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## 2543-Core Web Application Technologies with Microsoft Visual Studio 2005

Three days; Instructor-Led

### Introduction

This three-day instructor-led workshop provides students with the knowledge and skills to develop Microsoft( ASP.NET 2.0 Web applications using Microsoft Visual Studio( 2005. The workshop focuses on user interfaces, Web site structure and functionality, and implementation details.

### Audience

This workshop is intended for corporate/ISV application developers who have a desire to learn more about specific technology areas in Web application development.

#### At Workshop Completion

After completing this workshop, students will be able to:

- Create a Web application.
- Program a Web application.
- Add and configure server controls for a Web application.
- Use master pages to establish a common layout for a Web application.
- Manage state data for a Web application.
- Access and display data in a Web application.
- Control access to a Web application.
- Deploy a Web application.
- Create a mobile Web application.

# Prerequisites

Before attending this workshop, students must:

- Be able to manage a solution environment using the Visual Studio 2005 IDE and tools
- Understand Microsoft .NET Framework 2.0 and the Common Language Runtime
- Be able to program an application using a .NET Framework 2.0 compliant language
- Know how to make assemblies available to other applications
- Have a basic understanding of XML including XML declaration, elements, attributes, and namespaces
- Have a basic understanding of client-side scripts
- Have a basic understanding of HTML

# Workshop Outline

## Unit 1: Creating a Web Application

This unit describes the different types of Web sites that you can create with Visual Studio 2005. It introduces the concept of event handling, and shows how to work with default event handlers for an object. It also explains how to control a Web application through the hierarchy of configuration files.

### Lessons

- Visual Studio Web Site Types
- Default Event Handling in Web Applications
- Web Configuration Files

## Lab 1: Creating a Web Application

- Exercise 1. Creating a New Web Application
- Exercise 2. Configuring and Building a Web Application

After completing this unit, students will be able to:

- Describe the types of Web sites that they can create with Visual Studio 2005.

- Describe the concept of a default event handler for an object.
- Explain how the Machine.Config and Web.Config files control the settings for a Web application.
- Create a new Web application.
- Configure and build a Web application.

## **Unit 2: Programming a Web Application**

This unit introduces the advanced event-handling capabilities of ASP.NET 2.0 and describes how to work with events in Visual Studio 2005. It shows how to work with non-default event handlers and centralized event handlers. It also addresses other common Web programming concepts, including:

- Detecting the type, version, and capability of the browser being used to view a Web site.
- Accessing information in an ASP.NET Web Page header.
- Using the HttpResponse.Write method to provide feedback to users.
- Handling page-level errors.

### **Lessons**

- Event Handling in Web Applications
- Browser Capability Detection
- Page Header Retrieval
- Page-Level and Application-Level Error Handling

### **Lab 2: Programming a Web Application**

- Exercise 1. Implementing Non-Default Event Handlers
- Exercise 2. Detecting Browser Capabilities and Setting Page Header Properties
- Exercise 3. Handling Page-Level Exceptions

After completing this unit, students will be able to:

- Describe various event-handling techniques.
- Explain how to detect browser types and capabilities.
- Explain how to access page headers.
- Describe how to handle page-level errors and application-level errors.
- Implement advanced techniques for handling events.
- Implement browser-capability detection.
- Implement page-header manipulation.
- Implement page-level and application-level error handling.

## **Unit 3: Adding and Configuring Server Controls**

This unit explains how to use the HTML controls and Web server controls provided by Visual Studio 2005 and ASP.NET 2.0. It shows how to design and build Web-based user interfaces, and it teaches how to program Web server controls. This unit also describes how the ASP.NET 2.0 postback model works and how it can be used.

### **Lessons**

- HTML Controls and Web Server Controls
- Types of Web Server Controls
- Working with Web Server Controls
- The ASP.NET 2.0 Page Postback Model

### **Lab 3: Adding and Configuring Server Controls**

- Exercise 1. Building Graphical User Interfaces with HTML Controls
- Exercise 2. Building Graphical User Interfaces with Web Server Controls
- Exercise 3. Programming Web Server Controls and Working with Postbacks

After completing this unit, students will be able to:

- Explain the differences between HTML controls and Web server controls.
- Describe the different types of Web server controls.
- Explain how to use HTML controls and Web server controls.
- Explain how the postback model of ASP.NET 2.0 works.
- Create Web-based user interfaces with HTML controls and Web server controls.
- Write code that interacts with Web server controls.
- Write code that interacts with the postback model of ASP.NET 2.0.

### **Unit 4: Creating a Common Layout by Using Master Pages**

This unit explains how to use master pages to define common layouts for Web pages. Master pages provide developers with a new set of features for ensuring consistent page layout. Students will work with master pages and nested master pages in the lab to build a Web application that has a consistent layout and functionality across Web pages.

### **Lessons**

- What Are Master Pages?
- What Are Content Pages?
- Nested Master Pages

### **Lab 4: Creating a Common Layout by Using Master Pages**

- Exercise 1. Designing a Master Page
- Exercise 2. Adding and Configuring Content Pages

- Exercise 3. Designing Nested Master Pages

After completing this unit, students will be able to:

- Describe the concept of a master page.
- Describe the concept of a content page.
- Describe nested master pages.
- Design master pages.
- Configure content pages.
- Design nested master pages.

### **Unit 5: Managing State for a Web Application**

This unit describes the different state management technologies that students can use in ASP.NET 2.0 Web applications. It discusses how controls can retain state data over multiple requests, and then explains how developers can work with this state data. This unit then shows how to store state data in the Application and Session objects provided by ASP.NET 2.0. It also discusses the different session-data storage mechanisms. Finally, this unit explains how to use the Cache object to cache and retrieve state data.

#### **Lessons**

- ViewState Properties and ControlState Data
- Application and Session Objects
- Strategies for Managing Session State Data
- The Cache Object

#### **Lab 5: Managing State for a Web Application**

- Exercise 1. Configuring ViewState Properties for Web Server Controls
- Exercise 2. Storing and Retrieving Application and Session State
- Exercise 3. Implementing Out-of-Process Session State
- Exercise 4. Storing and Managing State Data in the Cache Object

After completing this unit, students will be able to:

- Describe the ViewState and ControlState data models for Web pages.
- Describe the Application and Session objects and explain how state data is stored and retrieved in these objects.
- Describe various session-state data-storage strategies.
- Describe the Cache object and explain how you can use it to store and manage state data.
- Configure ViewState properties and ControlState properties for Web server controls.
- Store and retrieve Application and Session state.

- Implement out-of-process session state.
- Store and manage state data in the Cache object.

### **Unit 6: Accessing and Displaying Data**

This unit describes how to add database connections to the Web.Config file and the benefits that this approach adds when building manageable Web applications. This unit then describes the new data controls for accessing data in a variety of formats. It includes details about using the SqlDataSource control, the XmlDataSource control, and the ObjectDataSource control. This unit also describes how user interface data controls are bound to the data source controls, and it includes a discussion about binding data-aware standard controls to data.

#### **Lessons**

- Database Connections and the Web.Config File
- Relational Data and Data Source Controls
- XML Data and Data Source Controls
- Object Data and Data Source Controls

### **Lab 6: Accessing and Displaying Data**

- Exercise 1: Creating and Retrieving Database Connections
- Exercise 2: Accessing Data by Using SqlDataSource Controls and Data Controls
- Exercise 3: Accessing Objects as Data with ObjectDataSource Controls
- Exercise 4: Accessing XML Data by Using XmlDataSource Controls

After completing this unit, students will be able to:

- Explain how to store and retrieve database connections by using the Web.Config file.
- Explain how to use data source controls to access relational data.
- Explain how to use data source controls to access XML data.
- Explain how to use data source controls to access object data.
- Create and retrieve database connections by using the Web.Config file.
- Access relational data by using the SqlDataSource control and data controls.
- Access XML data by using the XmlDataSource control and data controls.
- Access objects as data by using the ObjectDataSource control and data controls.

### **Unit 7: Controlling Access to a Web Application**

This unit describes authentication and authorization for Web applications. It also shows how to develop login, sign-up, and other membership pages for Web applications based on the ASP.NET 2.0 Membership system.

#### **Lessons**

- Authentication for Web Applications
- Authorization for Web Applications
- Site Membership Systems Using the Membership Class
- Web Site Security Administration Using the Roles Class

#### **Lab 7: Controlling Access to a Web Application**

- Exercise 1: Configuring Authentication and Authorization for a Web Application
- Exercise 2: Implementing a Membership Registration Page
- Exercise 3: Implementing a Login Page and Adding Login Controls
- Exercise 4: Creating a Membership Management Administrative User Interface

After completing this unit, students will be able to:

- Describe the authentication methods for Web applications.
- Describe the authorization methods for Web applications.
- Describe the main components of a membership system.
- Describe how to build a security administration interface.
- Configure authentication and authorization for a Web application.
- Implement a membership registration page.
- Implement a login page.
- Create a membership management administrative user interface.

#### **Unit 8: Deploying a Web Application**

This unit describes three different ways to deploy Web applications:

- Using the Copy Web Site utility to deploy a Web application in a non-compiled state
- Using the Publish Web Site utility to deploy a precompiled version of the Web application
- Building Microsoft Windows( Installer packages to create a redistributable application with full setup logic

#### **Lessons**

- The Copy Web Site Utility
- The Publish Web Site Utility
- Windows Installer Setup Packages

#### **Lab 8: Deploying a Web Application**

- Exercise 1. Deploying a Web Application by Using the Copy Web Site Utility
- Exercise 2. Precompiling and Deploying a Web Application by Using the Publish Web Site Utility
- Exercise 3. Building a Windows Installer Package for Deploying a Web Application

After completing this unit, students will be able to:

- Describe how to use the Copy Web Site utility to deploy a Web application.
- Describe how to use the Publish Web Site utility to precompile and deploy a Web application.
- Describe how to build Windows Installer packages for deploying a Web application.
- Deploy a Web application by using the Copy Web Site utility.
- Precompile and deploy a Web application by using the Publish Web Site utility.
- Build and run a Windows Installer setup application for deploying a Web application.

#### **Unit 9: Making Web Applications Available to Mobile Devices**

This unit explains how to enable browsers running on mobile devices, such as Pocket PCs and mobile phones, to access pages within your application.

##### **Lessons**

- Device Emulators for Mobile Web Forms
- Mobile Device Detection and Redirection
- Mobile Web Forms
- Device-Specific Features in Mobile Web Forms

#### **Lab 9: Making Web Applications Available to Mobile Devices**

- Exercise 1. Managing Redirection for Mobile Devices
- Exercise 2. Designing and Implementing a Mobile Web Form
- Exercise 3. Designing Device-Specific Features for a Mobile Web Application
- Exercise 4. Browsing a Mobile Web Application with Specific Device Emulators

After completing this unit, students will be able to:

- Explain how to detect mobile devices and redirect them to an appropriate page in a Web application.
- Describe mobile Web pages, forms, and mobile controls.

- Explain how to use device-specific features in mobile Web pages to respond to the different capabilities of mobile devices.
- Explain how to use device emulators in Visual Studio 2005 to test mobile Web pages.
- Design and implement mobile Web forms.
- Design device-specific features for mobile Web pages