



Training – Consulting - Mentoring

Official Course Syllabus

Mastering C# using Visual Studio 2005/2008

5 days

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OBJECTIVES

In this course students will learn in depth knowledge of building solutions with Visual Studio 2005/2008. Using the C# language, students will work hands on with essential aspects of the .NET runtime.

EXPERIENCE

Students must already be familiar with C# syntax and general programming techniques.

CLASS OUTLINE

- Introduction to .NET: Terms and Definitions (from a programmers viewpoint)
 - Application Domain
 - Assemblies
 - Digital Signing
 - Global Assembly Cache
 - Namespaces and Modules
 - User Defined Types: enums, structs, classes, interfaces and delegates
 - Components of all types

- Introduction to Types (Value Types vs Reference Types)

- Static vs Instance
- Constants, Fields and Methods (and nested types)
- Exploring Enums
- Structures vs Classes
- Special Methods
 - Constructors
 - Static Constructors
 - Destructors
 - Properties
 - Indexers
 - Converters
- Managing Memory
 - Static Region
 - Stack
 - Managed Heap
 - Garbage Collection

- Working with Types
 - Object
 - Assignment
 - Parameters

- Implementing Classes and Polymorphic Behavior in C#
 - Virtual Functions
 - Abstract Classes

- Sealed and New functions
 - Casting and determining type
 - Interfaces
 - Explicit Implementation

- System.Collections as an Example
 - IEnumerable
 - IEnumerator
 - ICollection
 - IList and IDictionary
 - ArrayList and Hashtable
 - Using CollectionBase to create a type-safe collection class

- Delegates and Events
 - Definition of Delegates
 - Examples and Case Study
 - Definition of Events
 - Procedure for exposing Events
 - Windows Forms as a case study of Events
 - Events vs Virtual Functions

- System.IO
 - The stream class
 - System.Text.Encoders and Decoders
 - Readers and Writers

- BinaryReader/Writer
 - TextReader/Writer
 - System.File and System.Directory
 - System.FileWatcher
- Networking
 - WebRequest
 - WebResponse
 - TCPListener
 - TCPClient
- Serialization
 - Object Graphs
 - Serializable
 - Writing
 - Reading
 - Custom Serialization
- Cryptography
 - Types of Encryption
 - Symmetric Algorithms
 - Asymmetric Algorithms
 - Using Salt to store a password safely
 - Using CryptoStream
- Database (ADO.NET)
 - Connected Model
 - IDbConnection
 - IDbCommand

- IDataRecord
 - IDataReader
 - Disconnected Model
 - DataSet
 - DataAdaptors
 - Typed DataSets
 - Using XML
- Windows Forms
 - Introduction and Basic control usage
 - Visual Inheritance
 - Creating Controls
 - Data Binding
- ASP.NET
 - Internal Architecture
 - Web Controls
 - Data Binding
 - Web Services
- Interoperability
 - Platform Invoke
 - Com Interoperability
- Deployment
 - Private Assemblies
 - Signing Assemblies
 - Installing Assemblies into the GAC

- Versioning Assemblies

- Security

- Code Access Security Demo

- Attributes

- Reflection
 - Attributes Demo