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Course Name

.Net Training Program

Overview

Course Description:

This course offers a comprehensive overview of the .NET framework, focusing on C# basics, ASP.NET Core 6, and essential tools for building robust applications. Topics include exception handling, delegates, events, collections, generics, ORM, asynchronous programming, microservices, HTTP fundamentals, Web API development, dependency injection, middleware, unit testing, and API consumption.

Learning Objectives:

- Understand .NET framework fundamentals.
- Master C# basics and essential language features.
- Develop proficiency in exception handling, delegates, and events.
- Utilize collections, generics, and LINQ for efficient data handling.
- Implement asynchronous programming for enhanced performance.
- Explore microservices architecture and HTTP fundamentals.
- Build Web APIs using ASP.NET Core 6 with proper routing and configuration.
- Implement middleware, dependency injection, and content negotiation for better application management.
- Document APIs using Swagger and manage authentication with Identity.
- Master unit testing and debugging techniques for robust application development.
- Prepare projects for release and consume APIs using clients for inter-application communication.

Prerequisites

- Basic understanding of programming concepts and principles.
- Familiarity with object-oriented programming (OOP) concepts.
- Knowledge of any programming language (preferably C# or Java)
- Familiarity with web development concepts such as HTTP, RESTful APIs, and JSON is advantageous.
- Comfortable working with development environments like Visual Studio or Visual Studio Code.

- Basic understanding of relational databases and SQL would be helpful but not required.
- Willingness to engage in hands-on exercises and assignments throughout the training duration.

Lab Setup

HW: 8 Core CPU, 16 GB RAM, 1 TB Disk Space, Open Internet

OS: Windows 11

SW: Visual Studio 2019+, NuGet Packages

Duration

48 Hours

Course Contents

SNo.	Day	Topics	Hours
1	Day - 1	Introduction to .NET framework C Sharp 10 Basics Properties Exception Handling Delegates & Events Indexers	8
2	Day - 2	Collections & Generics Lambda expressions Nullable Types & Anonymous methods Extension Methods	8
3	Day - 3	Namespaces Understanding ORM's Working With Data Data - JSON vs XML Linq in C# (using lambda & query techniques) Creating an Assembly (Overview - Project build outcome, exe vs dll) Attributes, scope of attributes, custom attributes in C# Using Threading Asynchronous Programming (In Depth)	8

4	Day – 4	<p>Microservices Introduction - HTTP fundamentals (high level)</p> <ul style="list-style-type: none"> - HTTP Status Codes (200, 201, 404, 500) - HTTPS - SSL Handshake, encryption, security - Open API Specification - Network flow: Network Proxy, DNS, Load balancer, Client, Server - Chrome developer (Network/script tabs) fundamentals - Using Postman <p>ASP.NET Core 6 Overview Build Web API via ASP.NET Core 6 Overview Web API Fundamentals Working with HTTP Verbs GET, POST, PUT and Delete. Environment Setup New Project Project Layout & Project. JSON Configuration</p>	8
5	Day – 5	<p>Using Dependency injection Middleware Exceptions Routing Attribute Routes & Action Results Repository Pattern Sync and Async methods Content Negotiation</p>	8
6	Day – 6	<p>Swagger – Open API Specification Identity Overview & Authorize Attribute Identity Configuration & Identity Migrations Unit Testing (TDD) [AAA pattern] Debugging Project release Consuming API using a Client</p>	8