

Course Outline



Tel: +44 (0) 118 979 4000 Fax: +44 (0) 118 979 4000

Email: training@ptr.co.uk Web: www.ptr.co.uk

C# .NET: Conversion for Developers

Course Description:

You have experience in programming in at least one other object-oriented or object-based programming language. You are now entering the new world of .NET programming, using the C# programming language and Visual C#.NET platform.

This course is designed to expose experienced software developers to the C# programming language and the core APIs of the .NET platform. The course will begin by exposing attendees to the syntax and semantics of the C# programming language and Object Oriented Programming (OOP) concepts. You'll learn how to use Microsoft Visual Studio(R) 2010 and Microsoft .NET Framework 4.0; develop a solid, fundamental understanding of C# language features; and then get to work creating actual components and working applications for the Windows(R) operating system. You'll also delve into data management technologies and Webbasedapplications.

Pre-requisites:

1-2 years of programming background in either C, C++, Java, Visual Basic, Perl or Fortran. Familiarity with the Windows XP/Windows Vista OS and experience using graphical IDEs to build and debug software application. Some exposure to OOP concepts is recommended but not required.

Course Content:

- **Part I: Introducing Microsoft Visual C# and Microsoft Visual Studio 2010**
- **Welcome to C#**
 - Beginning Programming with the Visual Studio 2010 Environment
 - Writing Your First Program
 - Using Namespaces 1.4 Creating a Graphical Application

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- **Working with Variables, Operators, and Expressions**
 - Understanding Statements
 - Using Identifiers
 - Using Variables
 - Working with Primitive Data Types
 - Using Arithmetic Operators
 - Incrementing and Decrementing Variables
 - Declaring Implicitly Typed Local Variables
- **Writing Methods and Applying Scope**
 - Creating Methods
 - Applying Scope
 - Writing Methods
 - Using Optional Parameters and Named Arguments
- **Using Decision Statements**
 - Declaring Boolean Variables
 - Using Boolean Operators
 - Using if Statements to Make Decisions
 - Using switch Statements
- **Using Compound Assignment and Iteration Statements**
 - Using Compound Assignment Operators
 - Writing while Statements
 - Writing for Statements
 - Writing do Statements
- **Managing Errors and Exceptions**
 - Coping with Errors
 - Trying Code and Catching Exceptions
 - Using Checked and Unchecked Integer Arithmetic
 - Throwing Exceptions
 - Using a finally Block
- **Part II: Understanding the C# Language**

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- **Creating and Managing Classes and Objects**
 - Understanding Classification
 - The Purpose of Encapsulation
 - Defining and Using a Class
 - Controlling Accessibility
 - Understanding static Methods and Data
- **Understanding Values and References**
 - Copying Value Type Variables and Classes
 - Understanding Null Values and Nullable Types
 - Using ref and out Parameters
 - How Computer Memory Is Organized
 - The System.Object Class
 - Boxing
 - Unboxing
 - Casting Data Safely
- **Creating Value Types with Enumerations and Structures**
 - Working with Enumerations
 - Working with Structures
- **Using Arrays and Collections**
 - What Is an Array?
 - What Are Collection Classes?
- **Understanding Parameter Arrays**
 - Using Array Arguments
 - Comparing Parameters Arrays and Optional Parameters
- **Working with Inheritance**
 - What Is Inheritance?
 - Using Inheritance
 - Understanding Extension Methods
- **Creating Interfaces and Defining Abstract Classes**
 - Understanding Interfaces
 - Abstract Classes
 - Sealed Classes

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- **Using Garbage Collection and Resource Management**
 - The Life and Times of an Object
 - Resource Management
 - Implementing Exception-Safe Disposal
- **Part III: Creating Components**
- **Implementing Properties to Access Fields**
 - Implementing Encapsulation by Using Methods
 - What Are Properties?
 - Understanding the Property Restrictions
 - Declaring Interface Properties
 - Generating Automatic Properties
 - Initializing Objects by Using Properties
- **Using Indexers**
 - What Is an Indexer?
 - Indexers in Interfaces
 - Using Indexers in a Windows Application
- **Interrupting Program Flow and Handling Events**
 - Declaring and Using Delegates
 - Lambda Expressions and Delegates
 - Enabling Notifications with Events
 - Understanding WPF User Interface Events
- **Introducing Generics**
 - The Problem with objects
 - The Generics Solution
 - Creating a Generic Class
 - Creating a Generic Method
 - Variance and Generic Interfaces
- **Enumerating Collections**
 - Enumerating the Elements in a Collection
 - Implementing an Enumerator by Using an Iterator

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- **Querying In-Memory Data by Using Query Expressions**
 - What Is Language Integrated Query?
 - Using LINQ in a C# Application
- **Operator Overloading**
 - Understanding Operators
 - Understanding Compound Assignment Evaluation
 - Declaring Increment and Decrement Operators
 - Comparing Operators in Structures and Classes
 - Defining Operator Pairs
 - Implementing Operators
 - Understanding Conversion Operators
- **Part IV: Building Windows Presentation Foundation Application**
- **Introducing Windows Presentation Foundation**
 - Creating a WPF Application 2
 - Adding Controls to the Form
 - Handling Events in a WPF Form
- **Gathering User Input**
 - Menu Guidelines and Style
 - Menus and Menu Events
 - Shortcut Menus
 - Windows Common Dialog Boxes
 - Improving Responsiveness in a WPF Application
- **Performing Validation**
 - Validating Data
 - An Example - Order Tickets for Events
-
- **Part V: Managing Data**

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- **Querying Information in a Database**
 - Querying a Database by Using ADO.NET
 - Querying a Database by Using LINQ to SQL
- **Displaying and Editing Data by Using the Entity Framework and Data Binding**
 - Using Data Binding with the Entity Framework
 - Using Data Binding to Modify Data
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- **Part VI: Building Professional Solutions with Visual Studio**
- **Introducing the Task Parallel Library**
 - Why Perform Multitasking by Using Parallel Processing?
 - Implementing Multitasking in a Desktop Application
 - Using Tasks and User Interface Threads Together
 - Cancelling Tasks and Handling Exceptions
- **Performing Parallel Data Access**
 - Using PLINQ to Parallelize Declarative Data Access
 - Synchronizing Concurrent Imperative Data Access
- **Creating and Using a Web Service**
 - What Is a Web Service?
 - Web Service Architectures
 - Building Web Services
- **Interoperating with Dynamic Languages; What Is the Dynamic Language Runtime?; The dynamic Keyword; Example: IronPython; Example: IronRuby;**

Course Duration:

5 Days

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