Creating the First Page

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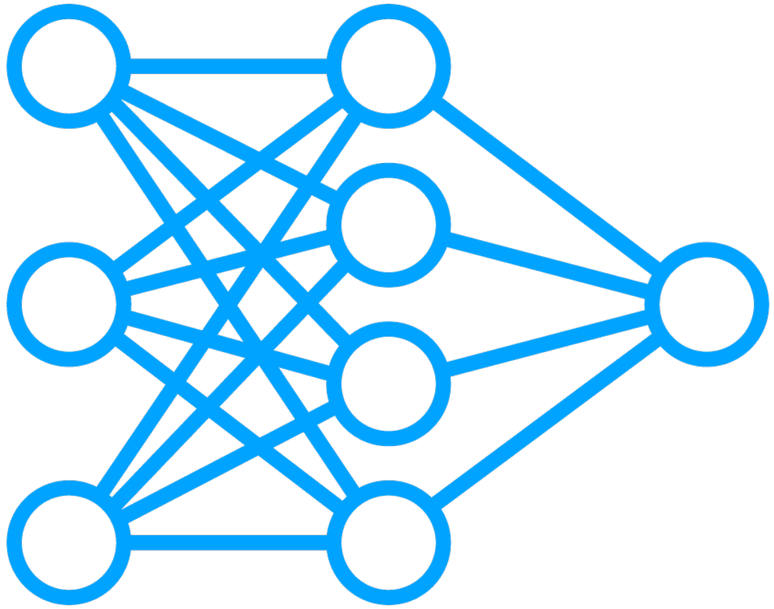
Overview

- Introducing the MVC pattern
- Creating the model and the repository
- Creating the controller
- Adding the view
- Styling the view

Demo

Looking at the page we will create

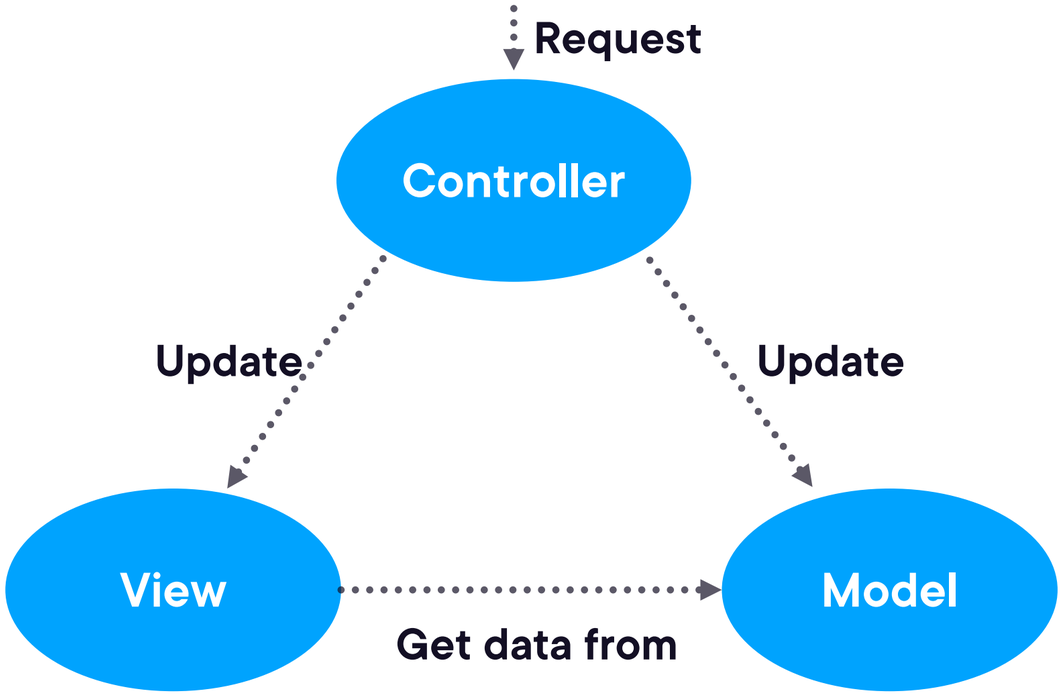
Introducing the MVC Pattern



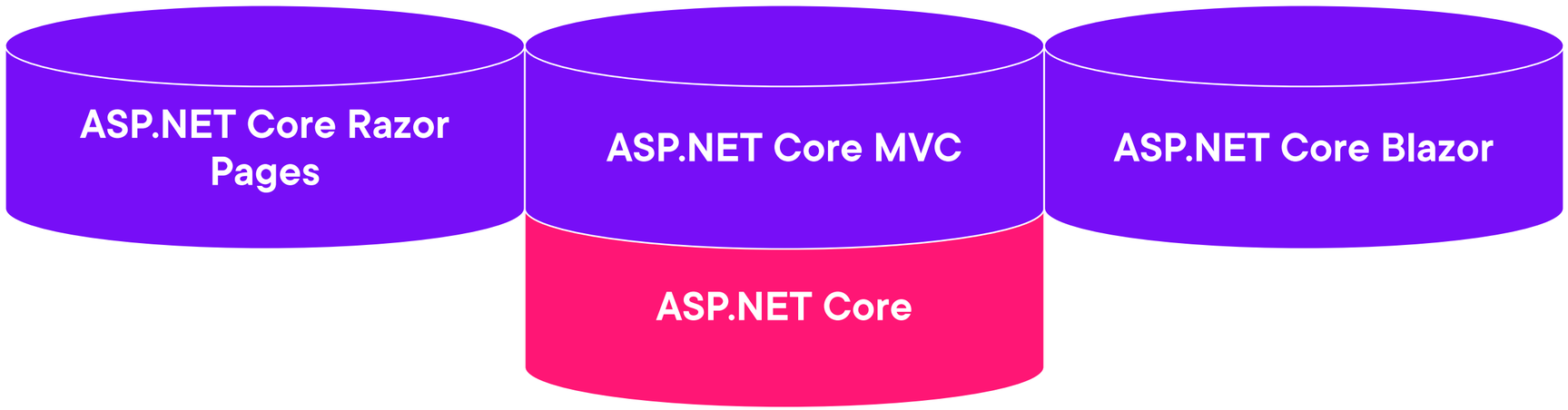
Model – View – Controller

- Common design pattern
- Separation of concerns
- Less dependencies
- Promotes testability and maintainability

The MVC Pattern

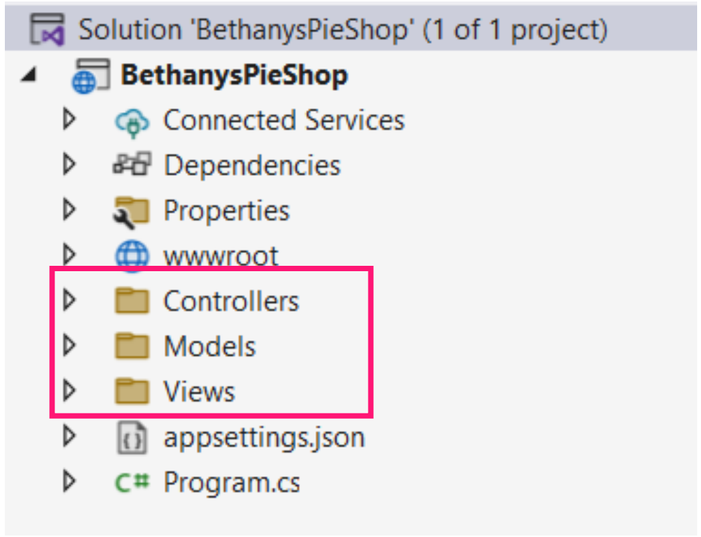


The ASP.NET Core MVC Framework

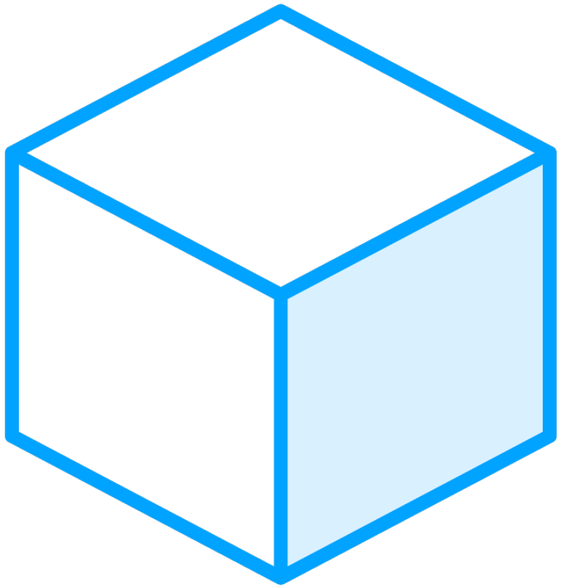


Creating the Model and the Repository

Convention-based Folders



The Model



Domain data & logic to manage data

Simple API

Hides details of managing the data

Sample Model Class

Nullable is used here

```
public class Pie
{
    public int PieId { get; set; }
    public string Name { get; set; }
    public string? ShortDescription { get; set; }
    public string? LongDescription { get; set; }
    public string? AllergyInformation { get; set; }
    public decimal Price { get; set; }
    public string? ImageUrl { get; set; }
    public string? ImageThumbnailUrl { get; set; }
    public bool IsPieOfTheWeek { get; set; }
    public bool InStock { get; set; }
    public int CategoryId { get; set; }
    public Category Category { get; set; }
}
```

The repository allows our code to use objects without knowing how they are persisted.
We will create an interface and its implementation.

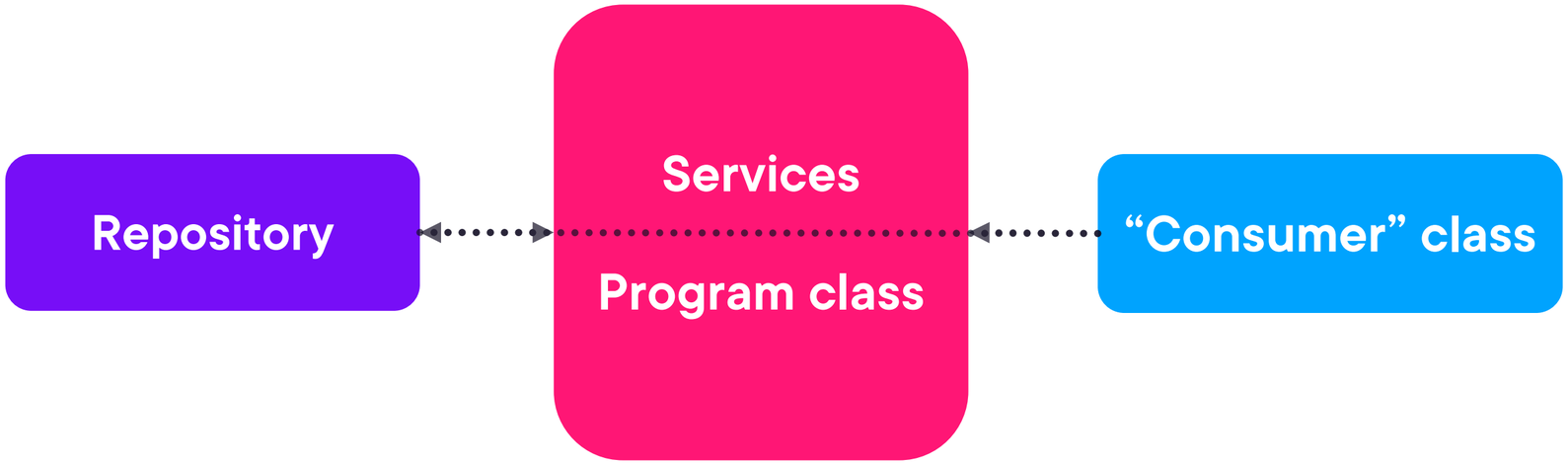
```
public interface IPieRepository
{
    IEnumerable<Pie> AllPies { get; }
    Pie GetPieById(int pieId);
}
```

The IPieRepository Interface

Creating the Implementation

```
public class MockPieRepository : IPieRepository
{
    public IEnumerable<Pie> AllPies
    {
        get { ... }
    }

    public Pie GetPieById(int pieId)
    { ... }
}
```

Registering the Repository



Registering the Repository

Program.cs

```
var builder = WebApplication.CreateBuilder(args);

builder.Services.AddScoped<IPieRepository, MockPieRepository>();
var app = builder.Build();
```

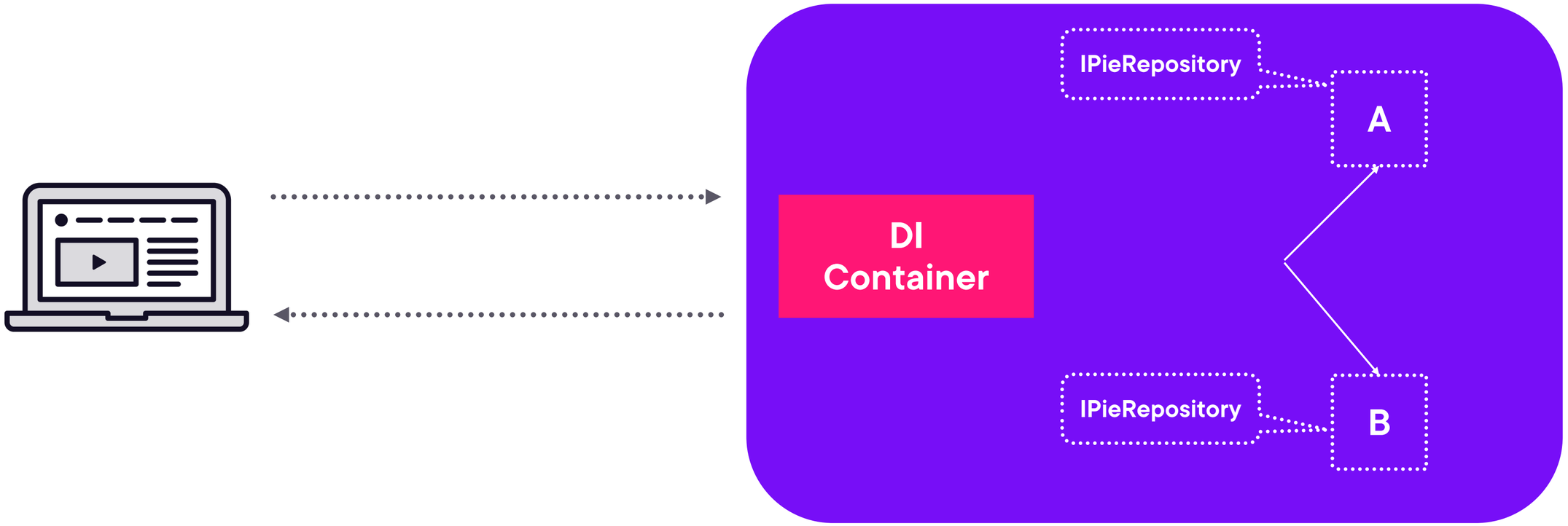
Registering Services

AddTransient

AddSingleton

AddScoped

Understanding AddScoped



```
var builder = WebApplication.CreateBuilder(args);

builder.Services.AddKeyedScoped<IPieRepository, MockPieRepository>("pieRepo");
var app = builder.Build();
```

Using Keyed Services

Demo

Creating the domain

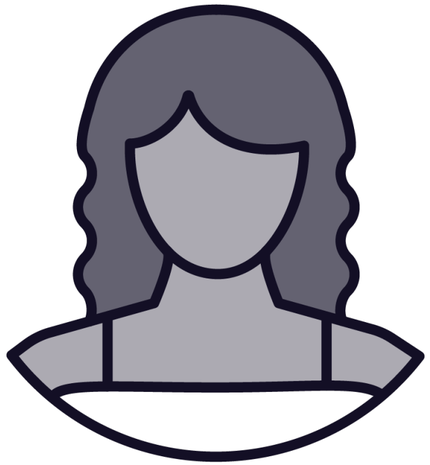
Adding the repository

Registering with the services collection

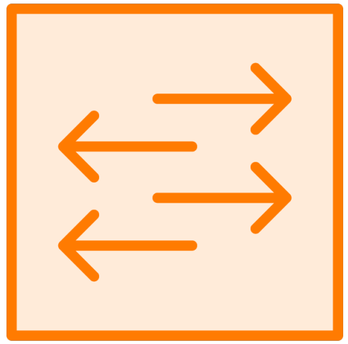
Creating the Controller

The Controller

Central role



Respond to user interaction



Interact with model and select view

No knowledge of data persistence

A Basic Controller

```
public class PieController : Controller
{
    public ViewResult Index()
    {
        return View();
    }
}
```

Action

View to show

A Real Controller

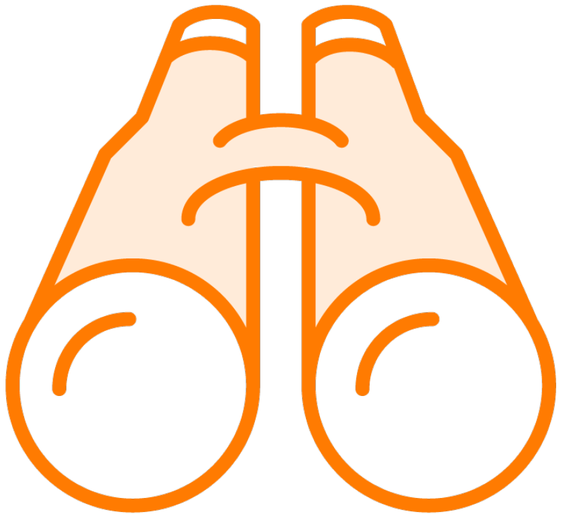
```
public class PieController : Controller
{
    private readonly IPieRepository _pieRepository;

    public PieController(IPieRepository pieRepository)
    {
        _pieRepository = pieRepository;
    }

    public ViewResult List()
    {
        return View(_pieRepository.Pies);
    }
}
```

Demo

Adding the controller

Adding the View

The View



HTML template (*.cshtml)

Use Razor code

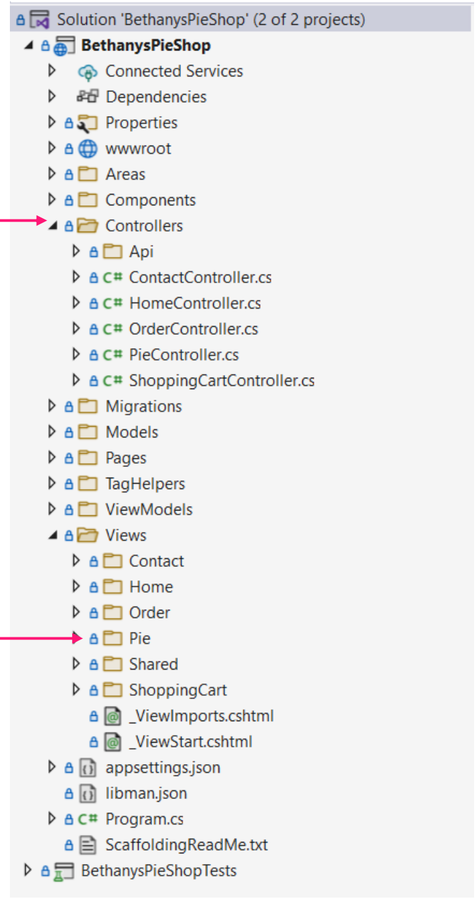
(Almost) no logic

- Conditions, loops
- Add tag helpers and view components

Matching the Controller and Its Views

PieController

Pie folder



Matching the Action With the View

Convention-based approach

```
public class PieController : Controller
{
    public ViewResult Index()
    {
        return View();
    }
}
```

Action

View to show: Index.cshtml

Regular View

```
<!DOCTYPE html>

<html>
  <head>
    <title>Index</title>
  </head>
  <body>
    <div>
      Welcome to Bethany’s Pie Shop
    </div>
  </body>
</html>
```

```
public class PieController : Controller
{
    public ViewResult Index()
    {
        ViewBag.Message = "Welcome to Bethany's Pie Shop";
        return View();
    }
}
```

Using ViewBag from the Controller

Dynamic Content Using ViewBag

```
<!DOCTYPE html>

<html>
  <head>
    <title>Index</title>
  </head>
  <body>
    <div>
      @ViewBag.Message
    </div>
  </body>
</html>
```

Razor is a markup syntax that allows us to include C# functionality in our web pages.

```
@ViewBag.Message

<p>@DateTime.Now</p>

@{

  var message = "Welcome to Bethany's
   Pie Shop";

}


<h3>@message</h3>
```

- Using ViewBag in Razor
- Displaying a date in Razor code
- Using a code block

```
public class PieController : Controller
{
    public ViewResult List()
    {
        return View(_pieRepository.AllPies);
    }
}
```

Calling a Strongly-typed View

A Strongly-typed View

```
@model IEnumerable<Pie>
<html>
  <body>
    <div>
      @foreach (var pie in Model)
      {
        <div>
          <h2>@pie.Name</h2>
          <h3>@pie.Price.ToString("c")</h3>
          <h4>@pie.Category.CategoryName</h4>
        </div>
      }
    </div>
  </body>
</html>
```

Demo

Creating the first view

```
public class PieListViewModel
{
    public IEnumerable<Pie>? Pies { get; set; }
    public string? CurrentCategory { get; set; }
}
```

Introducing the View Model

Demo

Using a View Model

Using the _Layout.cshtml

Template

Lives in Shared folder

Searched by default

One or more

View can specify

_Layout.cshtml

```
<!DOCTYPE html>
<html>
    <head>
        <title>Bethany's Pie Shop</title>
    </head>
    <body>
        <div>
            @RenderBody()
        </div>
    </body>
</html>
```

Replaced with view

```
@{
    Layout = "_Layout";
}

@model PieListViewModel
```

View Can Specify the Layout

```
@{
    Layout = "_Layout";
}
```

_ViewStart.cshtml

Contains logic shared by set of views
Executed automatically

```
@using BethanysPieShop.Models
```

View Imports

Group commonly used using statements

Demo

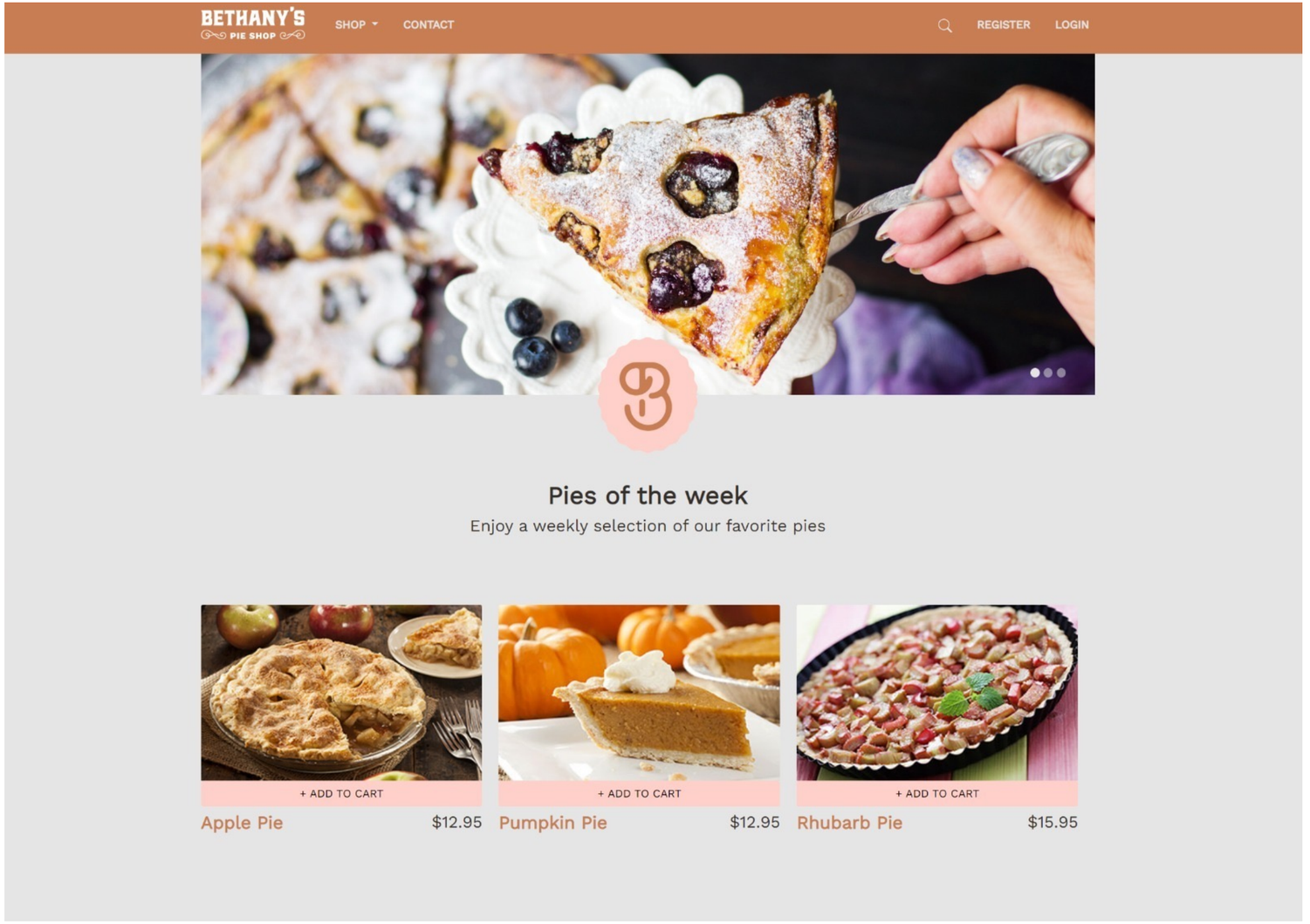
Adding a layout template

Creating the ViewStart file

Adding the ViewImports file

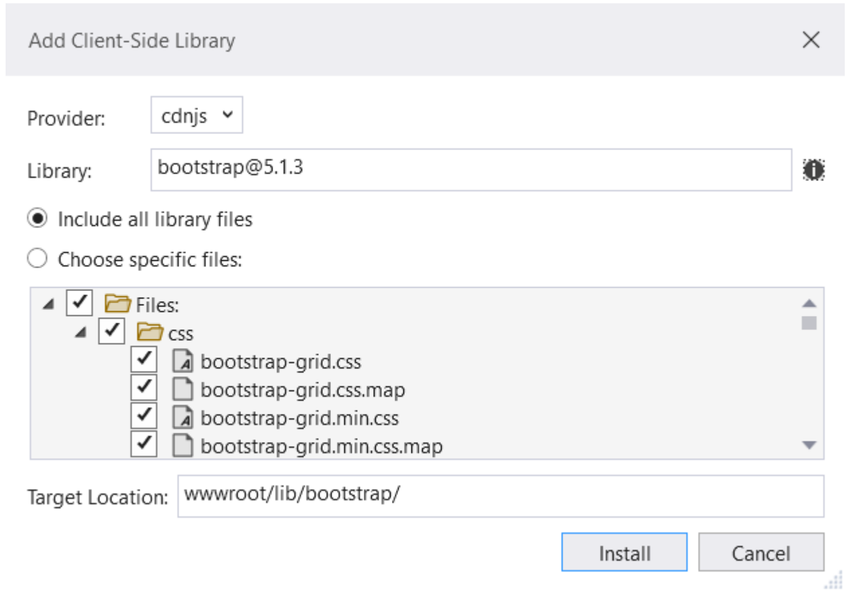
Styling the View

Where We Need to Get



Adding Client-side Libraries

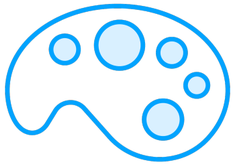
```
{
  "version": "1.0",
  "defaultProvider": "cdnjs",
  "libraries": [
    {
      "library": "bootstrap@5.1.3",
      "destination": "wwwroot/lib/bootstrap/"
    }
  ]
}
```



Demo

Bringing in Bootstrap through Library Manager

Introducing CSS Isolation



Styles specific for a page

Helps with avoiding style name conflicts

.cshtml.css

Demo

Adding CSS isolation

Summary

MVC ensures good separation of concerns

- M
- V
- C

Models wrap data

Views are templates that show model data

Controllers direct the flow

Up Next:

Accessing data in a database