



Enhanced Network Solutions Group

Systems Integration • Learning Solutions • CIO Consulting
Managed Outsourcing • Healthcare Solutions • Security Solutions

7224 Engle Road - Fort Wayne, IN 46804 - Phone: (260) 432-1364 - Fax: (260) 432.3168

Advanced C# with Visual Studio 2008

C#Adv Rev 02.10

5 days

Description

This course picks up where the Introduction to C# and the Microsoft .NET Framework course leaves off. Students won't spend time rehashing if statements or learning how to build a simple class. Upon entering the training room, it is assumed that students already know how to accomplish the basics in C#. A major focus of this course is creating not just applications, but applications that perform well and that are easy to maintain.

The course begins by discussing the inner workings of ADO.NET; not the drag and drop programming, but the nuts and bolts of how to create high performance, data-driven applications. It introduces common programming patterns and practices, devoting a significant portion of the material to implementing specific patterns using the .NET Framework. Students will learn the many ways available in the .NET Framework to create powerful, multi-threaded applications which take advantage of today's multi-core processors. The course also covers creating client-server applications, the Windows Communication Foundation, and Windows Workflow applications.

Audience

The target audience for this course is experienced developers in the C# programming language who want to move to more advanced topics.

Prerequisites

- *Intermediate-level experience in developing C# applications in Visual Studio 2008*

Course Outline

Module 1: Implementing the ADO.NET Connected Model to Optimize Data Driven Applications

- Topic A: What is the Disconnected Pattern?
- Topic B: Using Adapters, DataSets, and DataTables
- Topic C: Using Typed DataSets and TableAdapters
- Topic D: Data Binding in Windows and Web Forms Applications

Module 2: Introduction to Programming Patterns

- Topic A: What are Programming Patterns and Who is the Gang of Four?
- Topic B: Implementing the Singleton Pattern
- Topic C: Implementing the Factory Pattern
- Topic D: Implementing the Facade Pattern
- Topic E: Other Common Programming Patterns

Module 3: Object Lifetime and the Disposal Pattern

- Topic A: Exploring Object Lifetime and the Garbage Collector
- Topic B: Optimizing Garbage Collection
- Topic C: Implementing Class Destructors and the Disposal Pattern



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Module 4: Type Reflection and Attribute Based Programming

Topic A: What is Reflection?

Topic B: Using Reflection to Gather Type Information

Topic C: Implementing the Factory Pattern with Reflection

Topic D: Custom Attributes and Attribute Based Programming

Module 5: Working with Dynamic Assemblies

Topic A: Exploring Common Intermediate Language

Topic B: Understanding Round-trip Engineering

Topic C: Understanding CIL Directives and Attributes

Topic D: Understanding Dynamic Assemblies

Module 6: Delegates, Events and Lambda Expressions

Topic A: Creating and Using Delegates

Topic B: Implementing the Asynchronous Pattern Using Delegates

Topic C: Implementing Callbacks with Delegates

Topic D: Implementing Callbacks with Events

Topic E: Using Lambda Expressions in Place of Delegates

Module 7: Introduction to Asynchronous Programming

Topic A: Introduction to the Asynchronous Pattern

Topic B: Working with the Built-in Asynchronous Methods

Topic C: Using the BackgroundWorker Component to Implement Asynchronous Pattern

Module 8: Multi-Threaded Programming

Topic A: Creating and Managing Threads

Topic B: Thread Synchronization

Topic C: Working with the CLR ThreadPool

Module 9: Working with LINQ

Topic A: 50 Standard LINQ Operators

Topic B: LINQ to SQL and the Microsoft Entity Framework

Topic C: Using Functional Construction to Create XML Documents

Topic D: Query XML Documents using XLINQ

Module 10: Object Serialization

Topic A: Introduction to Object Serialization

Topic B: Using the Microsoft Serialization Framework

Topic C: Controlling Serialization by Using Attributes

Topic D: Implementing Custom Serialization



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Module 11: Implementing Client-Server Applications

- Topic A: Working with Sockets
- Topic B: Creating Socket Based Clients
- Topic C: Creating Socket Based Servers
- Topic D: Implementing Email Integration
- Topic E: Creating Windows Service Applications

Module 12: Introduction to Windows Communication Foundation

- Topic A: Introduction to Windows Communication Foundation
- Topic B: Creating WCF Services
- Topic C: Hosting WCF Services
- Topic D: Creating WCF Clients

Module 13: Introduction to Windows Workflow

- Topic A: Using Windows Workflow to Automate a Business Process
- Topic B: Creating Workflow Enabled Applications
- Topic C: Hosting a Workflow
- Topic D: Invoking Services from Within Workflows
- Topic E: Integrating Workflows with Microsoft BizTalk Server

Module 14: Securing .NET Applications

- Topic A: Implementing Code Access Security
- Topic B: Implementing Role Based Security
- Topic C: Implementing Security in Web Applications
- Topic D: Implementing Encryption and Digital Signatures

Module 15: Diagnosing and Treating Slow Performance

- Topic A: Instrumenting Applications Using System.Diagnostics
- Topic B: Implementing Custom Performance Counters
- Topic C: Using FxCop to Optimize Code Performance and Pattern Compliance



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