** to a **`ViewBag`** and **return a view**:

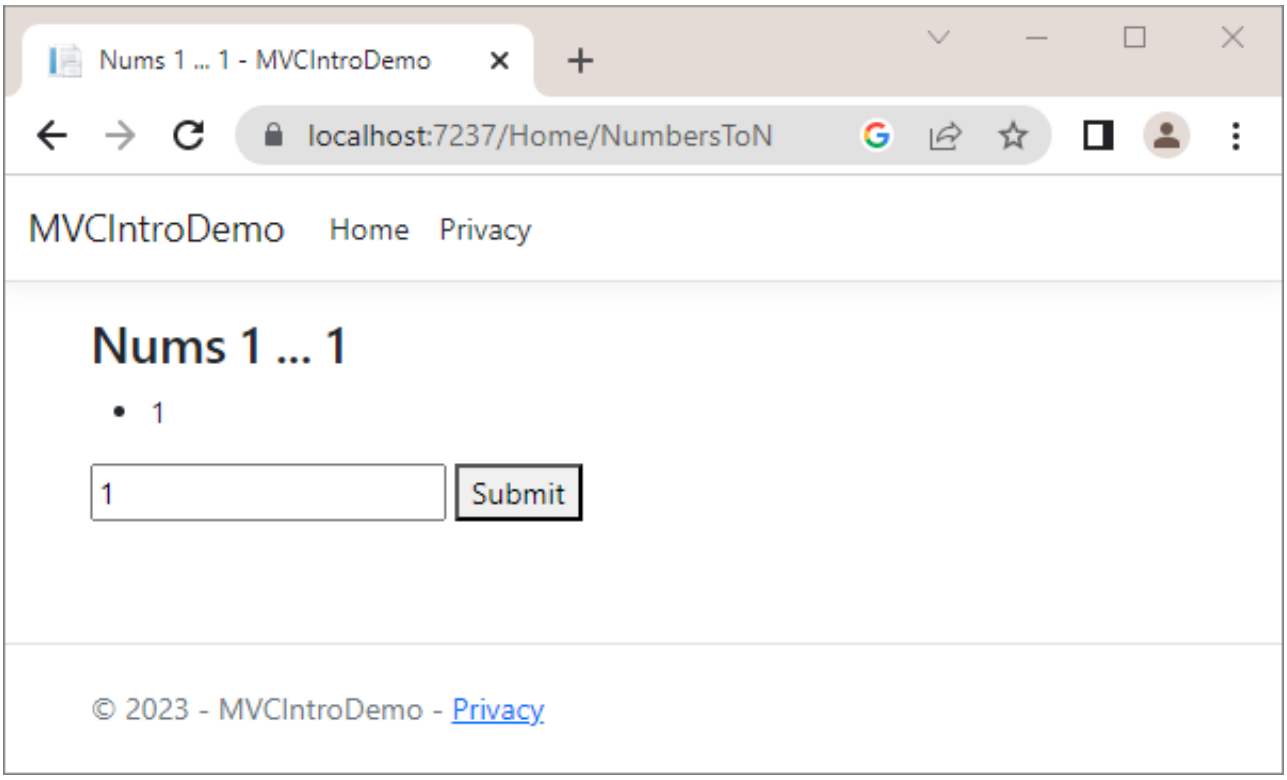
```
public class HomeController : Controller
{
    0 references
    public IActionResult NumbersToN(int count = 3)
    {
        ViewBag.Count = count;
        return View();
    }
```

Then, the **`NumbersToN.cshtml`** view should **display the numbers in a `for` loop** and should have a **form for submitting a count number**. The **number input field** should have a "**`name`**" **attribute**, so that its **value** is passed to the **controller action**. Do it like this:

NumbersToN.cshtml

```
@{
    ViewBag.Title = "Nums 1 ... " + ViewBag.Count;
}

<h2>@ViewBag.Title</h2>
<ul>
    @for(int i = 1; i <= ViewBag.Count; i++)
    {
        <li>@i</li>
    }
</ul>
```

Try out the page in the browser on "**/Home/NumbersToN**". It should **display different numbers**, depending on the **count** you enter in the form:



Add Navigation Links

As we have **created the pages** we need, let's **add links to the navigation pane** to access them easier. The **navigation pane** should look like this:

To **add links**, go the **_Layout.cshtml partial view** in the "**/Views/Shared**" **folder**, as this view is responsible for the **common design** of all pages. Add the following lines:

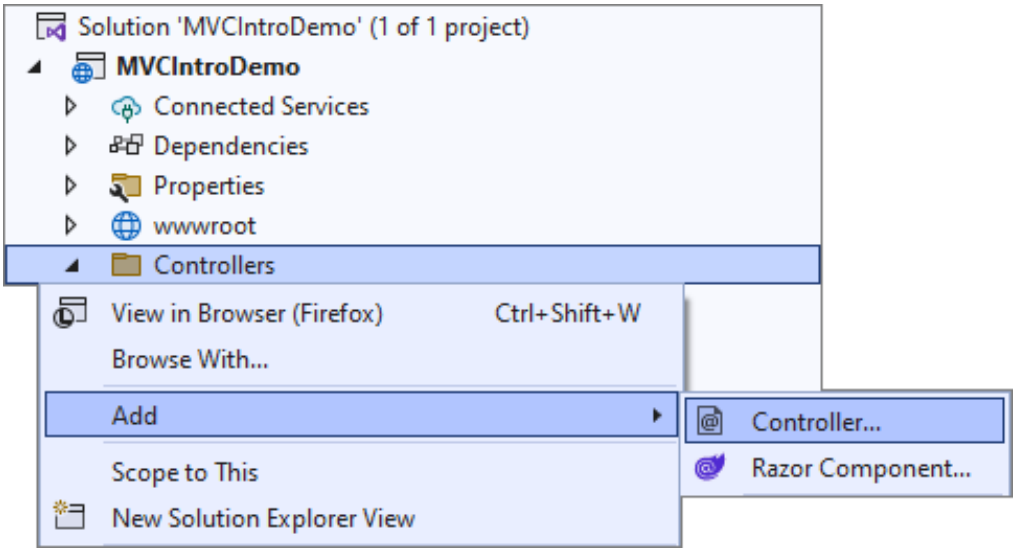
```
<!DOCTYPE html>
<html lang="en">
<head>...</head>
<body>
    <header>
        <nav class="navbar navbar-expand-sm navbar-toggleable-sm navbar-light bg-white border-bottom box-shadow mb-3">
            <div class="container-fluid">
                <a class="navbar-brand" asp-area="" asp-controller="Home" asp-action="Index">MVCIntroDemo</a>
                <button class="navbar-toggler" type="button" data-bs-toggle="collapse" data-bs-target=".navbar-collapse" aria-contr
                <div class="navbar-collapse collapse d-sm-inline-flex justify-content-between">
                    <ul class="navbar-nav flex-grow-1">
                        <li class="nav-item">...</li>
                        <li class="nav-item">...</li>
                        <li class="nav-item">
                            <a class="nav-link text-dark" asp-area="" asp-controller="Home" asp-action="About">About</a>
                        </li>
                        <li class="nav-item">
                            <a class="nav-link text-dark" asp-area="" asp-controller="Home" asp-action="Numbers">Numbers</a>
                        </li>
                        <li class="nav-item">
                            <a class="nav-link text-dark" asp-area="" asp-controller="Home" asp-action="NumbersToN">NumbersToN</a>
                        </li>
```

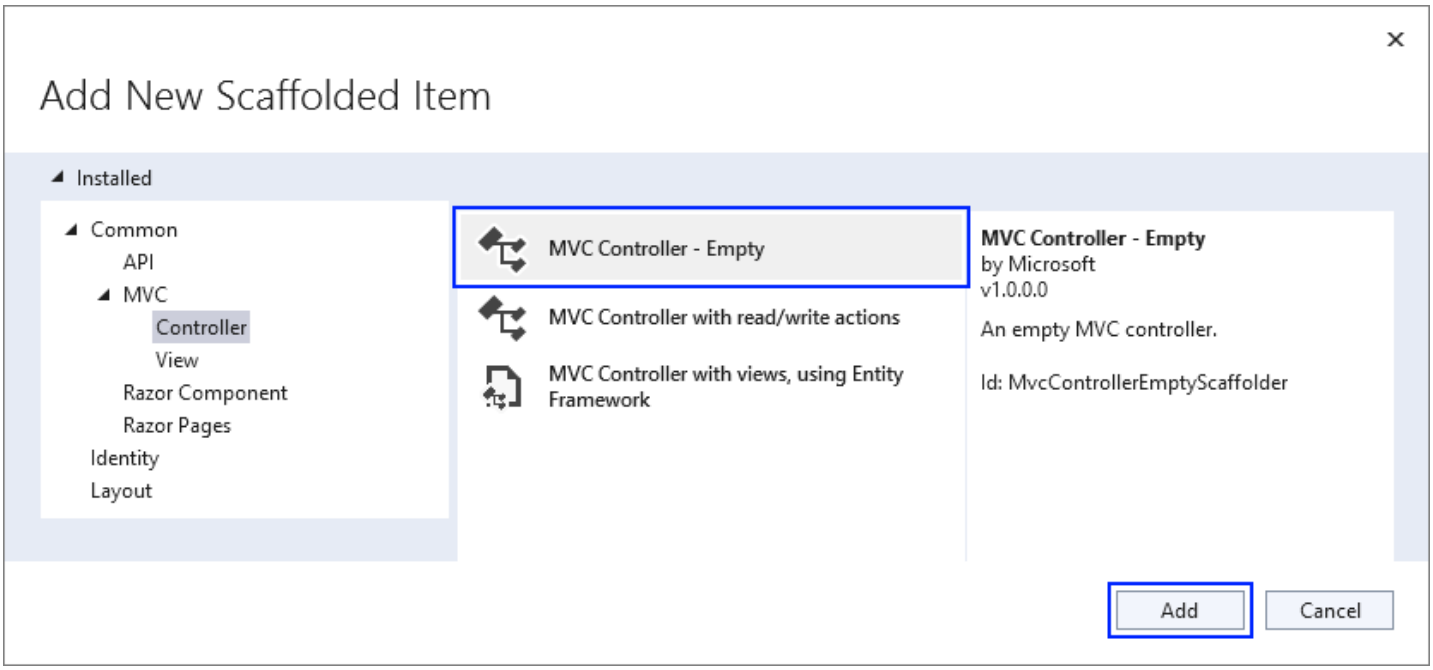
The **`asp-controller`** and **`asp-action` tag helpers** set the **controller** and **action names** of the page, which should be accessed.

Try out if the **links work correctly** and open the correct pages in the browser.

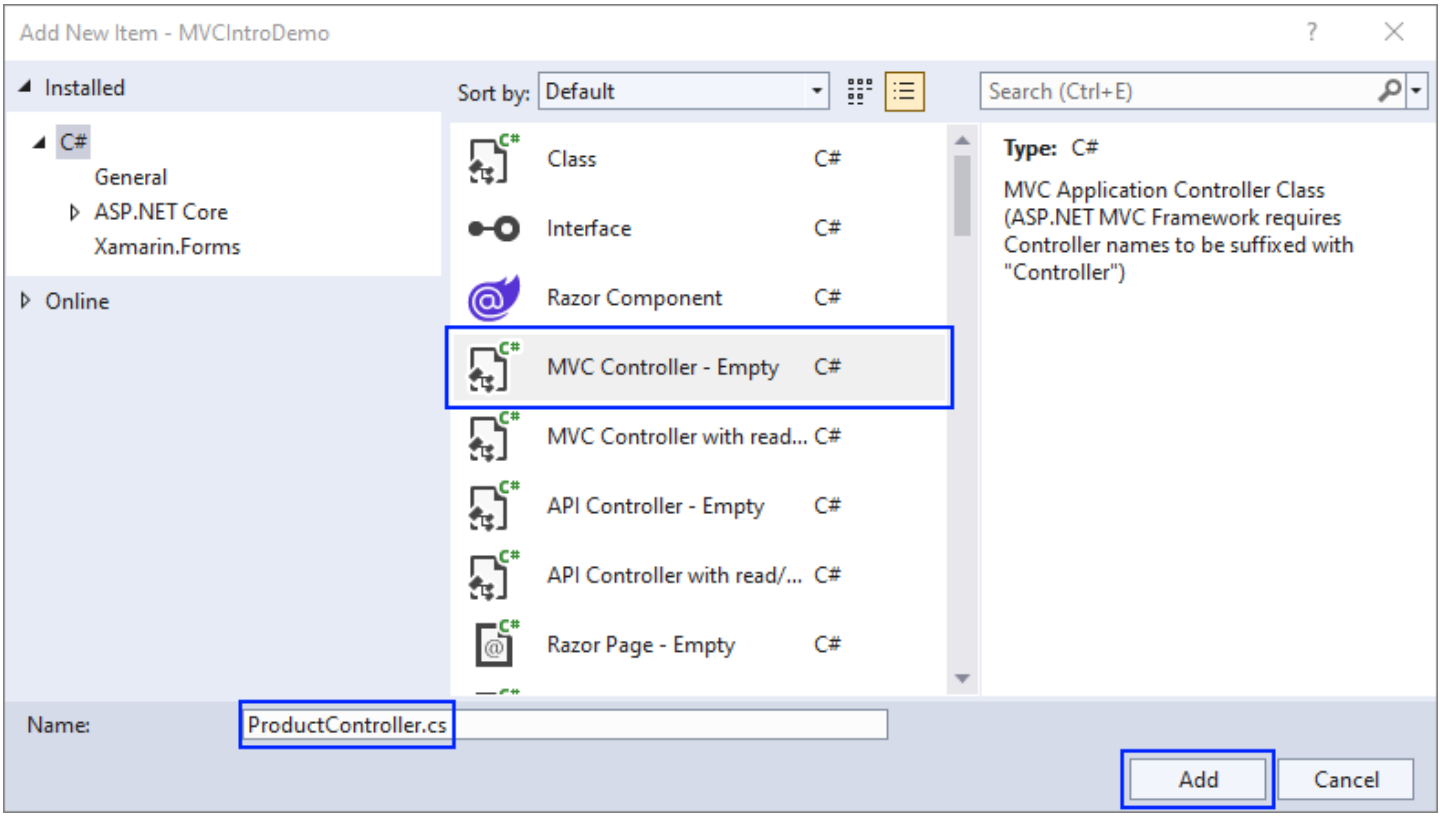
ProductController Pages

The **`ProductController`** will have **controller actions for displaying hardcoded products on pages**. Create the **`ProductController`** in the "**`Controllers`**" folder. To **create a controller**, **right-click** on the "**`Controllers`**" folder, click on **`[Add]`** → **`[Controller]`** and **choose `[MVC Controller – Empty]`** to create an **empty controller class**:

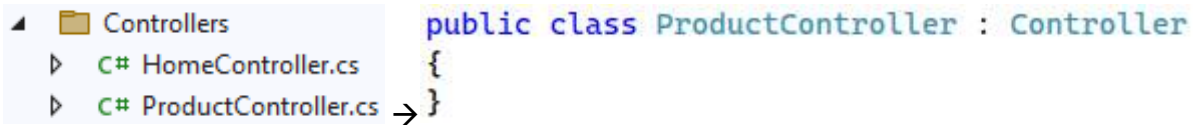




Set the **controller name** like this:



Now your **controller class** is created in the "**`Controllers`**" **folder** and **inherits the `Controller` base class**:



We will **display hardcoded products**. First, you should **create a model for these products**, which should have an **`id`**, **`name`** and **`price`**. Create a new folder "**`Product`**" in the "**`Models`**" folder and add a new **`ProductViewModel`** class in the "**`Product`**" **folder** with the following **properties**:

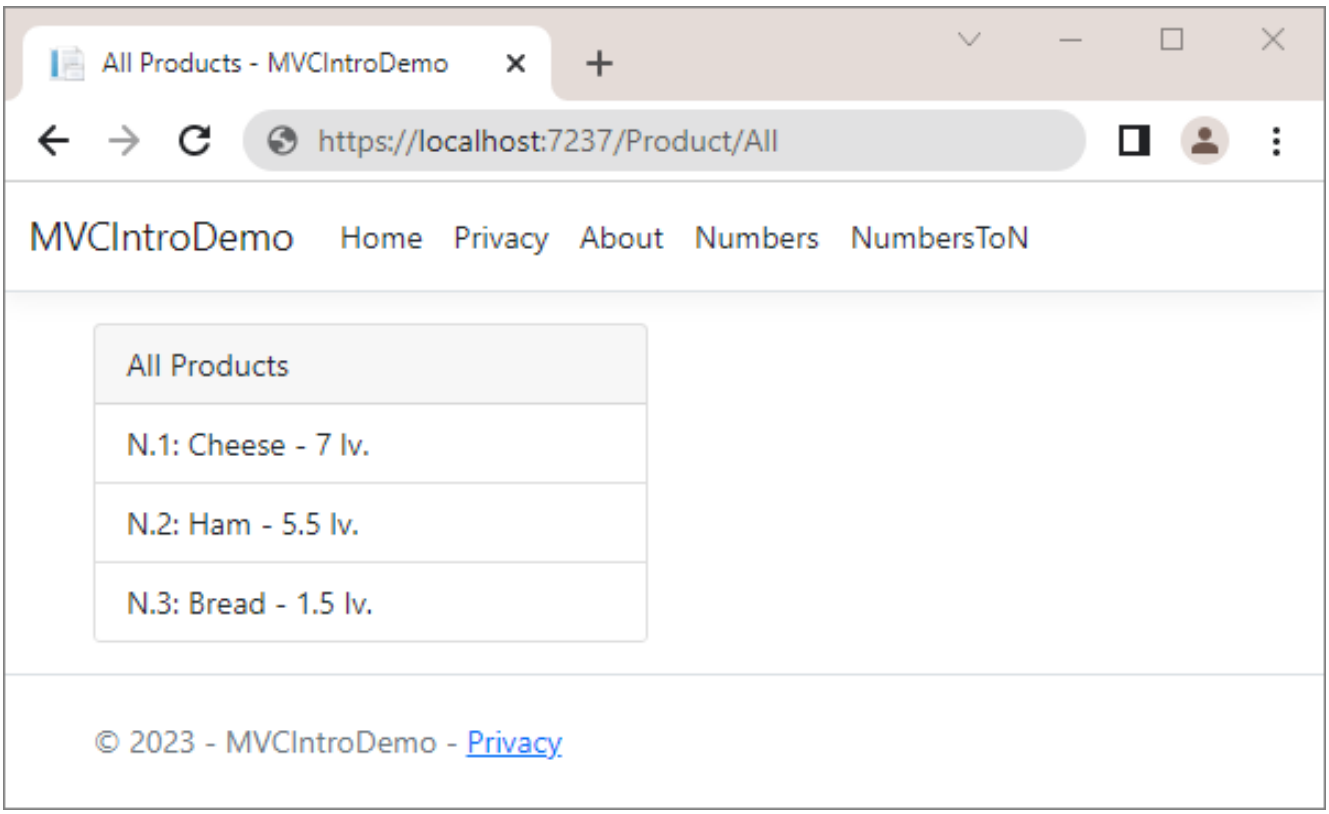
```
public class ProductViewModel
{
    5 references
    public int Id { get; set; }
    5 references
    public string Name { get; set; } = null!;
    5 references
    public double Price { get; set; }
}
```

Now go back to the **`ProductController`** and **add a field with products**. The field should have a **collection of `ProductViewModel`** with **three products** like this:

```
public class ProductController : Controller
{
    private IEnumerable<ProductViewModel> _products
        = new List<ProductViewModel>()
        {
            new ProductViewModel()
            {
                Id = 1,
                Name = "Cheese",
                Price = 7.00
            },
            new ProductViewModel()
            {
                Id = 2,
                Name = "Ham",
                Price = 5.50
            },
            new ProductViewModel()
            {
                Id = 3,
                Name = "Bread",
                Price = 1.50
            },
        };
}
```

Now use these **products in controller methods**.

Create the "All Products" Page



Create an **`All()` controller method** in the **`ProductController`**, which should only **return a view** with the **products collection**:

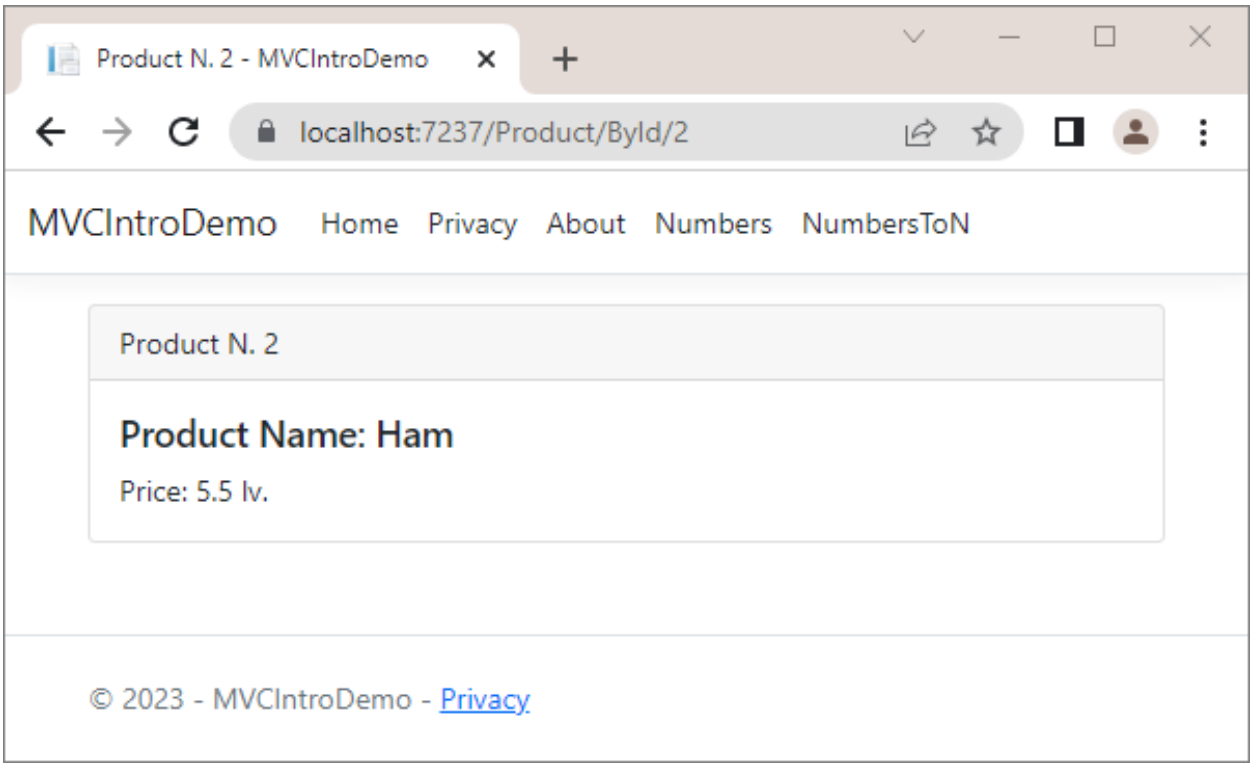
```
public class ProductController : Controller
{
    0 references
    public IActionResult All()
    {
        return View(_products);
    }
}
```

Now you should **create a "`Product`" folder** in the "**`Views`**" **folder**, which will have **all views for the `ProductController` methods**. In it, add an **`All.cshtml` view**, which should **accept a collection of `ProductViewModel`**. Then, **`foreach` the products** and **use the model properties** to display the product data:

```
All.cshtml
@model IEnumerable<ProductViewModel>

@{
    ViewBag.Title = "All Products";
}

<div class="card" style="width: 18rem;">
    <div class="card-header">@ViewBag.Title</div>
    <ul class="list-group list-group-flush">
        @foreach(var product in Model)
        {
            <li class="list-group-item">
                N.@product.Id: @product.Name - @product.Price lv.
            </li>
        }
    </ul>
</div>
```

Try the "**`All Products`**" **page** on "**`/Product/All`**" in the browser.

Create the "Product By Id" Page



Write the **`ById(int id)` method** in the **`ProductController`**. It should **pass a product by a given `id`** to the **view**, if it **exists**. If it does not, it should return a **`BadRequest`**:

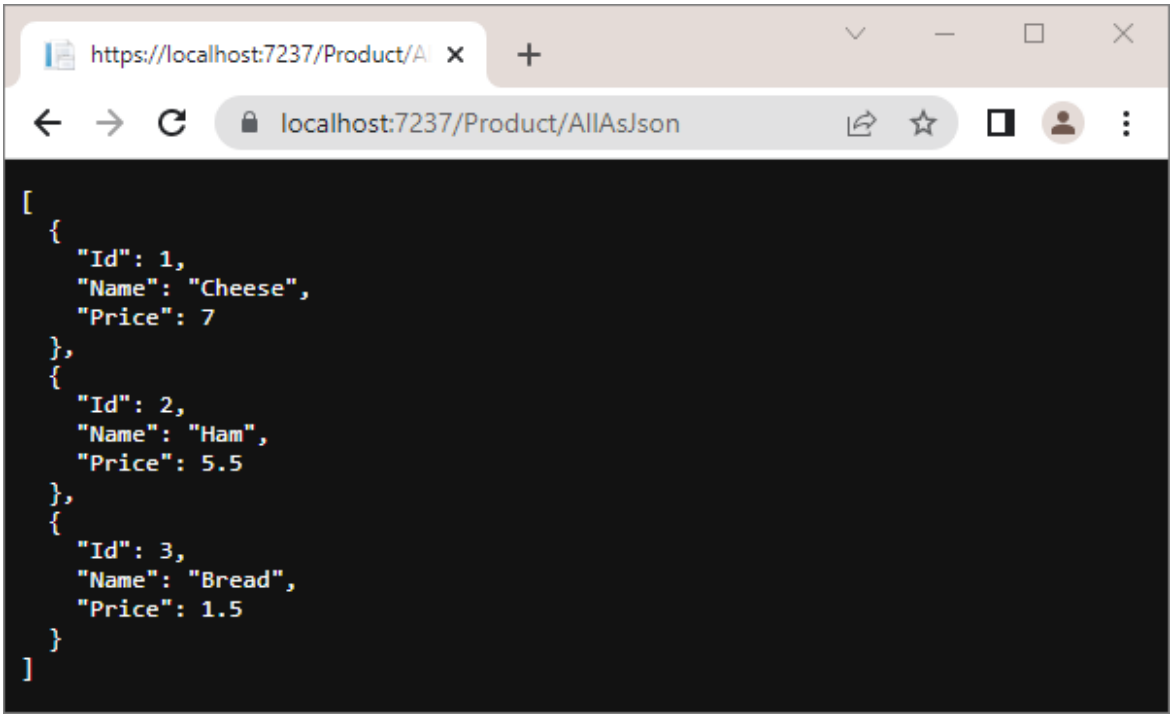
```
public IActionResult ById(int id)
{
    var product = _products
        .FirstOrDefault(p => p.Id == id);
    if (product == null)
    {
        return BadRequest();
    }
    return View(product);
}
```

The **`ById.cshtml` view** is the following:

Go to the "**Page By `Id`" page** on "**`/Product/ById/{id}`**" with a **valid** and an **invalid product id**.

Return Products as JSON

Our task now is to **return the products in a JSON format** when the user accesses "**`/Product/AllAsJson`**":



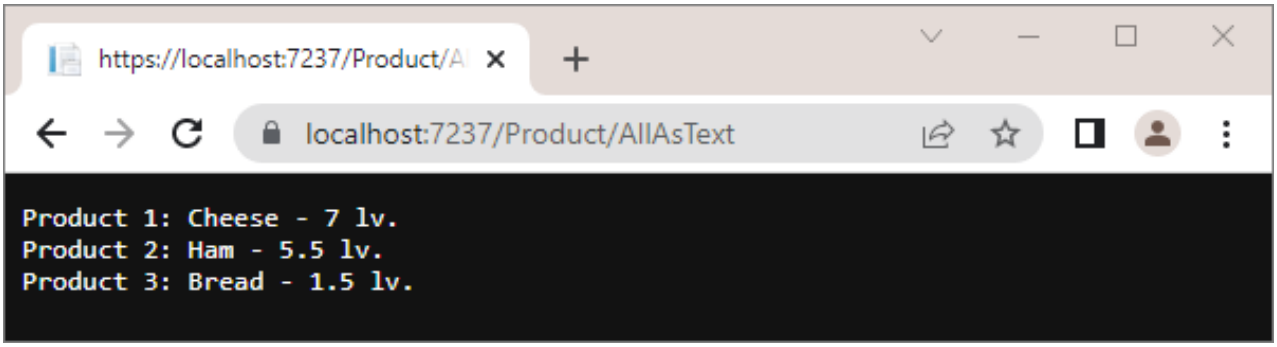
Create the **`AllAsJson()`** method in the **`HomeController`**, which should return a **JSON with the products** as shown below. It should use **JSON options** to display the JSON **indented**:

```
public IActionResult AllAsJson()
{
    var options = new JsonSerializerOptions
    {
        WriteIndented = true
    };
    return Json(_products, options);
}
```

Try the page in the browser and make sure that **products are displayed correctly** as **JSON**.

Return Products as Plain Text

Now we should **return the products as a plain text** in a **custom format** when the user accesses "**`/Product/AllAsText`**":



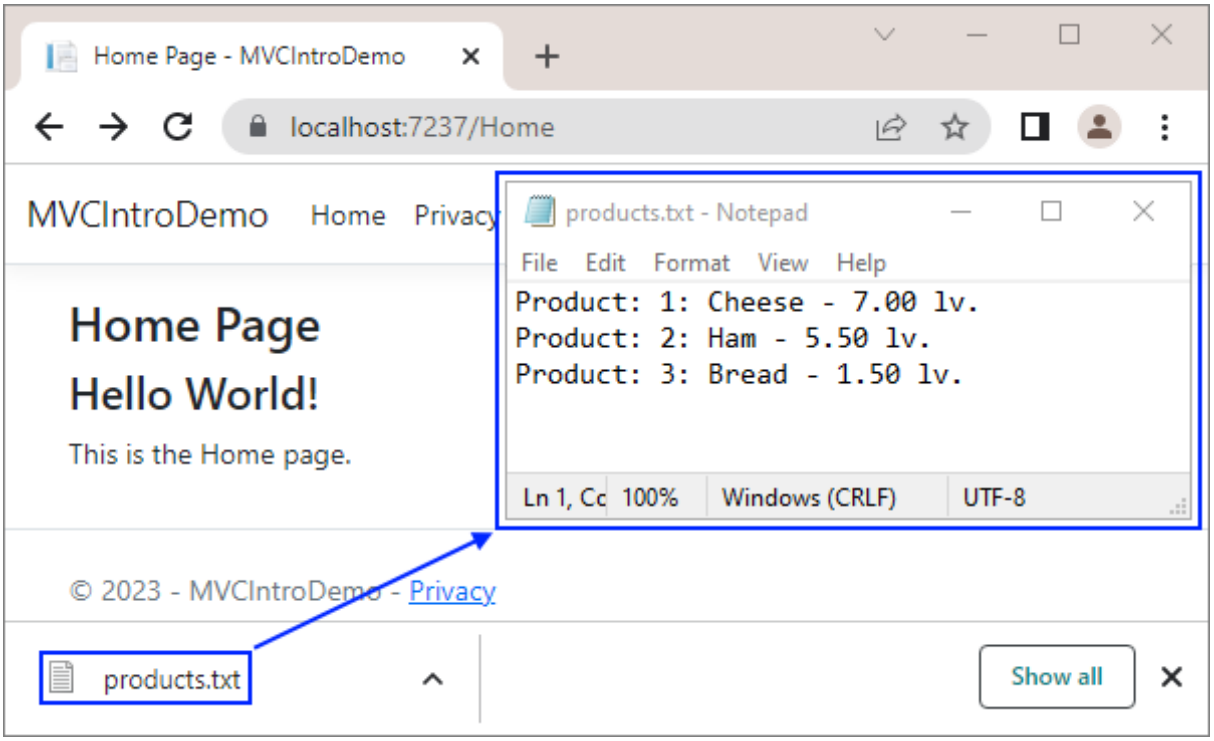
The **`AllAsText()` method** in the **`ProductController`** should **create a `string` of all products** and return it as a **plain text response**:

```
public IActionResult AllAsText()
{
    var text = string.Empty;
    foreach (var product in _products)
    {
        text += $"Product {product.Id}: {product.Name} - {product.Price} lv.";
        text += "\r\n";
    }
    return Content(text);
}
```

Try it in the browser.

Download Products As Text File

Now we want to **download a text file with the products** by accessing "**`/Product/AllAsTextFile`**":

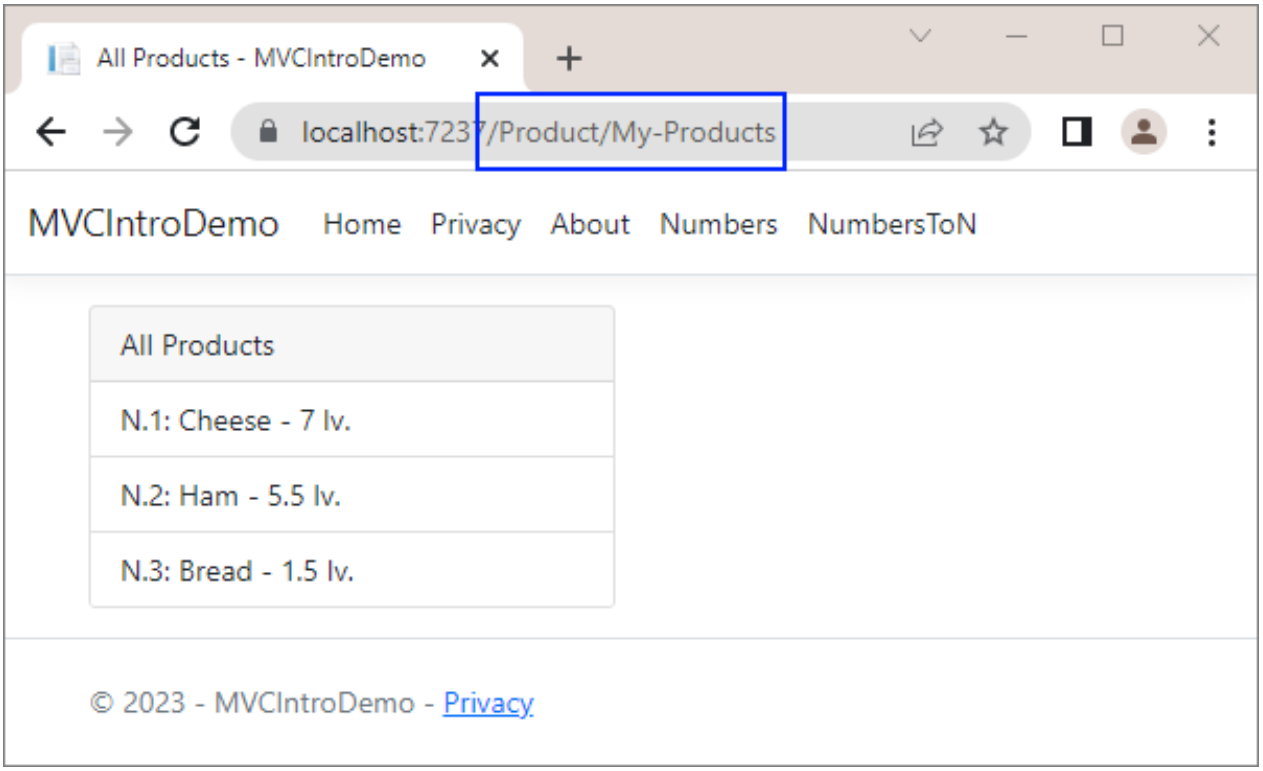


The **`AllAsTextFile()` method** in the **`ProductController`** should form a **text with the products**. Then, it should **add the `Content-Disposition` header** to the **`Response`**, so that the **file is downloaded** as an **attachment**. At the end, it should **return a file with the text as a byte array** and the **plain text type**. Write it like this:

```
public IActionResult AllAsTextFile()
{
    StringBuilder sb = new StringBuilder();
    foreach (var product in _products)
    {
        sb.AppendLine($"Product: {product.Id}: {product.Name} - {product.Price:f2} lv.");
    }

    Response.Headers.Add(HeaderNames.ContentDisposition,
        @"attachment;filename=products.txt");

    return File(Encoding.UTF8.GetBytes(sb.ToString().TrimEnd()), "text/plain");
}
```

Access the "All Products" Page on Another URL

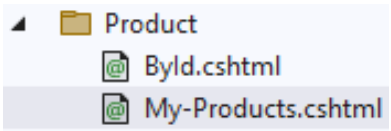
Now our task is to make the "**`All Products`**" page **accessible on "`/Product/My-Products`"**:



To do this, add the **`[Action Name]` attribute** over the **`All()` method** of the **`ProductController`**. In this way, you will **set an action name**, different from the real one:

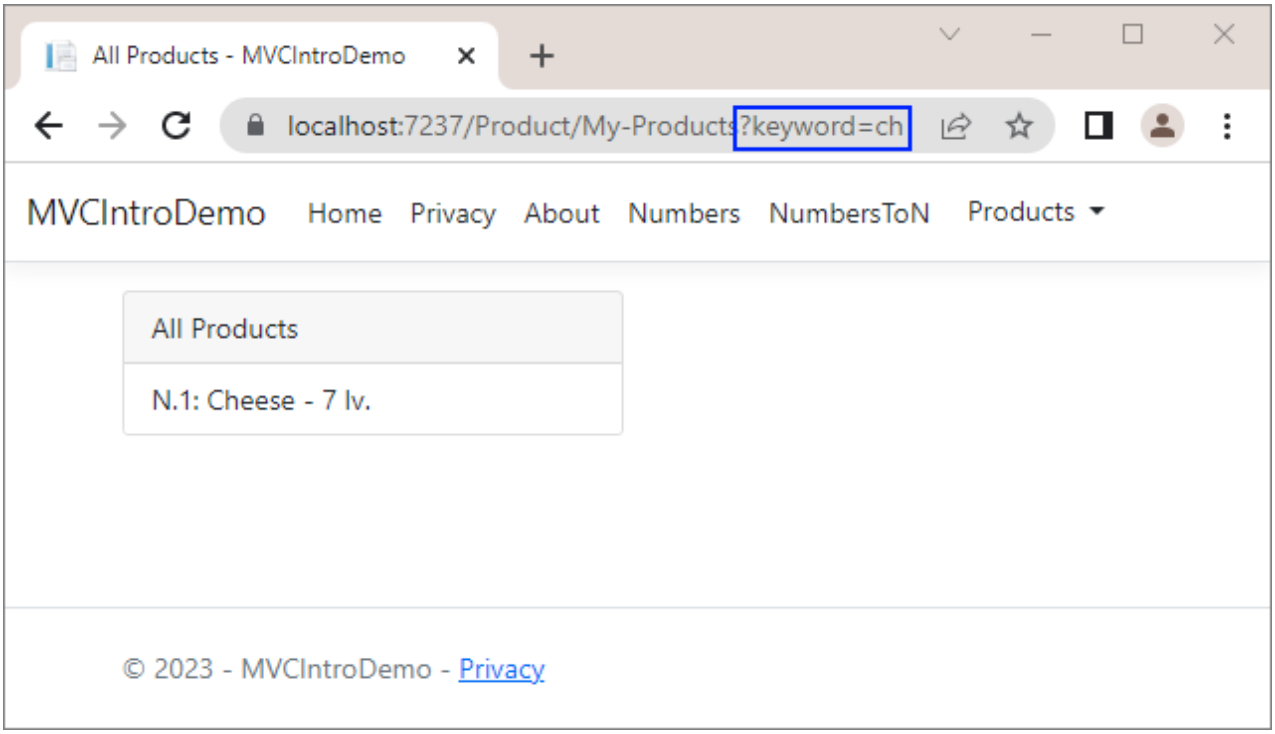
```
[ActionName("My-Products")]
0 references
public IActionResult All()
{
    return View(_products);
}
```

You should also **change** the **`All.cshtml` view name** to **`My-Products.cshtml`**, as the **view** and the **controller action** should have the **same names**:



Add Search to the "All Products" Page

Finally, we want to **modify** the "**`All Products`**" page to use a **keyword** in the **URL** to **filter the displayed products** like this:

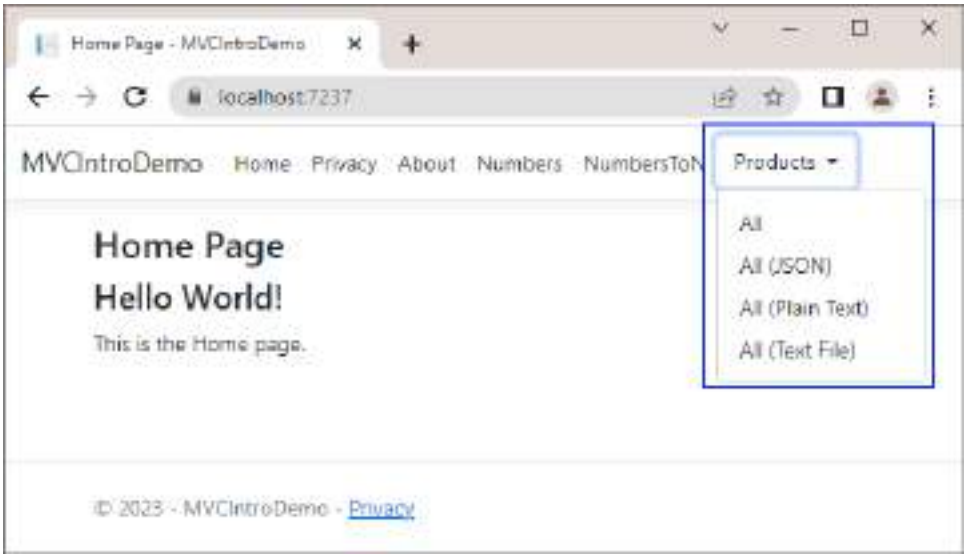


To do this, make the **`All()` controller action accept a keyword** and return only the **filtered products**, when there is a **keyword** in the **URL**:

```
[ActionName("My-Products")]
0 references
public IActionResult All(string keyword)
{
    if (keyword != null)
    {
        var foundProducts = _products
            .Where(p => p.Name
                        .ToLower()
                        .Contains(keyword.ToLower()));

        return View(foundProducts);
    }
    return View(_products);
}
```

Enter **different keywords** on "**`/Product/My-Product?keyword={keyword}`**" in the **browser** and make sure that only **products with the keyword in their name** are shown.

Add Navigation Links



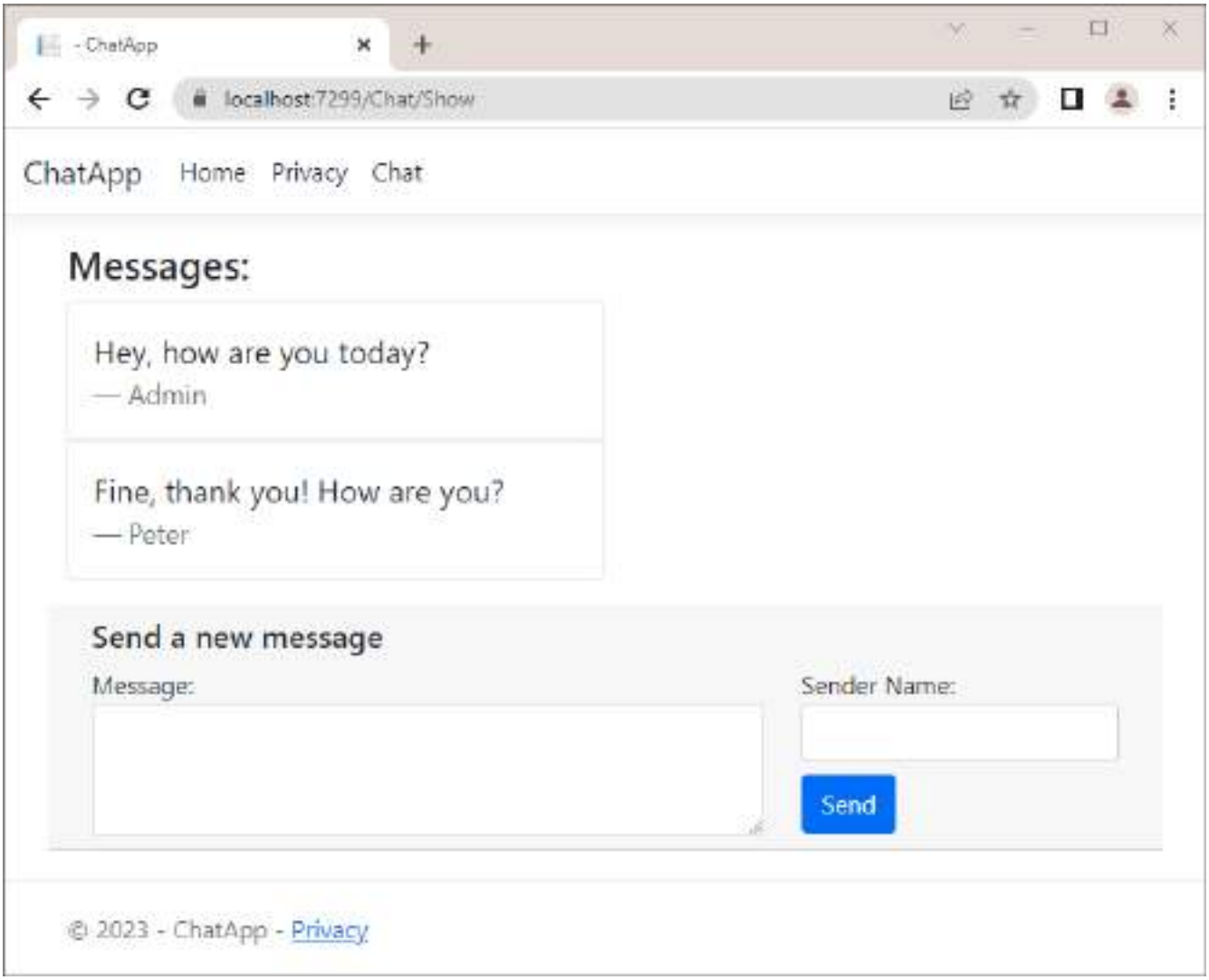
Modify the **`_Layout.cshtml` view** like this to have the above **links**:

```
<!DOCTYPE html>
<html lang="en">
<head>...</head>
<body>
    <header>
        <nav class="navbar navbar-expand-sm navbar-toggleable-sm navbar-light bg-white border-bottom box-shadow mb-3">
            <div class="container-fluid">
                <a class="navbar-brand" asp-area="" asp-controller="Home" asp-action="Index">MVCIntroDemo</a>
                <button class="navbar-toggler" type="button" data-bs-toggle="collapse" data-bs-target=".navbar-collapse" aria-controls="n
                <div class="navbar-collapse collapse d-sm-inline-flex justify-content-between">
                    <ul class="navbar-nav flex-grow-1">
                        <li class="nav-item">...</li>
                        <li class="nav-item">...</li>
                        <li class="nav-item">...</li>
                        <li class="nav-item">...</li>
                        <li class="nav-item">
                            <a class="nav-link text-dark" asp-area="" asp-controller="Home" asp-action="NumbersToN">NumbersToN</a>
                        </li>
                        <li class="nav-item dropdown">
                            <div class="dropdown">
                                <button class="btn dropdown-toggle" type="button"
                                        data-bs-toggle="dropdown">
                                    Products
                                </button>
                                <ul class="dropdown-menu">
                                    <li>
                                        <a class="dropdown-item" asp-controller="Product" asp-action="My-Products">All</a>
                                    </li>
                                    <li>
                                        <a class="dropdown-item" asp-controller="Product" asp-action="AllAsJson">All (JSON)</a>
                                    </li>
                                    <li>
                                        <a class="dropdown-item" asp-controller="Product" asp-action="AllAsText">All (Plain Text)</a>
                                    </li>
                                    <li>
                                        <a class="dropdown-item" asp-controller="Product" asp-action="AllAsTextFile">All (Text File)</a>
                                    </li>
                                </ul>
                            </div>
                        </li>
                    </ul>
                </div>
```

Try out all **new links** in the browser. They should **access the correct pages**.

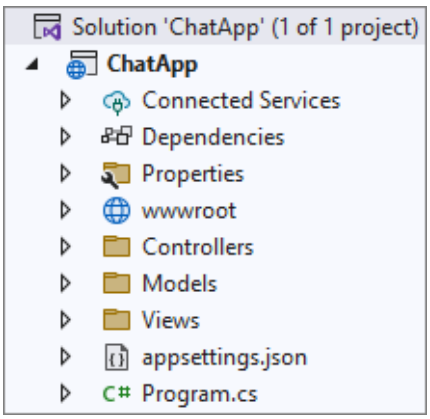
2. Simple Chat ASP.NET Core MVC App

We will begin this exercise by creating a **simple ASP.NET Core MVC app** called "**ChatApp**". Our app will have a page for **displaying and adding chat messages**. It will look like this:



Create the Project

First, **create the app and name it "ChatApp"**:



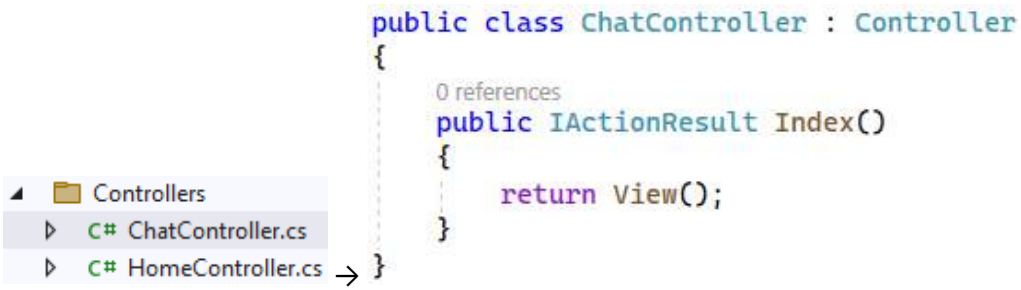
The **workflow** of the **chat functionality** in the app will be the following:

- A **controller action** passes the **current messages** (if any) to a **view** as a **model**
- The **view displays the messages** (if they exist). Also, the view displays a **form for creating a new message** and **passes a model to the controller** when the form is submitted
- Another **controller action accepts the model** and **adds a new message with the model data** to the other messages

- The **second method invokes the first one** by **redirection**, which again passes **all messages to the view** (including the new one)

Create Controller and Models

Create a **`ChatController` controller class** in the "**`Controllers`**" **folder**:




```
public class ChatController : Controller
{
    0 references
    public IActionResult Index()
    {
        return View();
    }
}
```

Delete the **`Index()` method**, as we will **create our own actions**. The **`ChatController`** should have:

- A **collection of messages**, which has the **message sender as key** and the **message text as value**
- A "**GET**" method **`Show()`**, which returns a **view with model** (the model may hold the **messages**)
- A "**POST**" method **`Send()`**, which **accepts a model** from the **view** and **adds a message to the collection**. Then, it **redirects** to the **`Show()`** action.

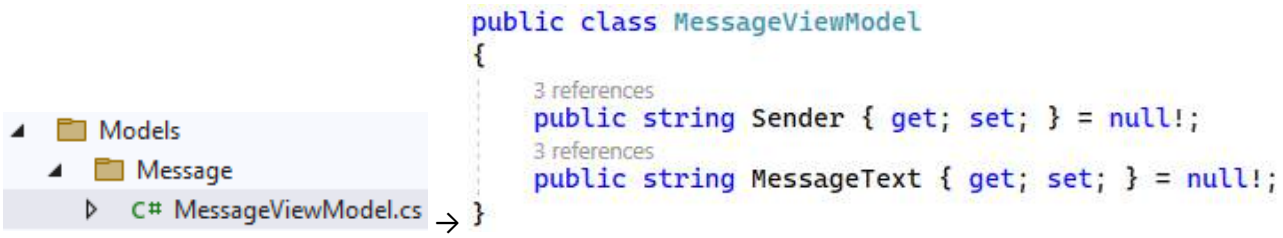
Write the above **class field** and **properties** like this:

```
public class ChatController : Controller
{
    private static List<KeyValuePair<string, string>> s_messages =
        new List<KeyValuePair<string, string>>();

    0 references
    public IActionResult Show()
    {
        return View();
    }

    [HttpPost]
    0 references
    public IActionResult Send()
    {
        return RedirectToAction("Show");
    }
}
```

	**Warning**: the above code holds the shared app data in a **static field** in the controller class. This is just for the example, and it is generally a **bad practice**! Use a **database** or other **persistent storage** to hold data, which should survive between the app requests and should be shared between all app users.

Note that the **message collection** is of type **`List<KeyValuePair<string, string>>`**, not **`Dictionary<string, string>`**, as it does **not allow duplicate keys**, but we may want to have **several messages by the same sender**.

Before we implement the **`Show()` method** of the **`ChatController`**, create the **needed models**, which will be passed to the **view**. In the "**`/Models/Message`**" **folder**, create a **`MessageViewModel` class** (this is an ordinary class), which will hold **properties for each message** (**message sender** and **text**):



Then, create the **`ChatViewModel`**, which will be **passed to the view** and then **returned to the controller**. Write the **`ChatViewModel` class** like this:

```
public class ChatViewModel
{
    1 reference
    public MessageViewModel CurrentMessage { get; set; } = null!;

    1 reference
    public List<MessageViewModel> Messages { get; set; } = null!;
}
```

The **`Messages` property** has a **collection of messages** (the already created messages), which will be passed to and displayed by the **view**. Then, the user will **submit a form for creating a new message**, which will be saved to the **`CurrentMessage` property** and **passed to the controller**.

Now go to the **`ChatController`** and **implement the above logic**. Write the **`Show()` method** first. If the **messages collection** of the class is **empty**, the controller action should return a **view with an empty `ChatViewModel`**. If there are messages, a view with a **`ChatViewModel`** should be returned. This time, however, the **`Messages` collection** of the **`ChatViewModel`** should have the **messages as a collection of type `MessageViewModel`**.

Implement the **action** like this:

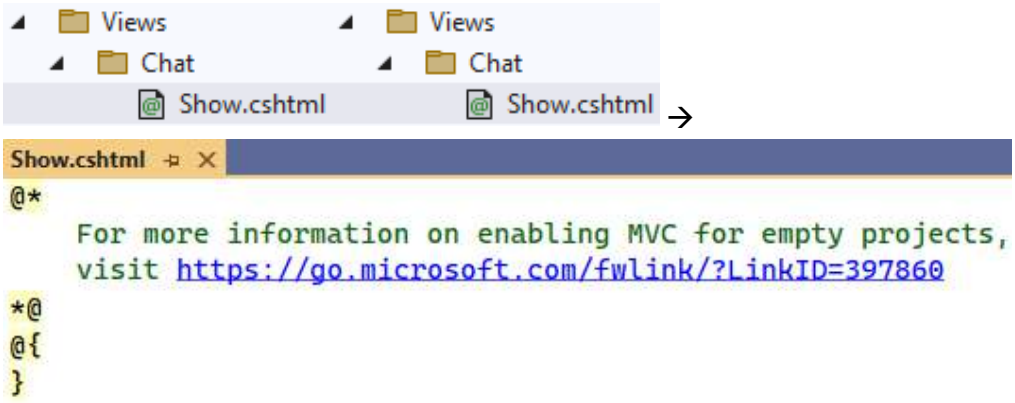
```
public IActionResult Show()
{
    if (s_messages.Count() < 1)
    {
        return View(new ChatViewModel());
    }

    var chatModel = new ChatViewModel()
    {
        Messages = s_messages
            .Select(m => new MessageViewModel()
            {
                Sender = m.Key,
                MessageText = m.Value
            })
            .ToList()
    };

    return View(chatModel);
}
```

Now write the **`Send()` method**, as well. It should have the **`[HttpPost]` attribute**, which means that the action will be invoked on a "**POST**" **request** to "**`/Chat/Send`**". The method should also **accept a `ChatViewModel`** (from the **view**) and use its **`CurrentMessage` property values** to **add a new message** to the message collection. Finally, it should **redirect** to the **`Show()` action**. Do it like this:

```
[HttpPost]
0 references
public IActionResult Send(ChatViewModel chat)
{
    var newMessage = chat.CurrentMessage;

    s_messages.Add(new KeyValuePair<string, string>
        (newMessage.Sender, newMessage.MessageText));

    return RedirectToAction("Show");
}
```

Create a View

Finally, we should create a **Show.cshtml view**. First, create a **new folder** "**Chat**" (the name of the **controller**) in the "**/Views**" **folder** and then create the **Show.cshtml** view:




```
Show.cshtml
@*
    For more information on enabling MVC for empty projects,
    visit https://go.microsoft.com/fwlink/?LinkID=397860
*@
@{
}
```

Clear the view file and let's write our own code. First, use the **@model directive** to make the **view accept** a **ChatViewModel**:

```
Show.cshtml
@model ChatViewModel
```

Add a **heading** to the view with a pure **HTML** like this:

```
<h3>Messages:</h3>
```

Next, we want to **show each message with its sender and text** if the **ChatView** model has any. Otherwise, we should just display the "**No messages yet!**" **message**. To do this, use an **if statement** and a **foreach loop** in the **Razor view**. Also, use the **@ symbol** to switch to **C# code** and **use the model properties**. Do it like this:

```
@if (Model.Messages != null)
{
    @foreach (var message in Model.Messages)
    {
        <div class="card .bg-light col-6">
            <div class="card-body">
                <blockquote class="blockquote mb-0">
                    <p>@message.MessageText<p>
                        <footer class="blockquote-footer">@message.Sender</footer>
                </blockquote>
            </div>
        </div>
    }
}
else
{
    <p>No messages yet!</p>
}
```

Then, create a **form**, which should send a "**POST**" **request** to "**/Chat/Send**" and **fill in the CurrentMessage property** of the **ChatViewModel**. Use **different tag helpers** (will be examined during the next topics) to **set the controller** and **action** and to **extract the name of a specified model property into the rendered HTML**. Write the rest of the view code like this:

```
<p></p>
<form asp-controller="Chat" asp-action="Send" method="post">
    <div class="form-group card-header row">
        <div class="col-12">
            <h5>Send a new message</h5>
        </div>
        <div class="col-8">
            <label>Message: </label>
            <textarea asp-for="CurrentMessage.MessageText"
                      class="form-control" rows="3"></textarea>
        </div>
        <div class="col-4">
            <label>Sender Name: </label>
            <input asp-for="CurrentMessage.Sender" class="form-control">
            <input class="btn btn-primary mt-2
                   float-lg-right" type="submit" value="Send" />
        </div>
    </div>
</form>
```

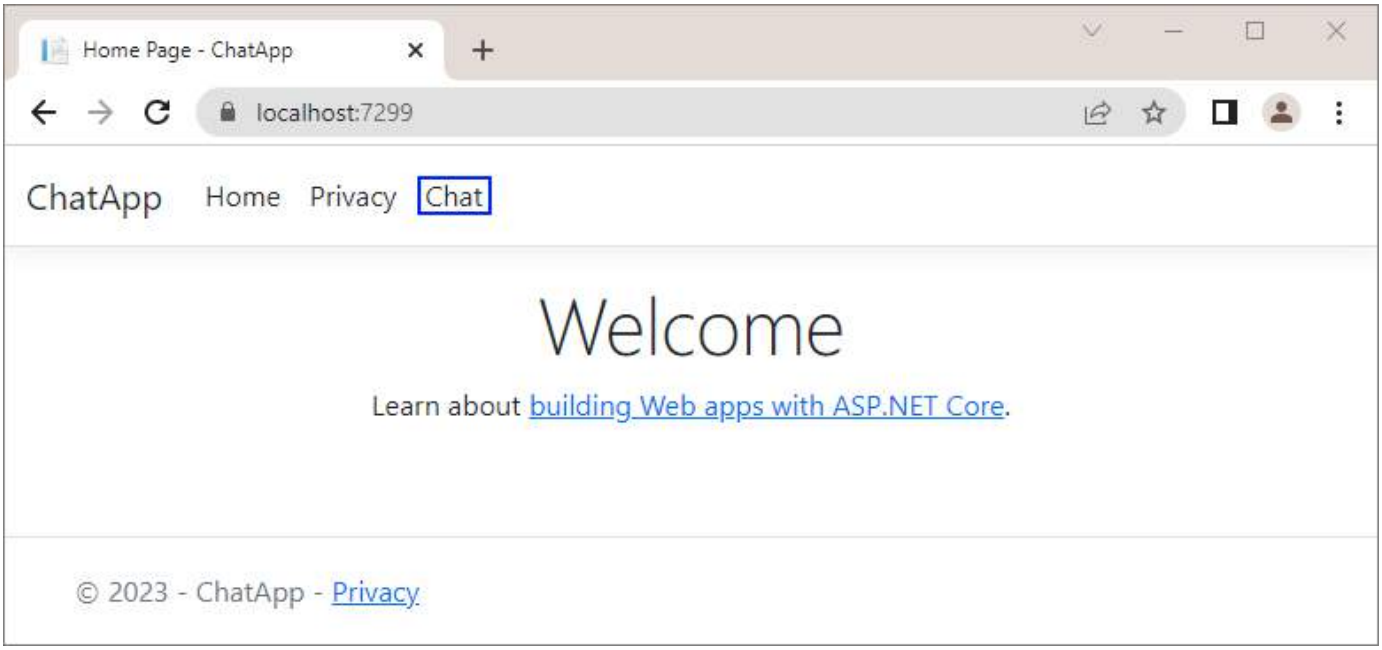
Now if we access "**/Chat/Show**" we will see the **Show.cshtml view**.

To **add a link** to the page, go to the **_Layout.cshtml.cshtml view** in "**/Views/Shared**" and add the following code:

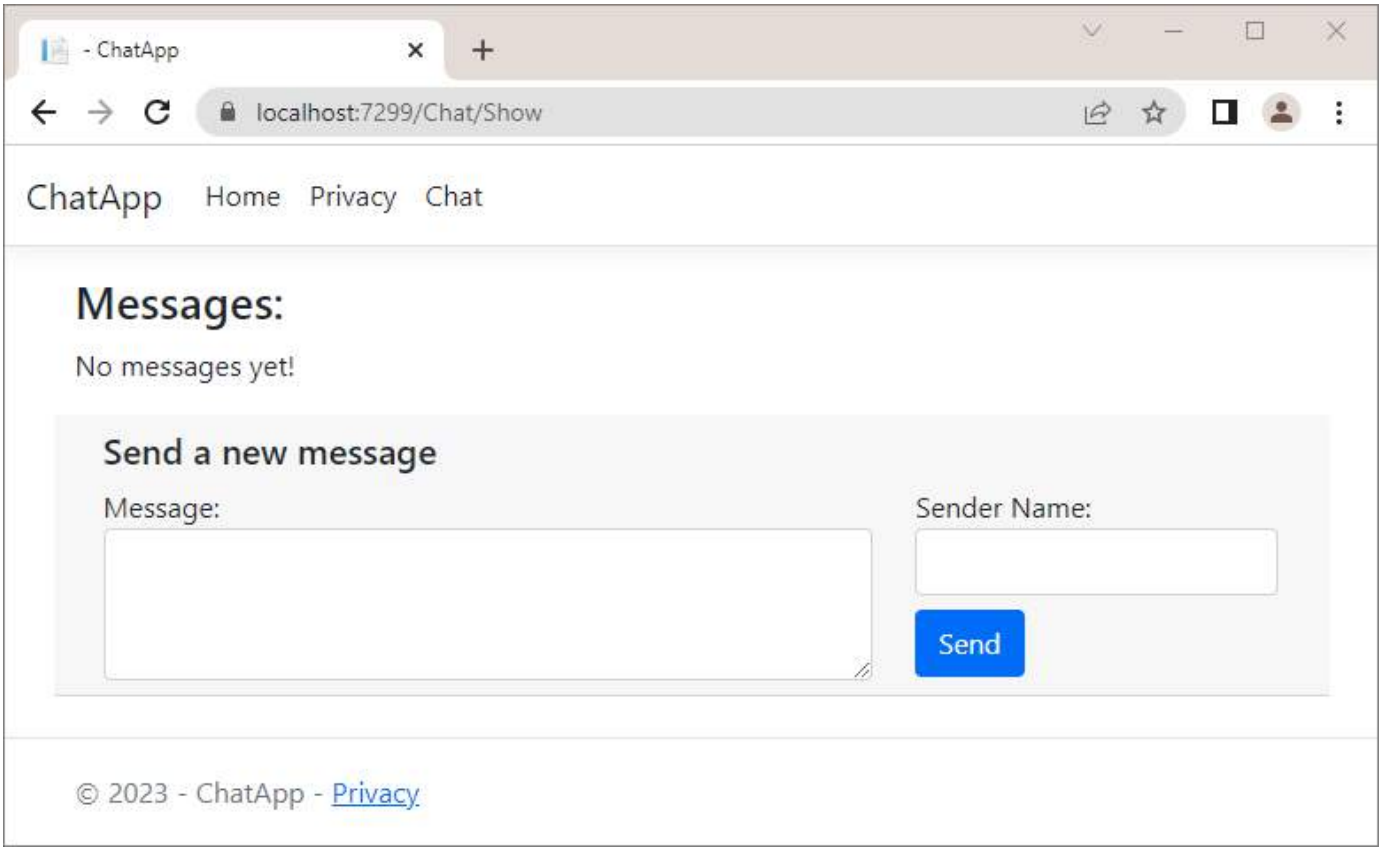
```
_Layout.cshtml
<!DOCTYPE html>
<html lang="en">
<head>...</head>
<body>
    <header>
        <nav class="navbar navbar-expand-sm navbar-toggleable-sm navbar-light bg-
            <div class="container-fluid">
                <a class="navbar-brand" asp-area=""
                    asp-controller="Home" asp-action="Index">ChatApp</a>
                <button class="navbar-toggler" type="button"
                    data-bs-toggle="collapse" data-bs-target=".navbar-collapse" a
                        aria-expanded="false" aria-label="Toggle navigation">
                    <span class="navbar-toggler-icon"></span>
                </button>
                <div class="navbar-collapse collapse d-sm-inline-flex justify-con
                    <ul class="navbar-nav flex-grow-1">
                        <li class="nav-item">
                            <a class="nav-link text-dark" asp-area=""
                                asp-controller="Home" asp-action="Index">Home</a>
                        </li>
                        <li class="nav-item">
                            <a class="nav-link text-dark" asp-area=""
                                asp-controller="Home" asp-action="Privacy">Privac
                        </li>
                        <li class="nav-item">
                            <a class="nav-link text-dark" asp-area=""
                                asp-controller="Chat" asp-action="Show">Chat</a>
                        </li>
                    </ul>
```

Try the App

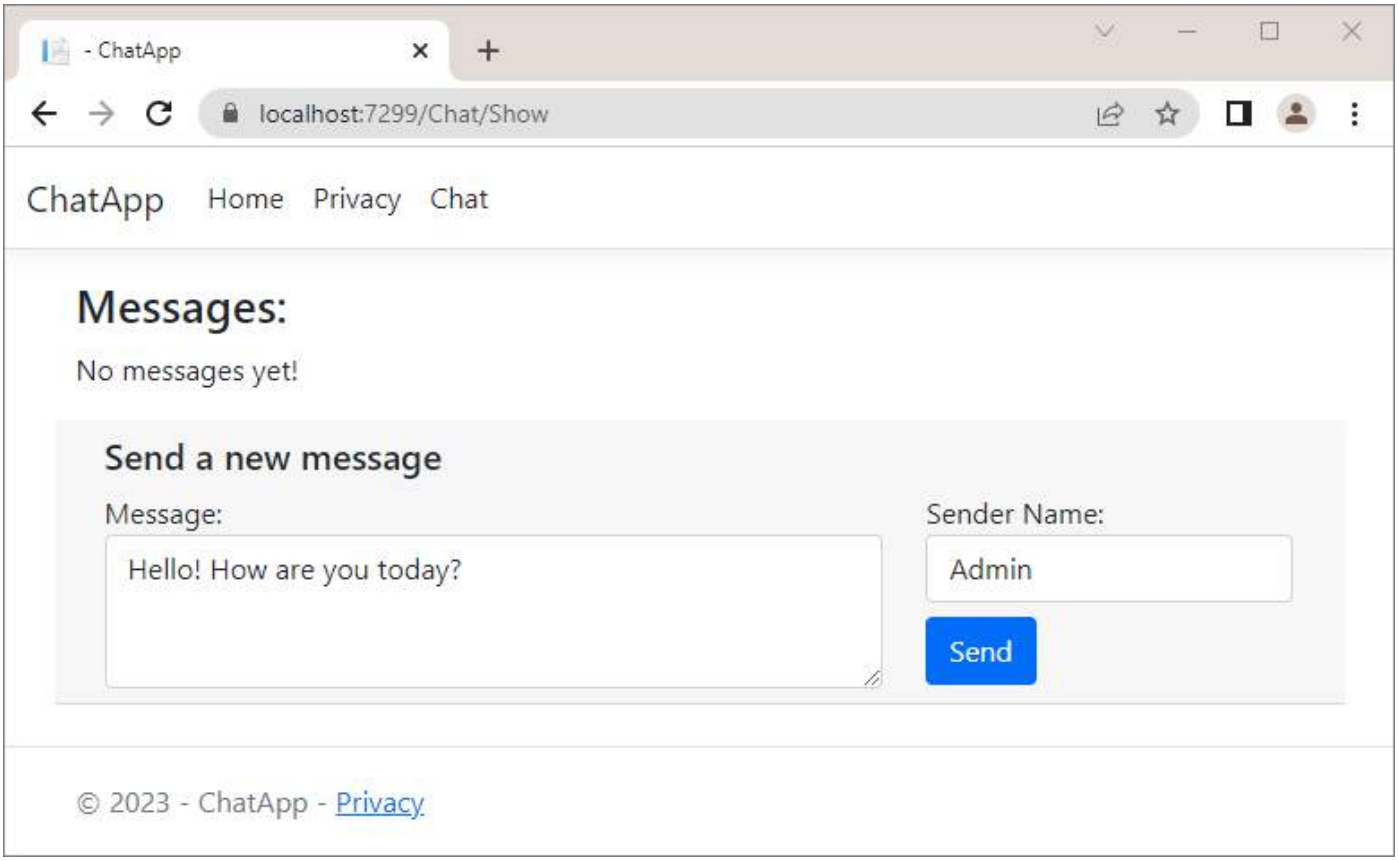
Run the app and examine it in the **browser**. It should have the "**Chat**" **navigation link**, which we have just added:

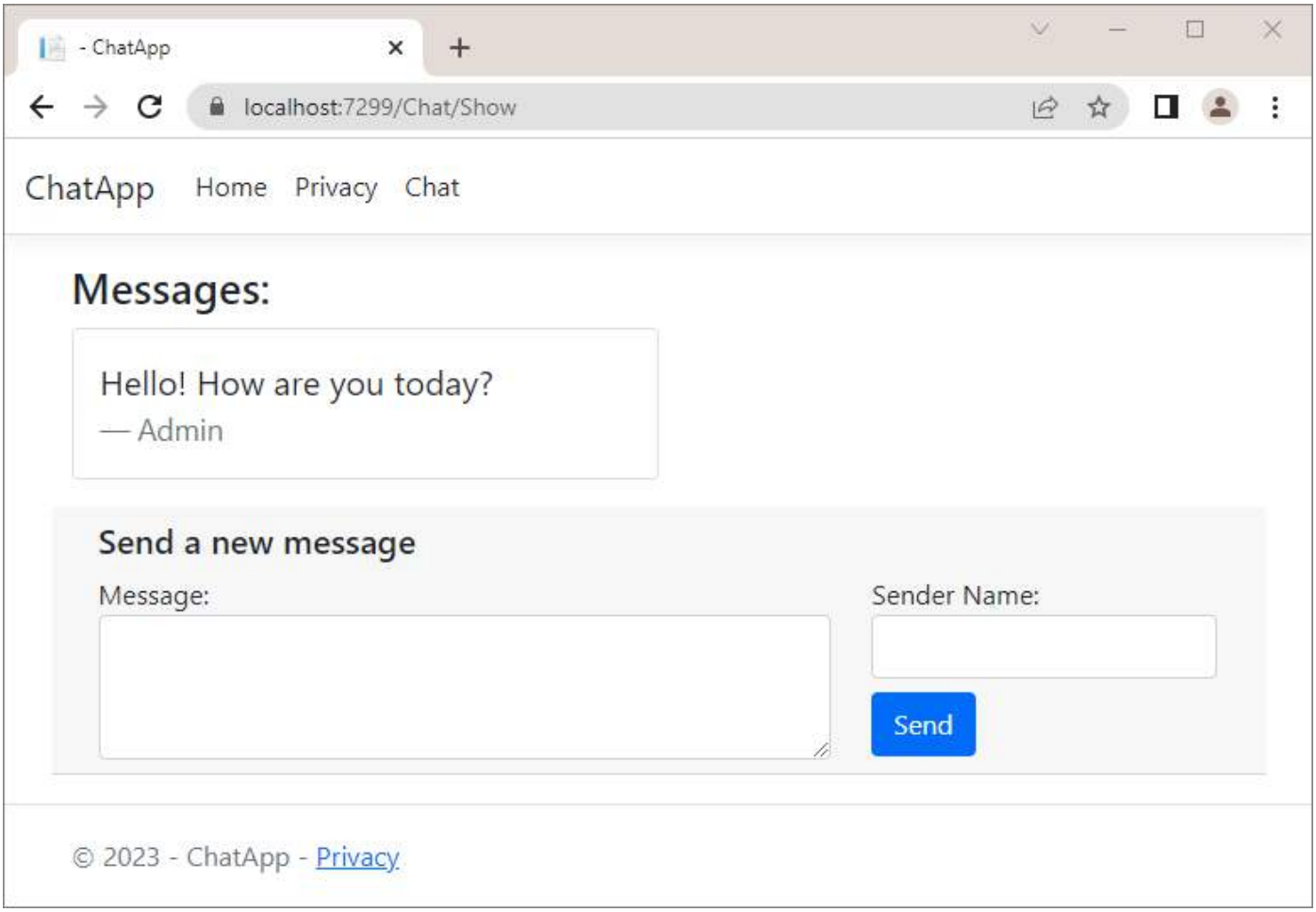


Click on the **`[Chat]` link**. You should be **redirected** to "**`/Chat/Show`**" and see the **`Show.cshtml` view**:



We have **no messages yet**, so let's **add** one. **Fill in the form** and **click** on the **[Send] button**. The **new message** should be **displayed on the page**:

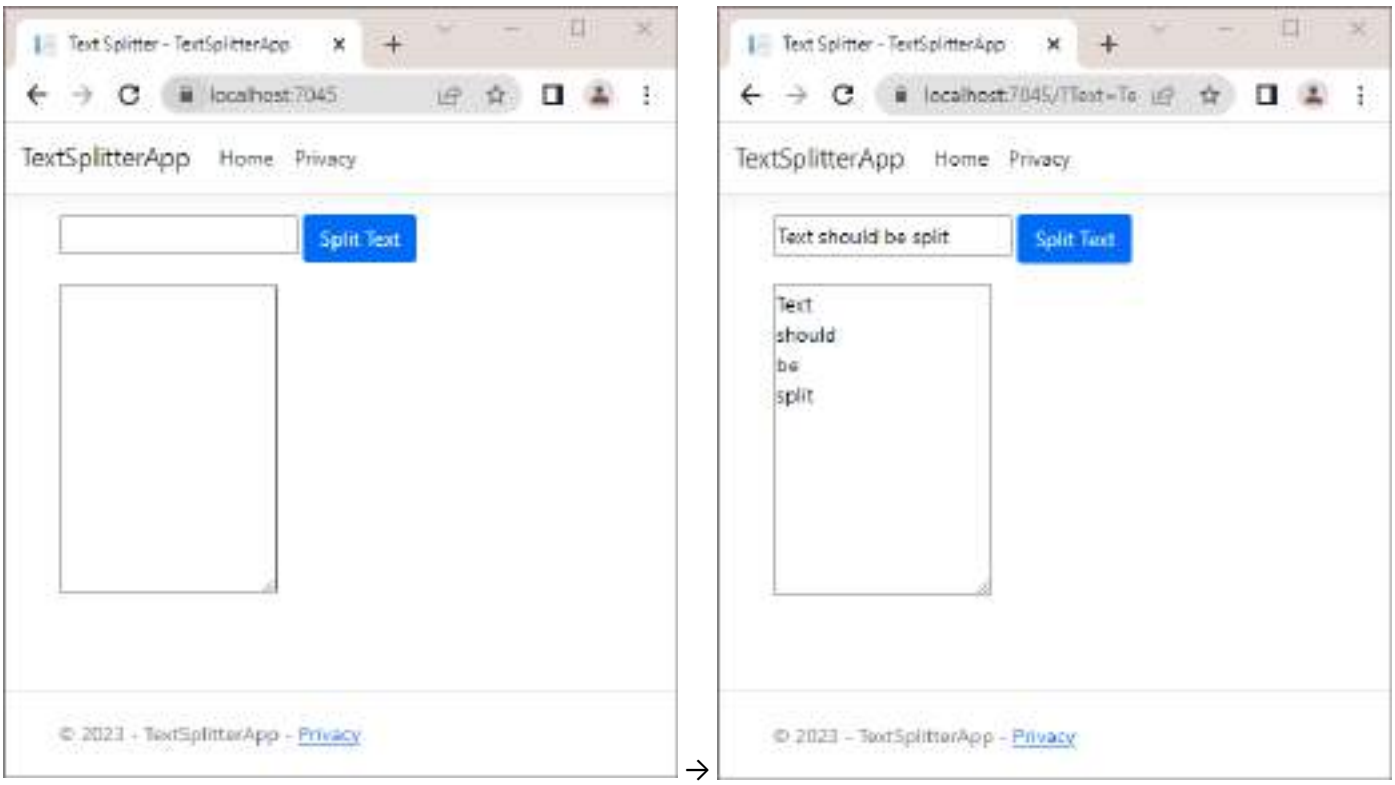




Make sure that your **app works correctly**. **Debug the code**, so that you fully understand the **MVC pattern**. Don't forget that **messages are deleted every time you close the app**, because they are **stored in a variable** – that's why we often create **databases** for our apps.

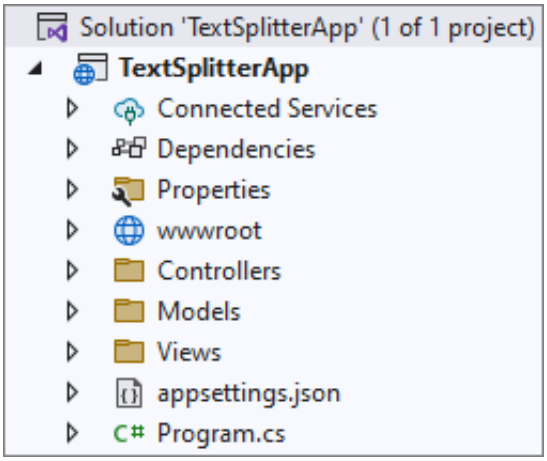
3. Text Splitter App

We will begin this exercise by creating a **simple ASP.NET Core MVC app** called "**`Text Splitter`**". Our app will split text, entered by the user and then display the splitted words. It will look like this:



Create the Project

First, **create the app and name it "`TextSplitterApp`"**:



Create Controller and Models

Before implementing the methods in the **`HomeController`**, create the needed models, which will be passed to the view. In the "**`/Models`**" folder, create a **`TextViewModel`** class (this is an ordinary class), which will hold the properties.

```
public class TextViewModel
{
    2 references
    public string Text { get; set; } = null!;

    2 references
    public string SplitText { get; set; } = null!;
}
```

After we have created the TextViewModel class, it's time to modify the **`Index()`** method from the **`HomeController`** controller class to return a view and a model.

```
public class HomeController : Controller
{
    0 references
    public IActionResult Index(TextViewModel model)
        => View(model);
```

Now write the **`Split()` method**, as well. It should have the **`[HttpPost]` attribute**, which means that the action will be invoked on a "**POST**" **request** to "**`/Split`**". The method should also **accept a `TextViewModel`** (from the **view**), then update it and pass it to the **`Index()`** method.

```
    [HttpPost]
    0 references
    public IActionResult Split(TextViewModel model)
    {
        var splitTextArray = model
            .Text
            .Split(" ", StringSplitOptions.RemoveEmptyEntries)
            .ToArray();

        model.SplitText = string.Join(Environment.NewLine,
            splitTextArray);

        return RedirectToAction("Index", model);
    }
}
```

Create a View

Now we should modify the **`Index.cshtml`** file.

We should accept a model in the view and change the **`ViewBag.Title`** to "**`Text Splitter`**"

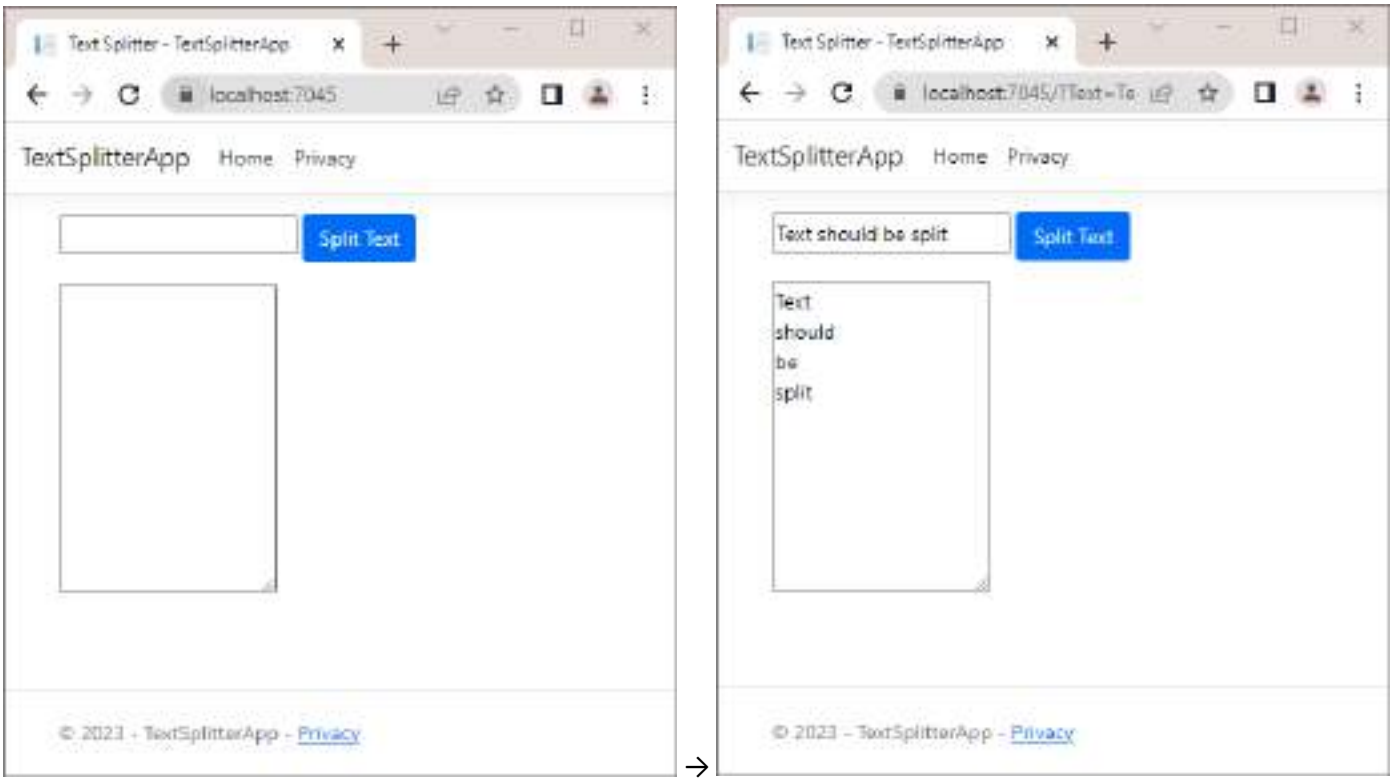
```
@model TextViewModel

@{
    ViewBag.Title = "Text Splitter";
}
```

Now, we need to create a form, which should send a "**POST**" request and submit the information from the form to the **`Split(TextViewModel model)`** action of the **`HomeController`**. We will use the **`@`** symbol to switch to C# code in order to assign input data to model properties.

```
<form asp-controller="Home" asp-action="Split" method="post">
    <div class="col-12">
        <input asp-for="@Model.Text" class="mr-2" />
        <button type="submit" class="btn btn-primary">Split Text</button>
    </div>

    <div class="col-2 mt-3">
        <textarea rows="10">@Model.SplitText</textarea>
    </div>
</form>
```

Try the App

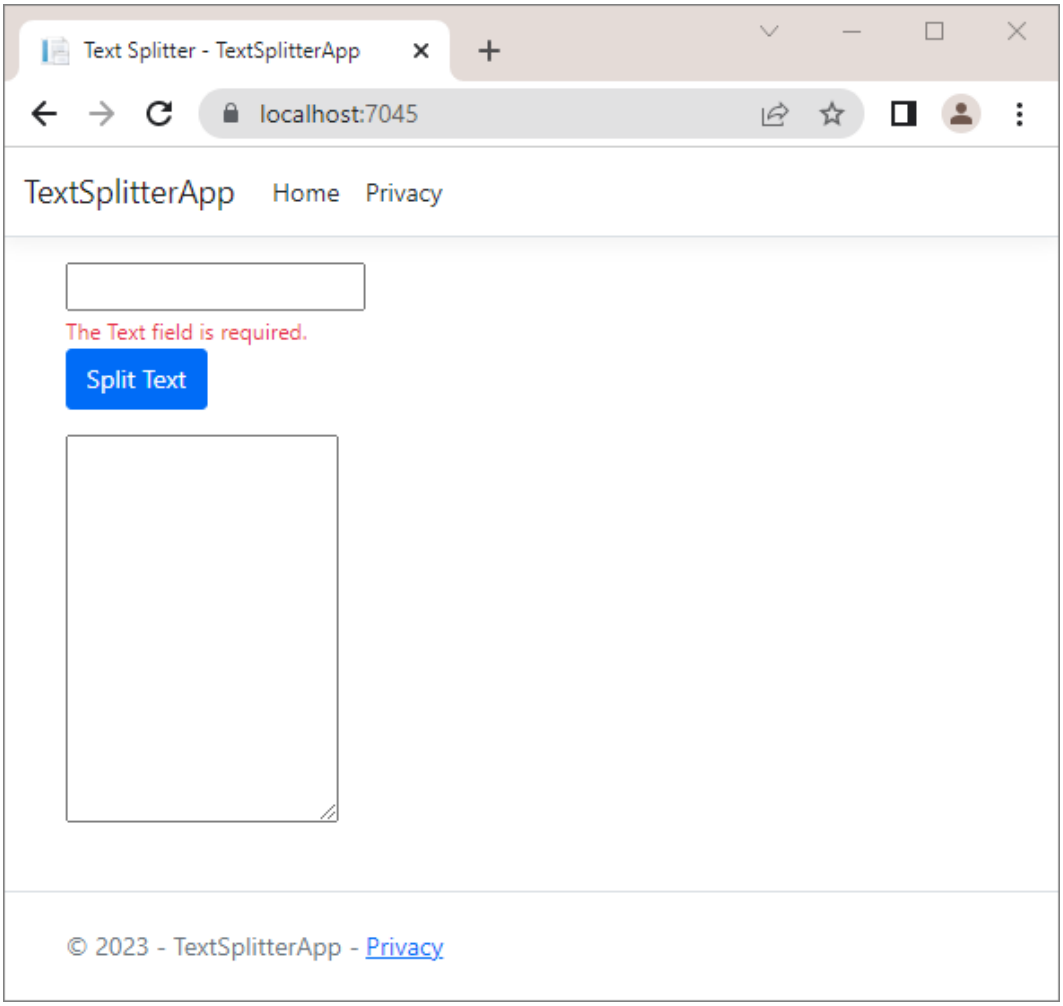
Run the app and examine it in the **browser**. Try splitting the sentence "**`Text should be split`**" and the result should look like this:



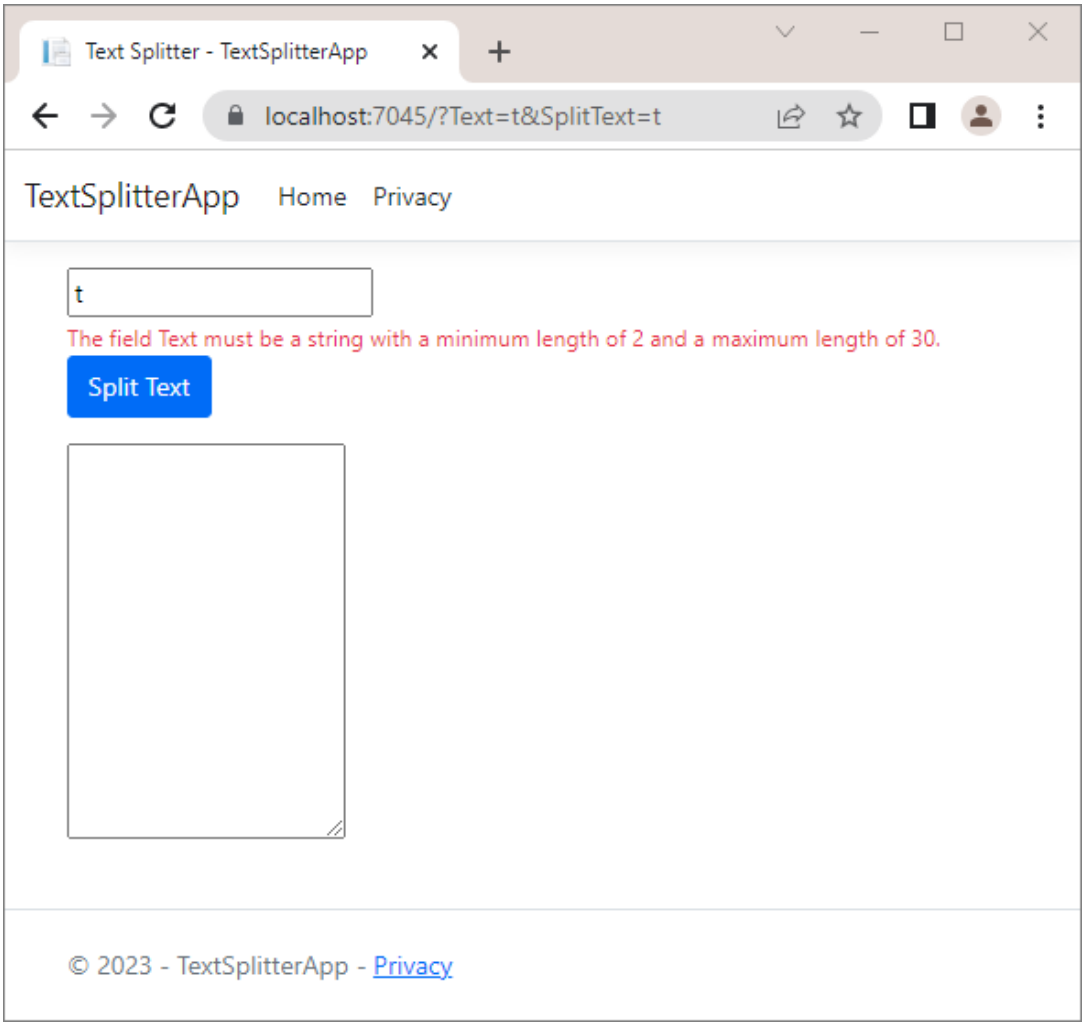
Adding App Validations

Now, let's add some requirements:

- The "Text" field should
  - Be **required** (not left empty)
  - Have a **minimum** length of **2** characters
  - Have a **maximum** length of **30** characters
- In case any **validation fails**, an **error** should be displayed.
  - If the text field is left empty, a "**`The Text field is required`**" message should be displayed like shown below:



- In case the length of the input is shorter than the minimum length or longer than the maximum length, a "**`The field Text must be a string with a minimum length of 2 and maximum length of 30.`**" should be displayed like shown below:



First, we will add validation attributes to the model property. The **`[Required]`** attribute will check if the model property holds any value and the **`[StringLength]`** will check the length of the string that is held as a value.

```
public class TextViewModel
{
    [Required]
    [StringLength(30, MinimumLength = 2)]
    3 references
    public string Text { get; set; } = null!;

    2 references
    public string SplitText { get; set; } = null!;
}
```

We will use the following tag helper in order to generate the validation message.

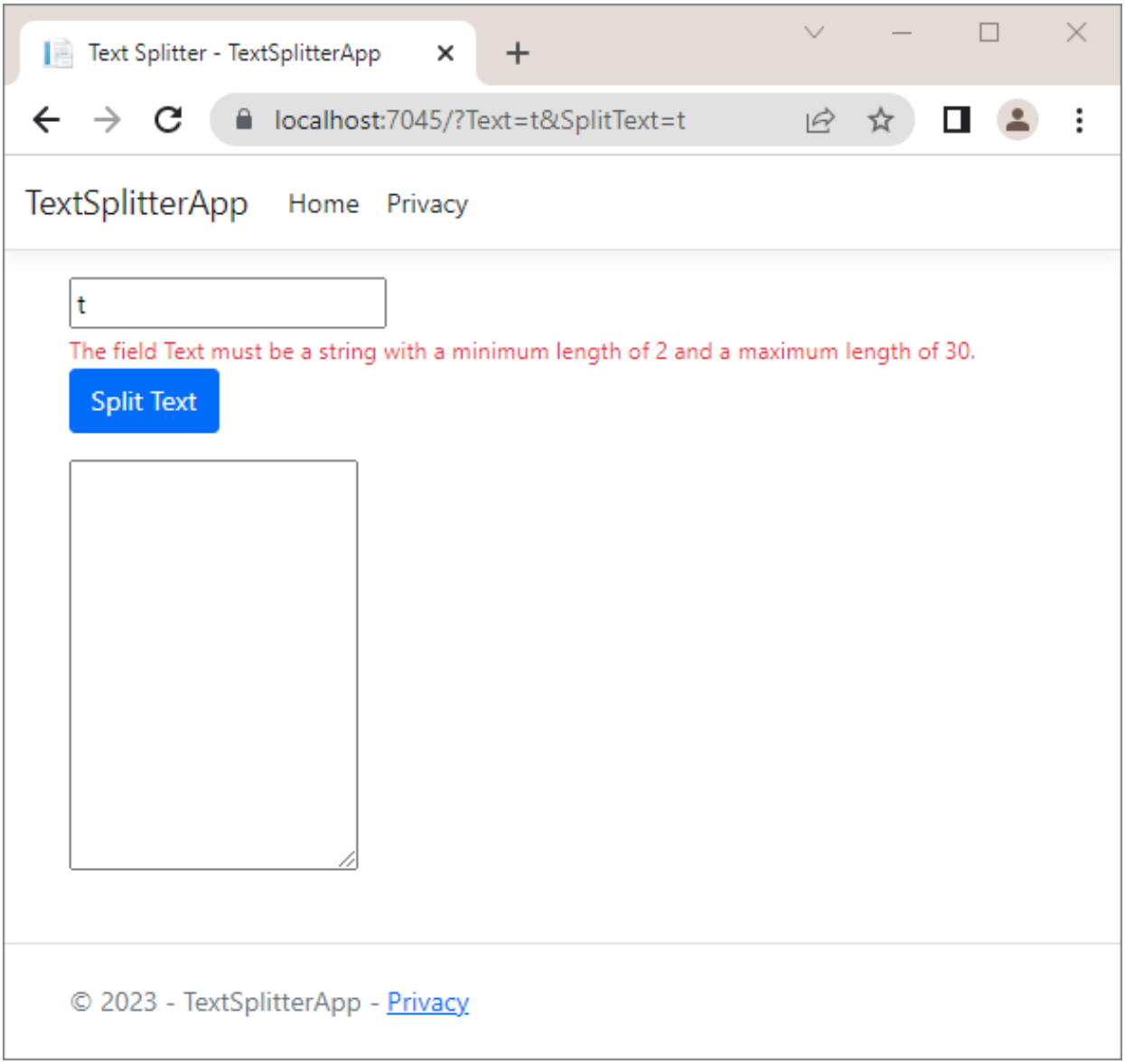
```
<form asp-controller="Home" asp-action="Split" method="post">
    <div class="col-12">
        <input asp-for="@Model.Text" class="mr-2" /><br />
        <span asp-validation-for="@Model.Text" class="small text-danger col-2"></span><br />
        <button type="submit" class="btn btn-primary">Split Text</button>
    </div>

    <div class="col-2 mt-3">
        <textarea rows="10">@Model.SplitText</textarea>
    </div>
</form>
```

Finally, add the following code to the end of the **`Index.cshtml`** file in order for the validations to be working:

```
@section Scripts {
    <partial name="_ValidationScriptsPartial" />
}
```

Try the App

Run the app again and examine it in the **browser**. Try splitting "**`t`**" and the result should look like this:



When you press the **`[Split Text]`** button when the text field is empty, the app should look like this: