2PGDCA4 (B)-Programming With ASP. Net

UNIT-II

1. Overview of Dynamic web page

Web page is a document available on World Wide Web. Web Pages are stored on web server and can be viewed using a web browser. A web page can contain huge information including text, graphics, audio, video and hyper links. These hyper links are the link to other web pages.

We can broadly classify web sites and web pages into two categories:

1. Static web pages
2. Dynamic web pages

1.1 Static Web Pages

A static web page is a page which has the same content always. In case of static web pages, content is written in the page itself as plain html. Until the author of the web page updates the content, the content remains the same in the static pages. Static web pages are meant for providing information which does not change often. For example, visit http://www.google.com/intl/en/about.html. This page is a static page. The content is always the same (until they update the content by uploading a new html file to the web server).

1.2 Dynamic Web Pages

Dynamic web pages get content from database. Content is NOT hard-coded in the page itself. Dynamic pages are created using "server side code" when the page is loaded every time. When you type the URL in the browser, the page is dynamically created from database, based on the page id in the URL. The content of each page is stored in database, not in the file itself. When you access the page, the server side code will check what is the pageId in the URL. Based on the pageId, it will retrieve appropriate page content from the database and dynamically create the web page. Dynamic web pages are created using technologies like ASP, ASP.NET, PHP etc. HTML pages cannot be dynamic. All HTML files are static pages. If you want to write dynamic pages, you must use some technologies like ASP.NET.

In other words we can say that a dynamic web page is a web page whose construction is controlled by an application server processing server-side scripts. On the server side, some parameters are going to determine how to web page is built. So, the content is dynamic.

2. Introduction to ASP. Net

ASP.NET is a technology used for creating Web applications and Web services that are executed in the IIS server. The ASP.NET pages are compiled making the application faster that classic ASP. It provides good level of consistency over the web applications. It has a large set of user controls, XML based components and user authentication. It is based on the open-source and cross-platform. The Asp.net framework's main motive is to bring the latest and modern technology which includes cloud-based and IoT. It is built for platforms such as Windows, Linux, and macOS. It is a web development platform provided by Microsoft. It is used for creating web-based applications. ASP.Net was first released in the year 2002.

The first version of ASP.Net deployed was 1.0. The most recent version of ASP.Net is version 4.6. ASP.Net is designed to work with the HTTP protocol. This is the standard protocol used across all web applications. ASP.Net applications can also be written in a variety of .Net languages. These include C#, VB.Net, and J#.

Basic information of ASP.Net:

- The term ASP.Net stands for Active Server Pages.Net.
- ASP.NET supports three frameworks for developing web apps - Web forms, ASP.NET web pages, and ASP.NET MVC. These three frameworks have the same benefits and features of the ASP.NET Framework.
- It offers huge library support to the developers and developed by Microsoft Corporation.
- This language is written in .Net.

2.1 Core Features of ASP.Net

High Performance

ASP.NET is based on high-performance features, and as per experts, it is an essential attribute in the software. This technology is evolved with pipeline and IIS. Apart from this, it is light weighted and based on synchronous programming models.

Supports Cross-Platform

ASP.Net support the cross-platform development, it can be deployed with Windows, Linux, and macOS. Hence, Microsoft offers huge support to the development process.

Fastest and Scalable

This framework is the fastest and scalable as it offers a huge library which saves a lot of time. This framework has been considered as the fastest framework as compared to other frameworks.

Open Source

ASP.Net is based on the open-source feature, from time to time it gets updated by the professionals. Hence, it is supported by an active and huge community. Huge support has been provided to the ASP.net developers.

Secure Apps

With the ASP.net framework, developers can bring secure applications. The built-in features help applications to prevent XSS and CDRF i.e cross-site scripting and cross-site request forgery respectively. Inbuilt feature secure user database, and supports multi-factor and external authentication with Twitter and Google.

Self Hosted Apps

Developers' job is not easy, they have to face many challenges and develop the solution as per the user's demand. Regularly they have to face many challenges and they have to fulfill the requirement of many other customers. Sometimes developers have the requirement to develop the application which can be displayed only on desktop and it should not be a server running IIS.

Hence, ASP.NET Framework offers various ways to develop the server free web apps.

3. Framework of ASP.NET
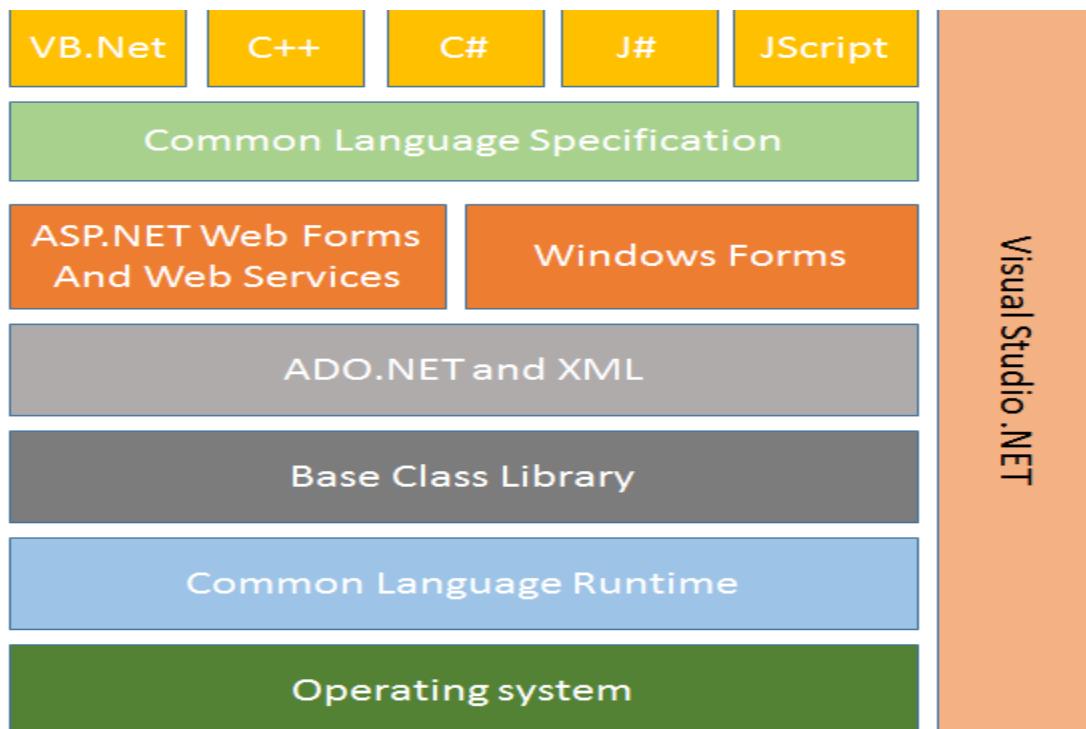
3.1 Component of ASP.Net Framework

1. Common Language Runtime:

The Common Language Runtime (CLR) is used as execution engine for .NET framework. All the ASP.NET code is executed in the CLR. It performs functions like security, memory management, exception handling, thread execution, code verification, code security. The Just In time compiler is used for compilation of the ASP.NET code.

The source is compiled into the intermediate language code. The JIT compiler coverts the IL code into native code that is specific to the system.

2. Base Class Library:

The Base Class Library is the functionality available to all the .NET framework languages. It provides various features like database connectivity, XML document manipulation, classes and interfaces that are reusable with the CLR.

3. ADO.NET and XML:

ADO.NET is used for the database operations in .NET. It works efficiently with SQL Server, OLEDB, XML. The operations like accessing data from the data source, updating and manipulating data are performed through ADO.NET. Extensible Markup Language (XML) is useful for designing the web pages in .NET

4. Windows Forms:

The windows Forms application is used for creating window application in .NET. There are wide controls and designing features available for Windows Forms.

5. ASP.NET Web Forms and Services:

The Web Forms user to create Web based applications. They include web pages and several GUI components for designing. It helps simultaneous addition of controls at runtime and design time.

Web Services are used when the user needs specific task to be executed. They are used for creating single application or distributed on the web.

6. Common Language Specification:

The Common Language Specification (CLS) is a set of language features used for developing web application and web services. It ensures interoperability among applications without the language dependency. It defines a subset of Common Type System (CTS) providing objects of different languages to interact with each other.

7. Visual Studio .NET:

The Visual Studio .NET is used for developing all the web and windows applications. The GUI interface and extensive built in class libraries are provided in the component. Web Services can be developed and deployed using Visual Studio.

3.2 Advantages of ASP.NET

- The code is reduced for building application through ASP.NET
- It is server side technology; the code is executed at the server before sending it to the browser.
- It is easy to deploy applications as the components are not registered in the system
- The applications developed are safe and secure due to Windows authentication
- The performance is better due to early binding, just in time compilation, and code optimization
- It is language independent providing user the flexibility to develop the application
- The ADO.NET used for data binding makes the application run faster with large volume of data

4. Understanding ASP.NET Controls

ASP.NET controls are the heart of ASP.NET Framework. An ASP.NET control is a .NET class that executes on the server and renders certain content to the browser. For example, in the first ASP.NET page created at the beginning of this chapter, a Label control was used to display the current date and time. The ASP.NET framework includes more than 90 controls, which enable you to do everything from displaying a list of database records to displaying a randomly rotating banner advertisement.

Overview of ASP.NET Controls

The ASP.NET Framework contains more than 90 controls. These controls can be divided into seven groups:

- **Standard Controls—** Enable you to render standard form elements such as buttons, input fields, and labels.
- **Validation Controls—** Enable you to validate form data before you submit the data to the server. For example, you can use a RequiredFieldValidator control to check whether a user entered a value for a required input field.
- **Rich Controls—**Enable you to render things such as calendars, file upload buttons, rotating banner advertisements, and multistep wizards
- **Data Controls—** Enable you to work with data such as database data. For example, you can use these controls to submit new records to a database table or display a list of database records.

- **Navigation Controls—** Enable you to display standard navigation elements such as menus, tree views, and bread crumb trails.
- **Login Controls—**Enables you to display login, change password, and registration forms.
- **HTML Controls—** Enable you to convert any HTML tag into a server-side control.

5. Applications

When we hear .NET, the first idea that comes to your mind will probably be internet or networked applications. Although this is absolutely true, there are many more types of applications to create with .NET.

So here is a more or less full list of various types of application that we can develop on .NET.

•**ASP.Net Web applications** are programs that used to run inside some web server to fulfill the user requests over the http. ASP.NET Web applications can range from simple Web sites that consist of HTML pages to advanced enterprise applications that run on local and remote networks. These enterprise applications also provide components for exchanging data using XML. This type includes dynamic and data driven browser based applications. (Ex: Hotmail and Google).

•**Web services** are "web callable" functionality available via industry standards like HTTP, XML and SOAP.

•**Windows applications** are form based standard Windows desktop applications for common day to day tasks. (Ex: Microsoft word). Run only under Windows environment. These applications consume the services provided by the Windows operating system.

•**Windows services** are long-running executable applications that run on the system as a background process. These applications do not interfere with the working of the other processes that run on the same computer. Windows services execute within separate Windows sessions created specifically for each Windows service. These services do not have a graphic user interface and are ideal for running on the server. Windows services were earlier called NT services.

•**Console applications** are light weight programs run inside the command prompt (DOS) window. They are commonly used for test applications.

•**Mobile applications** can run on multiple mobile devices, such as Pocket PCs, mobile phones, or personal digital assistants. These applications provide ubiquitous access to data from mobile devices. The .NET Framework automatically makes changes to these applications to enable them to run on multiple browsers, depending on the mobile device.

•**Class libraries** are components that you create once and reuse a number of times in multiple applications. Class libraries allow you to define several classes, along with their methods and interfaces, in one file. These libraries compile to .dll files and facilitate rapid development of new applications because of reusability of code. To access the functionality of the classes in a class library from your application, you need to include a reference to that library in your program.

All types of .NET applications use one or more .NET compliant languages for their design and development. The .NET Framework includes various technologies, such as ASP.NET, VB.NET, VC++.NET, and ADO.NET. You use ASP.NET to build Web applications and services, VB.NET and VC++.NET to create Windows applications, and ADO.NET for flexible access to databases.

6. Web Servers

A web server is a software program that serves web pages to web users (browsers). A web server delivers requested web pages to users who enter the URL in a web browser. Every computer on the internet that contains a web site must have a web server program. The computer in which a web server program runs is also usually called a "web server". So, the term "web server" is used to represent both the server program and the computer in which the server program runs.
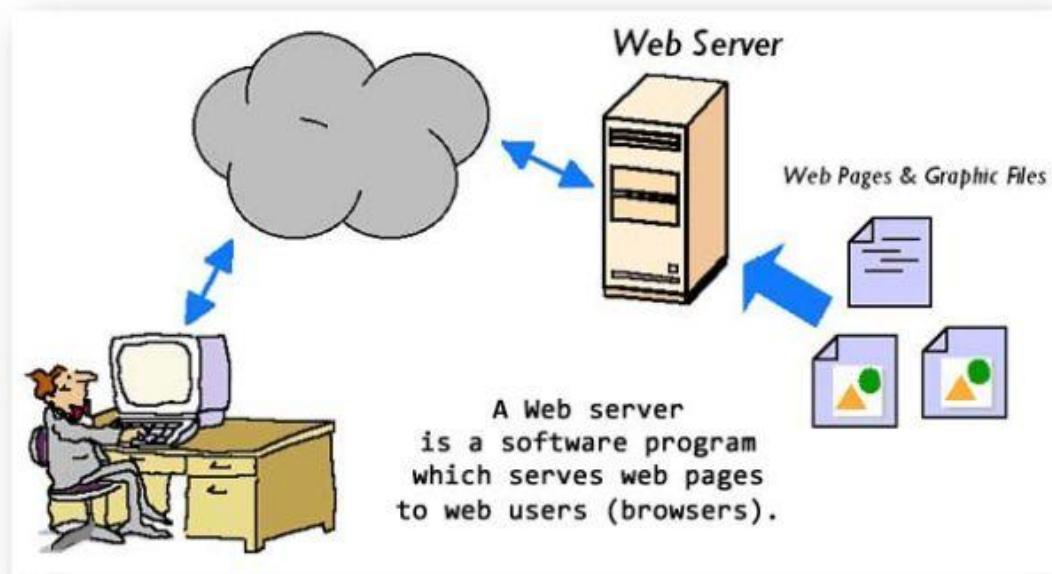
6.1 Characterizes of a Web Server

A web server computer is just like any other computer. The basic characteristics of web servers are:

- It is always connected to the internet so that clients can access the web pages hosted by the web server.
- It always has an application called "web server" running.

In short, a "web server" is a computer that is connected to the internet/intranet and has software called "web server". The web server program will always be running in the computer. When a user tries to access a website hosted by the web server, it is actually the web server program that delivers the web page that the client asks for.

All web sites in the internet are hosted in web servers sitting in various parts of the world.

6.2 Is a Web Server hardware or software?

Mostly, Web server refers to the software program, that serves the clients request. But sometimes, the computer in which the web server program is installed is also called a "web server".

6.3 Web Server, Behind the Scenes

When I type in an URL such as http://www.ASP.NET and click on some link, I dropped into this page. But what happens behind the scenes to bring you to this page and make you read this line of text. So now, let's see what is actually happening behind the scenes.

The first you might do is, you type the http://www.asp.net/ in the address bar of your browser and press your return key. We could break this URL into the following two parts:

1. The protocol we will use to connect to the server (http)
2. The server name (ASP.NET)

And the following process happens:

- The browser breaks up the URL into these parts and then it tries to communicate with the server looking up for the server name.
- The server is identified through a unique IP address but the alias for the IP address is maintained in the DNS Server or the Naming server.
- The browser looks up these naming servers, identifies the IP address of the server requested and gets the site and gets the HTML tags for the web page.
- Finally it displays the HTML Content in the browser.

6.4 Where is my web server?

When you try to access a web site, you don't really need to know where the web server is located. The web server may be located in another city or country, but all you need to do is, type the URL of the web site you want to access in a web browser. The web browser will send this information to the internet and find the web server. Once the web server is located, it will request the specific web page from the web server program running in the server. The Web server program will process your request and send the resulting web page to your browser. It is the responsibility of your browser to format and display the web page to you.

6.5 How many web servers are needed for a web site?

Typically, there is only one web server required for a web site. But large web sites like Yahoo, Google, MSN and so on will have millions of visitors every minute. One computer cannot process such huge numbers of requests. So, they will have hundreds of servers deployed in various parts of the world so that can provide a faster response.

6.6 How many web sites can be hosted in one server?

A web server can host hundreds of web sites. Most of the small web sites in the internet are hosted on shared web servers. There are several web hosting companies who offer shared web hosting. If you buy a shared web hosting from a web hosting company, they will host your web site in their web server along with several other web sites for a fee.

Examples of web server applications:

1. IIS
2. Apache

7. IIS - Internet Information Server

Internet Information Server (IIS) is one of the most popular web servers from Microsoft that is used to host and provide Internet-based services to ASP.NET and ASP Web applications. A web server is responsible for providing a response to requests that come from users. When a request comes from client to server IIS takes that request from users and process it and send response back to users.

Internet Information Server (IIS) has it's own ASP.NET Process Engine to handle the ASP.NET request. The way you configure an ASP.NET application depends on what version of IIS the application is running on.

Internet Information Server (IIS) includes a set of programs for building and administering Web applications, search engines, and support for writing Web-based applications that access databases such as SQL Server. With IIS, you can make your computer to work as a Web server and provides the functionality to develop and deploy ASP.NET Web applications on the server. You can also set security for a particular Website for specific Users and Computer in order to protect it from unauthorized access.

IIS helps organizations to increase Web sites and application availability while lowering system administration and cost of deployment. IIS 7.5 supports HTTP, HTTPS, FTP, FTPS, SMTP and NNTP.

8. Web Forms

ASP.NET is a development framework for building web pages and web sites with HTML, CSS, JavaScript and server scripting. ASP.NET supports three different development models: Web Pages, MVC (Model View Controller), and Web Forms.

Web Forms is one of the 3 programming models for creating ASP.NET web sites and web applications. The other two programming models are Web Pages and MVC (Model, View, and Controller). Web Forms is the oldest ASP.NET programming model, with event driven web pages written as a combination of HTML, server controls, and server code. Web Forms are compiled and executed on the server, which generates the HTML that displays the web pages. Web Forms comes with hundreds of different web controls and web components to build user-driven web sites with data access.

ASP.NET's Web Forms provide you with the ability to build Web-based GUI applications. Web Forms include Web pages (also called an ASP.NET page or web Forms page) and GUI components (sometimes called server controls) such as text boxes, buttons, list boxes, data grids, and so on. ASP.NET provides the flexibility to add these controls to an ASP.NET page at run-time as well as at design-time as well as at design-time. VS.NET provides design-time features to develop applications in no time. You add controls to a page by dragging controls from the toolbox to the page and then setting the controls' properties and event. Web Forms also provides a method for using the code behind directive to separate your controls from the code. In other worlds you can write code in a separate file from the controls.

9. Web Forms Controls

There are some Web Forms Controls which is given below with Real Time Example:-

- Label Control
- TextBox control
- Button control
- Literal control
- PlaceHolder control
- HiddenField control
- FileUpload control
- Image control
- ImageButton control
- ImageMap control

1.) Label Control:-

The Label Control is basically used to display the Information(Text) on Web Forms.Any end User can not Edit(change) the Label Information.

Properties of Label Control:-

- Text:-It is used to change the Label control information(text).
- Font:- It is used to sets the font of the Label text.
- ForeColor:- It is used to sets the text color in the Label.
- Height:- It is used to Specify the height of the Label Control.
- BackColor :-It is used to Sets the Background color of the Label control.
- BorderWidth:-It is used to Sets the Border color of the Label control.
- BorderStyle:-It is used to Sets the Style of the Label control.
- AccessKey:-It is used to Navigate the Web Server control.

2.) TextBox Control:-

The TextBox control is used to input the Data(text).Any end user can easily enter the text in this control.

Properties of TextBox Control:-

- Text:-It is used to sets the text in TextBox Control.
- TextMode:- It is used to sets the mode of the TextBox Control as Single Mode,Multiline or Password.
- Rows:-It is used to sets the number of rows display in a TextBox(Multiline).
- MaxLength:->It is used to sets the maximum number of character alloweded in a TextBox control.
- ReadOnly:-It is used to read the contents by the end used but can not change it.

- Columns:-It is used to sets the width of character in TextBox.
- AutoCompleteType:-It is used to sets a value that indicates the Auto Complete behavior of the TextBox control.
- AutoPostBack:-It is used to handle the event when the TextBox control lose focus.
- CauseValidation:-It is used to set a value that validate the TextBox control(client,server).
- TextChange:-It is an event.It occurs when the end user change the text of the TextBox control.

3.) Button Control:-

The Button control is used to create an Event and send request to the web server.

Properties of Button Control:-

- Text:- It is used to sets the text to be displayed on the Button Control.
- Click:-It is an Event that occurs when the Button is clicked.
- Command:- It is also an Event that occurs when the Button is clicked.It is used whenever we are using multiple Button on one page.
- CommandName:-It is used to sets the command Name associated with the Button control that is passed to the command event.
- OnClientClick:-It is used to sets the client side script that executes when a Button click event is fired.
- CauseValidation:- It is used to sets the validation that is perform or not when we click the Button control.

4.) Literal Control:-

It is similar to Label control but there are some differences and similarities which is given below.

- Literal and Label control both are used to display the text(information) on the web form.
- On Browser side Label control is converted to HTML 'Span' tag but Literal control is not converted in any HTML tag.
- We can provide formatting to the Label control but not to the Literal control.
- If we want to show some HTML code and java script code the we used mainly Literal control ,not Label control.Encoding Mode is used with Literal control only.

Properties of Literal Control:-

- Mode:- IT IS A Literal control property called Mode which can be changed as Transform,Encode and Pass Through.
- Text:-It is used to sets the caption displayed in the Literal.

5.) Place Holder Control:-

It is known as container control in Asp. Net. It is mainly used to store the value of other controls. You can Add controls to a Web Form by using the Controls.Add() Method.

6.) Hidden Field Control:-

It is used to display the value stored in the Hidden Field control in the Label control. It stores the information in the form of Strings.

7.) File Upload Control:-

It is basically used to Upload the File on the server using SaveAs() method on the click Event. When user browse a File and after browse click the Upload button then File is automatically Upload on the Server.

8.) Image Control:-

It is used to display an image on a web page.

Properties of Image control:-

- Alternate Text:- It is used to display alternate text when the image is not present.
- ImageAlign:-It is used to sets the alignment of image control on the web page.
- ImageUrl:-It is used to sets the path to an image to display in the image control.
- Font:-It is used to increase or decrease font of the image control text.
- DescriptionUrl:-It is used to set the location to a detailed description for the image.

9.) Image Button Control:-

It is used to display the image on Button instead of text. Properties of Image Button is same as Button property.

10.) Image Map Control:-

It is used to provide various links(hotspots) to navigate to other web page, depending on the place where the user clicks.

Properties of Image Map Control:-

- Hotspots:-It obtains a group of Hotspot Object that is defined in a Image Map.
- Target:-It is used to sets target window to show the web page when the Image Map control clicked.
- Enabled: - It is used to sets a value indicating whether the control can respond to the user interaction.

10. Server Controls

ASP.NET is a Web application framework used to develop dynamic websites and Web applications. An ASP.NET server control is a specific control class of the .NET framework, which is embedded in ASP.NET pages. It represents a user interface (UI) element on a page, such as a text box or command button.

Server controls in the ASP.NET page framework are designed to provide a structured programming model for Web-based applications. Unlike the code in ASP (an earlier version of ASP.NET), these controls allow for the separation of execution code from the HTML. This helps to separate the presentation from the content by making use of reusable UI controls, which contain common functionality and are better able to maintain the code.

The key features of the built-in server controls are:

- Automatic state management, where values are retained across round trips to the server
- Access to object values without using request objects
- Handling events for specific actions in server-side code
- A simple approach for producing a dynamic Web page with complex rendering and behavior
- Using adaptive rendering to implement "write once render anywhere." Different markup and layout are created to render anywhere for any type of device or browser.

The following table contains the server-side controls for the Web Forms.

Control Name	Applicable Events	Description
Label	None	It is used to display text on the HTML page.
Text Box	Text Changed	It is used to create a text input in the form.
Button	Click, Command	It is used to create a button.
Link Button	Click, Command	It is used to create a button that looks similar to the hyperlink.
Image Button	Click	It is used to create an images Button. Here, an image works as a Button.
Hyperlink	None	It is used to create a hyperlink control that responds to a click event.
Drop Down List	Selected Index Changed	It is used to create a dropdown list control.
List Box	Selected Index Changed	It is used to create a List Box control like the HTML control.
Data Grid	Cancel Command, Edit Command, Delete Command, Item Command, Selected Index Changed, Page Index Changed, Sort Command, Update Command, Item Created, Item Data Bound	It used to create a grid that is used to show data. We can also perform paging, sorting, and formatting very easily with this control.
Data List	Cancel Command, Edit Command, Delete Command, Item Command,	It is used to create data list that is non-tabular and used to show data.

	Selected Index Changed, Update Command, Item Created, Item Data Bound	
Repeater	Item Command, Item Created, Item Data Bound	It allows us to create a non-tabular type of format for data. You can bind the data to template items, which are like bits of HTML put together in a specific repeating format.
Check Box	Check Changed	It is used to create checkbox.
Check Box List	Selected Index Changed	It is used to create a group of check boxes that all work together.
Radio Button	Check Changed	It is used to create radio button.
Radio Button List	Selected Index Changed	It is used to create a group of radio button controls that all work together.
Image	None	It is used to show image within the page.
Panel	None	It is used to create a panel that works as a container.
Place Holder	None	It is used to set placeholder for the control.
Calendar	Selection Changed, Visible Month Changed, Day Render	It is used to create a calendar. We can set the default date, move forward and backward etc.
Ad Rotator	Ad Created	It allows us to specify a list of ads to display. Each time the user re-

		displays the page.
Table	None	It is used to create table.
XML	None	It is used to display XML documents within the HTML.
Literal	None	It is like a label in that it displays a literal, but allows us to create new literals at runtime and place them into this control.

11. Client Control

client side control are also called as HTML control and HTML control are always render on browsers because browsers understand only html programming just because of all html control executed at client machine's (pc) browser thus these are known as client side control and never executed server side or through server.

When client or user request a for a new page to the server then browser send request to server to access new page then server response back to client through the browser using html language and display HTML . as we discussed that client side control are html control and always written using <input> tag to create html control. Client side control are processed by browser and executed on browser and return back to browser i.e. browser understand only html control. Generally HTML control are use to perform page validation through java script (client side programming), normal calculation and displaying text information etc where no need to perform task through server.

The following table contains the client-side controls for the Web Forms.

Controls Name	Description
Button	It is used to create HTML button.
Reset Button	Resets all other HTML form elements on a form to a default value
Submit Button	Automatically POSTs the form data to the specified page listed in the Action attribute in the FORM tag
Text Field	Gives the user an input area on an HTML form
Text Area	Used for multi-line input on an HTML form
File Field	Places a text field and a Browse button on a form and allows the user to select a file name from their local machine when the Browse button is clicked
Password Field	An input area on an HTML form, although any characters typed into this field are displayed as asterisks
Check Box	Gives the user a check box that they can select or clear
Radio Button	Used two or more to a form, and allows the user to choose one of the controls
Table	Allows you to present information in a tabular format
Image	Displays an image on an HTML form
List Box	Displays a list of items to the user. You can set the size from two or more to specify how many items you wish show. If there are more items than will fit within this limit, a scroll bar is automatically added to this control.
Dropdown	Displays a list of items to the user, but only one item at a time will appear. The user can click a down arrow from the side of this control and a list of items will be displayed.

Horizontal Rule	Displays a horizontal line across the HTML page

12. Adding ASP.Net Controls to Web Forms

ASP.Net has the ability to add controls to a form such as textboxes and labels.

Let's look at the other controls available for Web forms and see some of their common properties.

In our example, we will create one form which will have the following functionality.

1. The ability for the user to enter his name.
2. An option to choose the city in which the user resides in
3. The ability for the user to enter an option for the gender.
4. An option to choose a course which the user wants to learn. There will be choices for both C# and ASP.Net

Let's look at each control in detail. Let's add them to build the form with the above-mentioned functionality.

Step 1) The first step is to open the Forms Designer for the Demo web form. Once you do this, you will be able to drag controls from the toolbox to the Web form.

To open the Designer web form,

- Right-click the Demo.aspx file in the Solution Explorer and
- Choose the menu option View Designer.
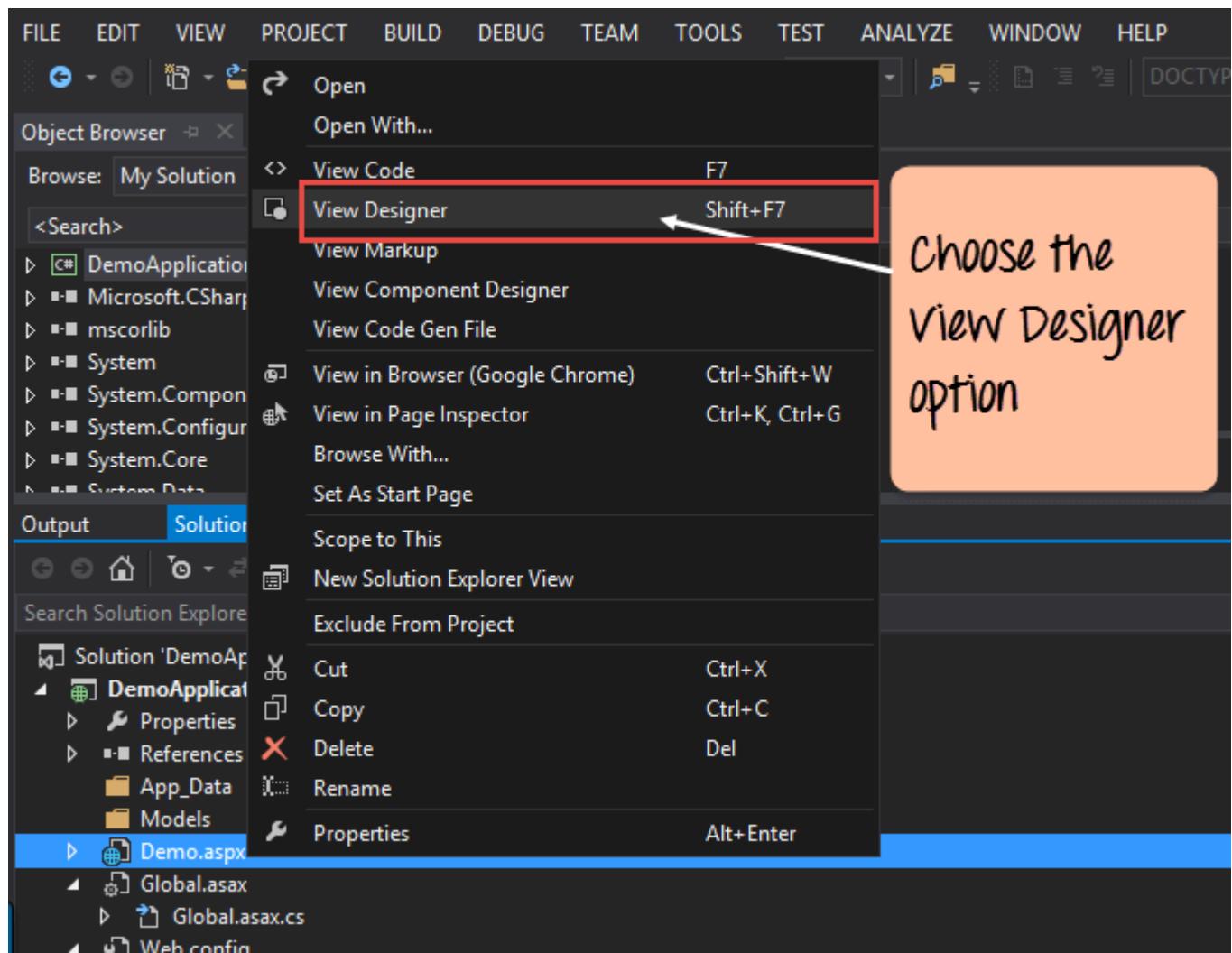
Once you perform the above step, you will be able to see your Form Designer as shown below.
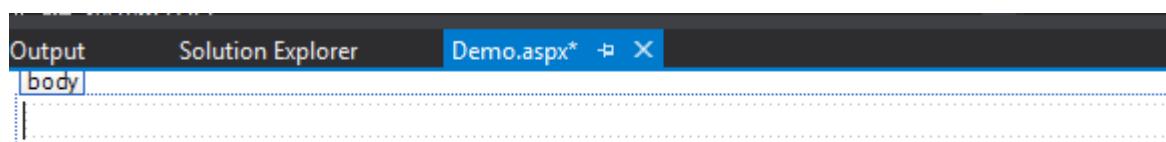
Now let's start adding our controls one by one

12.1 Label Control

The label control is used to display a text or a message to the user on the form. The label control is normally used along with other controls. Common examples are wherein a label is added along with the textbox control. The label gives an indication to the user on

what is expected to fill up in the textbox. Let's see how we can implement this with an example shown below. We will use a label called 'name.' This will be used in conjunction with the textbox controls, which will be added in the later section.

Step 1) The first step is to drag the 'label' control on to the Web Form from the toolbox as shown below.
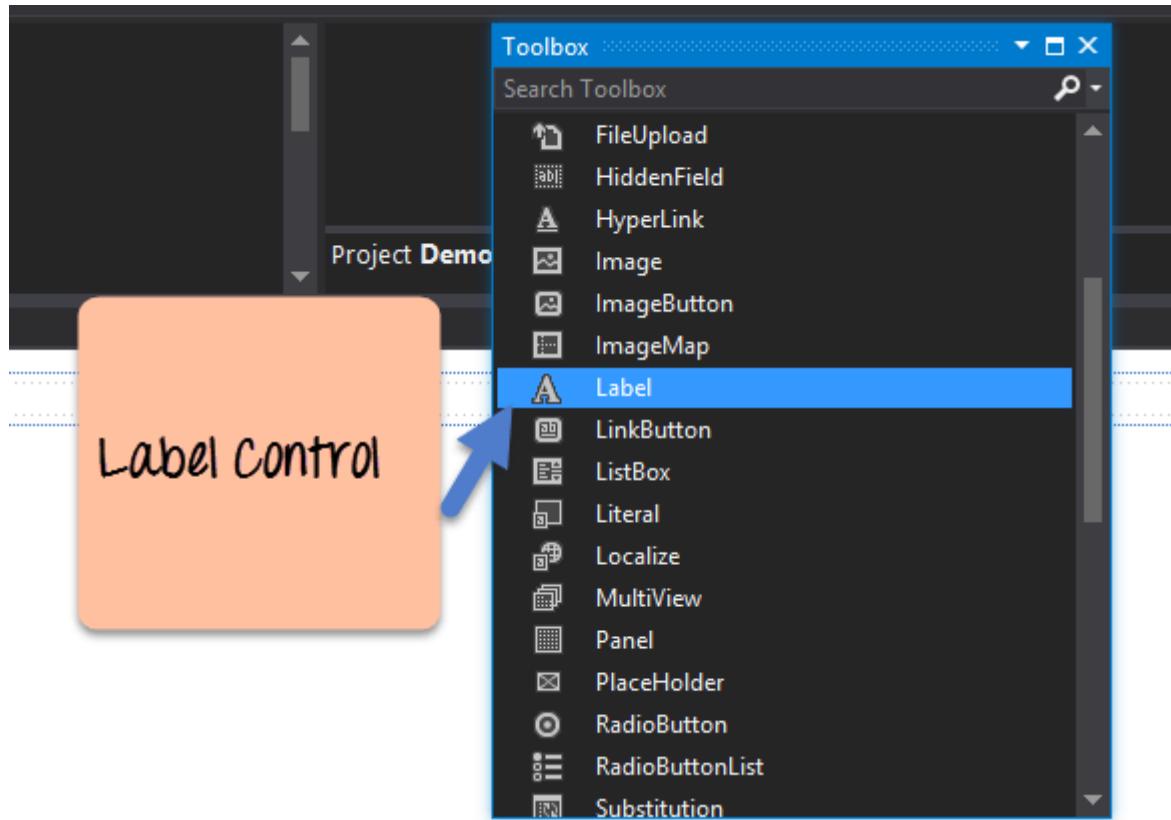
Step 2) Once the label has been added, follow the following steps.

1. Go to the properties window by right-clicking on the label control
2. Choose the Properties menu option
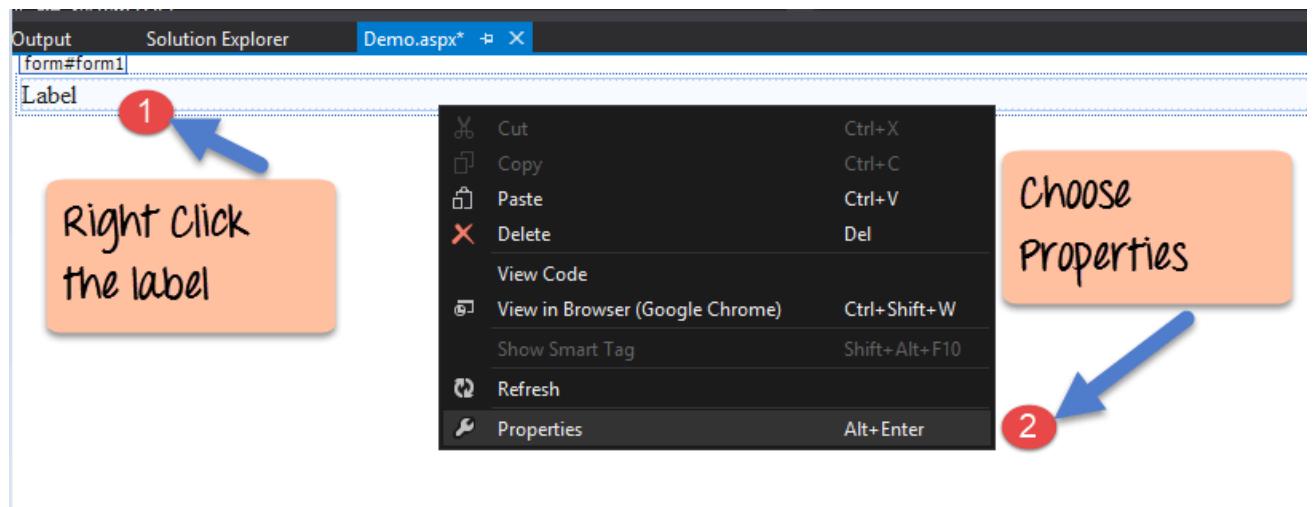
Step 3) From the properties window, change the name of the Text property to Name
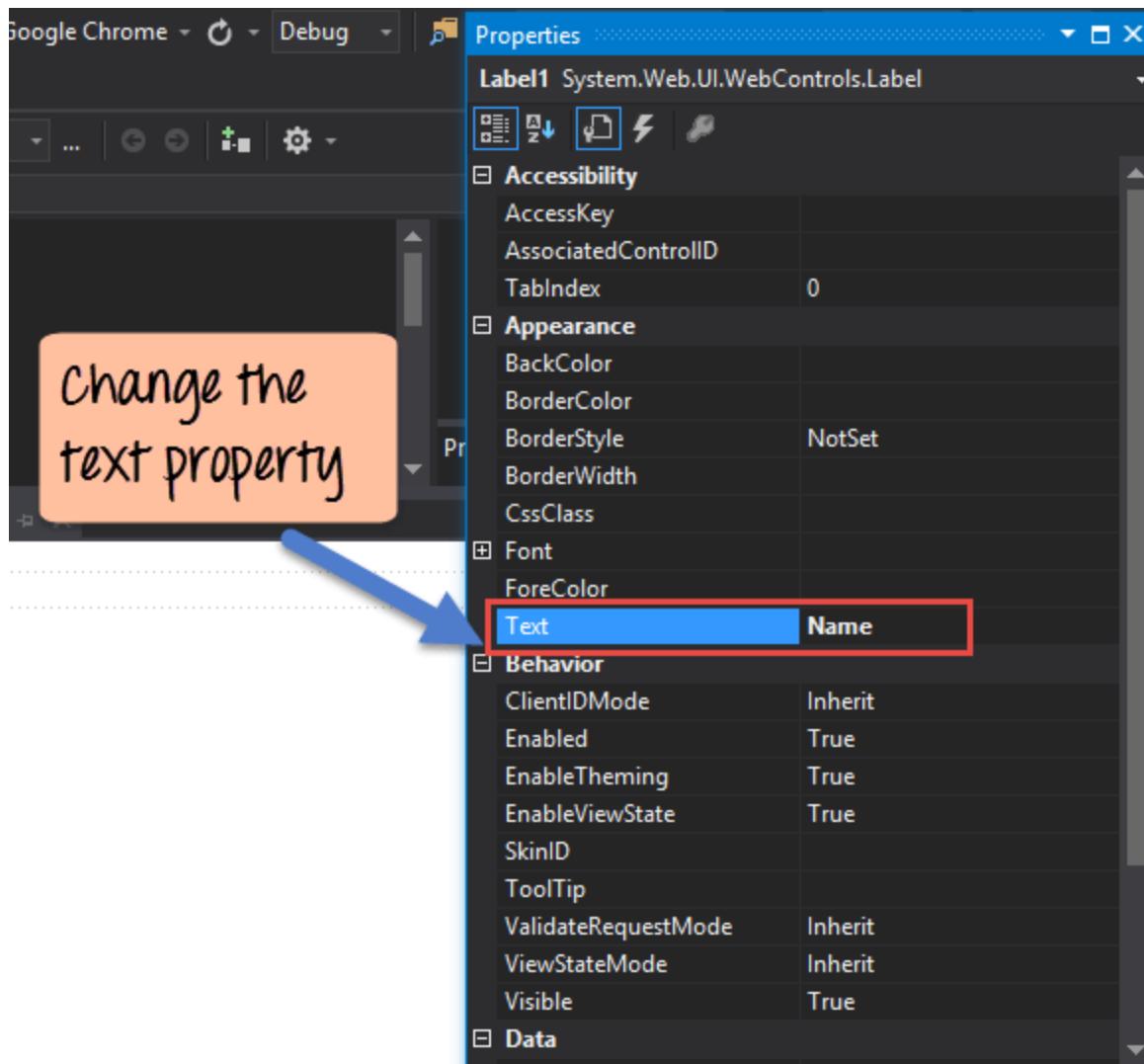
Similarly, also change the ID property value of the control to lblName. By specifying a meaningful ID to controls, it becomes easier to access them during the coding phase. This is shown below.
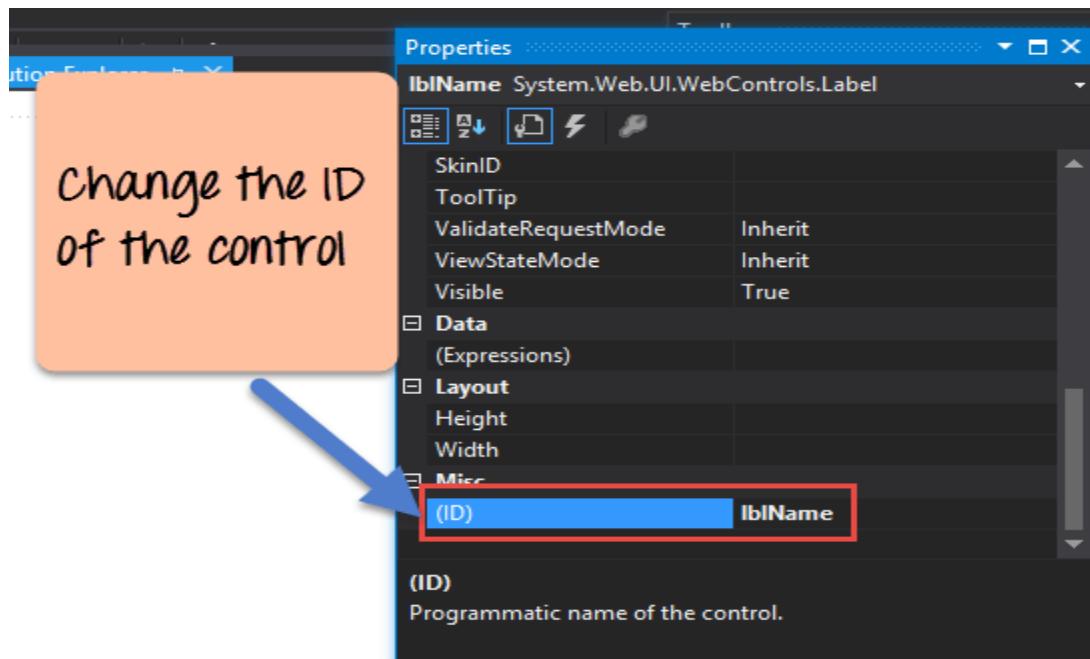
Once you make the above changes, you will see the following output

Output:-

You will see that the Name label appears on the Web Form.

12.2 Textbox

A text box is used for allowing a user to enter some text on the Web form application. Let's see how we can implement this with an example shown below. We will add one textbox to the form in which the user can enter his name.

Step 1) The first step is to drag the textbox control onto the Web Form from the toolbox as shown below
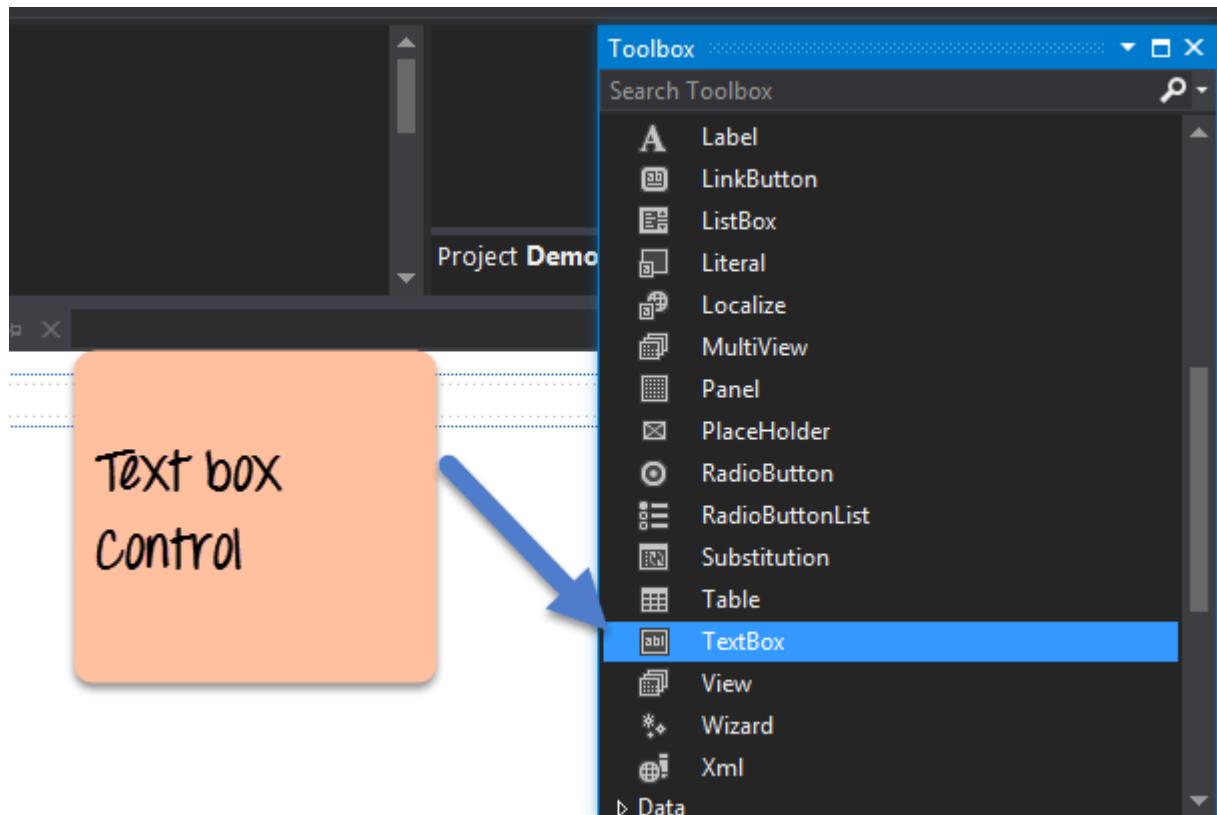
Below is how this would look in the forms designer once the Textbox control is on the form
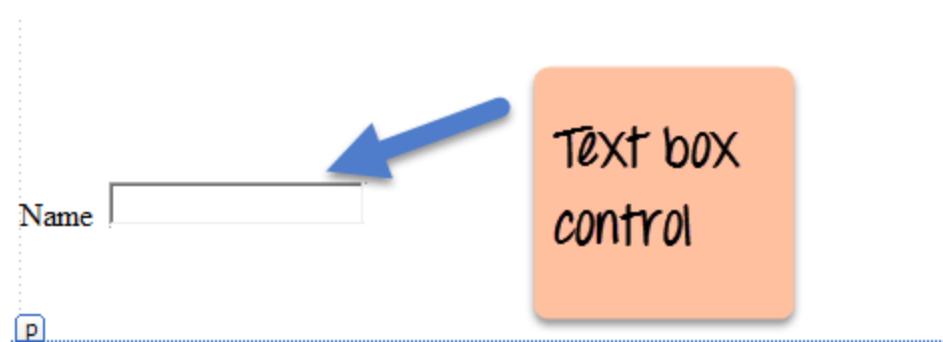
Step 2) Once the Textbox has been added, you have to change the ID property.

- Go to the properties window by right-clicking on the Textbox control and
- Choose properties then
- Change the id property of the textbox to txtName.
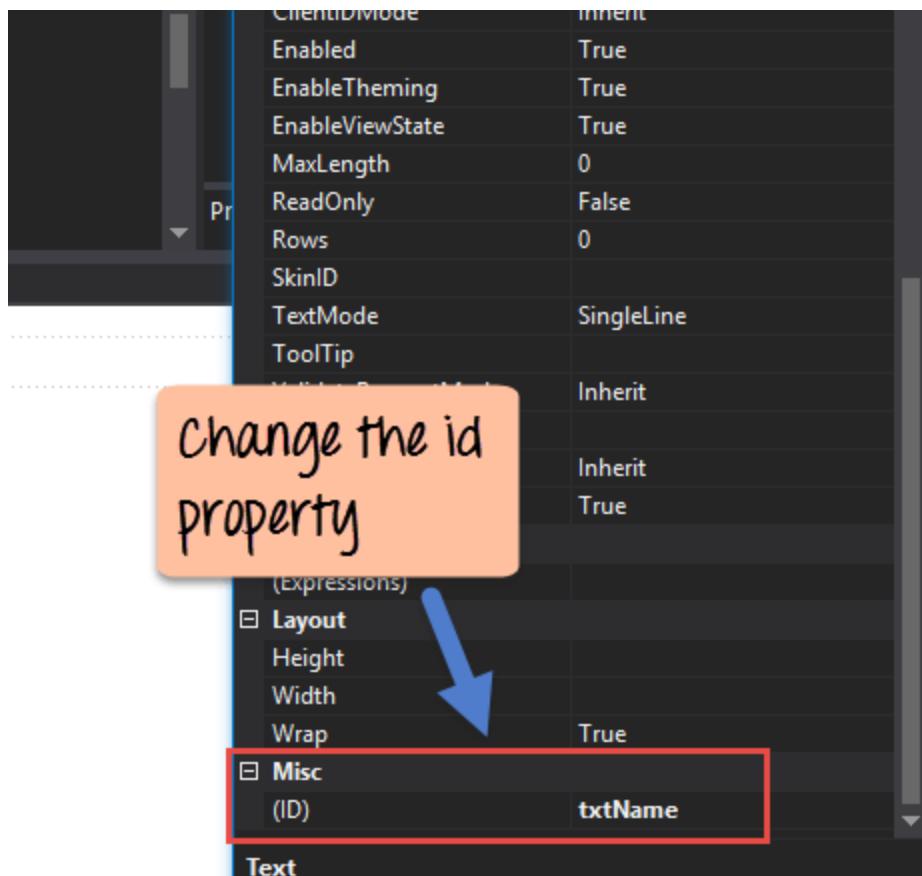
Once you make the above changes, you see the following output.

Output:-
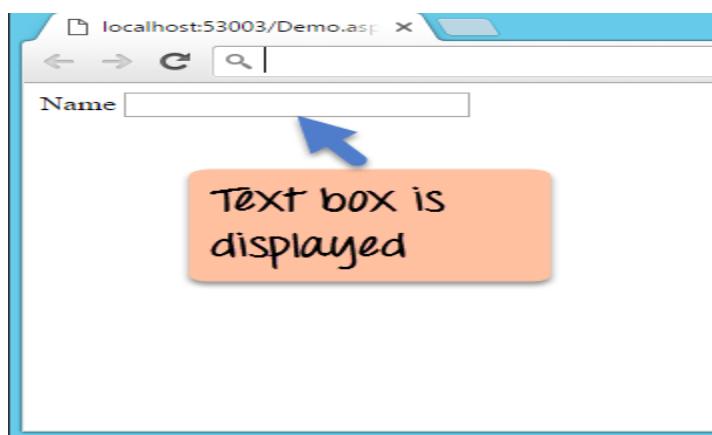
12.3 List box

A List box is used to showcase a list of items on the Web form. Let's see how we can implement this with an example shown below. We will add a list box to the form to store some city locations.

Step 1) The first step is to drag the list box control on to the Web Form from the toolbox as shown below
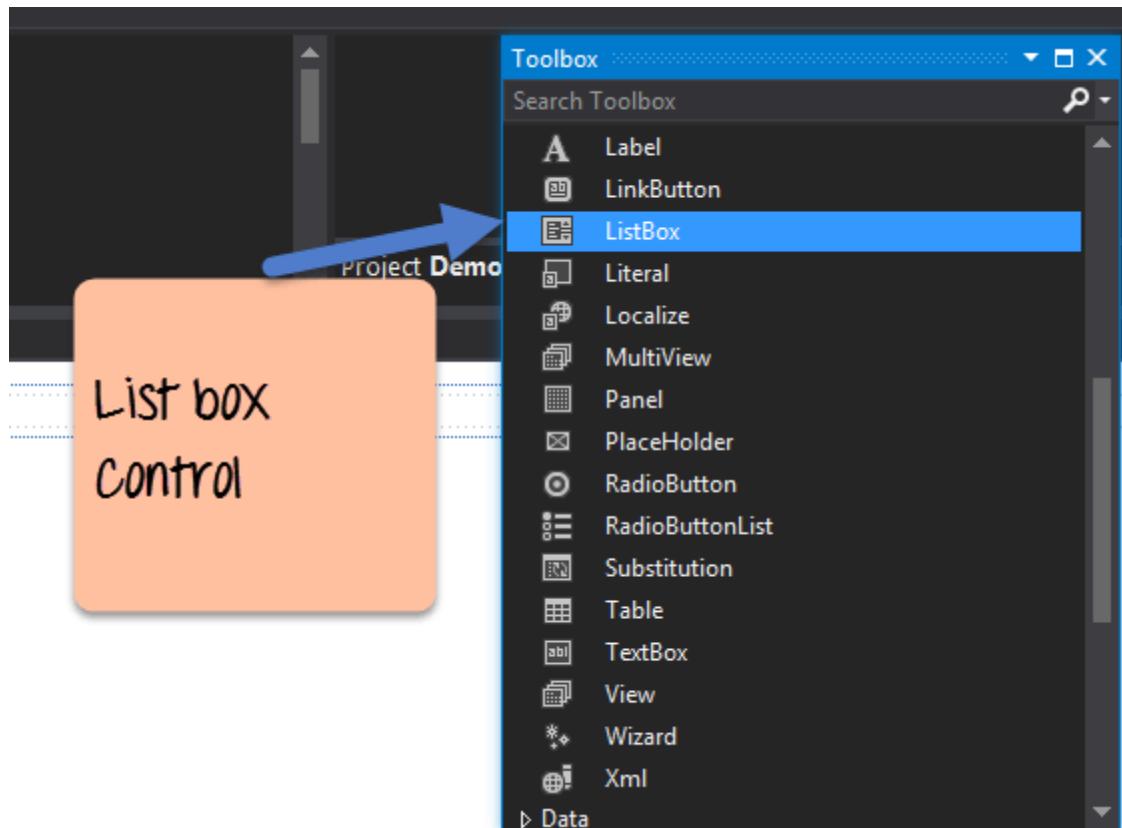
Step 2) Once you drag the list box to the form, a separate side menu will appear. In this menu choose the 'Edit Items' menu.
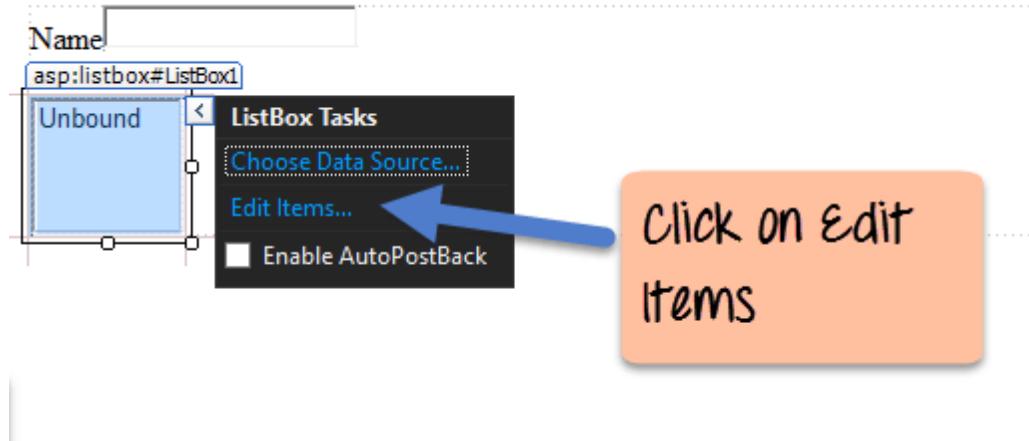
Step 3) You will now be presented with a dialog box in which you can add the list items to the listbox.

1. Click on the Add button to add a list item.
2. Give a name for the text value of the list item – In our case Mumbai. Repeat steps 1 and 2 to add list items for Mangalore and Hyderabad.
3. Click on the OK button
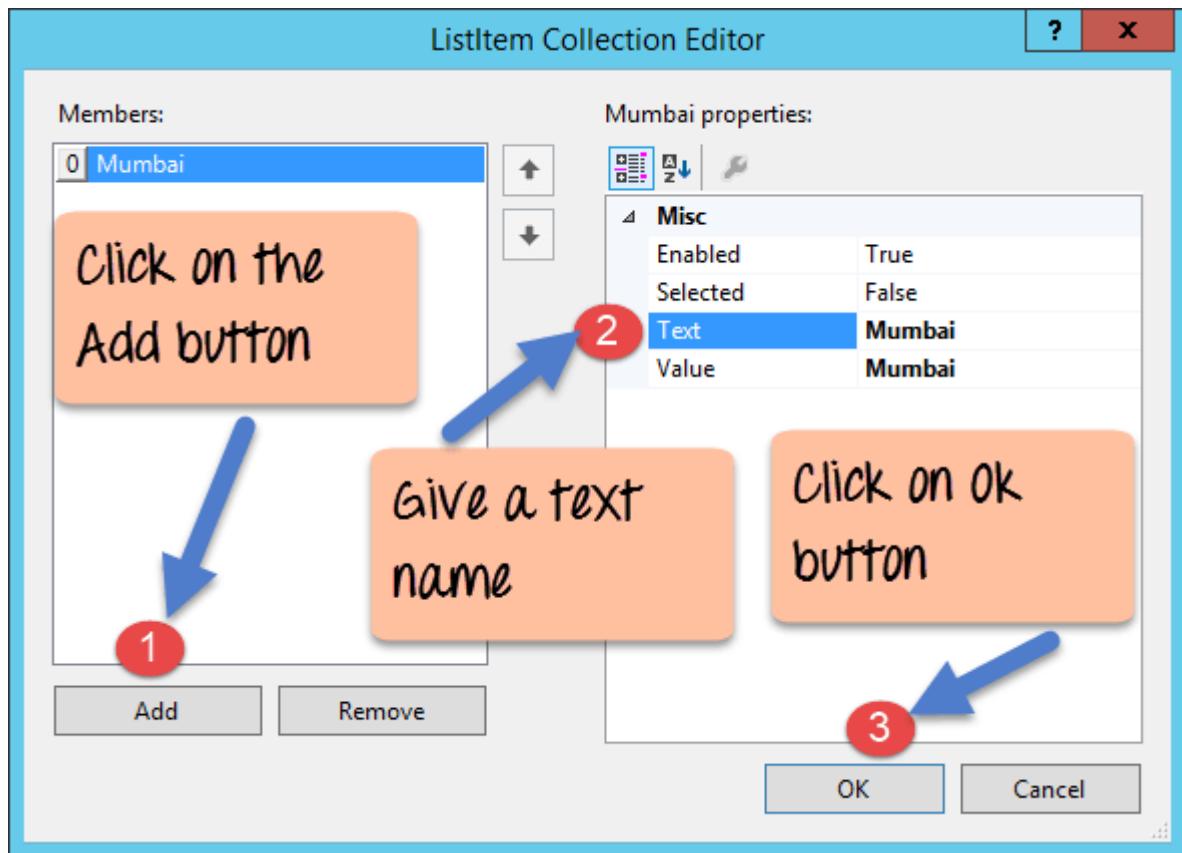
Step 4) Go to the properties window and change the ID property value of the control to lstLocation.
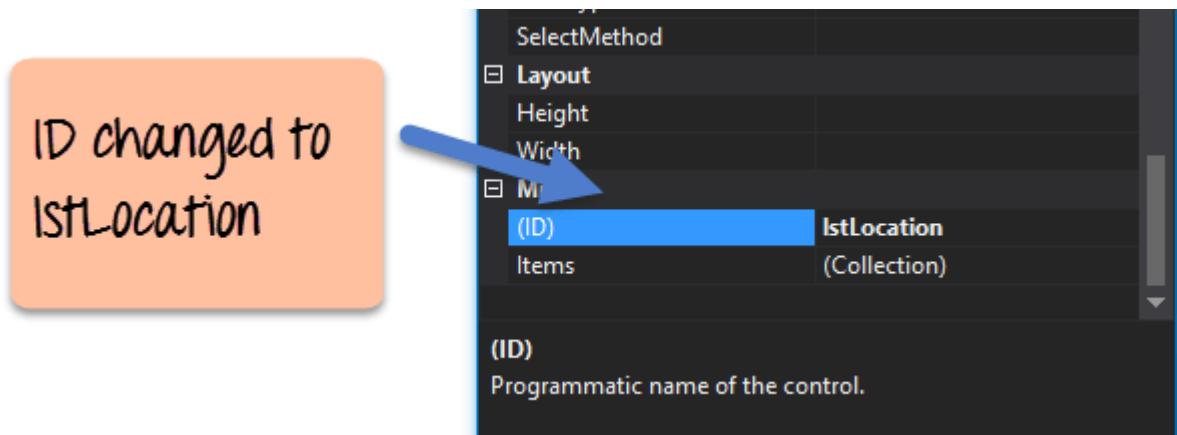
Once you make the above changes, you will see the following output
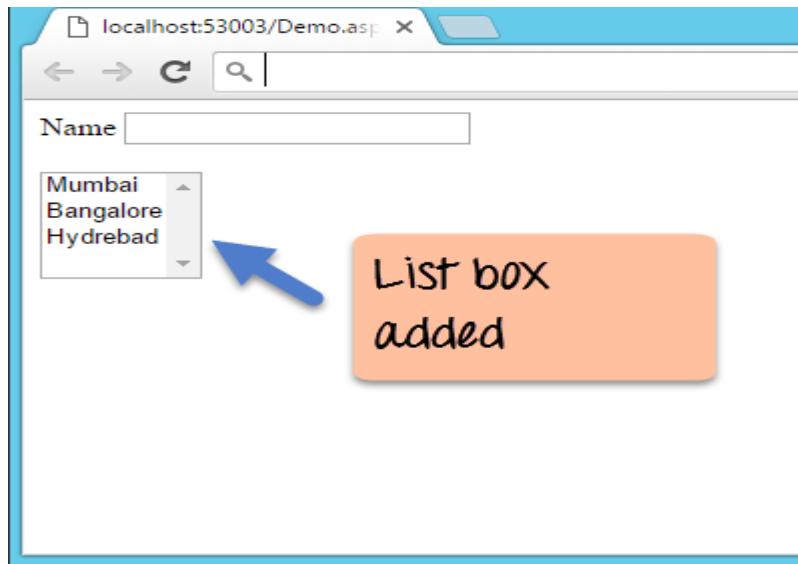
Output:-

From the output, you can clearly see that the Listboxes was added to the form.

12.4 RadioButton

A Radio button is used to showcase a list of items out of which the user can choose one. Let's see how we can implement this with an example shown below. We will add a radio button for a male/female option.

Step 1) The first step is to drag the 'radiobutton' control onto the Web Form from the toolbox. (see image below). Make sure to add 2 radio buttons, one for the option of 'Male' and the other for 'Female.'
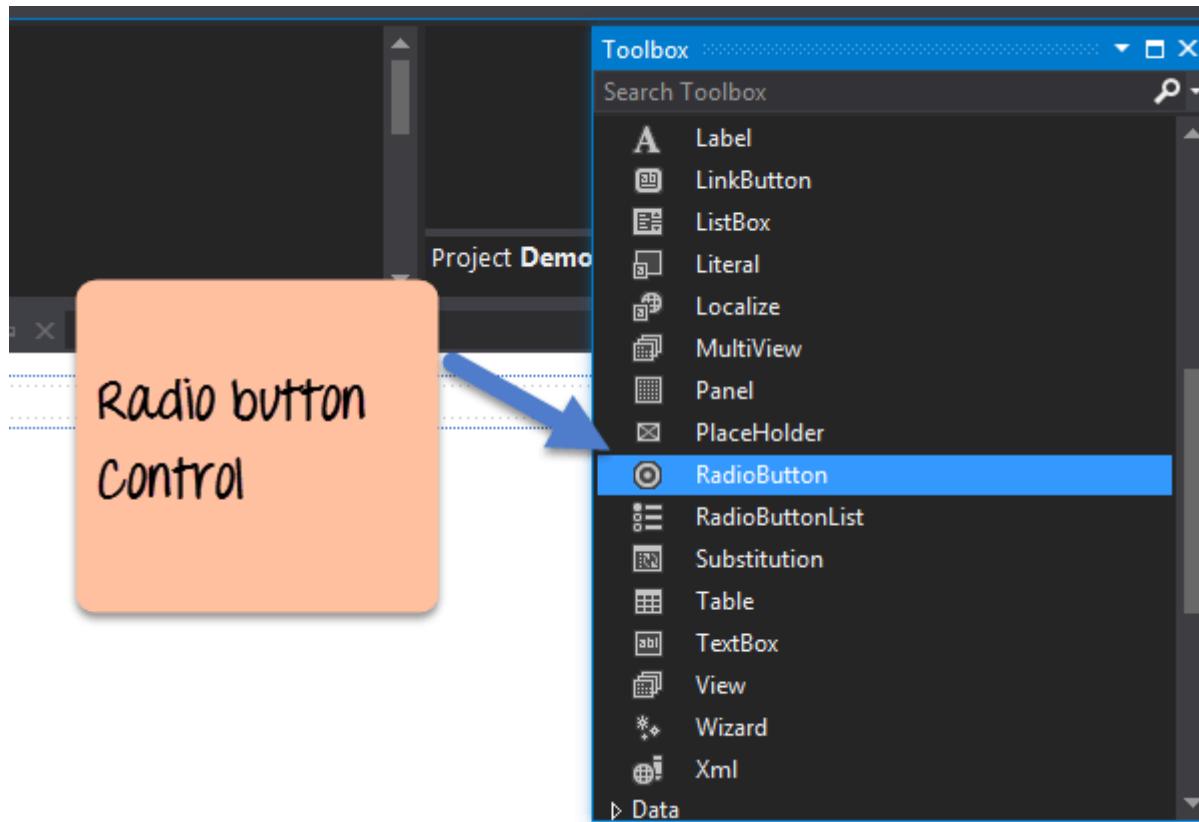
Step 2) Once the Radiobutton has been added, change the 'text' property.

- Go to the properties window by clicking on the 'Radiobutton control'.
- Change the text property of the Radio button to 'Male'.
- Repeat the same step to change it to 'Female.'
- Also, change the ID properties of the respective controls to rdMale and rdFemale.
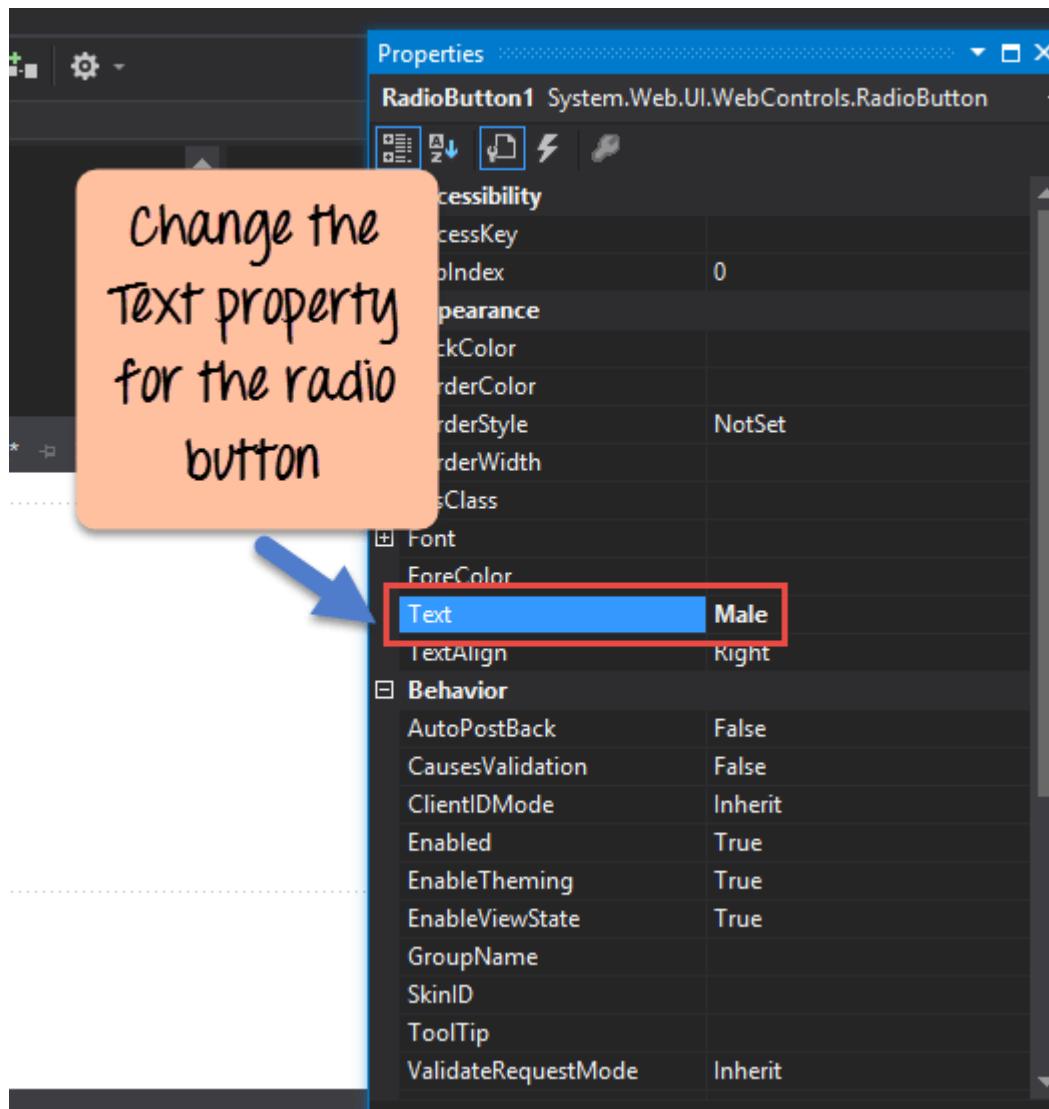
Once you make the above changes, you will see the following output
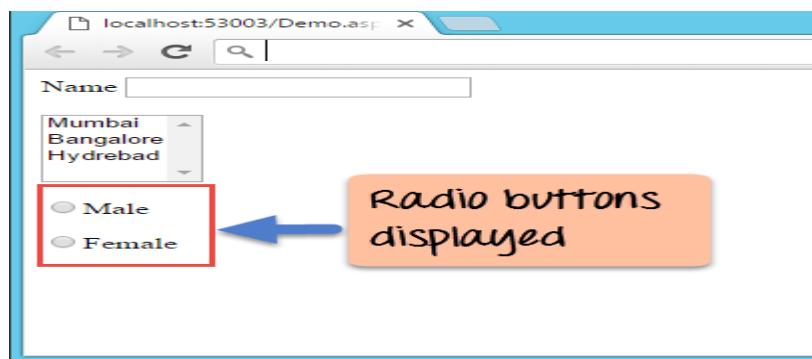
Output:-

From the output, you can clearly see that the radio button was added to the form

12.5 Checkbox

A checkbox is used to provide a list of options in which the user can choose multiple choices. Let's see how we can implement this with an example shown below. We will add 2 checkboxes to our Web forms. These checkboxes will provide an option to the user on whether they want to learn C# or ASP.Net.

Step 1) The first step is to drag the checkbox control onto the Web Form from the toolbox as shown below
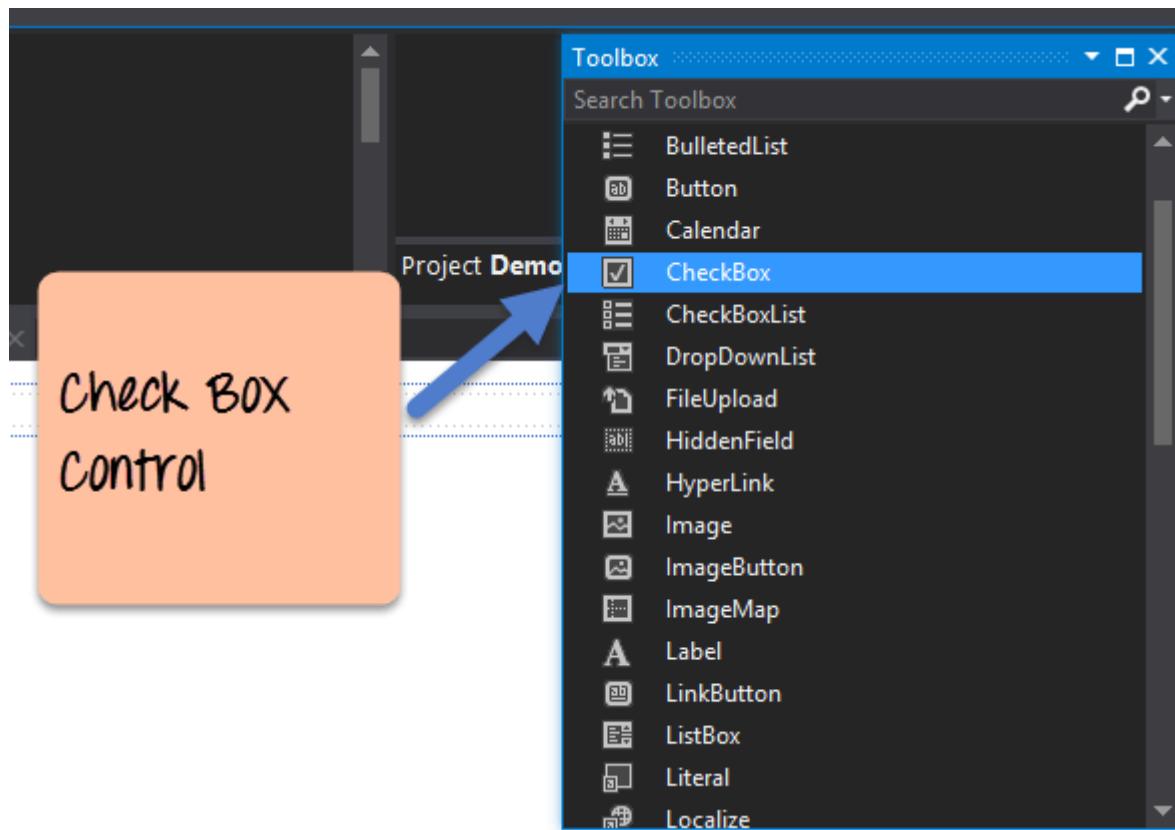
Step 2) Once the Checkboxes have been added, change the checkbox id property to 'chkASP'.

- Go to the properties window by clicking on the Checkbox control.
- Change the ID properties of the respective controls to 'chkC' and 'chkASP'.

Also, change the text property of the Checkbox control to 'C#'. Do the same for the other Checkbox control and change it to 'ASP.Net'.

1. Change the ID property of the checkbox to 'chkASP'
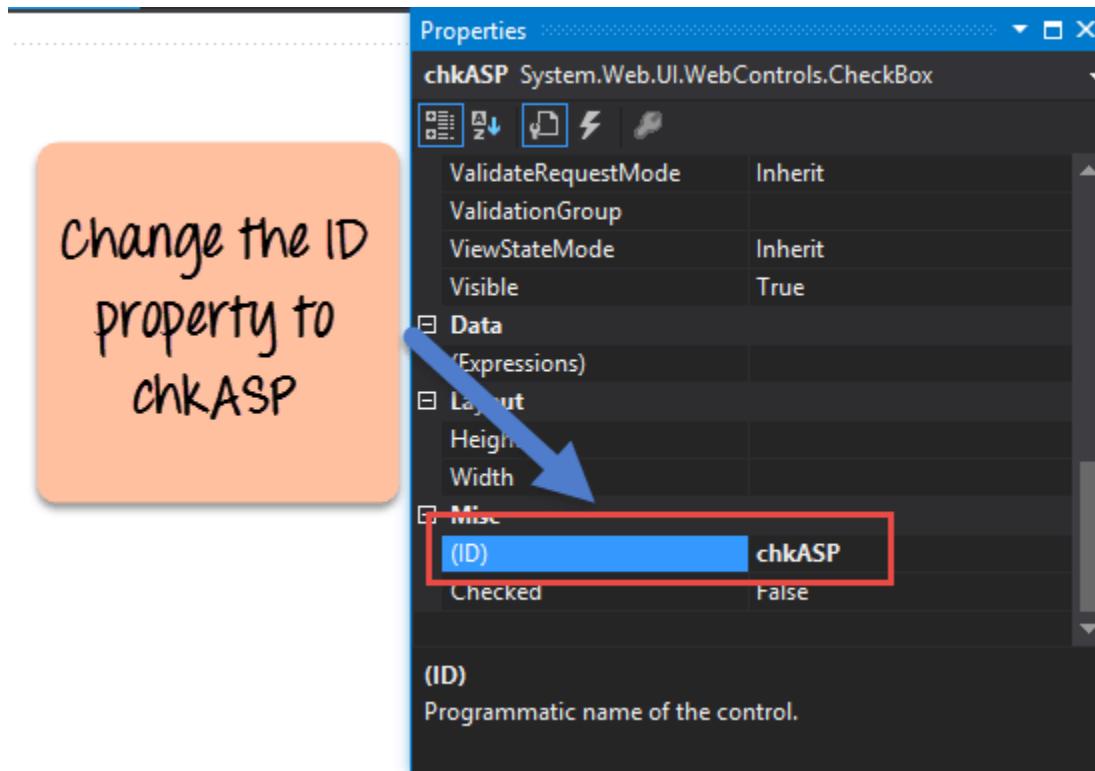
2. Change the ID property of the checkbox to chkC
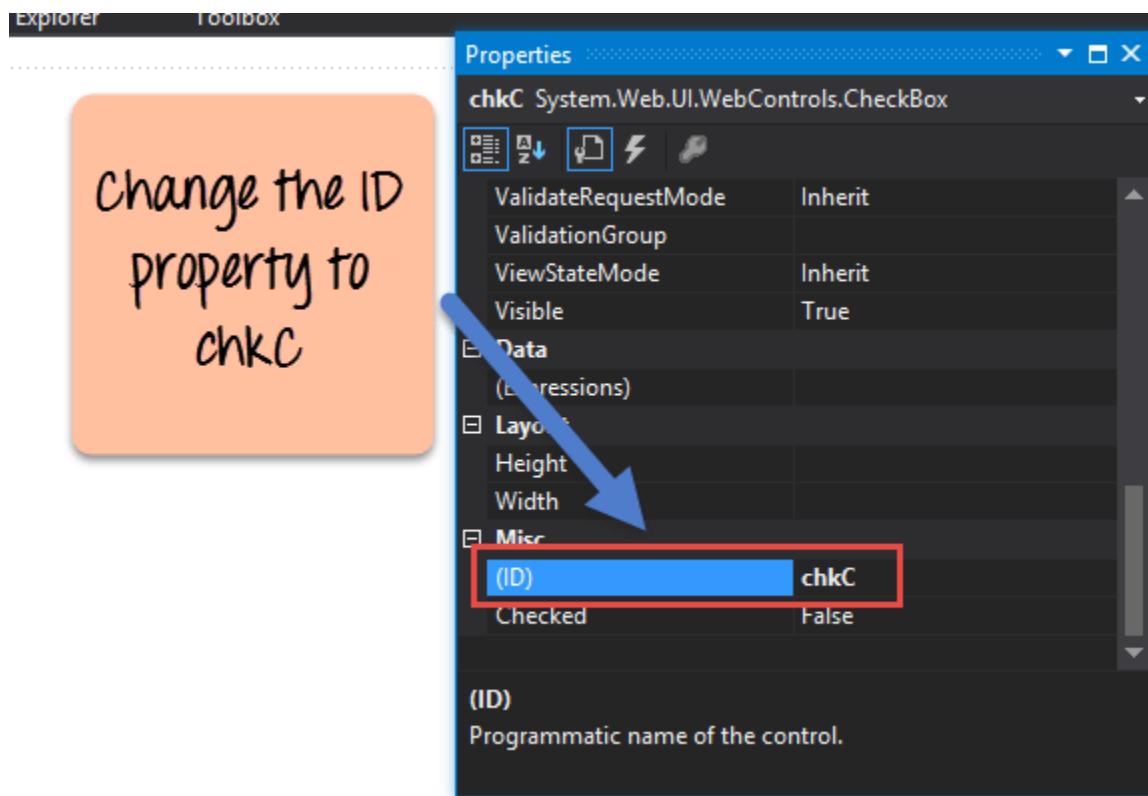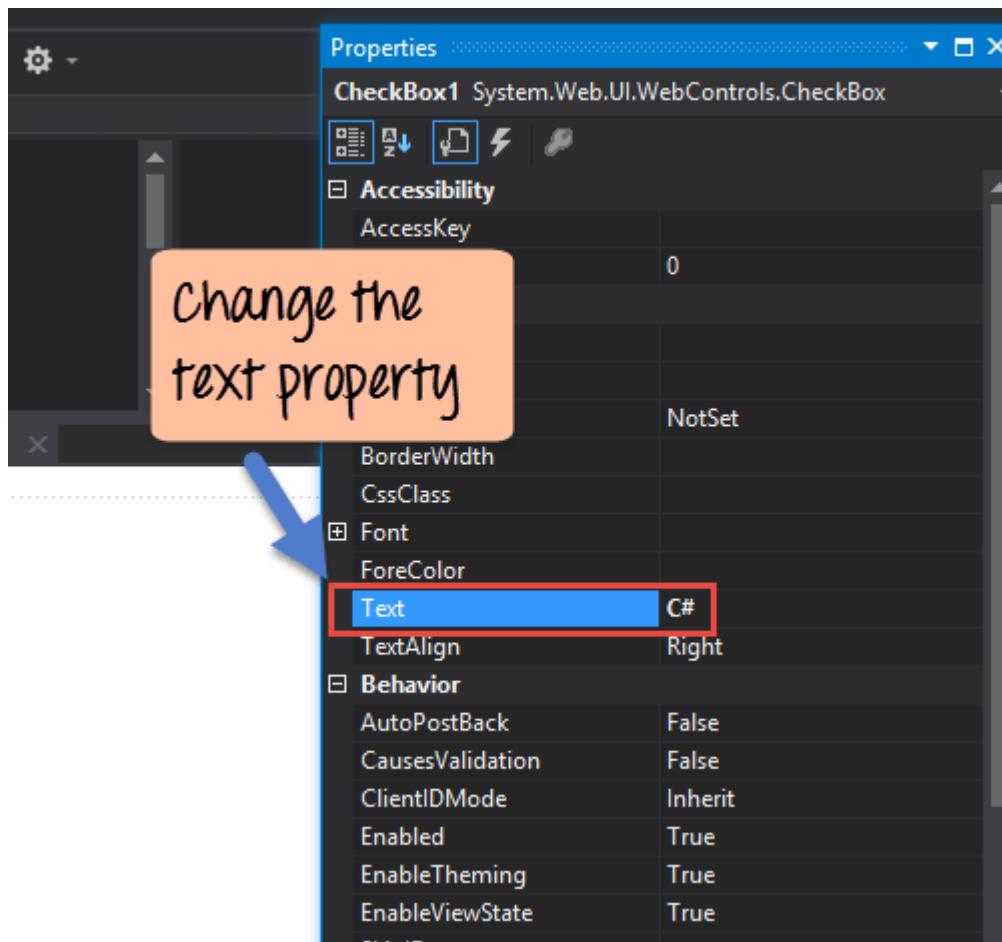
Once you make the above changes, you will see the following output
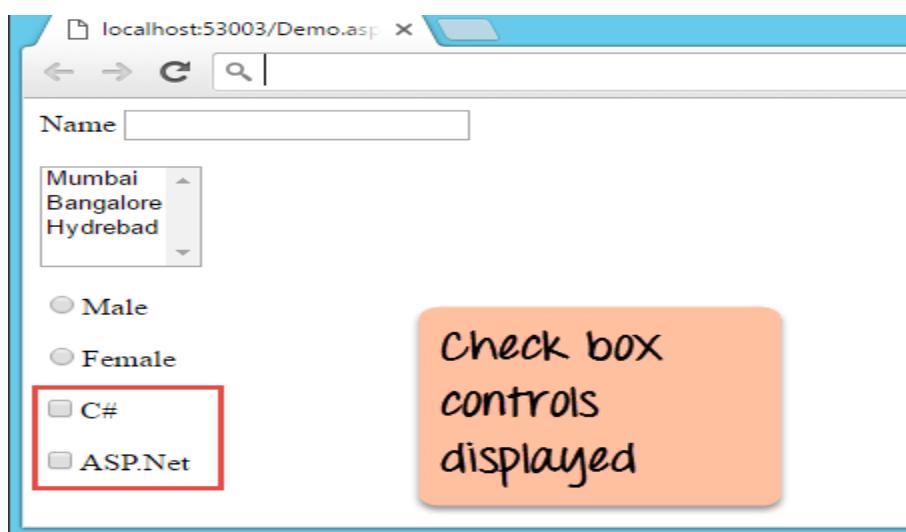
Output:-

From the output, you can clearly see that the Checkboxes was added to the form.

12.6 Button

A button is used to allow the user to click on a button which would then start the processing of the form. Let's see how we can implement this with our current example as shown below. We will add a simple button called 'Submit' button. This will be used to submit all the information on the form.

Step 1) The first step is to drag the button control onto the Web Form from the toolbox as shown below
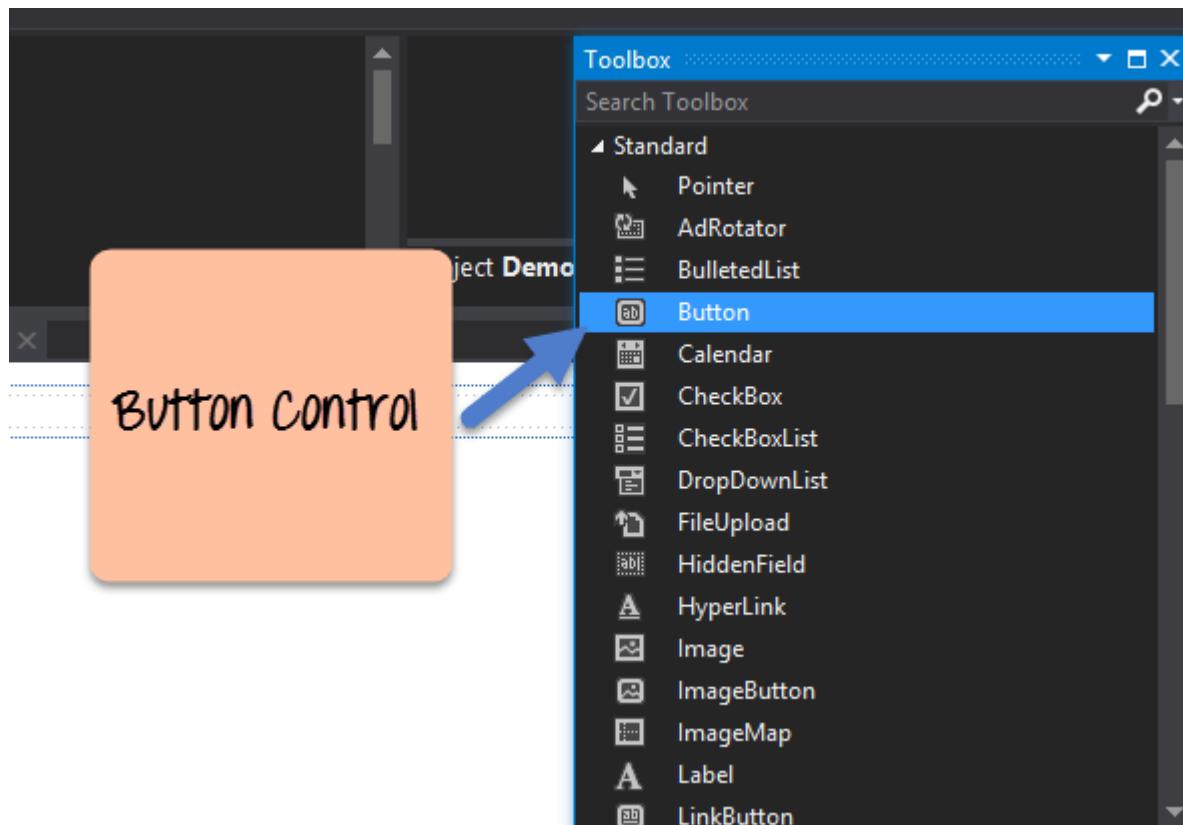
Step 2) Once the button has been added, go to the properties window by clicking on the button control. Change the text property of the button control to Submit. Also, change the ID property of the button to 'btnSubmit'.
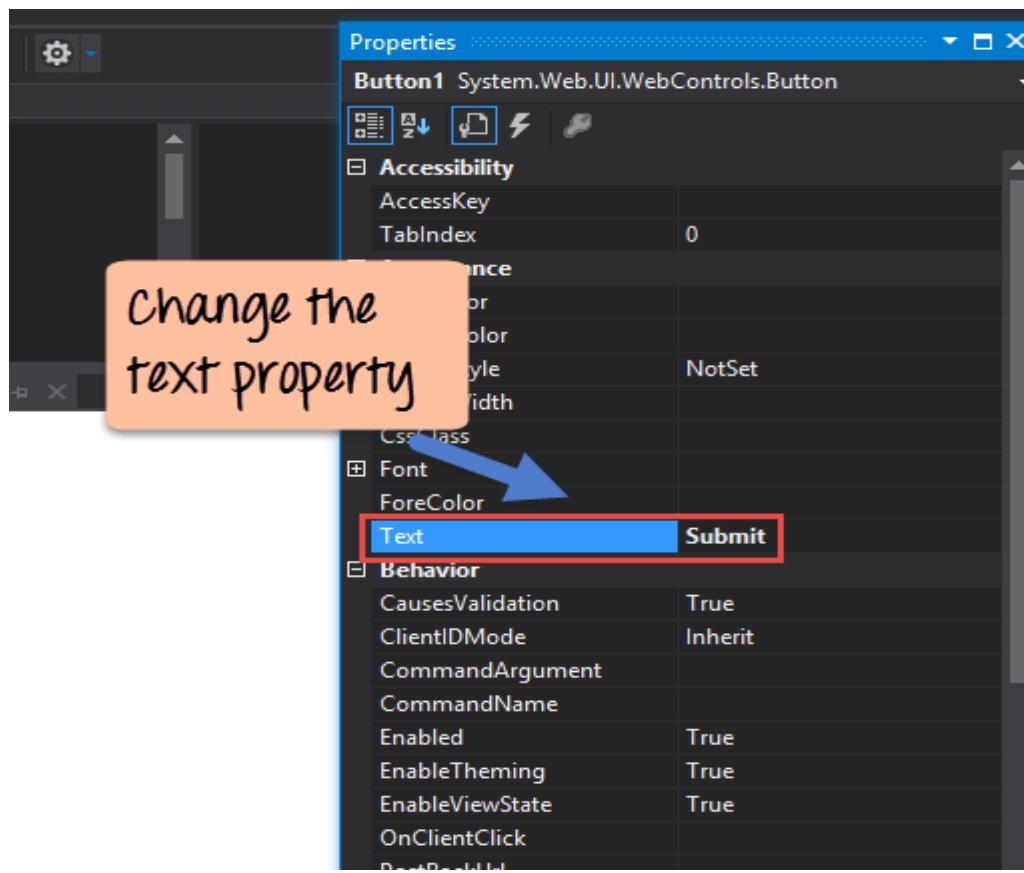
Once you make the above changes, you will see the following output
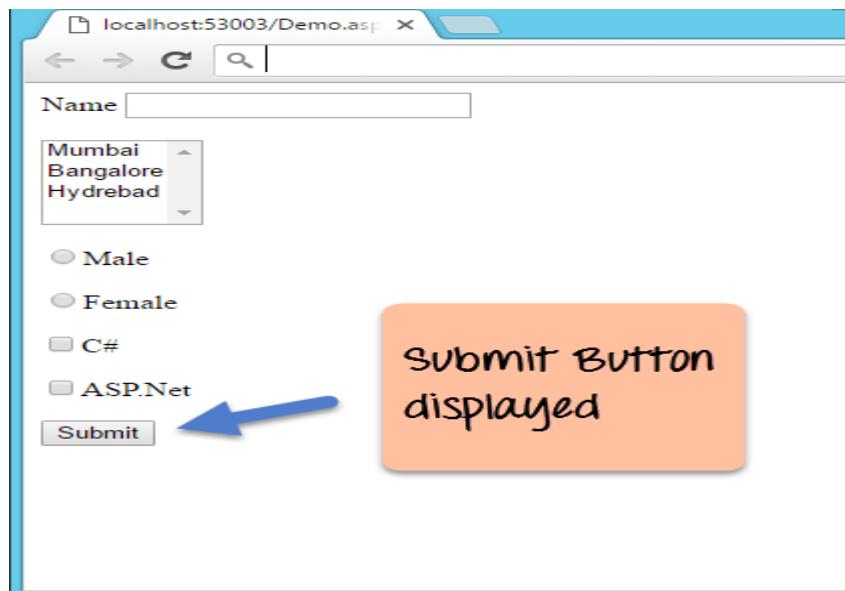
Output:-

From the output, you can clearly see that the button was added to the form.

12.7 Event Handler in ASP.Net

When working with a web form, you can add events to controls. An event is something that happens when an action is performed. Probably the most common action is the clicking of a button on a form.

In web forms, you can add code to the corresponding aspx.cs file. This code can be used to perform certain actions when a button is pressed on the form. This is generally the most common event in Web Forms. Let's see how we can achieve this.

We are going to make this simple. Just add an event to the button control to display the name which was entered by the user. Let's follow the below steps to achieve this.

Step 1) First you have to double-click the Button on the Web Form. This will bring up the event code for the button in Visual Studio.

```
protected void btnSubmit_Click(object sender, EventArgs e)
{


}
```
Event Handler for Button
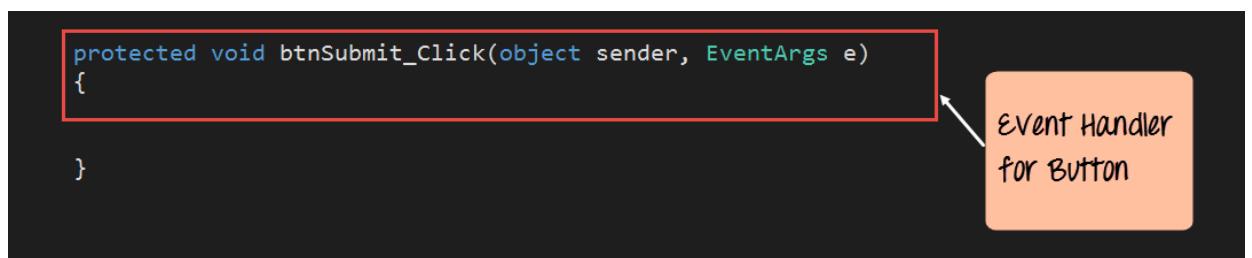
The btnSubmit_Click event is automatically added by Visual Studio when you double click the button in the web forms designer.

Step 2) Let's now add code to the submit event to display the name textbox value and the location chosen by the user.

```
protected void btnSubmit_Click(object sender, EventArgs e)
{
    Response.Write(txtName.Text + "</br>");         1

    Response.Write(lstLocation.SelectedItem.Text + "</br>"); 2

    lblName.Visible = false;
    txtName.Visible = false;
    lstLocation.Visible = false;     3
    chkC.Visible = false;
    chkASP.Visible = false;
    rdMale.Visible = false;
    rdFemale.Visible = false;
    btnSubmit.Visible = false;

}
```
Send the Text box value to the client

Send the selected Listbox item to the client

Mark all controls as invisible

```
protected void btnSubmit_Click(object sender,EventArgs e)
{
        Response.Write(txtName.Text + "</br>");

        Response.Write(lstLocation.SelectedItem.Text + "</br>");

        lblName.Visible = false;
        txtName.Visible = false;
        lstLocation.Visible = false;
        chkC.Visible = false;
        chkASP.Visible = false;
        rdFemale.Visible = false;
        btnSubmit.Visible = false;
}
```

Code Explanation:-

1. The above line of code does the simplest thing. It takes the value of the Name textbox control and sends it to the client via the Response object. So if you want to enter the string "Guru99" in the name text box, the value of txtName. A text would be 'Guru99'.
2. The next line of code takes the selected value of the listbox via the property 'lstLocation.SelectedItem.text'. It then writes this value via the Response.Write method back to the client.
3. Finally, we make all the controls on the form as invisible. If we don't do this, all the controls plus our response values will be displayed together.

   Normally, when a person enters all the information on the form such as the Name, location, Gender, etc. The next page shown to the user should only have the information which was not entered. The user does not want to see the Name, Gender, location controls again. But ASP. Net does not know this, and hence, by default, it will again show all the controls when the user clicks the Submit button. Hence, we need to write code to ensure all the controls are hidden so that the user just sees the desired output.

One you make the above changes, you will see the following output

Output:-

In the Output screen, carry out the following steps

1. Give a name of Guru99(you can give your name also) in the name textbox
2. Choose a location in the listbox of Bangalore
3. Click on the Submit button
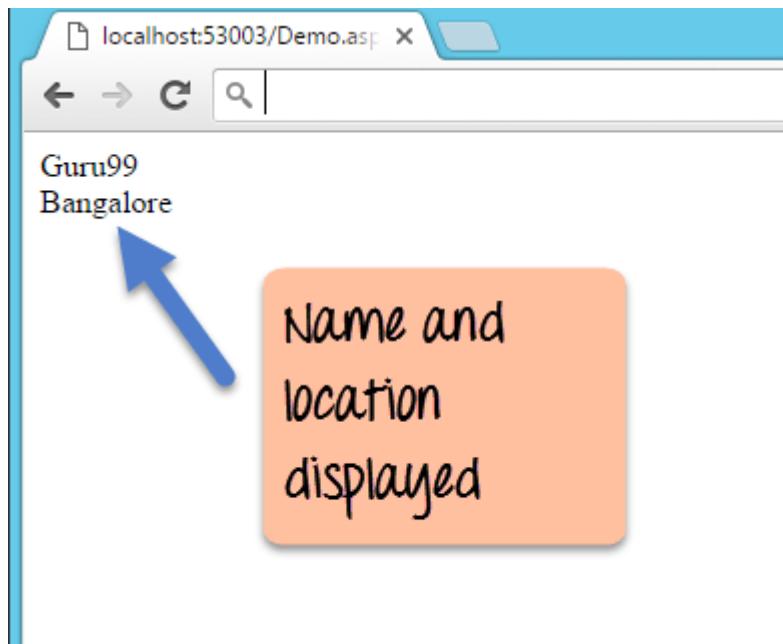
Once you do this, you will see 'Guru99' and the location 'Bangalore' is displayed on the page.

References:

- http://www.wideskills.com/aspnet/aspnet-introduction
- https://www.c-sharpcorner.com/UploadFile/c8b86e/introduction-to-web-server/
- http://net-informations.com/faq/asp/iis.htm
- https://www.msdotnet.co.in/2013/06/web-forms-controls-in-aspneti.html#.Xpn3BEAzbMw
- https://www.javatpoint.com/asp-net-web-form-introduction
- https://www.guru99.com/asp-net-controls.html