



## Windows Presentation Foundation Using C# (VS2010)

This course introduces Windows Presentation Foundation or WPF (“Avalon”), the new .NET technology from Microsoft for building rich Windows applications. It was originally part of .NET 3.0, previously called “WinFX” by Microsoft. WPF includes an XML-based markup language for defining program elements, Extensible Application Markup Language (XAML). WPF applications can be created using only code or a combination of code and XAML pages. This course covers the essentials of WPF, providing an orientation to this technology and a firm foundation for creating applications. The course is current to .NET 4.0 and Visual Studio 2010. WPF is a complex technology that can have a steep learning curve. This course approaches the subject in a practical manner, introducing the student to the fundamentals of creating Windows applications using the features of WPF. It includes coverage of both traditional concepts such as controls and new concepts such as XAML, flexible layout, logical resources, dependency properties, routed events, and the loosely-coupled command architecture of WPF. Data binding is discussed in detail, including visual data binding using Visual Studio 2010 and accessing databases using the Entity Data Model.

**Audience:** NET programmers who want to be able to create rich Windows applications.

**Prerequisites:** A working knowledge of C# and the .NET Framework.

**Number of Days:** 4 days

### 1. Introduction to WPF

History of Microsoft GUI

Why WPF?

When Should I Use WPF?

WPF and .NET Framework 3.0

.NET Framework 4.0

Visual Studio 2010

WPF Core Types and Infrastructures

XAML

Controls

Data Binding

Appearance

Layout and Panels

Graphics

Media

Documents and Printing

Plan of Course

Application and Window

Creating a Button

Providing an Event Handler

Specifying Initial Input Focus

Complete First Program

Device-Independent Pixels

Class Hierarchy

Content Property

Simple Brushes



Panels

Children of Panels

TwoControls – Code

Automatic Sizing

## **2. XAML**

What is XAML?

Default Namespace

XAML Language Namespace

.NET Class and Namespace

Elements and Attributes

XAML in Visual Studio 2010

Adding an Event Handler

Layout in WPF

Controlling Size

Margin and Padding

Thickness Structure

Children of Panels

TwoControls – XAML

Automatic Sizing

TwoControls - Code

Orientation

Access keys

Access keys in XAML

Content Property

Checked and Unchecked Events

Property Element Syntax

Type Converters

## **3. WPF Controls**

Buttons in WPF

Using the Button Class

Toggle Buttons

IsThreeState

CheckBox

CheckBox Code

ToolTip

RadioButton

GroupBox

Images

TextBox

Initializing the TextBox

Clipboard Support

Items Controls

Selector Controls

Using a ListBox



Multiple-Selection ListBox  
Selected Items  
Using the ComboBox  
Storing Objects in List Controls  
Collection Items in XAML

#### **4. Layout**

Layout in WPF  
Controlling Size: Review  
Margin and Padding: Review  
Thickness Structure: Review  
SizeDemo Program  
Top Panel  
Content Property  
XAML vs. Code  
Type Converter  
Alignment  
Alignment inside a Stack Panel  
Vertical Alignment  
Horizontal Alignment  
Vertical Alignment in a Window  
Content Alignment  
FlowDirection  
Transforms  
Panels  
Shapes  
Size and Position  
Attached Properties  
StackPanel  
Children of StackPanel  
WrapPanel  
DockPanel  
Grid  
Using the Collections Editor  
Star Sizing  
Grid.ColumnSpan  
Scrolling  
Scaling  
ScrollViewer and Viewbox Compared



## **5. Dialogs**

Dialog Boxes in WPF

MessageBox

MessageBox Show Method

Common Dialog Boxes

Custom Dialogs

Modal Dialogs

New Product Dialog

XAML for New Product Dialog

Code for the New Product Dialog

Bringing up the Dialog

Dialog Box Owner

Displaying the Dialog

Communication with Parent

XAML for Modeless Dialog

Handler for the Apply Button

Handler for the Close Button

Instances of a Modeless Dialog

Checking for an Instance

## **6. Menus and Commands**

Menus in WPF

Menu Controls

A Simple Menu

The Menu Using XAML

Handling the Click Event

The Menu Using Procedural Code

Icons in Menus

Context Menu

XAML for Context Menu

Separator

Keyboard Shortcuts

WPF Command Architecture

Command Bindings

Custom Commands

MenuCalculator Command Bindings

Input Bindings

Menu Items

Running MenuCalculator

Checking Menu Items

Common Event Handlers

Menu Checking Logic

Calculation Logic

Automatic Checking

## **7. Toolbars and Status Bars**



- Toolbars in WPF
- XAML for Toolbars
- Commands and Events
- Images on Buttons
- Tool Tips
- Other Elements on Toolbars
- Status Bars

## **8. Dependency Properties and Routed Events**

- Dependency Properties
- Change Notification
- Property Value Inheritance
- Support for Multiple Providers
- Logical Trees
- Visual Trees
- Routed Events
- Event Handlers
- Routing Strategies
- Ready-made Routed Events in WPF

## **9. Resources**

- Resources in .NET
- Resources in WPF
- Binary Resources
- Loose Files as Resources
- Logical Resources
- Logical Resources in Code
- Static Resources
- Dynamic Resources

## **10. Data Binding**

- What is Data Binding?
- Binding in Procedural Code
- Binding in XAML
- Binding to Plain .NET Properties
- Binding to a Collection
- Controlling the Selected Item
- Data Context
- Data Templates
- Specifying a Data Template
- Value Converters
- Using a Value Converter in XAML
- Collection Views
- Sorting
- Grouping
- Filtering



Collection Views in XAML  
Data Providers  
ObjectDataProvider  
XmlDataProvider  
Data Access with Visual Studio 2010  
SmallPub Database  
ADO.NET Entity Framework  
Navigation Code  
DataGrid Control  
Editing the Book Table  
Class Library  
Database Updates  
Refreshing the DataGrid

## **11. Styles, Templates, Skins and Themes**

WPF and Interfaces  
Styles  
Style Definition  
Applying Styles  
Style Inheritance  
Style Overriding  
Sharing Styles  
Typed Styles  
Triggers  
Multiple Conditions  
Validation  
Templates  
Improving the Template  
Templated Parent's Properties  
Respecting Visual States  
Using Templates with Styles  
Skins  
Changing Skins  
Themes

## **12. WPF and Windows Forms Interoperation**

Interoperating with Windows Forms  
Add a Form to a WPF Application  
Add a WPF Window to a Windows Forms Application  
Mixing WPF and Windows Forms in the Same Window  
Hosting a Windows Forms Control Using Code  
WindowsFormsHost via Code  
Windows Forms MonthCalendar  
WindowsFormsHost via XAML