Comprehensive ASP.NET Core 6 Development

Course ID #: 7000-694-ZZ-Z

Hours: 28

Course Content

Course Description:

ASP.NET Core 6 is the latest release of Microsoft's cross-platform version of its ASP.NET Web development framework. This ASP.NET Core 6 Development training introduces attendees to ASP.NET Core development and teaches the skills necessary to design and build well-architected web and service-oriented applications that follow the MVC design pattern. This course does introduce new frameworks like gRPC and Blazor but does not include in-depth coverage of those topics.

Course Objectives:

- Understand the goals and benefits of ASP.NET Core 6.0
- Learn to make good decisions about application architecture and data access technology
- Use ASP.NET's routing system to achieve a REST-style architecture
- Learn how to build a compelling and maintainable HTML user interface using the Razor view engine and client-side JavaScript
- Gain experience building a service that makes data available via a modern web API
- Understand the advantages of the new Minimal API Framework
- Learn best practices for employing unit testing, logging, and error handling
- Understand different authentication choices for securing a web API
- Get an introduction to Blazor, Razor Pages, and gRPC
- Understand the different cross-platform deployment options available including via Docker containers

Prerequisites:

- Prior .NET experience and basic skills with HTML and JavaScript is assumed.
- ASP.NET 5 SDK (5.0.101 or later)
- Visual Studio 2019 (any edition) with Update 16.8 (or later)

Topics:

Introduction
- Evolution of .NET and .NET Core
- .NET SKDs and Runtimes
- Visual Studio and Visual Studio Code

.NET 6.0 SDK
- Installation

- Version Management
- Command-Line Interface (CLI)

What's New in C#
- Record Types
- Init Only Setters
- Nullable Reference Types
- Global Using Directives

- File-Scoped Namespace Declarations
- Top-Level Statements

ASP.NET Core Application Architecture
- NuGet Packages
- Application Startup
- Hosting Environments
- Middleware and the Request Pipeline
- Services and Dependency Injection

Application Configuration
- Configuration Providers and Sources
- Configuration API
- Options Pattern
- HTTPS and HTTP/2

Request Routing
- RESTful Services
- Endpoint Routing
- Route Templates
- Route Constraints
- Route Template Precedence
- Attribute-Based Routing

Models
- Persistence Ignorance
- Dependency Inversion
- Asynchronous Data Access
- Object-Relational Mapping
- Entity Framework Core
- Dapper ORM

Controllers
- Responsibilities
- Requirements and Conventions
- Dependencies
- Action Results
- ApiController Attribute

Views
- Responsibilities
- Conventions
- Razor Syntax
- Layouts

- ViewData and ViewBag
- Strongly-Typed Views
- Partial Views
- HTML and URL Helpers
- Tag Helpers
- View Components
- Client-Side Dependencies
- Razor Pages
- View Models

HTML Forms
- Tag Helpers
- Form Submissions
- Model Binding

Input Validation
- Introduction
- Data Annotations
- Model Binding
- Input Tag Helpers
- Validation Tag Helpers

Application State
- Client-Side vs. Server-Side
- HttpContext.Items
- Session State
- TempData

Web APIs
- API Controllers
- Minimal APIs
- OpenAPI / Swagger
- Testing APIs
- Content Negotiation
- CRUD Operations
- Microservice Architecture
- Cross-Origin Resource Sharing (CORS)

Error Handling
- Best Practices
- HTTP Error Status Codes
- Developer Exception Page

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Logging
- Configuration
- ILogger
- Serilog and Seq

Testing
- Unit Testing
- xUnit
- Testing Controllers
- Integration Testing

Security
- Authentication
- ASP.NET Identity
- Authorization
- Web API Authentication
- JSON Web Tokens (JWT)
- OAuth 2.0 and OpenID Connect
- Secrets Management

Remote Procedure Calls (gRPC)
- Introduction
- Protobuf
- Server
- Client
- Limitations

Blazor
- Razor Components
- Blazor Server
- Blazor WebAssembly

Deployment
- dotnet publish
- Kestrel
- IIS
- Docker

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