

MCSA: Web Applications

This Training Program prepares and enables learners to Pass Microsoft “**MCSA Web Applications Exams**”

1. MCSA: Web Applications / Exam 70-480 (Programming in HTML5 with JavaScript and CSS3).
2. MCSA: Web Applications / Exam 70-486 (Developing ASP.NET MVC Web Applications).

About this course

This course helps students gain basic HTML5/CSS3/JavaScript programming skills. which is an entry point into both the Web application and Windows Store apps training paths. Then students will learn to develop advanced ASP.NET MVC applications using .NET Framework 4.5 tools and technologies.

Course Outline:

Programming in HTML5 with JavaScript and CSS3

Module 1: Overview of HTML and CSS

This module provides an overview of HTML and CSS, and describes how to use Visual Studio 2012 to build a Web application.

Lessons

- Overview of HTML
- Overview of CSS
- Creating a Web Application by Using Visual Studio 2012

Module 2: Creating and Styling HTML5 Pages

This module describes the new features of HTML5, and explains how to create and style HTML5 pages.

Lessons

- Creating an HTML5 Page
- Styling an HTML5 Page

Module 3: Introduction to JavaScript

This module provides an introduction to the JavaScript language, and shows how to use JavaScript to add interactivity to HTML5 pages.

Lessons

- Overview of JavaScript Syntax
- Programming the HTML DOM with JavaScript
- Introduction to jQuery

Module 4: Creating Forms to Collect Data and Validate User Input

This module describes the new input types available with HTML5, and explains how to create forms to collect and validate user input by using the new HTML5 attributes and JavaScript code.

Lessons

- Overview of Forms and Input Types
- Validating User Input by Using HTML5 Attributes
- Validating User Input by Using JavaScript

Module 5: Communicating with a Remote Data Source

This module describes how to send and receive data to and from a remote data source by using an XMLHttpRequest object and by performing jQuery AJAX operations.

Lessons

- Sending and Receiving Data by Using XMLHttpRequest
- Sending and Receiving Data by Using jQuery AJAX operations

Module 6: Styling HTML5 by Using CSS3

This module describes how to style HTML5 pages and elements by using the new features available in CSS3.

Lessons

- Styling Text
- Styling Block Elements
- CSS3 Selectors
- Enhancing Graphical Effects by Using CSS3

Module 7: Creating Objects and Methods by Using JavaScript

This module explains how to write well-structured and easily-maintainable JavaScript code, and how to apply object-oriented principles to JavaScript code in a Web application.

Lessons

- Writing Well-Structured JavaScript
- Creating Custom Objects
- Extending Objects

Module 8: Creating Interactive Pages using HTML5 APIs

This module describes how to use some common HTML5 APIs to add interactive features to a Web application. This module also explains how to debug and profile a Web application.

Lessons

- Interacting with Files
- Incorporating Multimedia
- Reacting to Browser Location and Context
- Debugging and Profiling a Web Application

Module 9: Adding Offline Support to Web Applications

This module describes how to add offline support to a Web application, to enable the application to continue functioning in a user's browser even if the browser is disconnected from the network.

Lessons

- Reading and Writing Data Locally
- Adding Offline Support by Using the Application Cache

Module 10: Implementing an Adaptive User Interface

This module describes how to create HTML5 pages that can dynamically detect and adapt to different devices and form factors.

Lessons

- Supporting Multiple Form Factors
- Creating an Adaptive User Interface

Module 11: Creating Advanced Graphics

This module describes how to create advanced graphics for an HTML5 Web application by using a Canvas element, and by using Scalable Vector Graphics.

Lessons

- Creating Interactive Graphics by Using Scalable Vector Graphics
- Programmatically Drawing Graphics by Using a Canvas

Module 12: Animating the User Interface

This module describes how to enhance the user experience in an HTML5 Web application by adding animations.

Lessons

- Applying CSS Transitions
- Transforming Elements
- Applying CSS Key-frame Animations

Module 13: Implementing Real-Time Communications by Using Web Sockets

This module explains how to use Web Sockets to transmit and receive data between an HTML5 Web application and a server.

Lessons

- Introduction to Web Sockets
- Sending and Receiving Data by Using Web Sockets

Module 14: Creating a Web Worker Process

This module describes how to use Web Worker Processes to perform long-running operations asynchronously and improve the responsiveness of an HTML5 Web application.

Lessons

- Introduction to Web Workers
- Performing Asynchronous Processing by Using a Web Worker

Developing ASP.NET MVC 4 Web Applications

Module 1: Exploring ASP.NET MVC4

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 4.5 and be introduced to the web forms, web pages, and MVC programming models. Finally, they will see an overview of ASP.NET MVC 4, including new features and configuration.

Lessons

- Overview of Microsoft Web Technologies
- Overview of ASP.NET 4.5
- Introduction to ASP.NET MVC 4

Module 2: Designing ASP.NET MVC 4 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 4 application. At this stage in the design process, MVC 4 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

Module 3: Developing ASP.NET MVC 4 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 and LINQ.

Lessons

- Creating MVC Models
- Working with Data

Module 4: Developing ASP.NET MVC 4 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 Action Filters

Module 5: Developing ASP.NET MVC 4 Views

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. HTML Helpers will also be discussed in detail and common Helpers, such as `Html.ActionLink()` and `Html.EditorFor()`, will be described. Reusing code by defining Partial Views and Razor Helpers will be discussed as well.

Lessons

- Creating Views with Razor Syntax
- Using HTML Helpers
- Reusing Code in Views

Module 6: Testing and Debugging ASP.NET MVC 4 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 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

- Unit Testing MVC Components
- Implementing an Exception Handling Strategy

Module 7: Structuring ASP.NET MVC 4 Web Applications

The goal of this module is to enable students to structure a web application in such a way that users can rapidly locate the information they need. Two aspects of the design are emphasized: the URLs presented in the browser address bar should be understandable and can be controlled by adding routes to the ASP.NET Routing Engine, and the navigation controls, such as menus and breadcrumb trails, should present the most relevant links to frequently read pages. Search Engine Optimization is important throughout this module.

Lessons

- Analyzing Information Architecture
- Configuring Routes
- Creating a Navigation Structure

Module 8: Applying Styles to ASP.NET MVC 4 Web Applications

The goal of this module is to explore how students can impose a consistent look and feel to an MVC application and share other common components, such as headers and footers, between all Views. Besides describing CSS styles and template views, the module will discuss how to migrate a look and feel created by a web designer into an MVC application. Techniques for adapting the display of a site for small screens and mobile devices will also be introduced.

Lessons

- Using Template Views
- Applying CSS to an MVC Application
- Creating an Adaptive User Interface

Module 9: Building Responsive Pages in ASP.NET MVC 4 Web Applications

The goal of this module is to describe to the students how partial page updates and caching can optimize the responsiveness of a web application. Students will see how to make use of AJAX helpers and partial views to update small portions of a page instead of refreshing the entire page. The module also covers the different caches developers can use to store rendered pages and discusses how to configure caching for maximum performance.

Lessons

- Using AJAX and Partial Page Updates
- Implementing a Caching Strategy

Module 10: Using JavaScript and jQuery for Responsive MVC 4 Web Applications

The goal of this module is to teach the students techniques that run code on the browser. This approach can increase the responsiveness of the application because a rendered page can respond to a user action without reloading the entire page from the server. Students will learn about the jQuery script library and how to use it to call web services and update user interface components.

Lessons

- Rendering and Executing JavaScript Code
- Using jQuery and jQueryUI

Module 11: Controlling Access to ASP.NET MVC 4 Web Applications

The goal of this module to ensure good security in terms of strong authentication and authorization for access. The lessons describe how to enable anonymous users to create their own user account and gain privileged access to content.

Lessons

- Implementing Authentication and Authorization
- Assigning Roles and Membership

Module 12: Building a Resilient ASP.NET MVC 4 Web Application ®

The goal of this module is to enable the students to build applications that are stable and reliable. Such applications are not vulnerable to common hacking techniques such as cross-site scripting and also store state information such as the contents of a shopping cart and user preferences. This state information is preserved when servers or browsers restart, connections are lost, and other connectivity issues occur.

Lessons

- Developing Secure Sites
- State Management

Module 13: Using Windows Azure Web Services in ASP.NET MVC 4 Web Applications

The goal of this module is to introduce Windows Azure to the students and explain why a developer would write a Windows Azure service instead of code in a web application. Students will also see how to write such a service and call it from a web application or from other applications, such as a mobile device app.

Lessons

- Introducing Windows Azure
- Designing and Writing Windows Azure Services
- Consuming Windows Azure Services in a Web Application

Module 14: Implementing Web APIs in ASP.NET MVC 4 Web Applications

The goal of the module is to introduce the concept of a Web API to students and to describe how to make an application's core functionality more broadly available for integration into other web and mobile applications. Students will learn about the new Web API feature of MVC 4 and see how to build a RESTful Web API and call it from other applications.

Lessons

- Developing a Web API
- Calling a Web API from Mobile and Web Applications

Module 15: Handling Requests in ASP.NET MVC 4 Web Applications

The goal of this module is to describe how to write components that intercept requests from browsers before they are received by MVC Controllers. These components include HTTP Modules, HTTP Handlers, and the Web Sockets protocol. The module describes scenarios in which developers use such components and shows how to add them to an MVC application.

Lessons

- Using HTTP Modules and HTTP Handlers
- Using Web Sockets

Module 16: Deploying ASP.NET MVC 4 Web Applications

The goal for this module is to enable students to deploy a completed MVC application to a web server or Windows Azure. The module begins by describing testing, staging, and production deployments and the web server environments required for each. It also describes the advantages and disadvantages of using Windows Azure to host the application. Students also see all the available deployment options in Visual Studio.

Lessons

- Deploying a Web Application
- Deploying an MVC 4 Application