***Duration: 4***

**Title: C# and .Net Fundamentals**

***Course Content***

This intensive course has been specifically designed to address the requirements of developers who are new to the .NET environment with a comprehensive introduction to creating typical commercial applications within the .NET framework using C#.  
  
Delegates will be introduced to Visual Studio 200x and .NET x Framework, and will learn to develop rich and reachable based applications using C#.

***Target Audience***

* Software Developers who wish to develop different layers of application using C# and .Net Platform
* Testers who need to use c# as a test script language

***Pre-Requisites***

Before attending this course, students can be experienced professional software developers or novice developers and have a basic understanding of the any one object oriented programming language and prior versions of any managed environment like java.

## What you will learn

At the end of this course you will be able to:

1. Utilize Visual Studio 20\*\* to design and develop applications
2. Understand the role of the Common Language Runtime (CLR) and .NET Framework
3. Object Oriented Programming using C#.
4. Understand internals of Compiler and Assembly
5. Public and Private Assembly

**Visual Studio 20\*\***

* .NET Fx\*\*
* Visual Studio 20\*\*
* New Project Templates
* New Designers
* Versions of Visual Studio
* A Tour of Visual Studio
* Multiple-Project Solutions

## Dotnet Fundamentals

**Dotnet Fundamentals**

* Dotnet Fundamentals and Architecture
* The .NET architecture
* What Is the .NET Framework?
* Common Language Runtime (CLR)
* The .NET Intermediate Language (IL)
* The Common Type System
* The Common Language Specification
* The .NET Framework Class Library

**.Net Application Building Blocks (Components)**

* Identifying assembly structures
* Building assemblies
* Shared vs. private assemblies
* GAC
* Generating strong assembly names with digital signatures
* Versioning Control (Binding Policies and Publisher policies)
* Deployment

## OOPS

* Object Oriented Programming ( C#)
  + Boxing & Unboxing value types
  + Classes
  + Constructors & Destructors
  + Static & Instance Members
  + Properties & Indexers
  + Method Overloading
  + Operator Overloading
  + Attributes
  + Inheritance, Polymorphism
    - Modifiers
    - Class Modifiers
    - Member Modifiers
    - Access Modifiers
    - Methods
    - Method Hiding
    - Method Overriding
* Interfaces & Abstract Classes
* Exception Handling
  + Managed v/s Unmanaged Exception Handling
  + Checked & Unchecked Statements
  + The try, catch, finally
  + Dos & Don’ts of Exception Handling
  + Throwing and re-throwing Exception
  + Using finally
  + Deriving exception class
  + Catching derived class exception
* Preprocessor Usage(C#)

## Conditional Compilation

* Strings and Regular Expressions
* Collections

**Delegates and Event**

* Manged Function Pointers
* Understanding the concept of Delegates
* Defining and using delegates
* Types of Delegates
* SingleCast Delegate
* Multicast Delegate
* Dealing with return values in Multicast delegates
* Delegate Advantages

**CLR Fundamentals**

* High Level overview
* CLR Loader
* Application Domains

**New Language Features (C# 3.5 ,4.0 and 4.5)**

* Auto-Implemented Properties
* Implicitly Typed Variables
* Object Initializer
* Collection Initializer
* Anonymous Types
* Partial Methods
* Extension Methods
* Lambda Expressions
* Named Parameters
* Optional Parameters
* Dynamic Scoping (DLR)
* Generic Variance
* Extension Property
* Code Contracts
* Features of COM Interop
* Async/await
* Named Arguments
* Optional Arguments