Programming C# and .NET

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! Description

The course is designed to demonstrate modern software engineering and critical aspects of the OOP way of thinking. The course teaches the student to become a professional C# programmer and how to develop .NET apps. After this course, student will be able to write complete computer programs, and take advantage of the powerful C# language. Furthermore, programmer will be able to build web applications using ASP.net. This course emphasizes the Object-Oriented paradigm and focus on general programming skills. C# is one of the most popular programming languages and .NET is a mature and powerful platform by Microsoft. Many companies choose this platform for their software. C# and .NET are similar to other languages and platforms, for example Java, so students acquire skills that are applicable to other platforms. One of the most central modules in this course is ASP.net web API which is a powerful back-end (server side) which any client-platform (i.e Android or browser) can communicate with over the Internet. Another module is WPF which allows development of apps for Windows natively with rich GUI.

Minimal technical specifications for a computer

SSD 512 storage drive
at least 14" screen

8th generation i5 processor and above
At least GB 16 memory

You must know!

Duration:

320 Hours

Who should attend?

People who wish to enter the programming industry and become a software developer for general purpose, especially web back-end development.

Prerequisites

The course first module teaches basic programming skills, that are relevant to any programming language or platform, so no previous programming experience is required but it is fast paste, so it requires fast learning skills and mathematical thinking. English is a must.

Course Modules

Module 1 – Introducing C# and .NET Platform (5 hours)

- The Philosophy of .NET (platform independency and CLR)
- Building C# Applications (installing SDK and IDE)

Module 2 – Core C# Programming (50 hours)

- Core C# Programming Constructs, Part I (variables, data types, operators, strings, type conversion, the console, and control statements)
- Core C# Programming Constructs, Part II (method and parameter modifiers, arrays, enum, structs and classes)

Module 3 – Object-Oriented Programming with C# (50 hours)

- Class, Constructors, the "this" and "static" keywords
- Understanding Encapsulation and using Access Modifiers and Automatic Properties, Constants and Partial Types
- Understanding Inheritance and Polymorphism. Casting. The Object class.
- Understanding Structured Exception Handling
- Working with Interfaces

Module 4 – Advanced C# Programming (50 hours)

- Collections and Generics
- Delegates, Events, and Lambda Expressions
- Advanced C# Language Features (Indexer, Operator Overloading, Custom Conversions, Extension Methods, Anonymous Types,
- LINQ to Objects
- Understanding Object Lifetime (Garbage Collection, Disposable Objects)

Course Modules

Module 5 – Programming with .NET Assemblies (15 hours)

- Building and Configuring Class Libraries
- Type Reflection, Late Binding, and Attribute-Based Programming

Module 6 – Introducing the .NET Base Class Libraries (50 hours)

- Multithreaded, Parallel, and Async Programming
- File I/O and Object Serialization
- Databases, SQL Server, writing SQL scripts and SSMS
- ADO.NET Part I: The Connected Layer
- ADO.NET Part II: The Disconnected Layer
- ADO.NET Part III: The Entity Framework
- Network communication: TCP and UDP

Module 7 – WPF – Developing apps with GUI (50 hours)

- Intro to WPF
- XAML and Layouts
- Dependency Properties
- Routed Events
- Controls, Panels and Nested Panels
- The Application
- Element Bindings
- Commands
- Resources, Styles and Behaviors
- Shapes, Brushes and Transforms
- Geometries and Drawing
- Effects, Visuals and Animation
- Data binding
- Multithreading
- Playing Sound
- Click-Once Deployment
- WPF vs. Winforms

|Programming C# and ASP.net

Course Modules

Module 8 – ASP.NET (50 hours)

- Intro to ASP.net core web API
- Controllers
- Configuration and Database Connection
- Routing
- Parameter Binding and Action return types
- Data formats and Media type formatters
- Filters
- Http Get, Post, Put and Delete
- Testing API using Google Postman
- Http Client
- JSON
- Hosting ASP.net apps on a server
- Serving static files: HTML5, JavaScript, CSS3 (*)
- Swagger
- Transferring Binary Data
- CORS – Allow cross domain requests
- ASPX pages (basic review, this course doesn't focus on this technology)
- MVC, and Razor pages (basic review)

Notes:

✔ Student must have a Windows PC to practice and perform homework and exercises.

✔ We do understand the Microsoft, like other platform vendors, keep changing and improving technologies and this course focuses as possible, on teaching skills that can be used in future technologies and other platforms.

✔ This course also exposes the student to writing algorithms and problem solving which requires logical and mathematical way of thinking.

✔ We teach based on .NET CORE which is cross-platform and efficient version of the SDK.

✔ ASP.net contains many sub-platforms, this course focuses on ASP.net Core Web API, so any client-side (front-end) can consume the API.

✔ Student must past an exam to receive a certificate.

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תל אביב
רחוב שביל המרץ 2