Microsoft's Silverlight is a client-side Web technology that enables the implementation of visually stunning Web applications that depend only on a small, easy-to-install plug-in that works in browsers for both Windows and Macintosh. Silverlight provides a cross-platform and cross-browser implementation of the .NET Framework. Out-of-browser support enables Silverlight applications to run disconnected from the Internet. Silverlight applications can be implemented in .NET languages such as C# and Visual Basic as well as in JavaScript.

This four-day course provides the C# programmer with a thorough foundation in Silverlight 5. The course then shows how to use Silverlight to draw shapes, lines, text and images. Layout is discussed in detail, including sizing and positioning of controls and the use of panels. Event handling is covered. There is an introduction to Silverlight animation and the use of video and audio. Networking issues are covered, including caching, asynchronous data transfers, and downloading assemblies and resources on demand. The use of both SOAP and REST based Web services is discussed. The course concludes with a chapter covering new features in Silverlight 5.

Course Objectives:

- Gain a practical knowledge of using Silverlight in Web applications.
- Understand the use of XAML with Silverlight, including the creation of dynamic content.
- Use Silverlight to draw shapes, lines, text and images.
- Implement input-driven Web applications using Silverlight.
- Use advanced Silverlight features such as animation and multimedia.
- Communicate over the network using HTTP and Web services.
- Use data controls and data binding.
- Access data in Silverlight applications.
- Interoperate between JavaScript and managed code.
- Implement out-of-browser Silverlight applications, including ones with elevated trust.
- Do printing and clipboard access from Silverlight applications.

Audience: Programmers needing to create web applications using Silverlight.

Prerequisites: A basic understanding of Web application development using HTML and programming experience in .NET using C#. A basic knowledge of ADO.NET is desirable for the data access chapter..

Number of Days: 4 days

1 Introduction to Silverlight

What Is Silverlight?
Silverlight and AJAX
Silverlight and Flash
Silverlight Tools
XAML
XHTML
Automatic Plug-In Download
Using Visual Studio 2010
Hosting the Silverlight Application
MainPage.xaml
MainPage.xaml.cs
Designer Support
Layout Panels
Using a StackPanel
Handling Events in Managed Code

Events Window
Adding Events in XAML
Code-Behind File
Names of XAML Elements
Silverlight Controls
Application Package (.xap)
2 Using XAML
Windows Presentation Framework
What Is XAML?
Root Element
Default Namespace
XAML Namespace
Canvas
An Opaque Ellipse
Property Element
Type Converters
Content Element Syntax
Collection Syntax
Implicit Collection Syntax
Attached Properties
XAML and C#
Assigning Property Values
Using the XAML Namespace
Assigning Simple Properties
Properties Attached to Canvas
Assigning Attached Properties
XamlReaderLoad()
BrushFromString()
Navigating from the Root
MainPage.xaml
Code-Behind File
Using an Event Sender
Handling an XAML Event
3 Shapes and Lines
Shapes
Size and Position
Rectangle and Ellipse
MainPage.xaml
MainPage.xaml.cs
More Shape Properties
Opacity and Visibility
Receiving Mouse Events
Polygon
Line
Dashed Lines
Polyline
Path
Arc Segments
Bezier Curves
Clipping
4 Texts and Fonts
TextBlock
Text Wrapping
Font Attributes
Font Families
Font Weights
Additional TextBlock Properties
TextBlock Dimensions
ActualWidth and ActualHeight
Rich Text Content
Run and LineBreak
5 Brushes and Images
Brushes
SolidColorBrush
Predefined Color Names
RGB Color Space
Enhanced RGB Color Space
Gradient Brushes
Linear Gradient Brushes
Default Gradient Axis
Horizontal and Vertical Gradient Axis
Color Interpolation Mode
Spread Methods
Repeat and Reflect
Alpha Channel Changes
Painting Other Shapes
Radial Gradient Brushes
GradientOrigin
ImageBrush
Using an ImageBrush with Text
Image
Stretch Property
Code-Behind File
6 Layout
Layout in Silverlight
Controlling Size
Margin and Padding
Thickness Structure
Alignment
Panels
Grid
Using the Collections Editor
Star Sizing
Grid.ColumnSpan
Positioning on a Canvas
Moving Elements

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Z-Order
Clipping
7 Handling Events
Events in Silverlight
Event Handlers in XAML
Adding/Removing Event Handlers
Loaded Event
Mouse Events
Microsoft Silverlight Configuration
MouseEventArgs
C# Code
Rubber-Band Drawing
Naïve Implementation
drawRect() Helper Function
Final Implementation
Drag and Drop
Drag and Drop – XAML File
Drag and Drop – Code-Behind
Capturing the Mouse
Routed (or "Bubbled") Events
8 Animation and Media
Manual Animation
Silverlight Animation
Storyboard Methods
User Interface
DoubleAnimation
ColorAnimation
ColorAnimation – Code-Behind
PointAnimation
Audio and Video
Resources
Loose Files as Resources
9 Application Structure and Networking
Silverlight Application Structure
A Simple Package
Application Package
Application Manifest
Application Class
XML Processing
Image Resource Files
Resource File in a Component
Resource File in the Package
Application Library Caching
External Parts
CopyLocal is False
Using WebClient
Downloading Content on Demand
DownLoadImage Code
10 Web Services
Accessing Web Services in Silverlight
REST
EchoREST Web Service
SOAP
Web Service Proxies
Windows Communication Foundation
EchoSOAP Web Service
11 Data Controls and Data Binding
ListBox Control
Book.cs
Auto-Implemented Properties
Using Items Property
Deleting a Book
Selection
Binding to a Collection
DataPager Control
DisplayMode
DataGrid Control
Paging with DataGrid
Sorting with DataGrid
More about Data Binding
Dependency Properties
Binding Object
ElementName Binding
Binding to a CLR Object
Change Notification
Updating the Book Object
INotifyPropertyChanged
Notification with Collections
Book Class
MainPage.xaml.xs
Updating Collection Elements
Notification by Collection Elements
Notification in Book Class
12 Data Access
Accessing Data on the Server
SmallPub Database
ADO.NET Entity Framework
SmalPub Tables
SmallPub Entity Data Model
Entity Data Model Concepts
Querying the EDM
Class Diagram
Context Class
List of Categories

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List of Books
Language Integrated Query (LINQ)
IntelliSense
Modifying a Data Source
Entity Framework in a Class Library
Data Access Class Library
Client Code
Silverlight Database Clients
Adding a Web Service
Consuming a Web Service
Modifying the Configuration File
Auto-Generated Columns
WCF Data Services
Choosing Data Objects
BookModel.edmx
WCF Data Service Template
DataService Class
A REST-based Web Service
Disabling Feeds
Open Data Protocol (OData)
OData and WCF Data Services
OData Feeds
Medata for OData Services
URI Conventions
Resource Path Options
Query String Options
OData Operations
A Console Client
A Silverlight Client
Accessing XML Data
Accessing an XML File
Using LINQ to XML
Isolated Storage
Isolated Storage Store
Saving Data to a File
Loading Data from a File
Deleting a File

13 Additional Features

HTML Bridge
HAMTL and JavaScript
HtmlPage Class
JavaScript from Managed Code
Managed Code from JavaScript
Out-of-Browser Support
Configuring Out-of-Browser Support
Installing Out-of-Browser
Running Out-of-Browser
Application Manifest
Elevated Trust
Printing
Print Dialog Box
Printing Code
Clipboard Access

14 New Features in Silverlight 5

3D Graphics in Silverlight
XNA SoundEffect API
Audio File Formats and Codes
Audio Files on the Web
Downloading Audio Files
Audio File Conversion
Using the SoundEffect Class
Variable Rate Playback (Trick Play)
Trick Play Example Code
Trusted Applications
PivotViewer Control
PivotViewer Features
Utility Class
DemoItem Class
PivotViewer Collection
PivotViewer Assembly and Namespace
PivotProperties
Running the Example
Some Experiments
Color Converter
Template Definition
Breakpoints in XAML Data Binding
XAML Data Binding Enhancements

Appendix A – Learning Resources

Appendix B – Transforms

Transforms
Translate Transform
A Dynamic Transform
Rotate Transform
Scale Transform
Skew Transform
Combining Transforms

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