Visual C# .NET: Advanced

Course length: 5 days

Course Description

You have already briefly entered into the new world of .NET programming, using some of the basic features of the C# programming language and the Visual C#.NET integrated development environment inside Visual Studio.NET. Building on the basics, you are now ready to seriously pursue the advanced aspects of Visual C#.NET programming that are introduced in this course. This is one in a series of Visual C#.NET programming courses offered by Element K.

Course Objective: You will program rich client Windows desktop applications and distributed applications using Visual C#.NET.

Target Student: Visual Basic, C++, or Java programmers with at least one year of practical experience who want to be a Visual C#.NET programmer, able to program rich client desktop applications and distributed applications, and/or is seeking Windows Application Developer certification.

Prerequisites: To ensure your success, we recommend you first take the following courses or have equivalent knowledge:

- .NET Framework: Introduction
- Visual Studio.NET: Introduction
- Visual C#.NET: Introduction for Developers

Delivery Method: Instructor led, group-paced, classroom-delivery learning model with structured hands-on activities.

Performance-Based Objectives

Upon successful completion of this course, students will be able to:

- Add user interface elements to forms.
- Display GDI+ graphics.
- Work with delegates and events.
- Input and output data.
- Implement document printing.
- Interact with the garbage collector.
- Write multi-threaded programs.
- Write internet-based and distributed applications.
- Implement user-based and code-based security.
- Control and analyze compiled code.

Course Content

Lesson 1: Adding User Interface Elements to Forms
Topic 1A: Add a Menu to a Form-based Application
Topic 1B: Handle a Menu Item
Topic 1C: Create a Context Menu
Topic 1D: Add a Toolbar
Topic 1E: Add a Status Bar
Topic 1F: Add a Splitter Bar
Topic 1G: Create and Use a Modal Dialog Box
Topic 1H: Use a Common Dialog Box
Topic 1I: Create and Use a Modeless Dialog Box

Lesson 2: Displaying GDI+ Graphics
Topic 2A: Draw Graphics with Pens
Topic 2B: Fill Areas with Brushes
Topic 2C: Draw Text with Fonts
Topic 2D: Draw Images
Topic 2E: Perform Graphical Transformations

Lesson 3: Working with Delegates and Events
Topic 3A: Respond to Keyboard and Mouse Events
Topic 3B: Use a Delegate
Topic 3C: Work with Custom Events

Lesson 4: Inputting and Outputting Data
Topic 4A: Read and Write Text Data with Streams
Topic 4B: Read and Write Binary Data
Topic 4C: Implement Object Serialization
Topic 4D: Implement Custom Serialization

Lesson 5: Implementing Document Printing
Topic 5A: Print a Document
Topic 5B: Implement Print Preview
Topic 5C: Print Headers and Footers
Topic 5D: Scale Document Printing

Lesson 6: Interacting with Garbage Collection
Topic 6A: Force Garbage Collection
Topic 6B: Investigate Garbage Collection
Topic 6C: Expedite Clean-Up Using the Dispose Design Pattern
Topic 6D: Manage Temporary Resources

Lesson 7: Writing a Multi-threaded Application
Topic 7A: Create a Thread
Topic 7B: Modify Thread Priority
Topic 7C: Control Execution of a Thread
Topic 7D: Coordinate Threads Sequentially
Topic 7E: Synchronize Access to Data from Multiple Threads in a Process
Topic 7F: Synchronize Access to Data from Multiple Threads Between Processes
Topic 7G: Synchronize Access to Methods in a Class
Topic 7H: Store Data with Local Data Storage

Lesson 8: Writing Internet and Distributed Applications
Topic 8A: Write a Server Using Sockets
Topic 8B: Write a Client Using Sockets
Topic 8C: Write an HTTP Server
Topic 8D: Write an HTTP Client
Topic 8E: Write a Web Service
Topic 8F: Consume a Web Service
Topic 8G: Create a Server Using Remoting
Topic 8H: Create a Client using Remoting

Lesson 9: Implementing Security
Topic 9A: Implement User-based Security

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Topic 9B: Implement Code Access Security
Topic 9C: Configure Security Permissions
Topic 9D: Implement Permission-based Security
Topic 9E: Implement Data Encryption and Decryption

Lesson 10: Controlling and Analyzing Compiled Code
Topic 10A: Control Compilation using Pre-processor Directives and the Conditional Attribute
Topic 10B: Analyze Assembly Types Using Reflection
Topic 10C: Create Custom Attributes
Topic 10D: Access Memory Directly Using Pointers