Learn Easy

ASP.NET

LEARN EASY ASP.NET

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Preface

ASP.NET is a web development platform, which provides a programming model, a comprehensive software infrastructure and various services required to build up robust web applications for PC, as well as mobile devices. ASP.NET is a leading web development tool. This book helps to understand

The advantages of ASP.NET applications are

- Learn about server controls and events in ASP.NET.

- Create a simple Web Service in ASP.NET.

- ASP.NET is a development framework for building web pages. This book will help to build the Quality interactive, robust web application development ideas. Three different development model Web Pages, MVC (Model View Controller), and Web Forms.

- It consists of a large number of controls such as text boxes, buttons, and labels for assembling, configuring, and manipulating code to create HTML pages.

- ASP.NET is a technology, which works on the .Net framework made of an object-oriented hierarchy.

Students who go through this books and practice in Lab with the help of Lab assistant, they will be able to do wonders out of this book.

With 17 years of teaching experience in computer science,

- Completed M.Phil from Mother Theresa University, Kodaikanal and a Ph.D from Madurai Kamaraj University, Madurai.

- Started career as Lecturer in Computer Science.

- Passionate in motivating the youth especially the student community to become, first and foremost, good citizens of the country.

- Interested in imparting creativity, self confidence and helping tendency among the students.

- Working as the Head of the department of MCA, at N.M.S.S.V.N College, Madurai.

- Welcome feedback, if any, from students community who use this book as their guide to jas_ani@yahoo.com

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Introduction to Visual Studio & ASP.NET 3.5

Lesson Objectives
- ❖ Overview of Visual Studio 2008
- ❖ Explore the Visual Studio 2008 IDE
- ❖ Understand Debugging Tools
- ❖ An Introduction to ASP.NET 3.5

Visual Studio 2008 is a suite which can be used to develop Console Applications, Windows Applications, ASP.NET Web Applications, ASP.NET Web Services, Enterprise Applications and applications for Mobile Devices. It also provides tools for the deployment of Windows, Web, Enterprise and Mobile Applications. Visual Studio 2008 provides a common environment for the development of applications in any .NET Programming Language such as Visual Basic.NET, Visual C#.NET and VC++.NET.

Visual Studio 2008 can be used to develop applications targeting any of the frameworks below:

Microsoft.NET Framework 3.5
Microsoft.NET Framework 3.0
Microsoft.NET Framework 2.0

Overview of Visual Studio 2008 Features:

Visual Studio 2008 has several new features and enhancements in relation to the Integrated Development Environment, Data Access, Client Application Services and Reporting. Windows Presentation Foundation, Windows Communication Foundation, Windows Workflow Foundation and CardSpace are some of the important new features. Let us discuss the remarkable features.

Windows Presentation Foundation (WPF) Applications

Windows Presentation Foundation is used to build applications with rich user interfaces containing graphics. WPF can be used to develop forms, animations, videos. IT was first introduced in the .NET Framework version 3.0. It allows you to create windows applications as well as applications which can run over the browsers. It uses Extensible Application Markup Language (XAML). WPF has several controls such as Label, Button, CheckBox, RadioButton, GroupBox, ListBox, TabControl, ToolBar, StatusBar, ProgressBar, Frame, etc.

Extensible Application Markup Language (XAML)

XAML is used for creating the user interface elements for Windows Presentation Foundation Applications. The User Interface elements are declared using XAML and the business logic is implemented in the form of code-behind files. XAML files are XML files. The extension of XAML file is ".xaml". The .NET Framework includes a compiler and run-time parser for XAML.

Windows Communication Foundation (WCF) Applications

WCF is a framework for creating secure, reliable, transactional, distributed and interoperable applications. It is a programming model which is based on a WCF Service and WCF Client. WCF service is based on an interface that defines a contract between a service and the client. WCF Client has a proxy that enables an application to communicate with a WCF service.

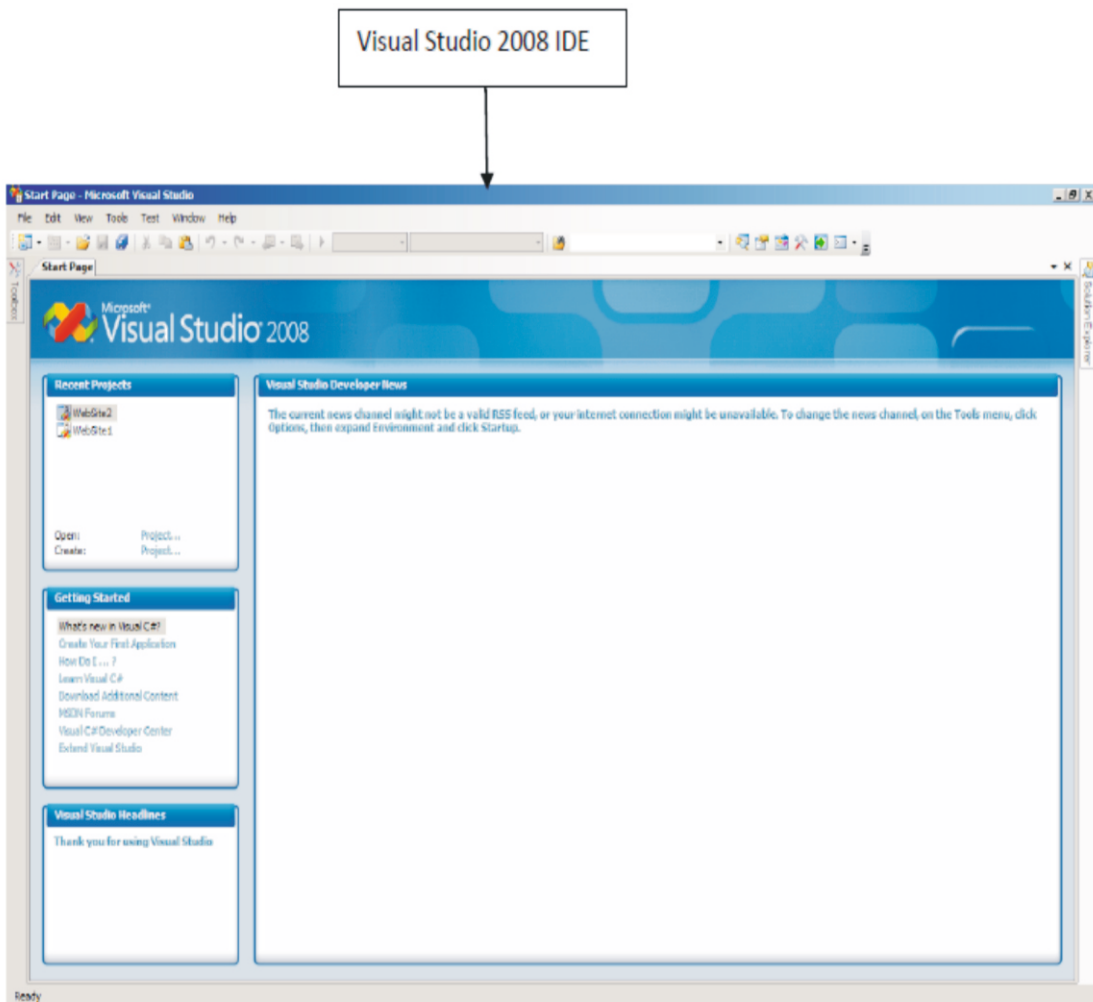# Windows Workflow Foundation (WF) Applications

WF is used to create system as well as human workflows. Workflows are the activities of a real-world process that are stored as a model. ASP.NET web services, ASP.NET web sites, windows and console applications can use workflows.

Language Integrated Query (LINQ)

LINQ provides a mechanism for writing queries against strongly typed collections of objects with the help of language keywords and operators. LINQ provides the benefits of compile-time checking, static typing and intellisense. LINQ has various data access models such as LINQ to ADO.NET, LINQ to XML, and LINQ to Objects.

Exploring the Visual Studio 2008 IDE

The Integrated Development Environment (IDE) is a graphical tool used for developing applications with the .NET Framework. It is used to enhance productivity by providing various tools for software development.
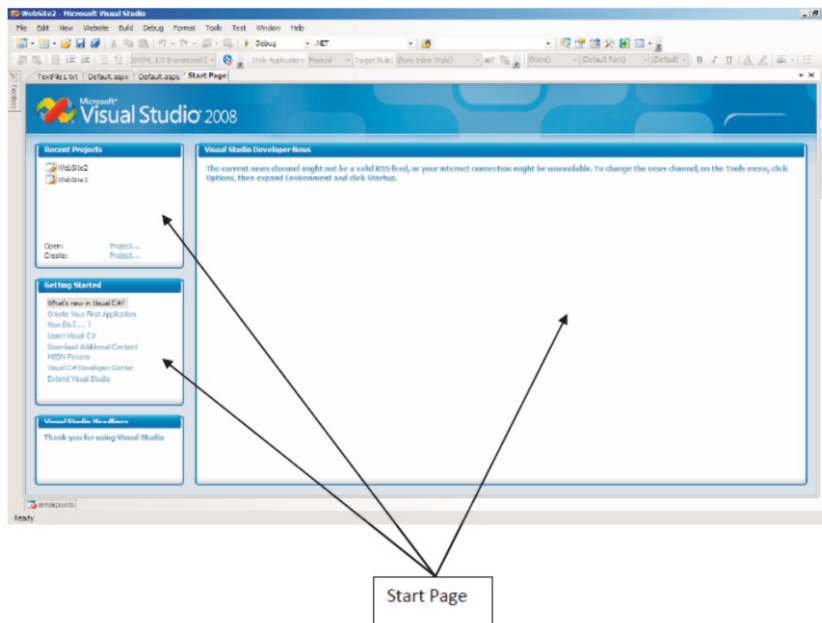
Steps to open Visual Studio IDE:

Start Menu > All Programs > Microsoft Visual Studio 2008 > Microsoft Visual Studio 2008.

Solutions and projects can be created using the IDE. Solution contains one or more projects and miscellaneous files. Projects contain source files, folders and references. A solution is automatically created when you create a project. Let us now explore the various windows and tools of the IDE.
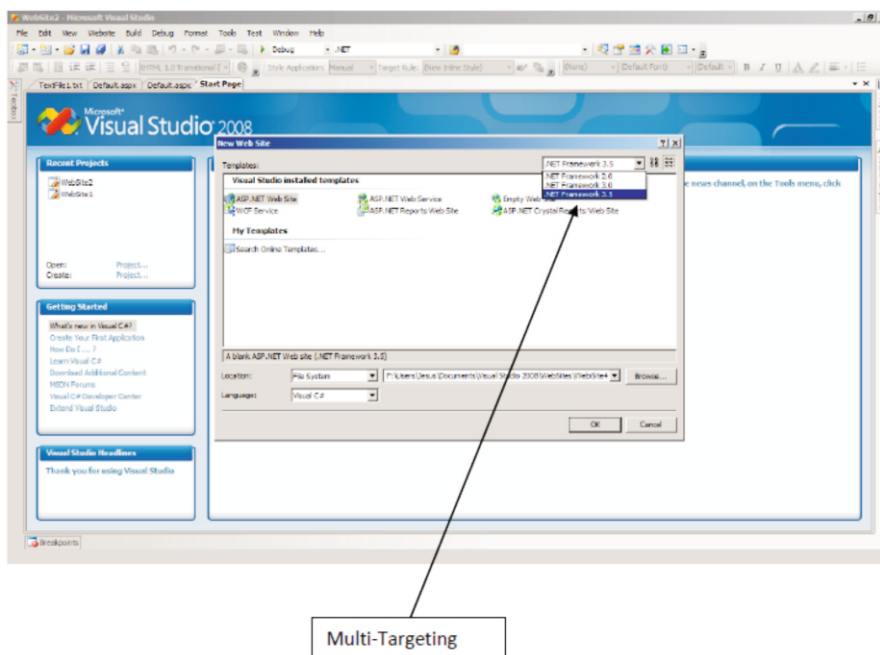
Start Page

The Start Page displays a list of projects which were recently used in the Recent Projects Section.

Start Page

It allows you to open projects already created and also create new projects. The Getting Started section provides you with various help topics. It also contains the Visual Studio Headlines and Visual Studio Developer News Sections.
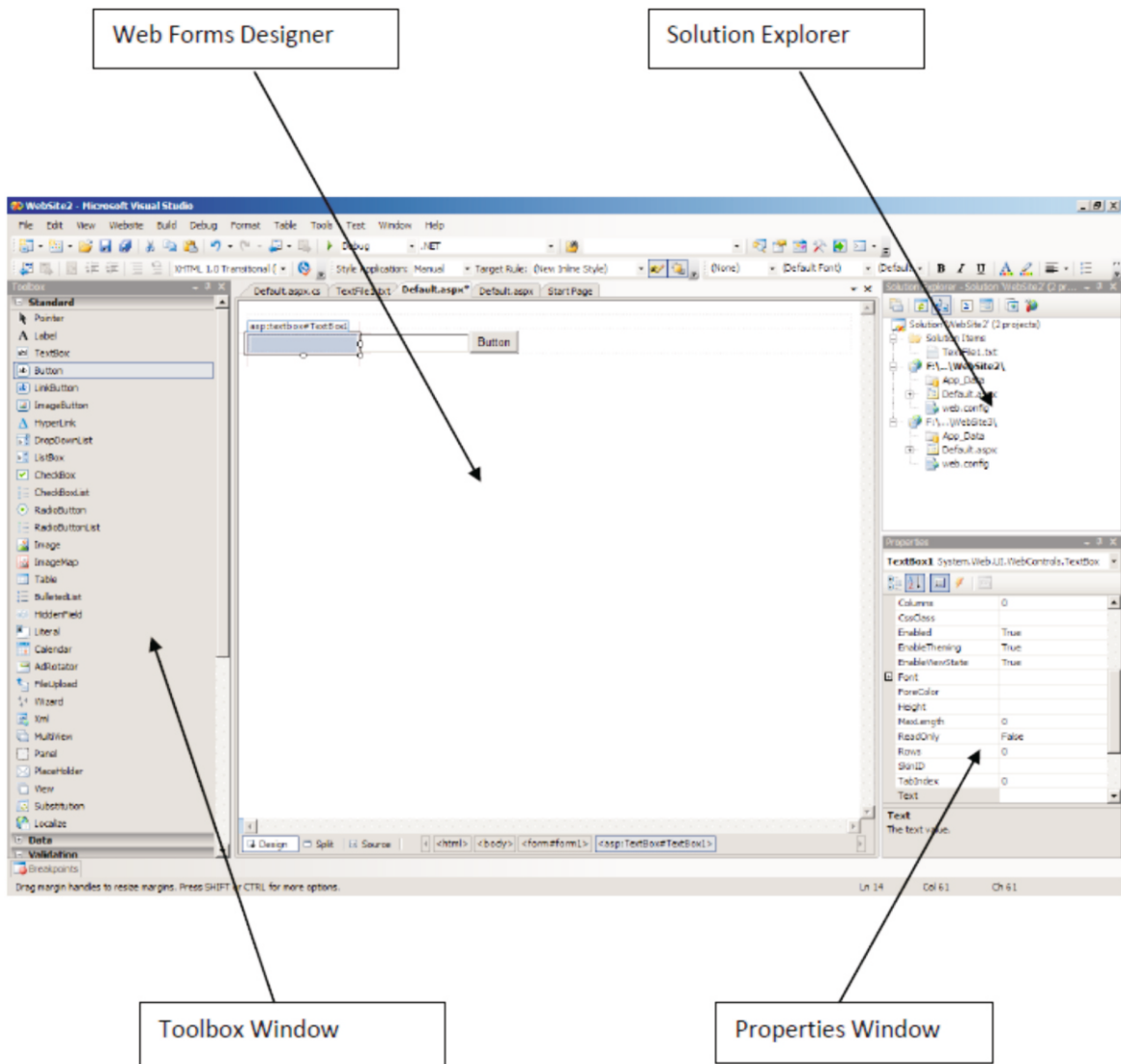
Multi-Targeting

The Multi-Targeting feature allows you to select any one of the .NET Framework versions (2.0, 3.0 or 3.5) for the application which is to be developed. It provides the flexibility of developing applications which were developed in Visual Studio 2005.

Multi-Targeting

Solution Explorer

The Solution Explorer displays the projects and files contained in the projects of a solution. Solution Explorer can be opened by selecting the "Solution Explorer" option from the View Menu. Solution items and miscellaneous files are also displayed along with projects. The solution explorer can be displayed by selecting the "Solution Explorer" option from the View Menu.

Properties Window

The Properties window displays the various properties of a form or the control which is selected in the design view. It also displays the various events for the selected control of form. The properties and events can be displayed based on category or in alphabetical order.

Toolbox

The Toolbox contains various tabs containing groups of related controls such as HTML, Data, Validation, Navigation, Login, WebParts, AJAX Extensions, Reporting and General. The controls can be dragged from the toolbox onto the Web Form Designer.
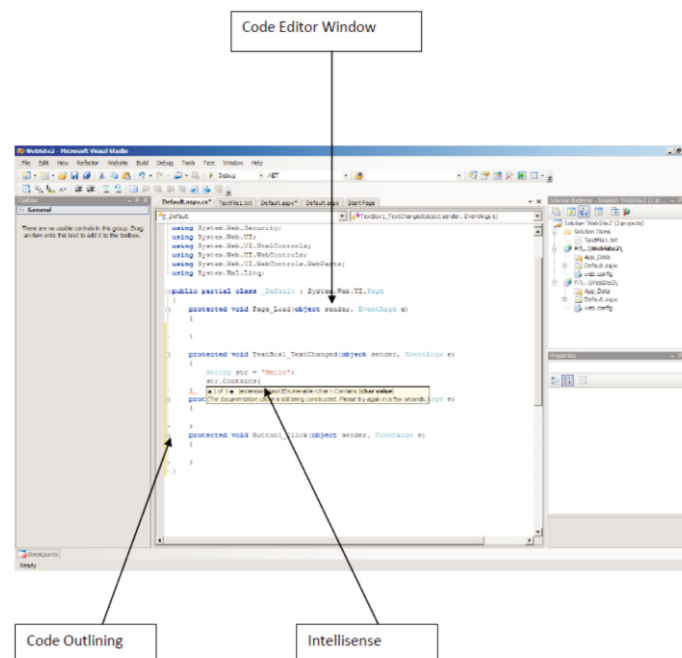
Web Forms Designer Window

The Web Forms Designer Window allows you to edit the controls in an ASP.NET web page. It has two views, the Design view and the Source View. The Design View displays the web page in with a visual representation of the HTML and ASP.NET controls. The Design view is as WYSIWYG (What You See Is What You Get) view. The Source View displays the markup for various HTML and ASP.NET Controls. It allows the software developer to edit the mark up of the web page and controls.

Code Editor Window

The Code Editor Window displays the code written in the code-behind file. It allows editing of code. This window can be opened by double-clicking the form in the Design view or by right-clicking the form from the Solution Explorer and selecting the View Code option. The Code Editor Window also allows setting up of break points for debugging.

IntelliSense

IntelliSense is as feature of the Visual Studio IDE which displays class definitions and comments based on the context. It displays the various overloaded functions and descriptions for the various parameters when you start typing the function name in the Code Editor and helps you complete the function names without having to type them out.

Code Outlining

The Code Outlining feature is used to expand or collapse the various members of a class such as functions, properties, and blocks of code. This helps better visibility of code in the Code Editor window. Outlining menu contains various options which can be displayed by right clicking the Code Editor Window.
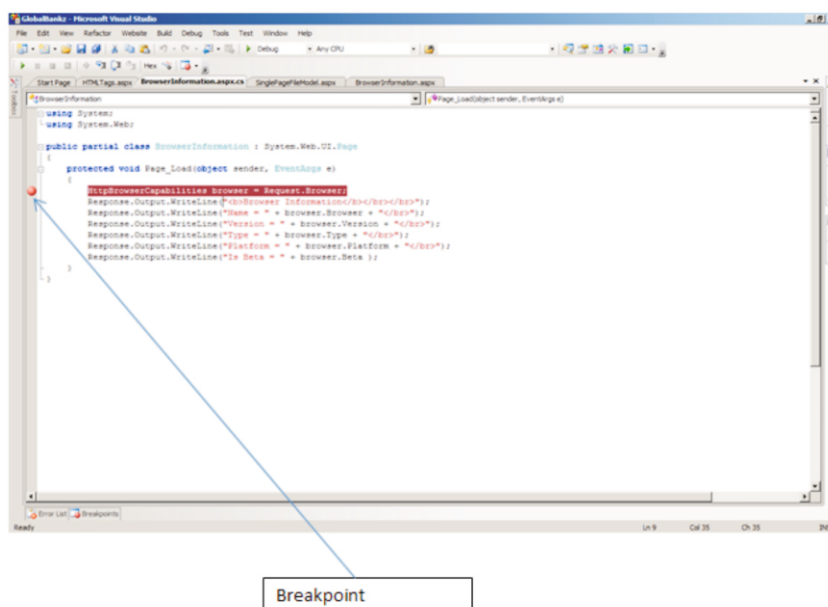
Integrated Web Server

The Integrated Web Server allows the hosting of an ASP.NET web application during development without the need of an Internet Information Server (IIS). It allows execution of an ASP.NET web site directly from the Integrated Development Environment. The Integrated Web Server allows execution on Web Sites in the local machines only.

Debugging

Debugging is the mechanism of identifying logical errors by observing the behavior of the program during run-time. Debugging can be done with the help of the Visual Studio Debugger. The Debug menu displays all the commands used during debugging. The debug tool bar can also be used for quick access of the debugging commands. Let us now look at the various debugging tools.

Breakpoint

A breakpoint in the code instructs the asp.net debugger to suspend execution of your program temporarily at the line of code where it is set. The program enters break mode. The break mode does not end your program. The programmer can continue execution at any point of time. Breakpoints can be set by right clicking the line of code in the code editor window and from the Breakpoint menu, selecting the Insert Breakpoint option.
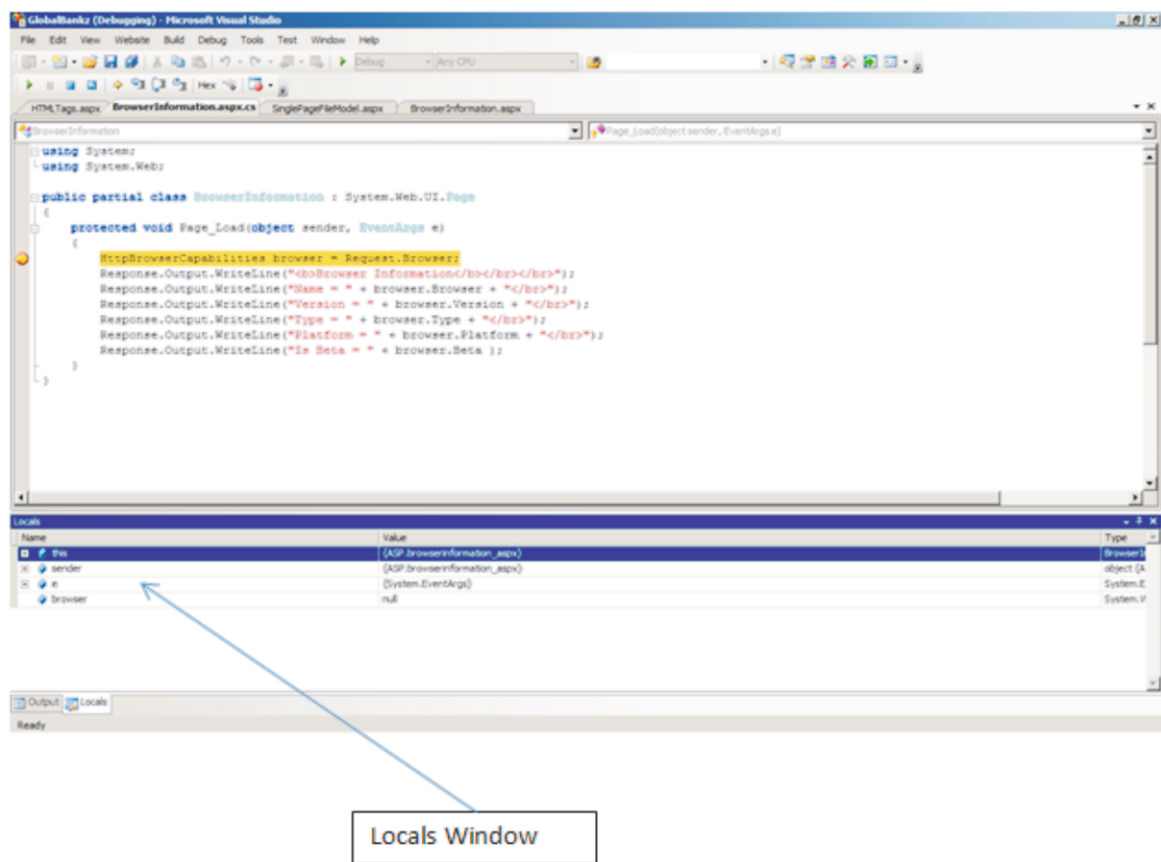

Breakpoint

Breakpoints Window

The Breakpoints window displays a list of all the break points placed in the application. The Breakpoint window allows you to double-click on the breakpoint name and it takes you to the line of code. It also allows you to delete or disable breakpoints.
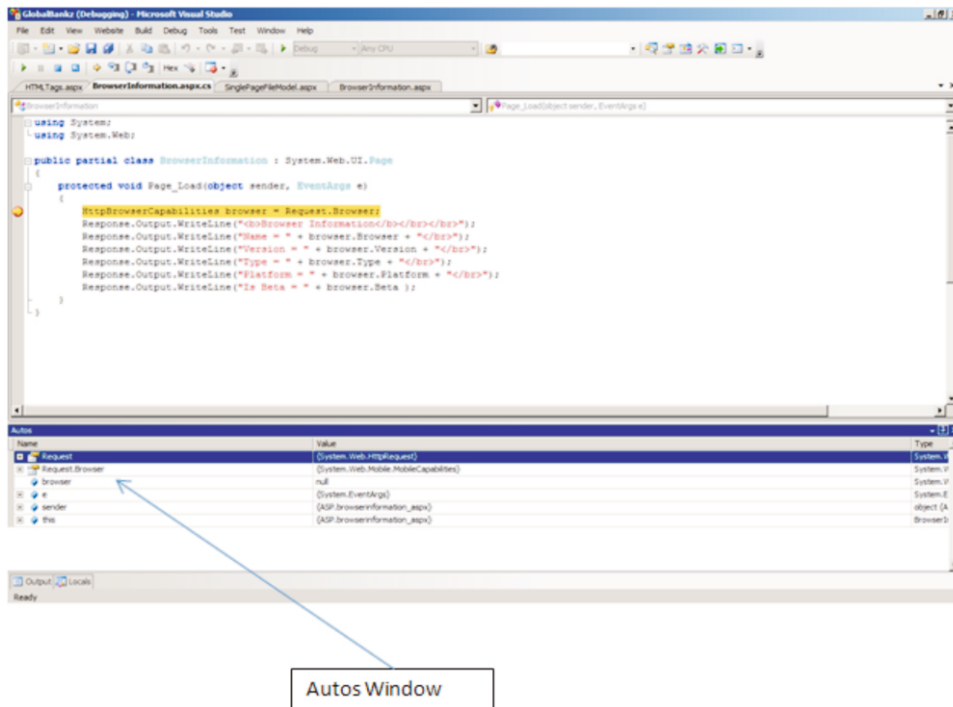
Variable Watch Windows

The Variable Watch Windows allow the display of values in the variables during debugging. The variable values can also be edited. Expressions can be evaluated using these windows. The various types of Variable Watch Windows are Locals, Autos, and Watch. To display the variable watch windows use Debug Menu > Windows and select the appropriate options.
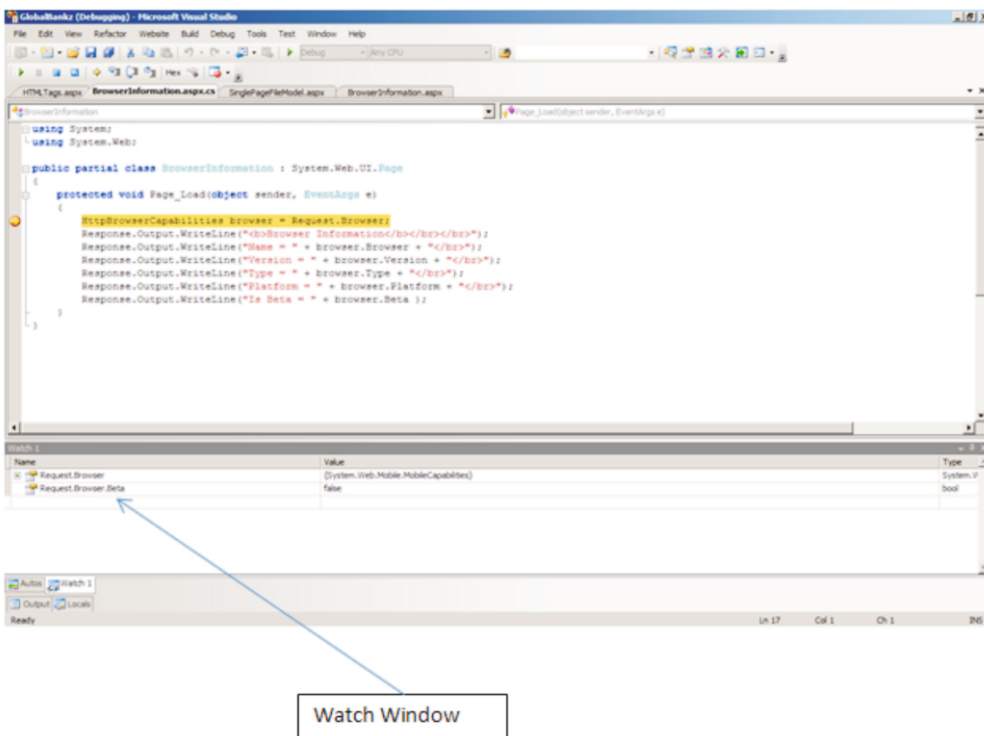
The Locals window displays the variables which are in the scope of the currently executing method. This window is automatically populated by the debugger during run-time. The Locals window has the Name, Value and Type columns.

Locals Window

The Autos window displays the variables in the current and previous line of code. This window is automatically populated by the debugger.

Autos Window

The Watch window displays the values of variables which are added by the developer. Not only variables, but expressions can too be used in the Watch Window. Visual Studio 2008 has 4 Watch windows named "Watch 1", "Watch 2", "Watch 3", "Watch 4"
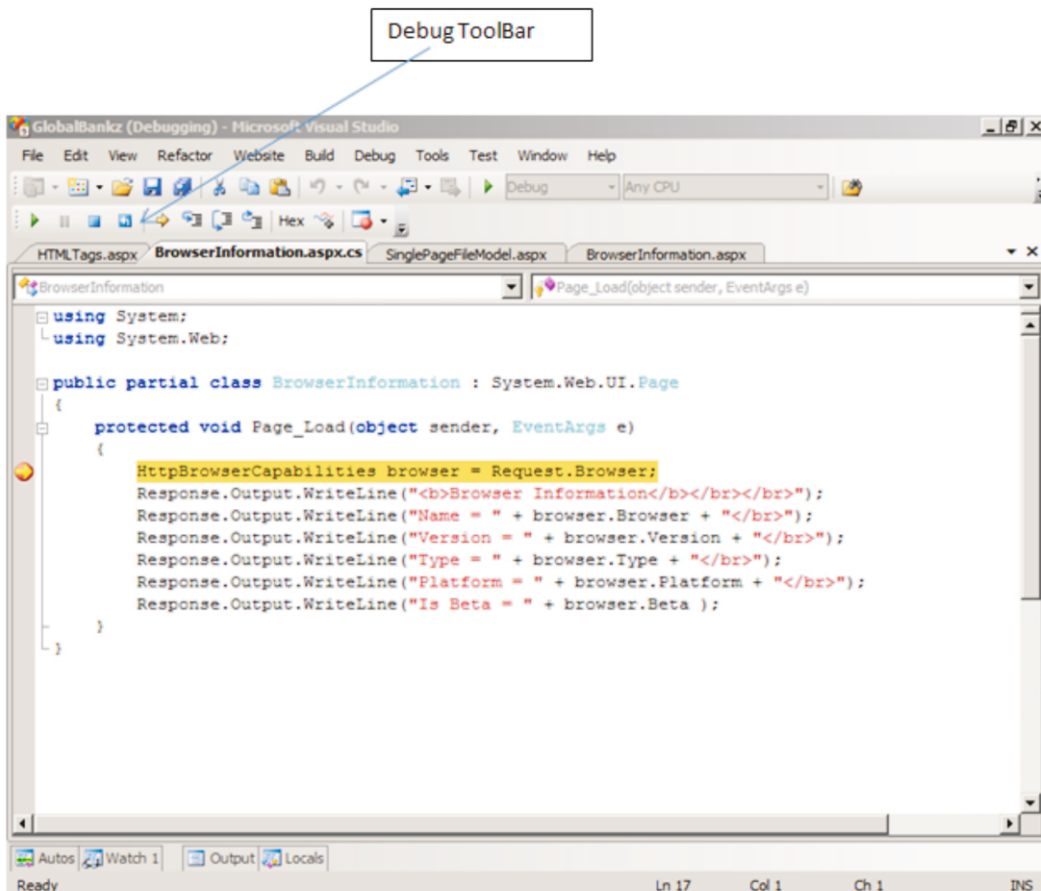

Watch Window

Exploring the Debug ToolBar

The Debug Toolbar has various commands such as Start Debugging, Step Into, Step Out, Step Over, Continue, Stop Debugging, etc.

The Start Debugging command runs the web site in debugging mode and the execution of the program is suspended when a break point is reached.

The Step Into command executes the current line of code and breaks execution by pausing on the next line. In case the current line is a method call, then the control moves inside the called method and breaks execution by pausing at the first line inside the called method. The shortcut for Step Into command is "F11".

The Step Out command executes all the remaining lines of code in the current method and the control passes to the calling method. The control breaks on the next line (i.e. after the method call) in the calling procedure. The shortcut for Step Out command is "Shift + F11".

The Step Over command is used when the current line to be executed is a call to a function. Step Over executes all the lines of code in the called method and returns to the calling method. The control breaks in the next line in the calling method. The shortcut for Step Over command is "F10".

The Continue command executes the rest of the code in a normal fashion till a break point is reached. Once a break point is reached, it pauses on the line where the break point is placed. The shortcut command for Continue command is "F5".

The Stop Debugging command ends the execution of the program.

Note: The "Start Debugging" command initially appears before the debugging starts and once the debugging session starts it changes to "Continue" command.

Introduction to ASP.NET 3.5

ASP.NET 3.5 is a web development platform which allows developers to create dynamic Web Applications by using any of the server-side scripting language such as C#.NET or VB.NET. It is object-oriented and event-driven. ASP.NET is called as a server-side scripting technology, which uses HTML for the presentation. It allows implementing the business logic on the server side by using any one of the .NET languages such as C#.NET, VB.NET, J#, .NET.

ASP.NET code executes on the Application Server which is the Internet Information Services (IIS) and finally an HTML page containing the output is returned to the browser. The browser which is the client displays the HTML page. ASP.NET Web Forms can be accessed by a variety of devices ranging from personal computers to palmtop computers, personal digital assistants (PDA) and mobile phones.

ASP.NET uses the classes in the .NET Framework and provides the benefits of Common Language Runtime (CLR). ASP.NET code is compiled and assemblies are created. The assemblies are in the form of Microsoft Intermediate Language (MSIL). The compilation takes place automatically when the first request for a resource is made by the user.

The communication between the browser and sever takes place in several steps as listed below:

   a.)   The user opens a web browser and types the URL of the web site to access a web page.

   b.)   The browser initiates a Hypertext Transfer Protocol (HTTP) request to the Application Server containing the web page to be processed.

   c.)   The Application Server processes the request by executing the server-side code and creates a Hypertext Markup Language (HTML) document as the output and sends it to the browser using HTTP response.

d.) The response sent by the Application Server is processed by the Web Browser and the Web Page is displayed on the browser.

e.) The user enters the required data on the web page and submits the page.

f.) The browser submits the request along with the data entered by the user to the Application Server.

g.) The application server once again processes the request and sends the response back to the browser. A request and response forms one cycle. This cycle continues as long as the user uses the web page.

Note: The versions prior to ASP.NET 3.5 were ASP.NET 1.0, ASP.NET 1.1, ASP.NET 2.0.

Lesson Summary:

- Visual Studio 2008 is a suite which can be used to develop console, windows, web, enterprise and mobile applications.

- Rich user interface applications can be developed using the Windows Presentation Foundation.

- Secure, reliable, transactional and distributed interoperable applications can be created using Windows Communication Foundation Framework.

- The Visual Studio 2008 has an Integrated Web Server for executing ASP.NET application on the local machine.

- Debugging is the mechanism of identifying logical errors by observing the behavior of the program during run-time.

- ASP.NET 3.5 is a web development platform which allows developers to create dynamic Web Applications by using any of the server-side scripting language such as C#.NET or VB.NET.

Check Your Understanding:

1.) Visual Studio 2008 can be used to develop applications for _____ , _____ and _____ frameworks.

2.) XAML stands for _____.

3.) List the data access models available in LINQ?

4.) Which one of the features below allows the developer to select the framework in which the application has to be created?
a. IntelliSense
b. Multi-Targeting
c. Code Outlining

5.) Which one of the following is not a debugging command?
a. Step Into
b. Step After
c. Step Out
d. Step Over

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