Module 1: Exploring ASP.NET Core

The goal of this module is to outline to the students the components of the Microsoft Web Technologies stack, which can be used to host a completed web application. Students will also learn about ASP.NET CORE and be introduced to the Razor Views and Razor pages, and MVC programming models.

Lessons

- Overview of Microsoft Web Technologies
- Overview of ASP.NET Core
- Introduction to ASP.NET Core MVC 6

Lab : Exploring ASP.NET Core

- Exploring a Dot Net Core Framework
- Exploring a Razor Pages
- Exploring a Razor Views
- Exploring an Dot Net Core Application

Module 2: Designing ASP.NET Core MVC 6 Web Applications

The goal of this module is to introduce students to the typical design process that architects must complete when they plan an MVC 6 application. At this stage in the design process, MVC 6 has been selected as the most appropriate programming model, but the details of the application, such as the overall architecture, Controllers, Views, Models, and routes to create, have not been fixed. How to plan such details is shown during this module.

Lessons

- Planning in the Project Design Phase
- Designing Models, Controllers, and Views

Lab : Designing ASP.NET MVC 6 Web Applications

- Planning Model Classes
- Planning Controllers
- Planning Views
- Basics of Services
- Basics of Dot Net Core MiddleWare
- Architecting an MVC Web Application

Module 3: Developing ASP.NET MVC 6 Models

The goal of this module is to enable the students to create Models within an MVC application that implement the business logic necessary to satisfy business requirements. The module also describes how to implement a connection to a database, or alternative data store, using the Entity Framework Core.

Lessons

- Creating MVC Models
- Working with Data

Lab : Developing ASP.NET MVC 6 Models

- Creating an MVC Project and Adding a Model
- Adding Properties to MVC Models
- Using Data Annotations in Entity Framework Core Models
- Creating a New Microsoft Azure SQL Database

Module 4: Developing ASP.NET MVC 6 Controllers

The goal of this module is to enable students to add Controllers to MVC applications and to implement actions that respond to user input and other events. The students will learn how Controllers relate to Models and how to implement Controller actions that define the View used to display or edit data. This module also covers how to write action filters that run code before or after multiple actions in the Controller. The students will learn about situations when action filters are useful.

Lessons

- Writing Controllers and Actions
- Writing Async Action
- Writing API in Controllers
- Writing Action Filters

Lab : Developing ASP.NET MVC 6 Controllers

- Adding an MVC Controller and Writing the Actions
- Optional—Writing the Action Filters in a Controller
- Writing Async Action with TASK
- Writing API actions

Module 5: Developing ASP.NET MVC 6 Views and Pages

The goal of this module is to describe the role of Views in an MVC web application and enable users to create and code them. The syntax of a Razor View is of critical importance for students to understand because it defines both the layout and the functionality of the data display. TAG Helpers will also be discussed in detail and common Helpers. Reusing code by defining Partial Views and Razor Pages will be discussed as well.
Lessons

- Creating Views with Razor Syntax
- Using TAG Helpers
- Re-using Code in Views

Lab : Developing ASP.NET MVC 6 Views and Pages

- Creating Views with Razor Syntax
- Using TAG Helpers
- Re-using Code in Views
- Accessing data in Razor Views
- Binding of Razor Views and Pages

Module 6: Testing and Debugging ASP.NET Core MVC 6 Web Applications

The goal of this module is to enable students to increase the resilience and quality of an application by locating and correcting code errors, bugs, and other unexpected results. MVC 6 applications are well suited to unit testing techniques and these techniques ensure a high quality of code by systematically testing the functionality of each small component. In addition the debugging tools and exception handling available in Visual Studio will be explained.
Lessons

- XUnit Testing MVC Components
- Implementing an Exception Handling Strategy

Lab : Testing and Debugging ASP.NET Core MVC 6 Web Applications

- Performing XUnit Tests
- Optional – Configuring Exception Handling

Module 7: ASP.NET Core MVC 6 Middleware

The goal of this module is to enable students to structure a web application with custom and pre-defined middleware as well as understand execution cycle with middleware execution.
Lessons

- Creating Custom Middleware
- Middleware Execution
- Different methods to control middleware execution

Lab : Structuring ASP.NET MVC 5 Web Applications

- Creating Custom Middleware
- Middleware Execution
- Different methods to control middleware execution
- Middleware sequencing concerns
- Terminating middleware
- Pass-through middleware
- Middleware in Startup
- Moving middleware into its own class
- Using built-in middleware in ASP.NET Core