Advanced MVC: Building Web Applications Using the ASP.NET Web API with VB.NET

Duration: 35 hours

Prerequisites: Prior experience building ASP.NET MVC web sites and programming with VB.NET.

Course Description: This course provides students with the skills needed to create sophisticated web applications using advanced features of ASP.NET MVC, the Entity Framework, Web API, and the popular JavaScript libraries jQuery, jQuery UI, and Bootstrap. Students will build several ASP.NET MVC web applications using Visual Studio to reinforce the skills they learn.

The course begins with an overview of ASP.NET MVC for experienced programmers and then covers the fundamentals of responsive website design. Students then learn how to use Bootstrap with MVC to make a web site responsive on devices from large desktop displays to small mobile devices.

Students will learn how to integrate jQuery into an MVC application to provide dynamic client-side behavior. They will then learn how to use jQuery's Ajax features to build more interactive MVC applications. Students will also learn how to use jQuery UI widgets to provide a more sophisticated user interface for their MVC views.

The course covers use of the Entity Framework to provide a data access layer for an MVC application. The Database First strategy is briefly examined before thorough coverage of the more configurable Code First strategy. Students will also learn how to use the Web API to build APIs that expose services and data via HTTP. These APIs can be used by a diverse set of clients including browsers, desktop applications and mobile devices.

Students Will Learn

- Generating Custom HTML Using Html Helpers and Partial Views
- Responsive MVC Applications Using Bootstrap
- Using jQuery with MVC
- Using jQuery UI Widgets with MVC
- Using Ajax to Build Interactive MVC Applications
- MVC and Routing
- Entity Framework Database First
- Entity Framework Code First Design
- Working with ASP.NET Web API
- Building Single Page Applications with ASP.NET MVC, Web API and AngularJS
- Working with NuGet

Overview

Introduction to .NET

- Overview of the .NET Framework
- How .NET is Different from Traditional Programming
- Common Language Runtime (CLR)

Introduction to Visual Studio

- Creating a Project
- Using the Code Editor
- Correcting Syntax Errors

- Common Language Specification (CLS)
- Common Type System (CTS)
- .NET Assemblies
- Microsoft Intermediate Language (CIL)
- .NET Namespaces
- .NET Framework Class Library

Language Fundamentals

- VB.NET Program Structure
- Defining Namespaces
- Understanding VB.NET Data Types
- Defining Variables and Constants
- Comparing Value Types vs. Reference Types
- Working with Operators and Expressions
- Performing Type Conversions
- Using Console I/O
- Formatting Numbers, Date and Times

Procedures and Parameters

- Subroutines vs. Functions
- Defining Shared and Instance Methods
- Passing Parameters by value and by reference
- Overloading Methods
- Using Variable Length Parameter Lists

Collections

- Defining and Using Arrays
- Understanding `System.Array`
- .NET Collections vs Generic Collections
- Working with Lists
- Working with Dictionaries
- Using LINQ to Objects

- Setting Project Properties
- Adding References
- Compiling a Program
- Running a Program
- Debugging a Program
- Using the MSDN (Help)

Conditionals and Looping

- `If/Else`
- `Select Case`
- `Do/Loop`
- `While`
- `For`
- `For Each`

Exception Handling

- What are Exceptions?
- .NET Exception Hierarchy
- Catching Exceptions
- Throwing Exceptions
- Managing Resources with Finally

Object-Oriented Programming

- Overview of Object-Oriented Programming
- Building Classes
- Defining Properties
- Using Auto-Implemented Properties
- Defining Methods
- Understanding Constructors
- Extending .NET Classes via Inheritance
- Defining and Implementing Interfaces
- Understanding the Role of Interfaces in .NET

Overview of ASP.NET MVC

- Overview of Model-View-Controller Design Pattern
- ASP.NET MVC Application Architecture
- Understanding the MVC Execution Process
- Building an ASP.NET MVC Application Using Visual Studio
- Visual Studio MVC Project Templates
- Using a `web.config` File

Developing Views

- Creating Views
- Understanding View Engines
- Using the ASMX View Engine
- Using the Razor View Engines

Developing Controllers

- Creating Controllers
- Defining Action Methods
- Mapping URLs to Action Methods
- Understanding `ActionResult` Types
- Working with `ViewData` and `ViewBag`

Developing Models

- Creating Model Classes
- Working with the Entity Framework
- Working with LINQ to SQL
- Using Scaffolding

Using HTML Helpers
- Adding Validation
- Working with Strongly-Typed Views

Routing Control

- Understanding Routing in ASP.NET MVC
- Defining URL Routes
- Registering Routes
- Adding Constraints to Routes
- Debugging Routes

MVC Unit Testing

- Test-Driven Development
- Designing Test Cases
- Creating Unit Tests
- Using MS Test

Integrating ASP.NET MVC and Web Forms

- What are Web Forms
- Using Web Forms in an MVC Application
- Using MVC in a Web Form Application
- Linking to MVC Actions from Web Forms

Securing MVC Applications

- ASP.NET Security
- Windows vs Forms Authentication
- Configuring Authentication
- Configuring Authorization
- Building a Secure Web Site
- Defending against Attacks
    - Cross-site Scripting
    - Session Hijacking
    - SQL Injection
    - Input Forgery

Deploying ASP.NET MVC Applications

- Understanding Deployment Issues
- Required MVC Assemblies
- Server Requirements
- Configuring an ASP.NET Application for Deployment
- Using XCOPY Deployment
- Using WebDeploy

Related Bootcamp

Track	Duration	Price
Microsoft .NET Developer: VB.NET	147 hours	$4,475

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