

# From Zero to MVC

One of the most popular methods for creating web application these days is Microsoft's .NET 6 and the Model-View-Controller (MVC) design pattern. Using the MVC pattern makes your code reusable, testable and flexible. In this course you use .NET 6, MVC and Razor markup to build a web application. This course assumes you have little to no experience using MVC and .NET 6 and want to learn to build web applications using this technology. This course walks you step-by-step through building a business application using the MVC Razor markup in .NET 6.

Throughout this course you learn the basics of the MVC design pattern and navigating from page to page. Tag helpers are an easy way to add great functionality to your web pages. Passing data from one page to the next, or from a controller to a view can be accomplished using a few different mechanisms and each is explored. Exception handling and logging are essential in today's applications and MVC has an easy way to deal with both.

After the basics of MVC have been explored, you start to build a list of product data and learn how to build forms for user input. Data validation can be accomplished using Data Annotations, and you learn how to display validation messages to the user. Finally, you build a full CRUD page so a user can retrieve, insert, update, and delete data in a SQL Server table.

## Learning Objectives

Getting started with .NET 6 MVC and Razor markup

Learn to manage state, catch exceptions and perform logging

Work with tag helpers and the HTML helper class

Displaying, validating, and modifying data in a database

## Prerequisites

We assume you have a good knowledge of C# and the .NET Framework. You must have access to a version of Visual Studio.

## Course Length

4 days

## Module 1: Basics of MVC

- Create a new MVC project
- Overall program flow
- Folders and files
- Using `@Html.ActionLink` helper
- Using `@Url.Action` helper
- Anchor Tag Helpers
- Partial pages
- CSS style sheets
- Adding page head styles
- Adding JavaScript
- Retrieving configuration settings from `appsettings.json`
- Modify the overall layout of your website

## Module 2: Displaying Lists of Data

- Add a data layer class library
- Add a view model class library
- Display an unordered list
- Display an ordered list
- Build a `<select>` list
- Use the `@Html.DropDownList` HTML helper
- Use the Select Tag Helper

## Module 3: Working with HTML Forms

- Create a product input form using `@Html` Helpers
- Create a product input form using Input Tag Helpers
- Add data annotations for displaying labels
- Cancel out of a form

Work with related data in a <select> list

Working with radio buttons

Working with check boxes

## Module 4: Validating Data

Add data annotations for validation (required, string length, datatype, range, etc.)

Bind/display validation messages using asp-validation-for

Use the validation summary tag helper

Create your own server-side custom validation attribute

Using the IValidatableObject interface for validation

## Module 5: Passing Data

Using ViewData

Using a ViewBag

Using TempData

Passing data as a query string

## Module 6: State Management

Working with the Session object

Create your own session class wrapper

Send and retrieve Cookies

Working with the Cache object

Create your own state class and use dependency injection

## Module 7: Exception Handling

Built-in global exception handling

- Add a custom development page for retrieving exception information
- Handle 404 status codes
- Handle status code errors with redirect
- Handle status code errors with re-execute

## Module 8: Working with HTML Tables

- Build a table of product data
- Searching product data
- Searching using the MVVM design pattern
- Sorting columns in a table
- Paging table data

## Module 9: WebGrid

- Using the WebGrid control
- Styling the grid
- Styling the pager
- Displaying specific columns
- Formatting columns

## Module 10: Paging Table Data

- Creating a pager
- Using a data-driven pager
- Hooking up our pager to a table
- Paging and sorting table data

## Module 11: Drop Downs and Ajax

- One to many Drop-downs with Ajax
- Setting up the API call
- Working with the JSON data that is returned

## Module 12: Html Helpers

- Creating your own HTML helpers
- Emit bootstrap styles with controls
- Creating radio buttons and check boxes quickly and easily

## Module 13: Using the MVVM Design Pattern

- Why use the MVVM design pattern
- Creating a view model base class
- Using hidden fields
- Binding data
- Using custom data- attributes to communicate to view model

## Module 14: Security

- Authentication
- Getting started with Identity
- Registration of users
- Login
- Logout
- Working with Roles
- Securing pages

## Module 15: File Uploading

Making the `<input type="file">` look good

Uploading a single file

Restricting file size

Uploading large files

Exception handling

Creating a thumbnail

Storing the file on the file system

Storing the file in SQL Server

Multiple file uploads

## Module 16: Alternatives to HTML Tables

See bad examples of tables on mobile devices

Eliminate table columns

Use bootstrap panels or cards

Use List groups

Use carousels

Use collapsible areas

Detect browser and switch your display