**Core C# Programming TOC**

**Day1:**

* What & Why .NET?
* Difference between .NET FW, .NET Core and .NET Standard
* .NET Framework Components
  + CLR
  + CTS
  + CLS
  + FCL & BCL
* .NET Assemblies and Types of Assemblies
  + Difference between dll and exe
* How a .NET program gets compiled?
  + What is MSIL code and why?
* Installing .NET using .NET SDK
* .NET projects and solutions difference and why have they been given?
* Introducing the C# Language
  + What and Why C#?
* Creating a .NET Console Application using .NET SDK (Command Line)
* Understanding the structure of a .NET Console App
  + What is Main()?
  + Why Main() is static?
  + Why return type is void?
  + What are command line args to Main()
* Compiling and exeuting a .NET Console App
  + Console.Write() and Console.WriteLine()
* Understanding the assemblies created under bin/debug after compiling
* C# Types
  + Value Types and Reference Types difference
  + Primitive types
  + Creating variables and printing them
* Writing methods inside Program class
* .NET’s unified type System (System.Object)
  + Boxing and Unboxing

**Day2:**

* Conditional Statements
* Operators, Loops
* Arrays 🡪 Rectangular and Jagged
* params, ref, in and out keywords
* Creating and using a Class Library to share and reuse code

**Day3:**

* Overview of OOPs Concepts
* Classes and Objects
* Instance and static method
* Constructor and Constructor Overloading
* Using Static keyword
* Properties

**Day 4:**

* Need for Inheritance
* Types of Inheritance
* Implementing Inheritance
  + Single
  + Multi-Level
* Constructor Initialization
* Virtual Functions
* Runtime Polymorphism
* Abstract Classes and Methods
* Interfaces

**Day 5:**

* Compile-time Error v/s Runtime Error
* Introduction to Exception Handling
* Working with Try-Catch-Finally block
* Working with Multiple catch block
* Creating Custom Exception

**Day 6: Generics and Collections**

* Introduction to Generics
* Need for Generics
* Implementing Generics ( Classes and Methods)
* Generic Constraints
* Introduction to Collections
* Need for Collections
* Working with Object Based Collections
  + ArrayList
  + HashTable
  + Stack
  + Queue
* Working with Generic Collections
  + List
  + Dictionary
  + Stack
  + Queue

**Day 7:**

* Introduction to System.IO
* Working with Files
  + StreamReader
  + StreamWriter
  + FileInfo & DirectoryInfo
* Introduction to Serialization (What and Why)
* Implementing Serialization
  + Binary
  + XML

**Day 8: Delegates and Events**

* Introduction to Delegates
* Need for Delegates
* Types of Delegates
  + Single-Cast
  + Multi-Cast
* Basics of events

**Day 9: C# 3.0 & 4.0 Features**

* var
* Anonymous Types
* Lambda Functions
* Auto implemented properties
* Object and Collection initializers
* dynamic in C#

**Day 10: ADO.NET**

* Need for Data Access
* Introduction to ADO.NET
* .NET Data Providers for SQL Server
  + SQLConnection
  + SQLCommand
  + SQLDataReader
* Using Parameterized Query and Stored Procedure