MVC Architecture

Lesson Objectives

- *MVC architectural pattern overview*
- *ASP.NET MVC Folder Structure*
- *Controllers in ASP.NET MVC Application*
- *Views in ASP.NET MVC*
- *Models in ASP.NET MVC*

Section 1

MVC ARCHITECTURAL PATTERN OVERVIEW

What is MVC?

- MVC is an architectural software design pattern which is used for developing interactive applications where there would be user interaction involved and based on the user interaction some event handling has occurred.

What is MVC?

- It is not only used for web-based applications but it can also be used for Desktop or mobile based application where there are user interactions involved.

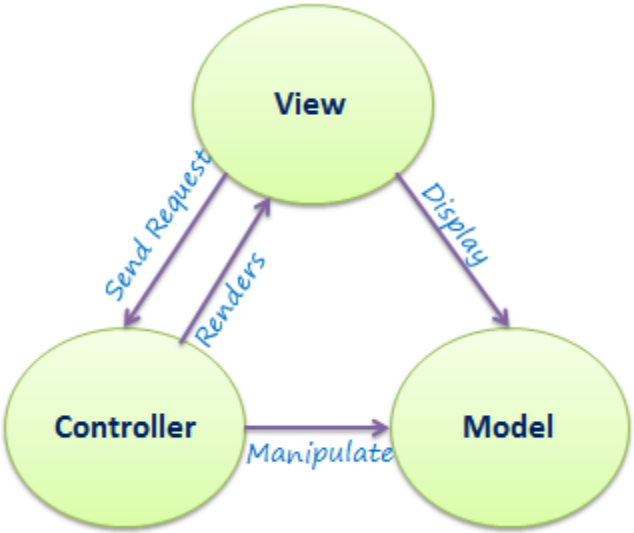
What is MVC?

- MVC design pattern was introduced in the 1970s that basically divides an application into 3 major components such as Model, View, and Controller.

What is MVC?

- The main objective of the MVC design pattern is the separation of concerns, it means the domain model and business logic are separated from the user interface (i.e. view). Thus, maintenance and testing of the application become simpler and easier.

MVC Architecture



- **Model**:
  - ✓ Represent shape of the data and business logic.
  - ✓ Maintain the data of the application.
  - ✓ Retrieve and store model state in a database.
- **View**:
  - ✓ Is a user interface.
  - ✓ Display data using model to the user
  - ✓ Enable use to modify the data.
- **Controller**:
  - ✓ Handle the user request.
  - ✓ Render the appropriate view with the model data as a response.

ASP.NET MVC

- Is an open source web application development framework provided by Microsoft which is built on top of the .NET Framework.
- Use to develop web applications which provide a clean separation of code.
- Is the most extensible and customizable framework provided by Microsoft.

- **ASP.NET MVC** is a **Framework**

whereas

- **MVC** is a **Design Pattern**.

Advantages of using ASP.NET MVC

- ASP.NET MVC Framework divides the application into three main aspects such as Model, View, and Controller which make it easier to manage the application complexity.
- Components are designed to be extensible and pluggable and therefore they are easily replaced or customized.

Advantages of using ASP.NET MVC

- Each developer based on his expertise or experience can work on different parts of the application.
- We can use most of the ASP.NET features such as authentication and authorization scenarios, membership and roles, caching, session and many more

Advantages of using ASP.NET MVC

- Supports a powerful URL routing mechanism (i.e. attribute routing) which helps to build a more user-friendly and SEO friendly URLs for our application.
- It is lightweight because it does not use view state or server-based forms or server controls.

Advantages of using ASP.NET MVC

- Clean HTML and easy integration with javascript and jQuery.
- It provides better support for test-driven development (TDD)

Section 2

ASP.NET MVC FOLDER STRUCTURE

ASP.NET MVC Application

- Development Environment
  - ✓ Visual Studio 2013 or higher
  - ✓ .NET framework 4.5 or higher
- MVC application
  - ✓ Use **ASP.NET Web Application (.NET Framework)** template

MVC Folder Structure

- Controllers
  - ✓ contains class files for the controllers
  - ✓ name of all controller files to end with "Controller“
  - ✓ Controllers handles users' request and returns a response.

MVC Folder Structure

- Models
  - ✓ contains model class files.
  - ✓ Typically model class includes public properties, which will be used by application to hold and manipulate application data.

MVC Folder Structure

- Views
  - ✓ contains html files for the application.
  - ✓ Typically view file is a .cshtml file where you write html and C#
  - ✓ Views folder includes separate folder for each controllers.
  - ✓ Shared folder contains all the views which will be shared among different controllers.

MVC Folder Structure

- App_Data
  - ✓ can contain application data files like LocalDB, .mdf files, xml files and other data related files.
  - ✓ IIS will never serve files from App_Data folder.

MVC Folder Structure

- App_Start
  - ✓ can contain class files which will be executed when the application starts.
  - ✓ Typically, these would be config files like AuthConfig.cs, BundleConfig.cs, FilterConfig.cs, RouteConfig.cs etc.
  - ✓ MVC 5 includes BundleConfig.cs, FilterConfig.cs and RouteConfig.cs by default.

MVC Folder Structure

- Content
  - ✓ contains static files like css files, images and icons files.
  - ✓ MVC 5 application includes bootstrap.css, bootstrap.min.css and Site.css by default.

MVC Folder Structure

- Scripts
  - ✓ contains JavaScript or VBScript files for the application.
  - ✓ MVC 5 includes javascript files for bootstrap, jquery 1.10 and modernizer by default.

MVC Folder Structure

- Configuration files
  - ✓ Global.asax: to write code that runs in response to application level events
  - ✓ Packages.config: managed by NuGet to keep track of what packages and versions you have installed in the application
  - ✓ Web.config: contains application level configurations.

Section 3

MODEL, VIEW, CONTROLLER IN ASP.NET MVC

Controller

- Is basically a C# class which is inherited from the **System.Web.Mvc.Controller**.
- Is the component which will interact with both Models and Views.
- Contains action methods which are responsible for handling the incoming URL and control flow logic
- Can access and use the model class to pass the data to the views.

View

- In ASP.NET MVC is a cshtml page.
- Contains all page specific HTML generation and formatting code.
- A request to a view can only be made from a controller's action method.
- The one and only responsibility of a view to render the domain data.

Model

- In ASP.NET MVC is basically a C# class to represent the data as well as to manage the data.
- Is accessible by both controller and view.
- Can be used to pass data from controller action methods to a view.
- Can also be used by a view to display data in a page (HTML output).

Thank you