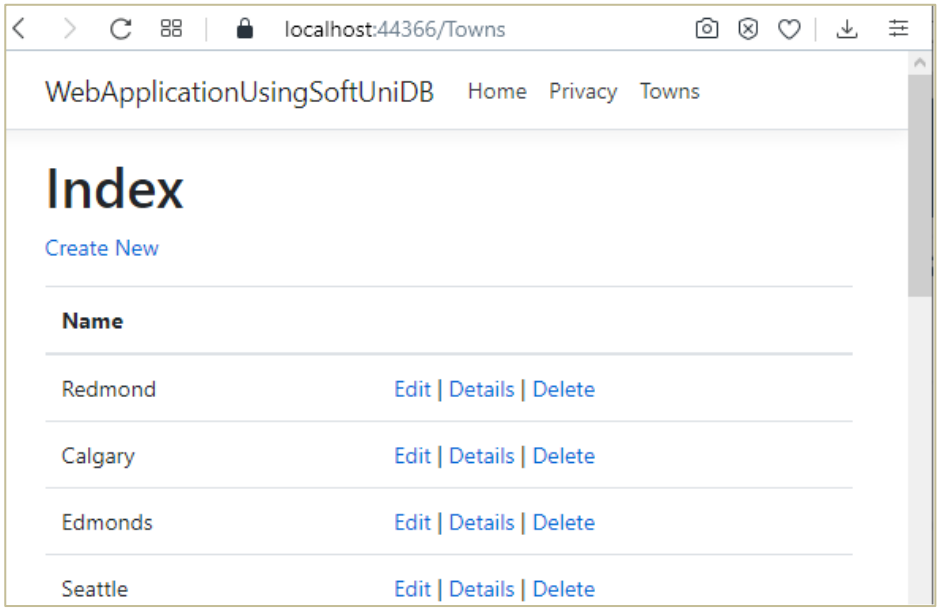
Lab: ASP.NET MVC with DB

his document defines several walkthroughs for creating ASP.NET MVC-based apps, from setting up the framework to implementing the fully functional applications.

1. Application with SoftUni Database

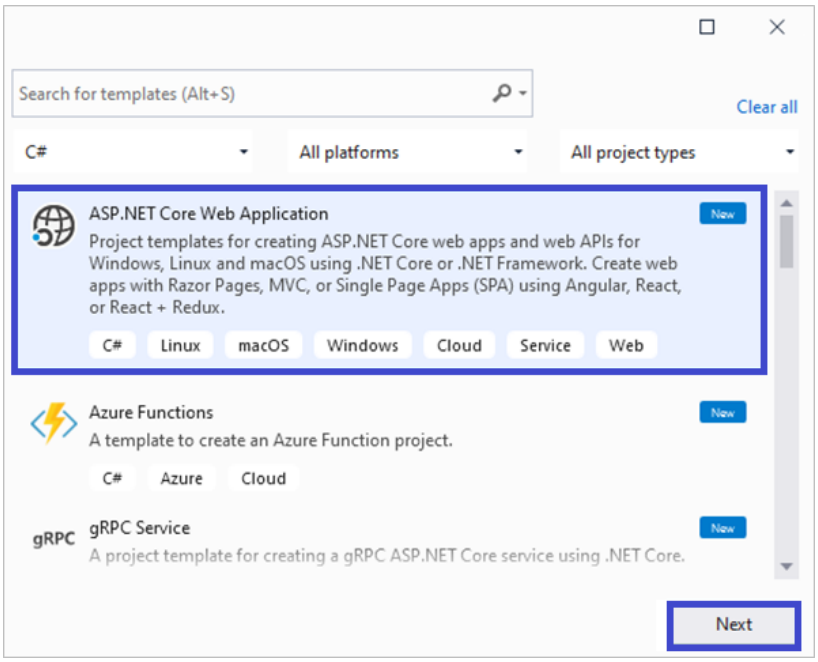
Create a Web application, which **displays and modifies** the data from table **`Towns`** in the **SoftUni Database**. The app should look like this:



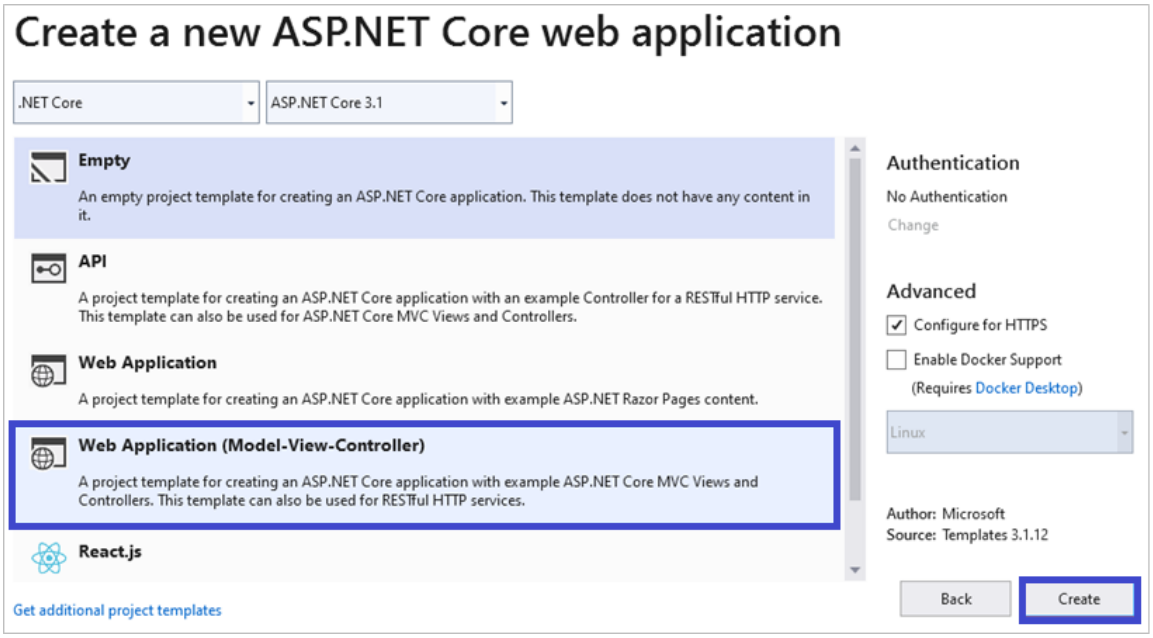
We are going to **use** the existing **`SoftUni`** database. **Start** your **`Microsoft SQL Management Studio`**.

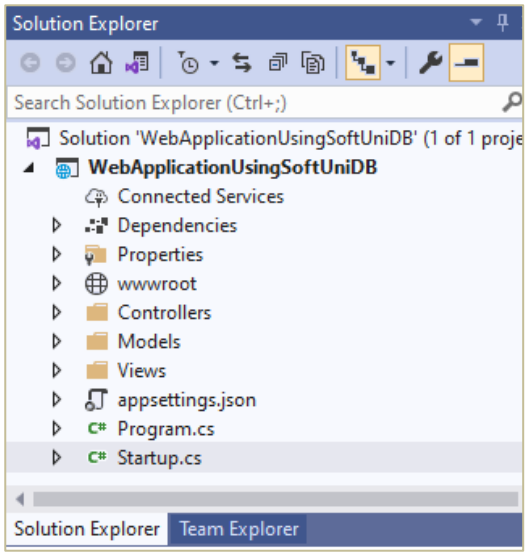
Create a New ASP.NET MVC Project

Open **Visual Studio** and create a C# web project using the **ASP.NET Web Application (.NET Core)** template.



In the "**Create a new ASP.NET Core Web Application**" window, choose **[Model-View-Controller (MVC)]**.

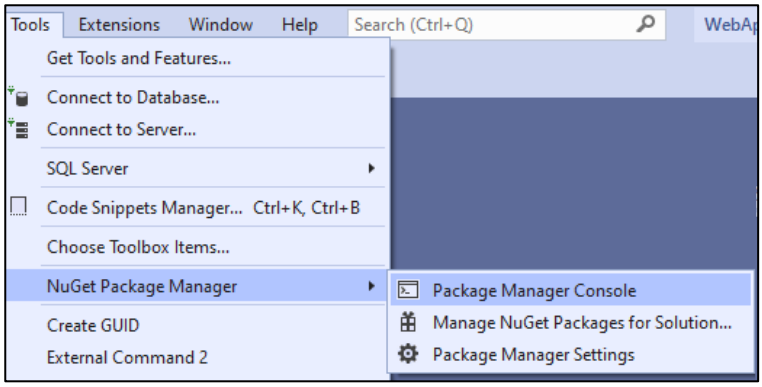


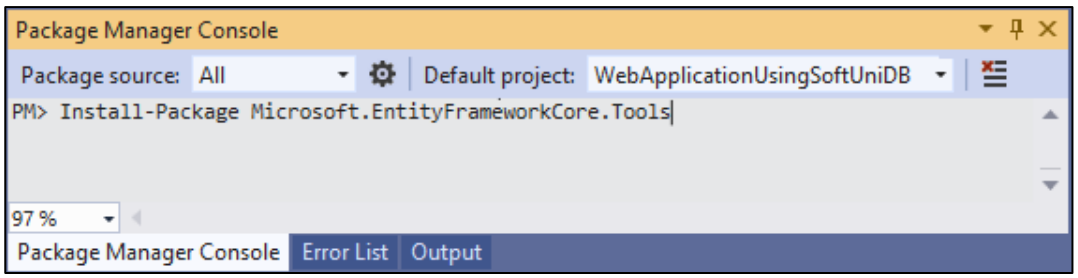


Install Entity Framework Core

Go to **[Tools]** → **[NuGet Package Manager]** → **[Package Manager Console]** and **run** the following commands individually:

`Install-Package Microsoft.EntityFrameworkCore.Tools`
`Install-Package Microsoft.EntityFrameworkCore.SqlServer.Design`
`Install-Package Microsoft.EntityFrameworkCore.SqlServer`

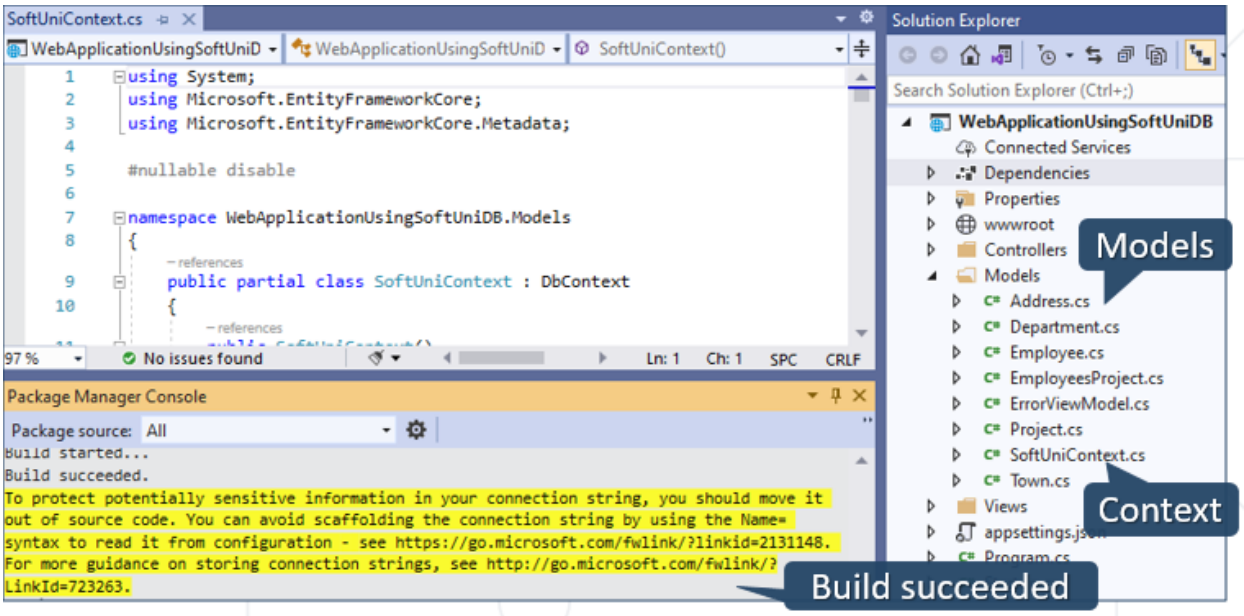




Create Model and Database Context

In the **Package Manager Console run** the following command:

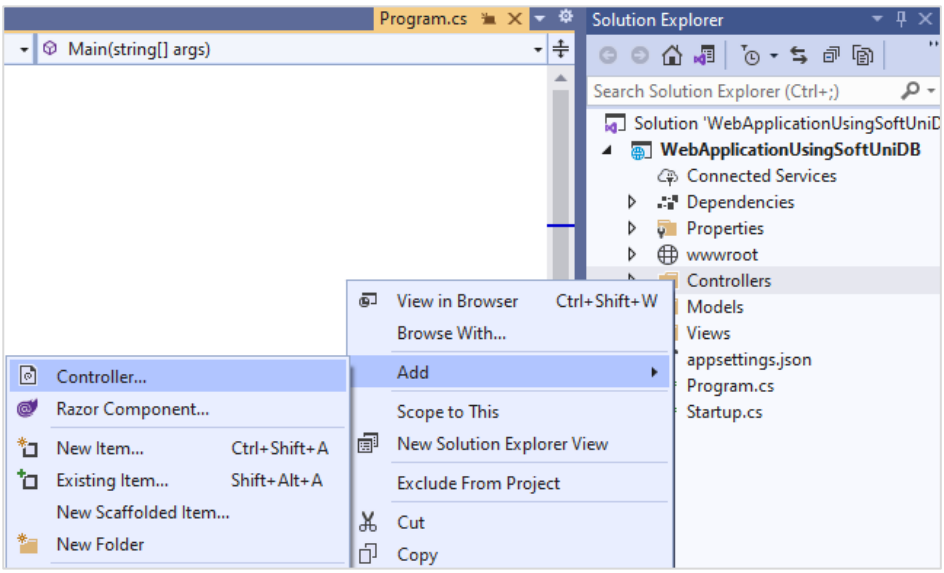
```
Scaffold-DbContext -Connection
"Server=(localdb)\MSSQLLocalDB;Database=SoftUni;Integrated Security=True;" -
Provider Microsoft.EntityFrameworkCore.SqlServer -OutputDir Models
```



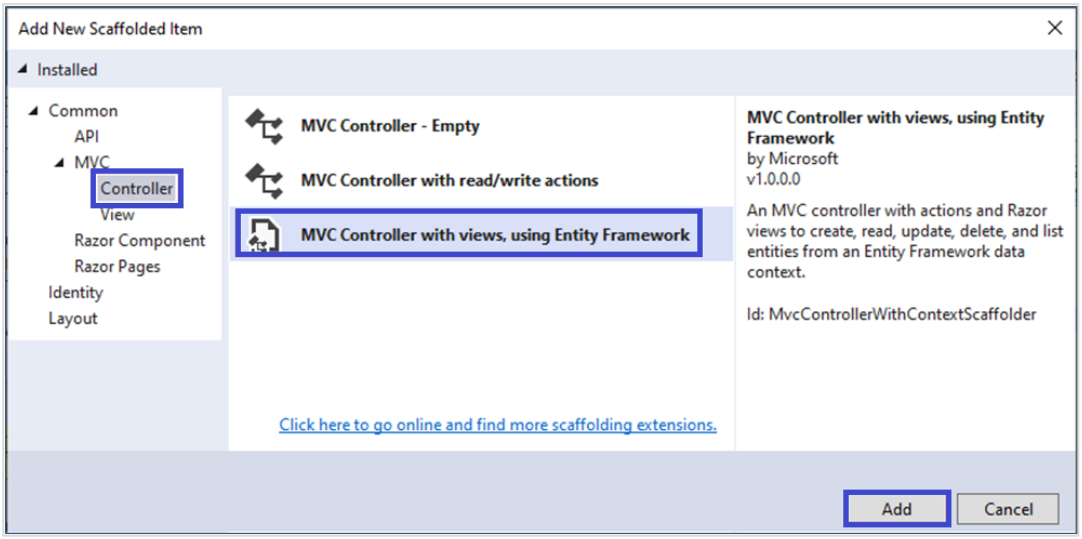
Scaffold Controller with Views

Create an ASP.NET Core MVC Controller for handling data and performing basic CRUD operations.

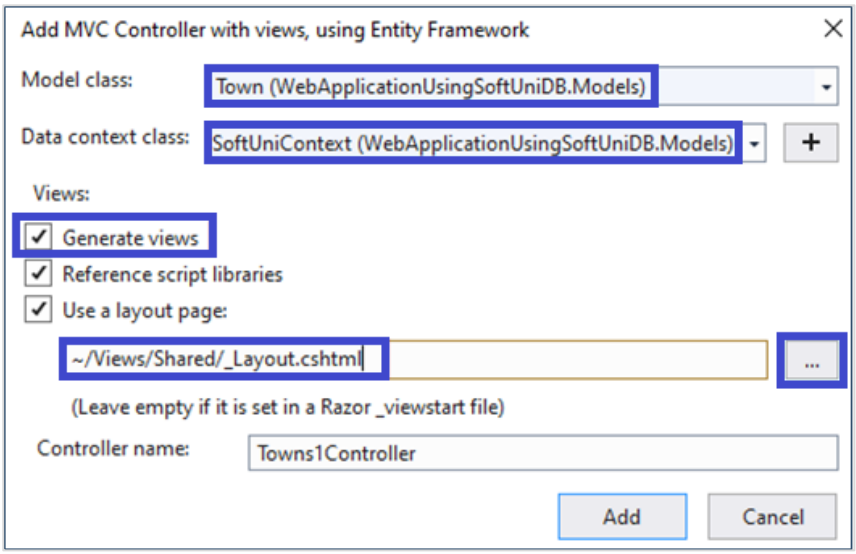
Right-click on the **Controllers** folder in Solution Explorer and select **[Add]** → **[Controller]**:

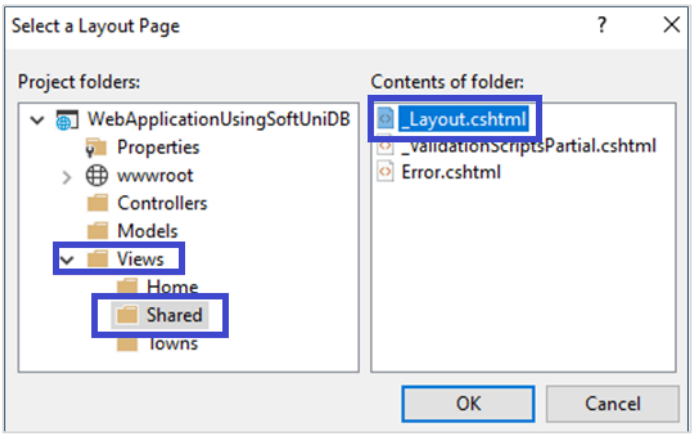


Select **[MVC Controller with Views using Entity Framework]**.

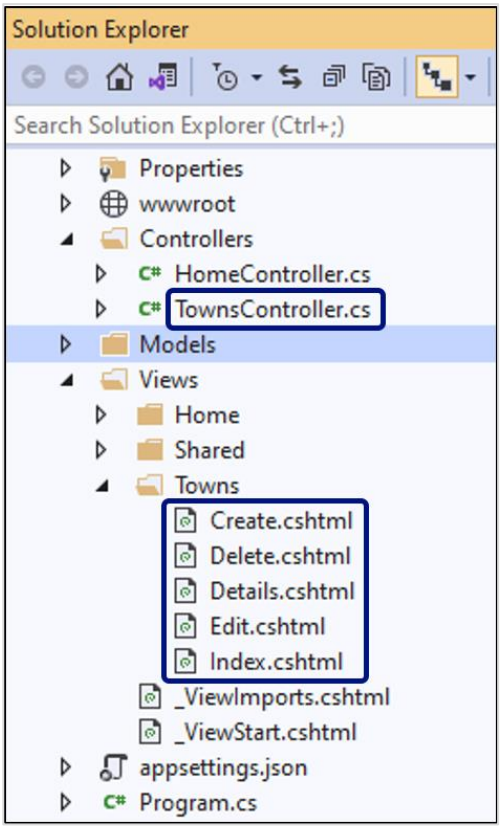


- Select **Town** as **Model class**
- **`SoftUniContext`** as the **Data Context class**
- Tick the **`[Generate Views]`** option
- In the "**Select a Layout Page**", browse through **`Views`** → **`Shared`** → **`_Layout.cshtml`**
- Give a good name for the controller class, e.g. **`TownsController`**





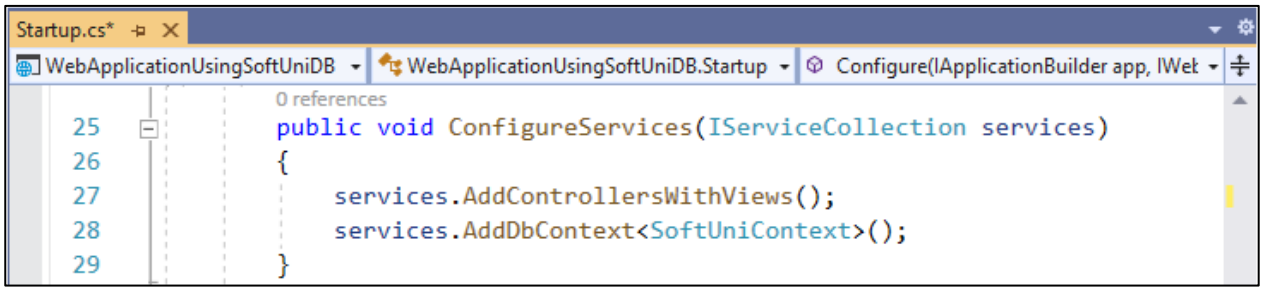
Now, you will have generated a new **controller** class, with a few **views** in the code:



Register the DB Context Class in the App Configuration

Register your configuration class at the **`ConfigureServices()`** method in **`Startup.cs`**, by adding:

```
services.AddDbContext<SoftUniContext>();
```



Display the "Towns" Page in the Menu

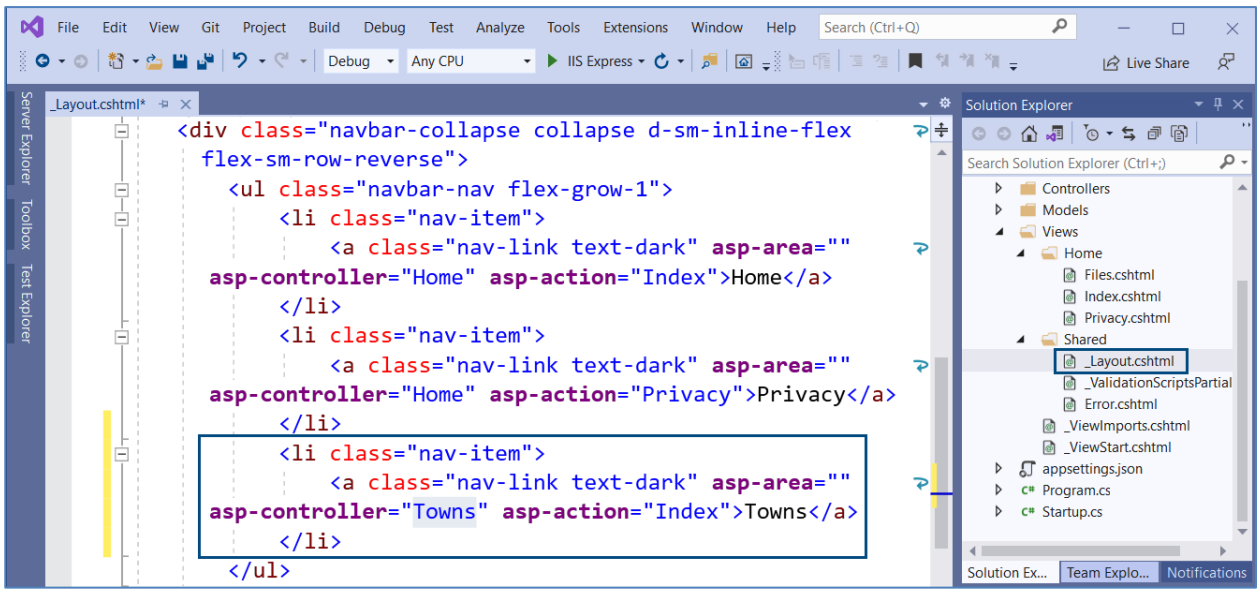
To **display the "Towns" page** in the app, you need to add it to the layout view:

In Solution Explorer go to: **`Views`** → **`Shared`** → **`_Layout.cshtml`**.

In the **<ul class="navbar-nav flex-grow-1"> add new `<li>` element**:

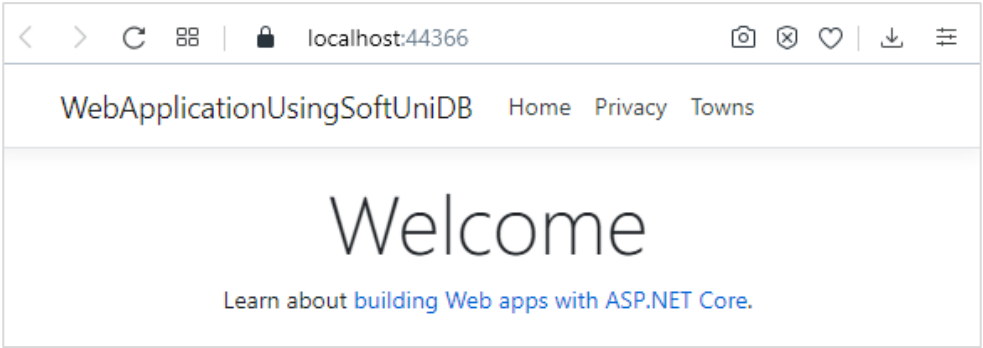
```
<li class="nav-item">
  <a class="nav-link text-dark" asp-area="" asp-controller="Towns" asp-
action="">Towns</a>
</li>
```

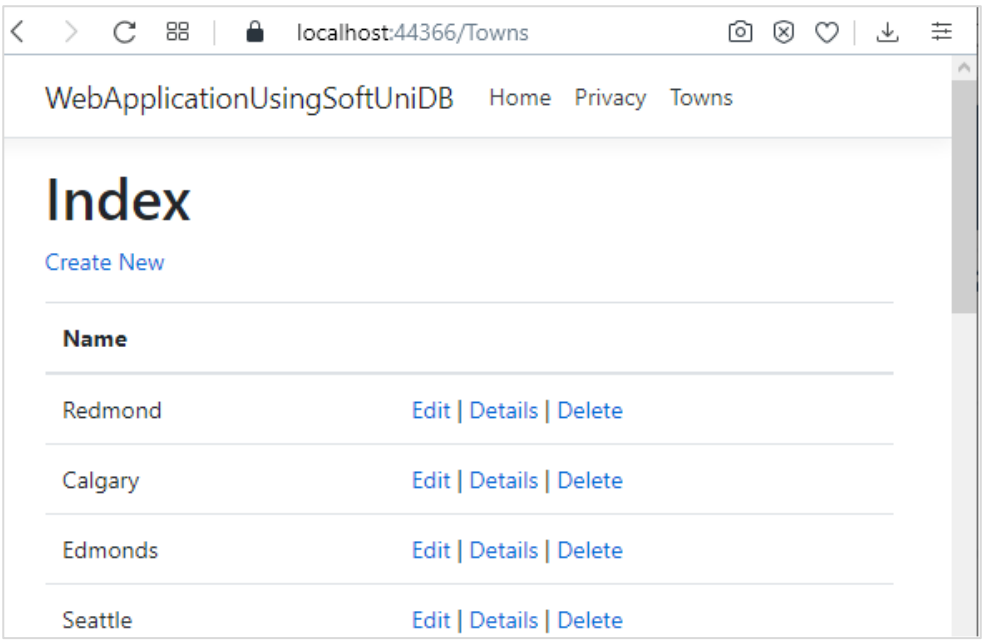
This is how it looks like:



Run and Test the App

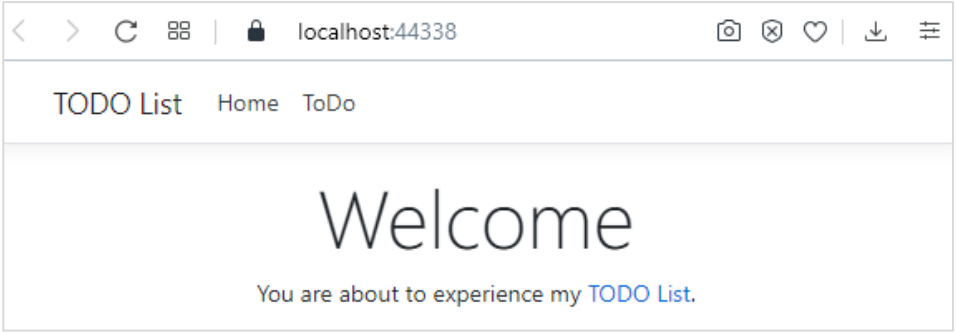
Now **build** and **run** the application using **[Ctrl] + [F5]**.





2. TODO List

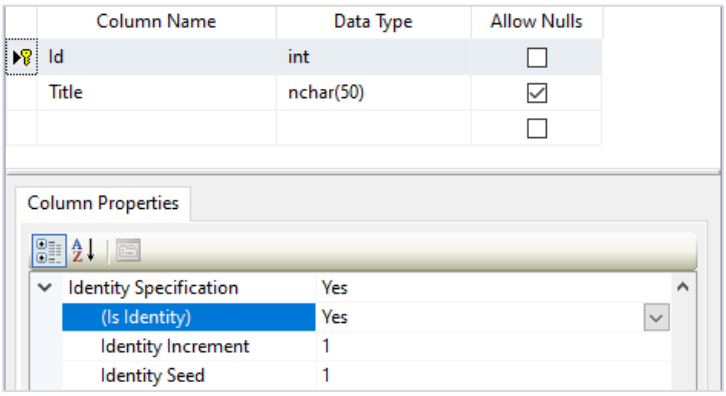
Create a "**TODO List**" Web application, which keeps track of a person's **tasks** inside a **database**. The application should support **creating** tasks and **deleting** tasks.



Create the Database

Create **database** named **"ToDoDB"** in **Microsoft SQL Management Studio**. It will have a **ToDoTasks table** with **2 columns**:

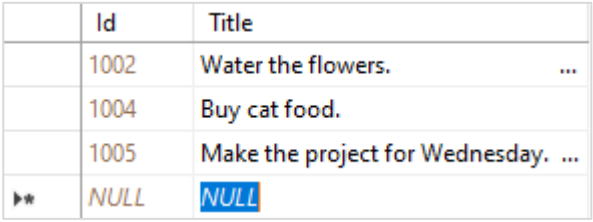
- **`Id`** – a unique **integer**, with which to differentiate tasks from one another.
- **`Title`** – the **title** of the task, stored as a **string**.



Insert Some Sample Data

Create 3 tasks in the table:

Tasks
`Water the flowers.`
`Buy cat food.`
`Make the project for Wednesday.`



Create a New Project

Create new project and name it **`TODOTasksList`**.

Open **Visual Studio** and create a C# web project using the **ASP.NET Web Application (.NET Core)** template.

In the **`Create a new ASP.NET Core Web Application`** window, choose **`Model-View-Controller (MVC)`**.

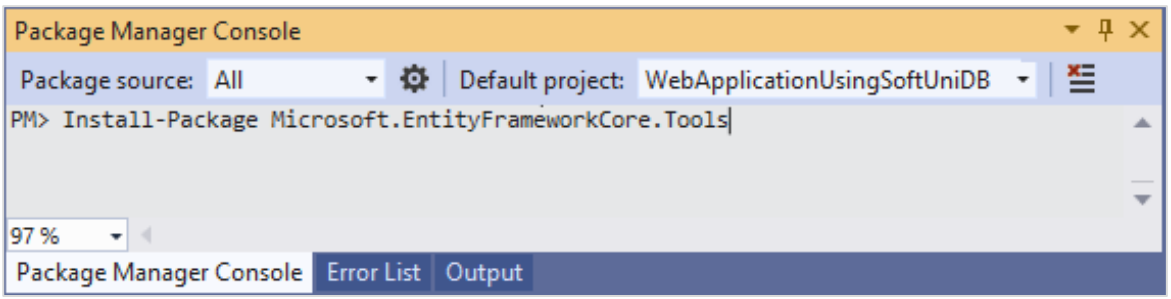
Integrating Entity Framework Core:

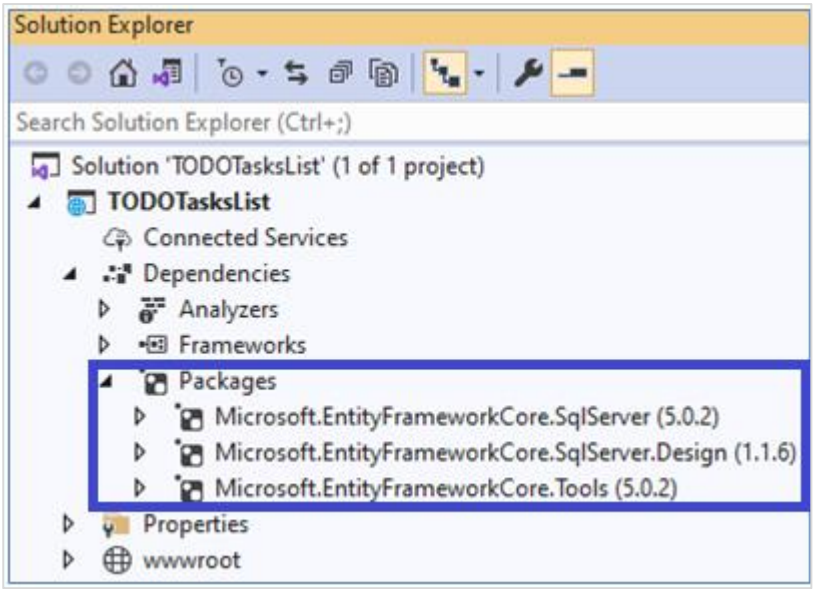
Go to **`[Tools]`** → **`[NuGet Package Manager]`** → **`[Package Manager Console]`** and **run** the following commands individually:

```
Install-Package Microsoft.EntityFrameworkCore.Tools
```

```
Install-Package Microsoft.EntityFrameworkCore.SqlServer.Design
```

```
Install-Package Microsoft.EntityFrameworkCore.SqlServer
```

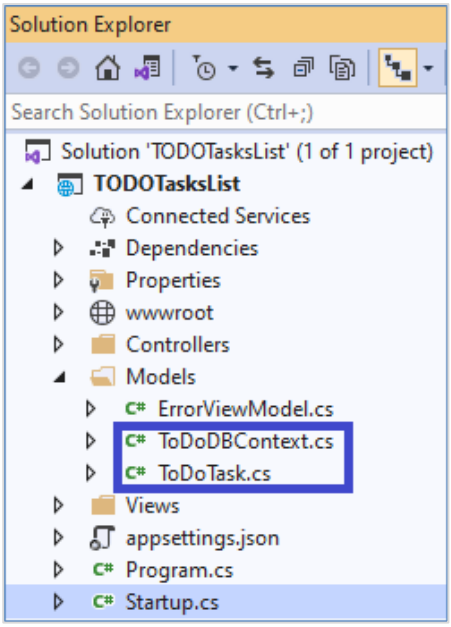




Create Model and Database Context

In the **Package Manager Console** run the following command:

```
Scaffold-DbContext -Connection
"Server=(localdb)\MSSQLLocalDB;Database=ToDoDB;Integrated Security=True;" -Provider
Microsoft.EntityFrameworkCore.SqlServer -OutputDir Models
```



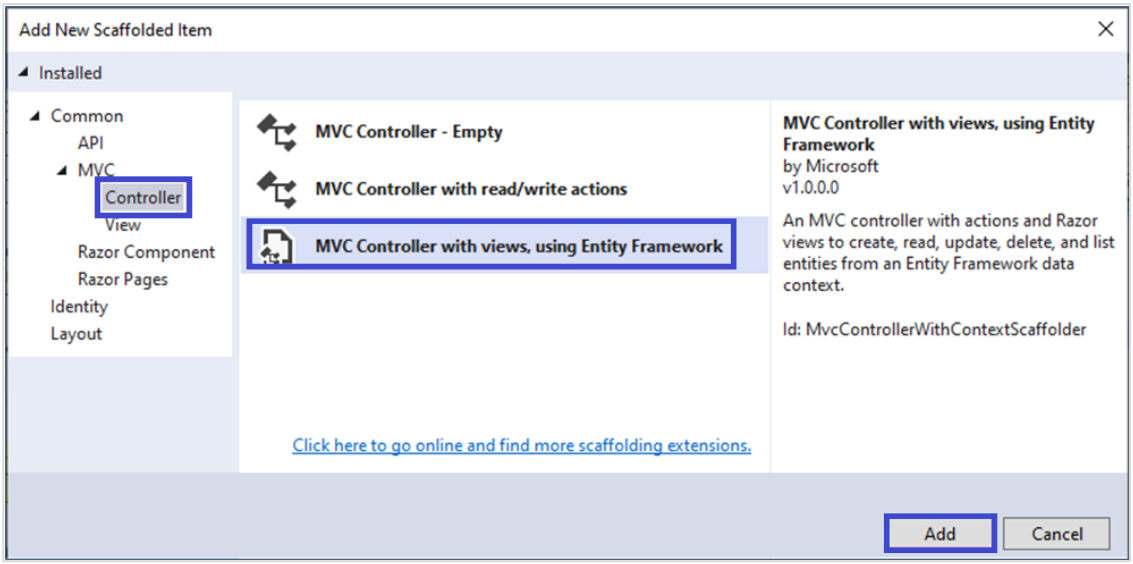
Scaffold Controller with Views

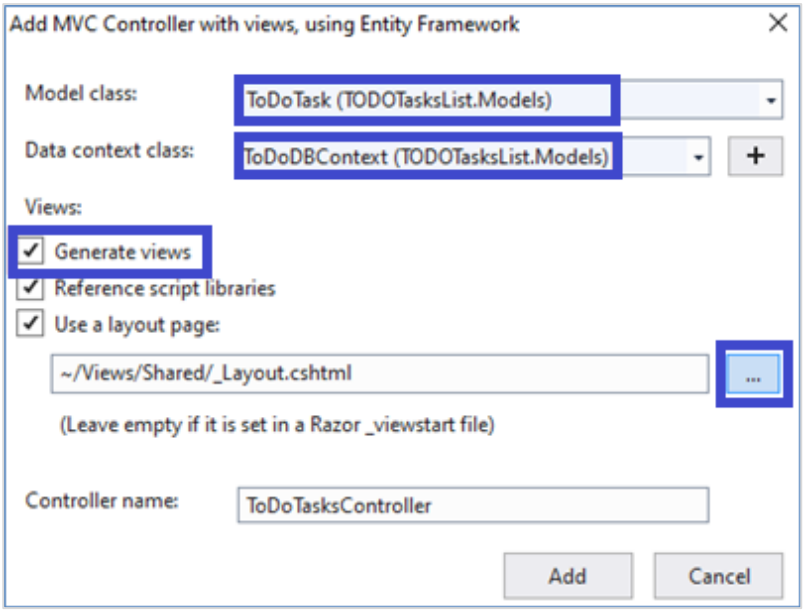
Create an ASP.NET Core MVC Controller for handling data and performing basic CRUD operations.

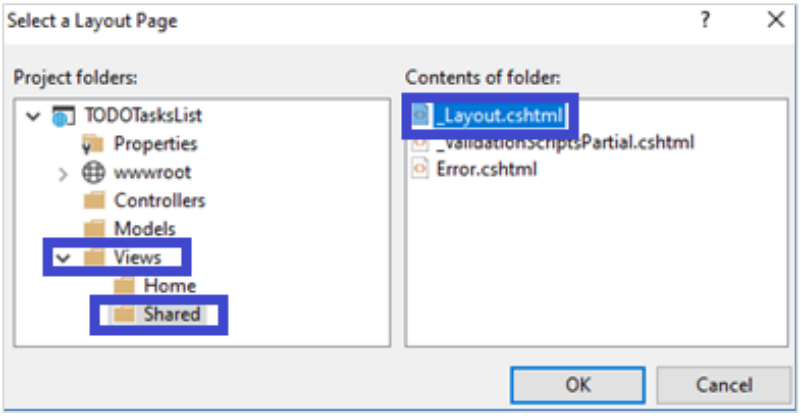
Right-click on the **Controllers folder** in Solution Explorer and select [**Add**] > [**Controller**]

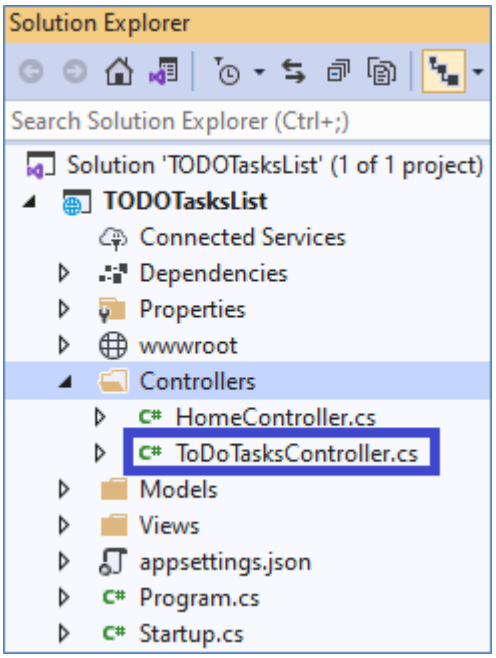
Select **MVC Controller with Views using Entity Framework**.

- Select **`ToDoTasks`** as **Model class**
- **`ToDoDBContext`** as the **Data Context class**
- Tick the **`[Generate Views]`** option
- In the "**Select a Layout Page**", browse through **`Views`** → **`Shared`** → **`_Layout.cshtml`**









Register the DbContext Class in the App Config

Register your configuration class at the **ConfigureServices()** method in **Startup.cs**, by adding:

```
services.AddDbContext<ToDoDBContext>();
```

```
Startup.cs*
TODOTasksList | TODOTasksList.Startup | ConfigureServices(IServiceCollectic
0 references
public void ConfigureServices(IServiceCollection services)
{
    services.AddControllersWithViews();
    services.AddDbContext<ToDoDBContext>();

}
```

Display the "Tasks" Page

To **display the page** in the app, you need to add it to the title page.

In **Solution Explorer** go to: **`Views`** → **Shared** → **`_Layout.cshtml`**.

In the **`<ul class="navbar-nav flex-grow-1">`** add **new `<li>` element**:

```
<li class="nav-item">
<a class="nav-link text-dark" asp-area="" asp-controller="ToDoTasks" asp-
action="Index">ToDo</a>
</li>
```

```
<div class="container">
    <a class="navbar-brand" asp-area="" asp-controller="ToDoTasks" asp-action="Index">TODO List</a>
    <button class="navbar-toggler" type="button" data-toggle="collapse" data-target=".navbar-collapse" aria-control
            aria-expanded="false" aria-label="Toggle navigation">
        <span class="navbar-toggler-icon"></span>
    </button>
    <div class="navbar-collapse collapse d-sm-inline-flex flex-sm-row-reverse">
        <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="ToDoTasks" asp-action="Index">ToDo</a>
            </li>
        </ul>
    </div>
</div>
```

Change the App Details

Change the **title** and **link**. In **`_Layout.cshtml`** change the text of the **first `<a>` element** to **`TODO List`** and the controller to lead to **`ToDoTasks`**. **Delete** the **`<li class="nav-item">`** that gives the **`[Privacy]` button** in the navigation bar.

```
<nav class="navbar navbar-expand-sm navbar-toggleable-sm navbar-light bg-white border-bottom box-shadow mb-3">
    <div class="container">
        <a class="navbar-brand" asp-area="" asp-controller="ToDoTasks" asp-action="Index">TODO List</a>
```

Change the index page. In **Solution Explorer** go to: **`Views`** → **Home** → **`Index.cshtml`**. Change the **paragraph text** to: "You are about to experience my TODO List." and make the **last two words link** which leads to **`TODO Page`**.

```
<div class="text-center">
    <h1 class="display-4">Welcome</h1>
    <p>You are about to experience my <a href="ToDoTasks">TODO List</a>.</p>
</div>
```

Change the **`TODO Page`**. In **Solution Explorer** go to: **`Views`** → **`ToDoTasks`** → **`Index.cshtml`.** Change the heading to "To Do Tasks":

```
@model IEnumerable<TODOTasksList.Models.ToDoTask>

@{
    ViewData["Title"] = "Index";
    Layout = "~/Views/Shared/_Layout.cshtml";
}

<h1>To Do Tasks</h1>
```

Run and Test the App

Now **build** and **run** the application using **[Ctrl] + [F5]**.