



Session 2

Working with
ASP.NET Web
Forms, Controls,
and Events

Session Overview

- Explain Web application development and Web Forms
- Describe event handling in ASP.NET
- List and describe various types of controls in ASP.NET

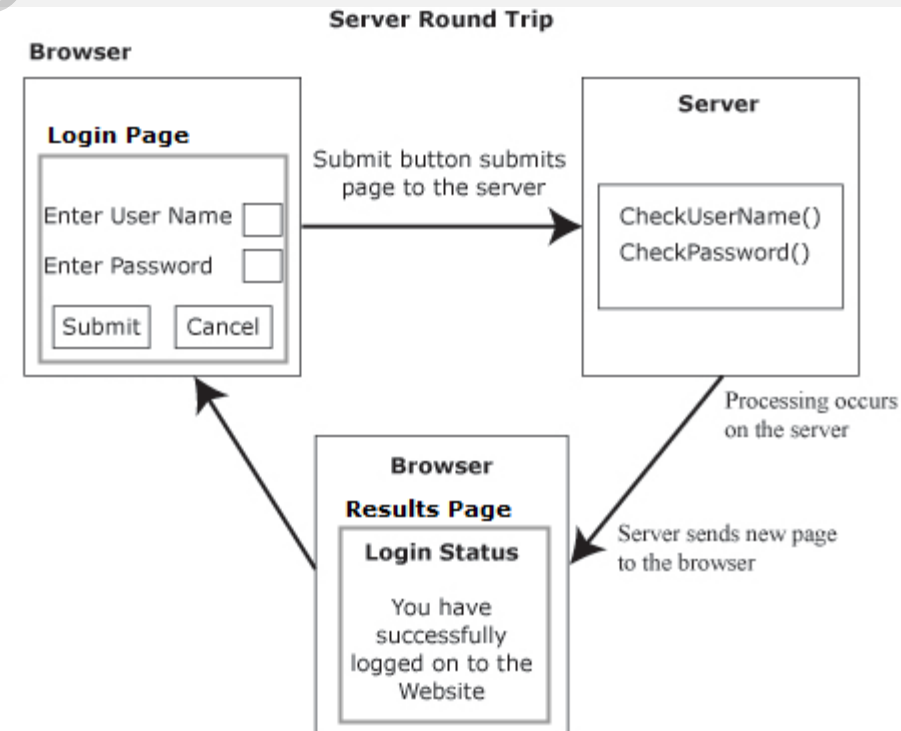
Web Application Development and Web Forms (1-2)

A Web application is a computer program consisting of HTML Pages with contents and hyperlinks (URL).

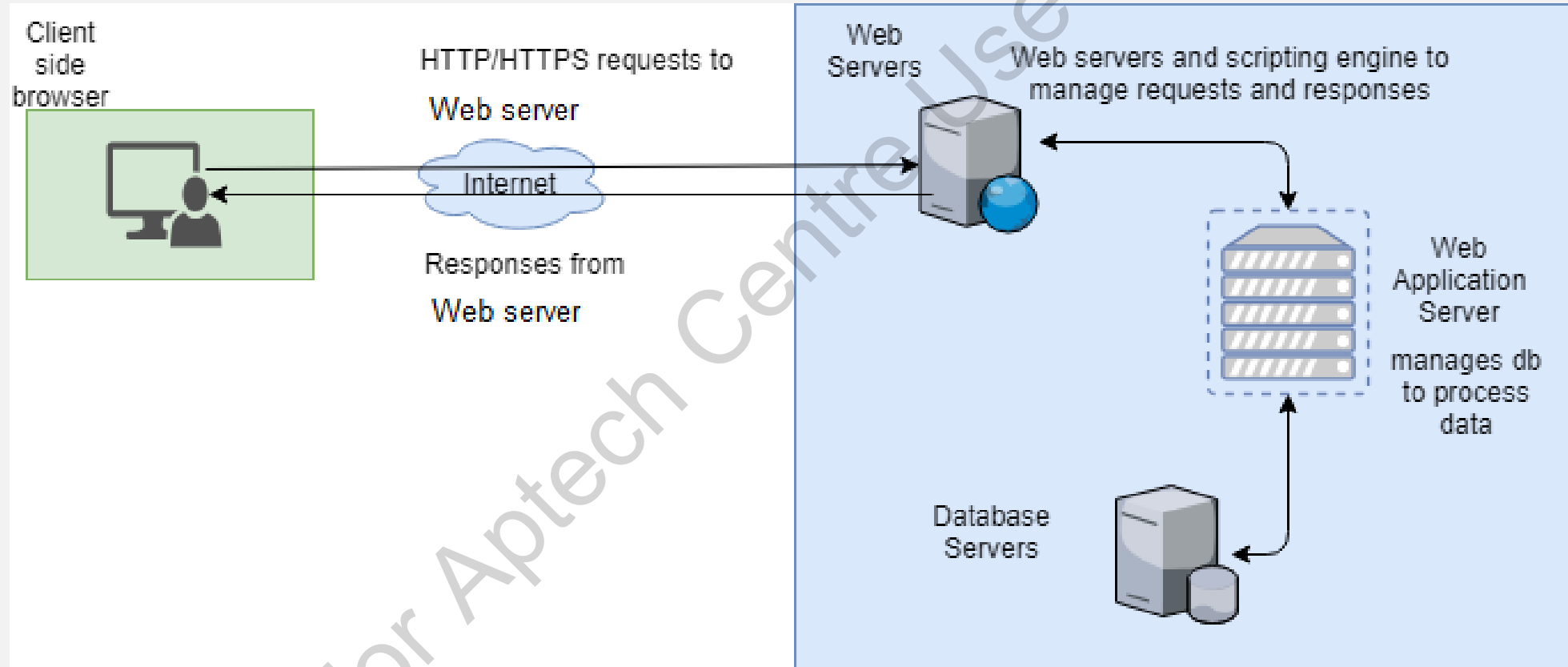
It resides on a remote server and passed over the network such as a browser application.

ASP.NET is an advanced technology enabling a fast Web development with lesser code.

ASP.NET offers three programming models for creating Websites - Web Forms, Web Pages, and Model-View-Controller (MVC) Applications.



Web Application Development and Web Forms (2-2)



Web Application Process

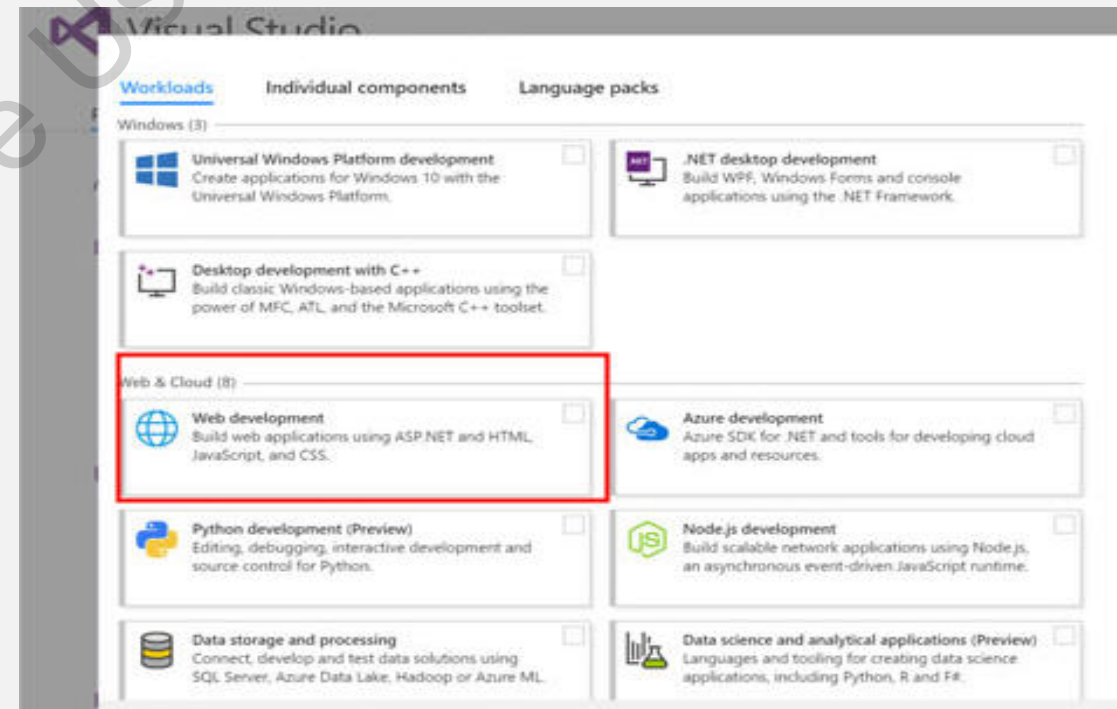
ASP.NET Environment Setup

Microsoft Visual Studio is an exceptionally capable IDE for writing, compiling, and debugging code.

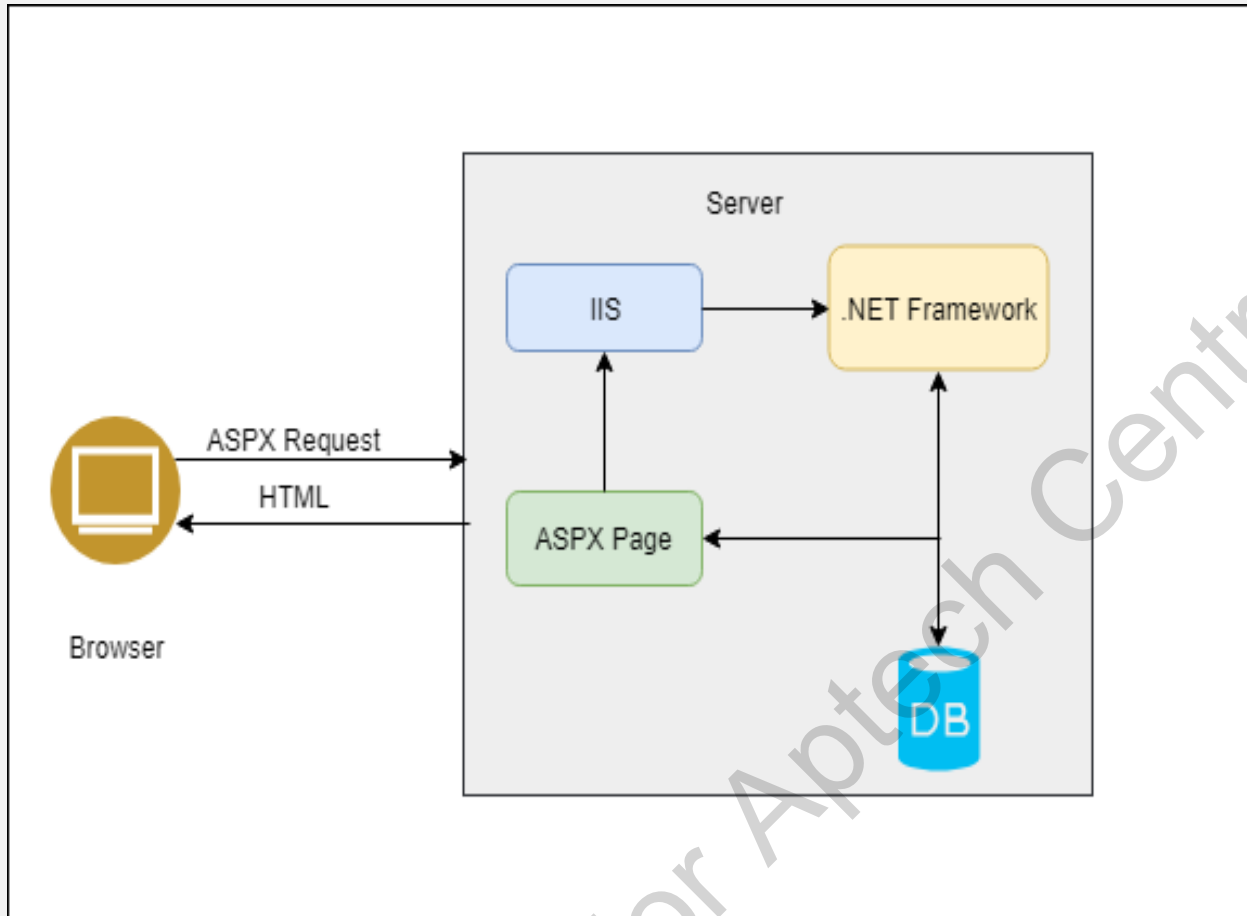
Provides a complete set of development tools for building ASP.NET Web applications, Web services, desktop applications, and mobile applications.

While installing it, one must select appropriate workloads so as to ensure correct templates.

Selecting Workloads for Web Development



ASP.NET Web Forms



Processing of ASP.NET Web Form

ASPX

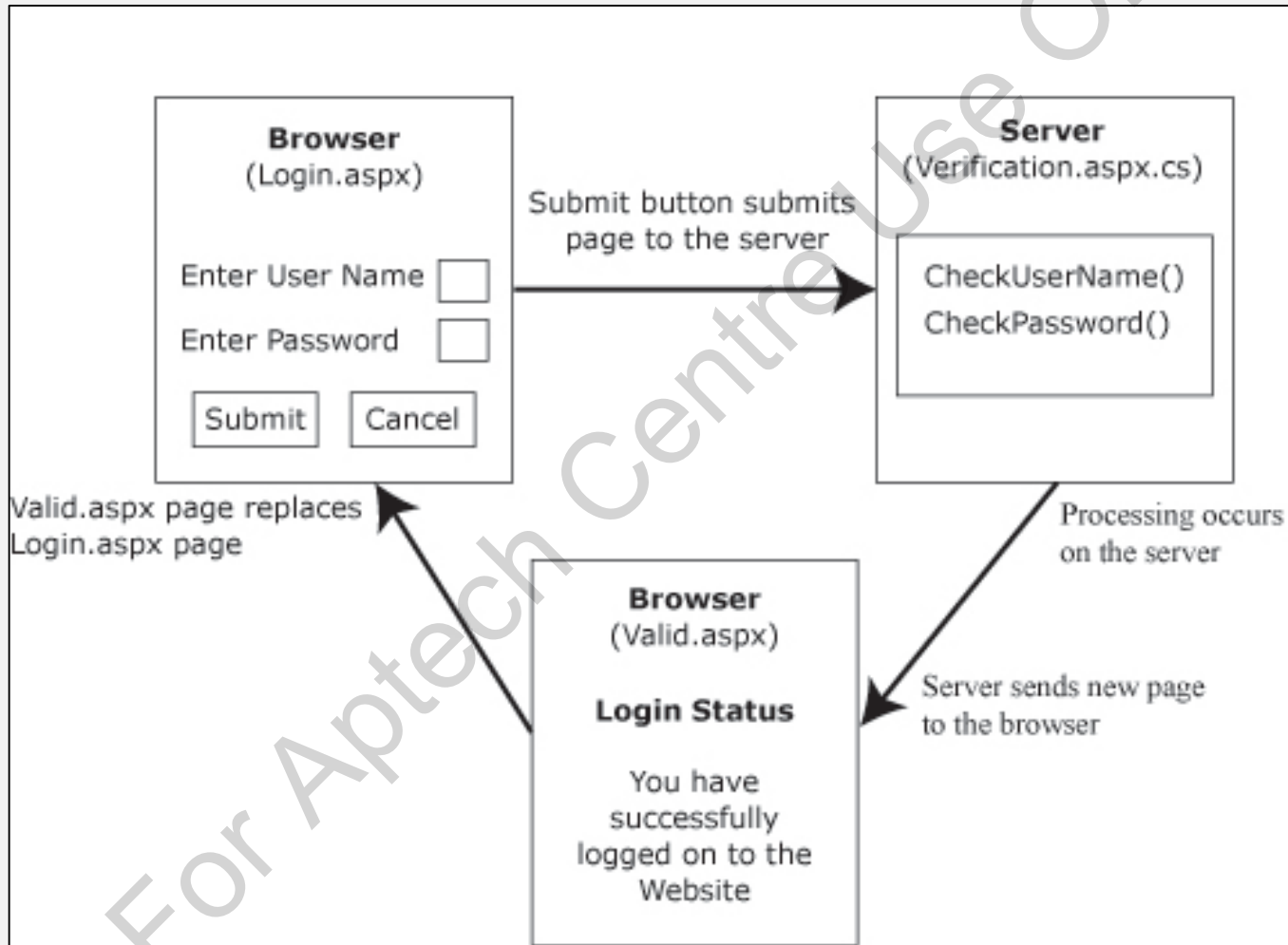
Is a visual based Web page or User Interface (UI).

Code-behind file

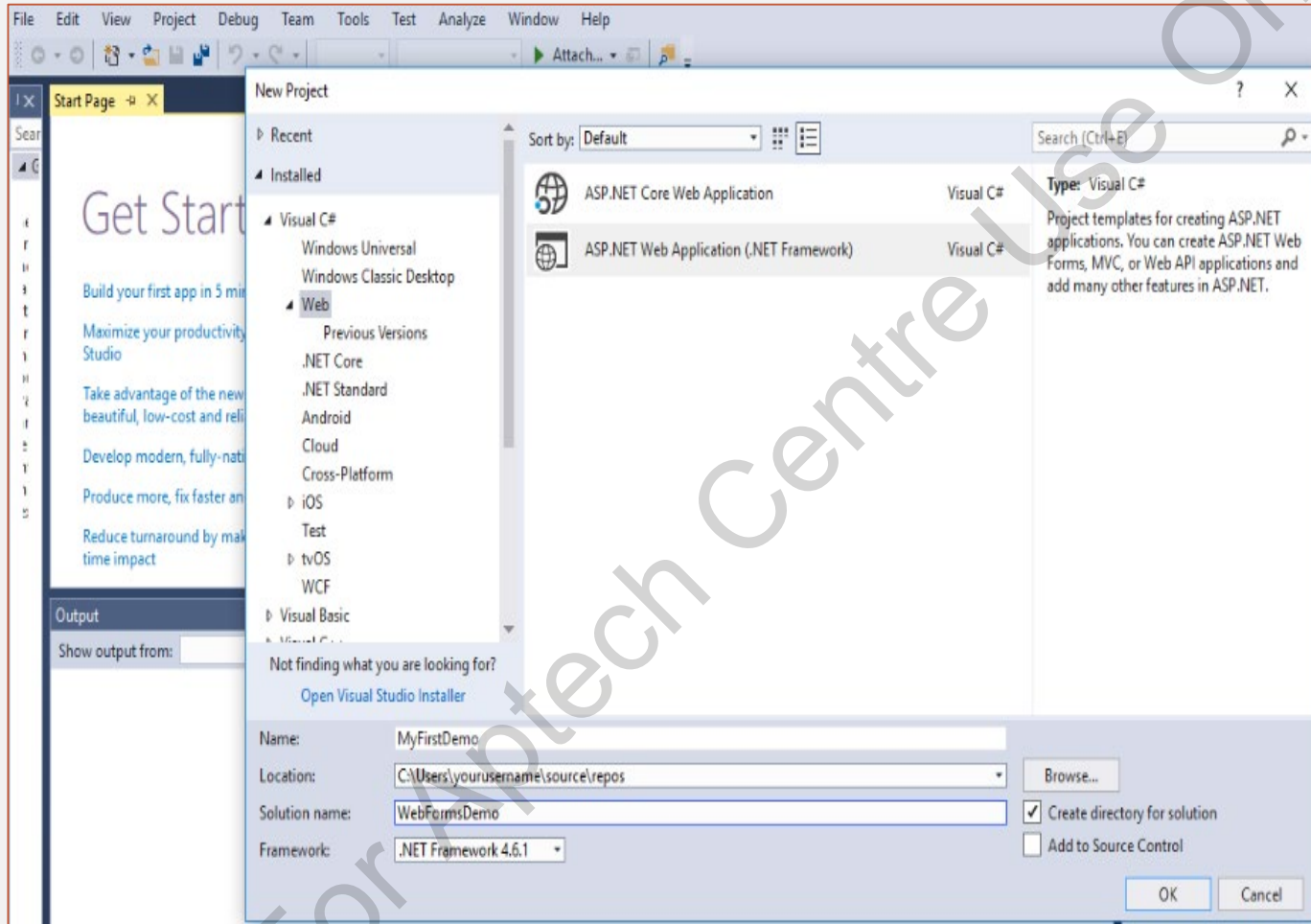
Contains server-side code of the Web page specifying how the Web page and its visual controls should behave upon execution.

Web Forms Page Segments

ASP.NET Web Forms - Example

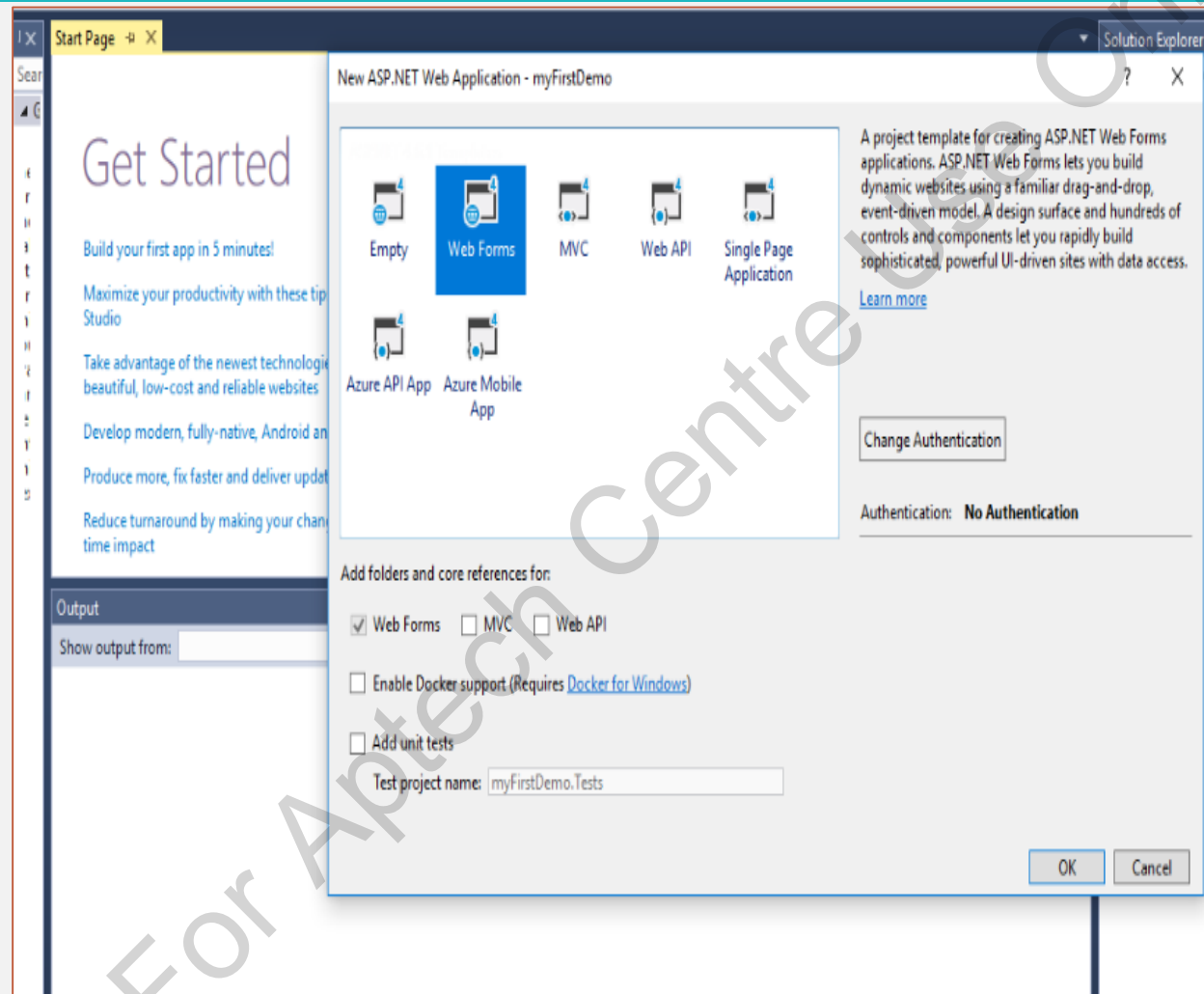


Creating an ASP.NET Web Form (1-6)



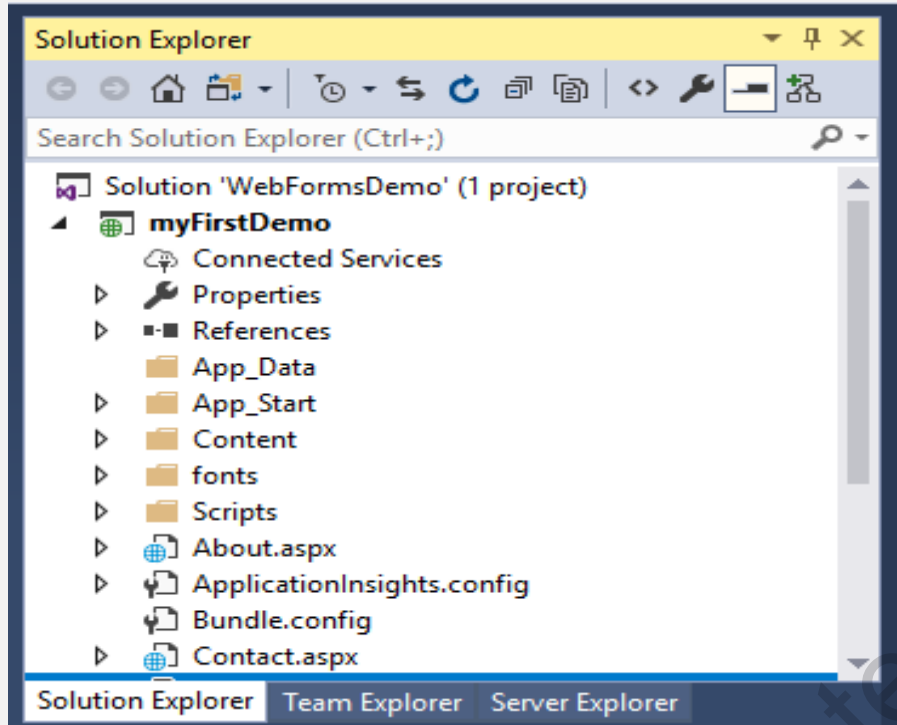
Creating a New Project

Creating an ASP.NET Web Form (2-6)

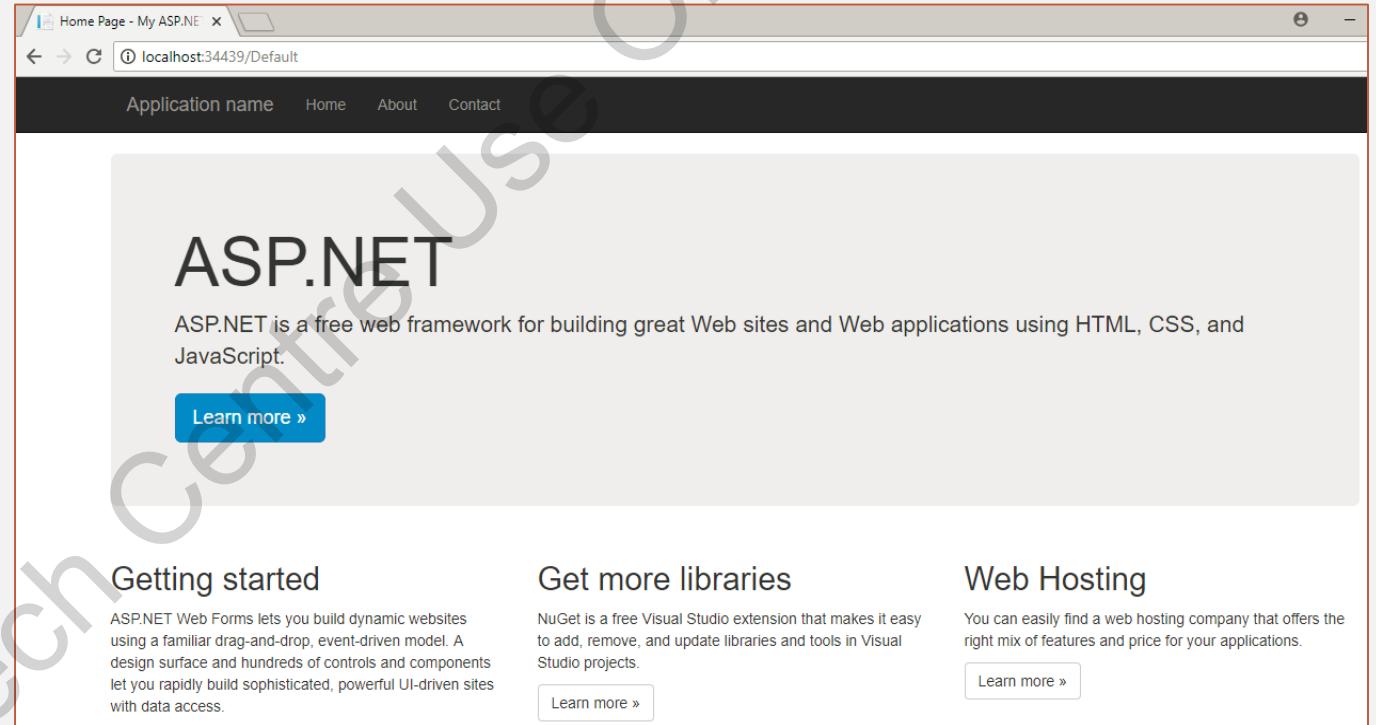


Selecting a Web Form

Creating an ASP.NET Web Form (3-6)

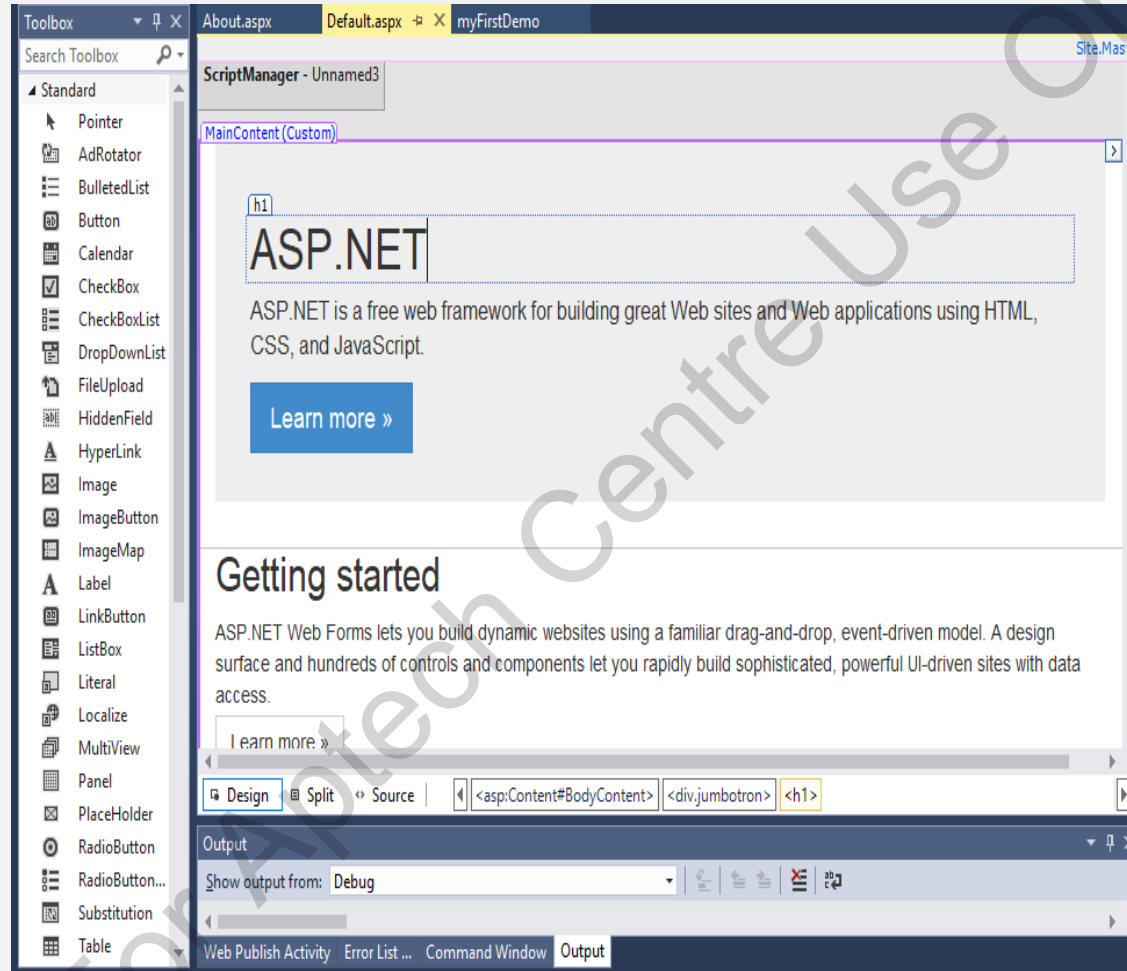


Solution Explorer



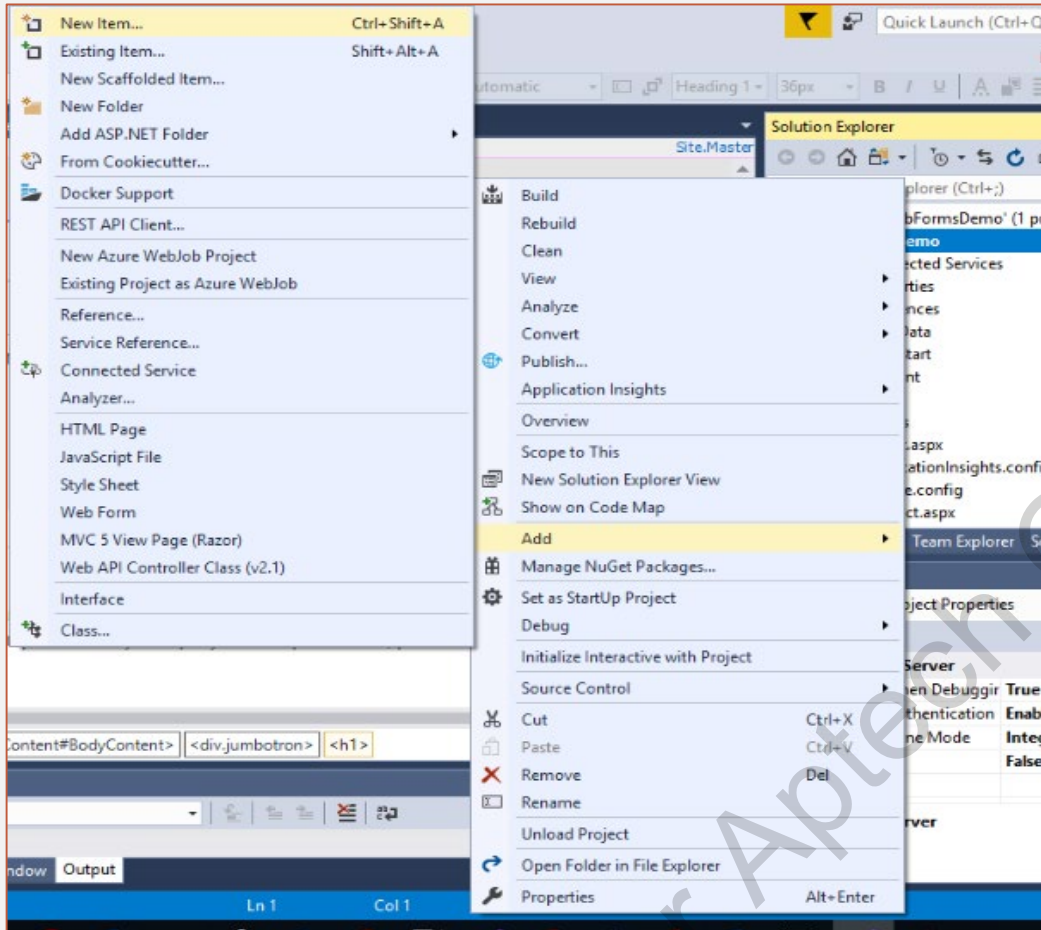
Default .ASPX Page

Creating an ASP.NET Web Form (4-6)



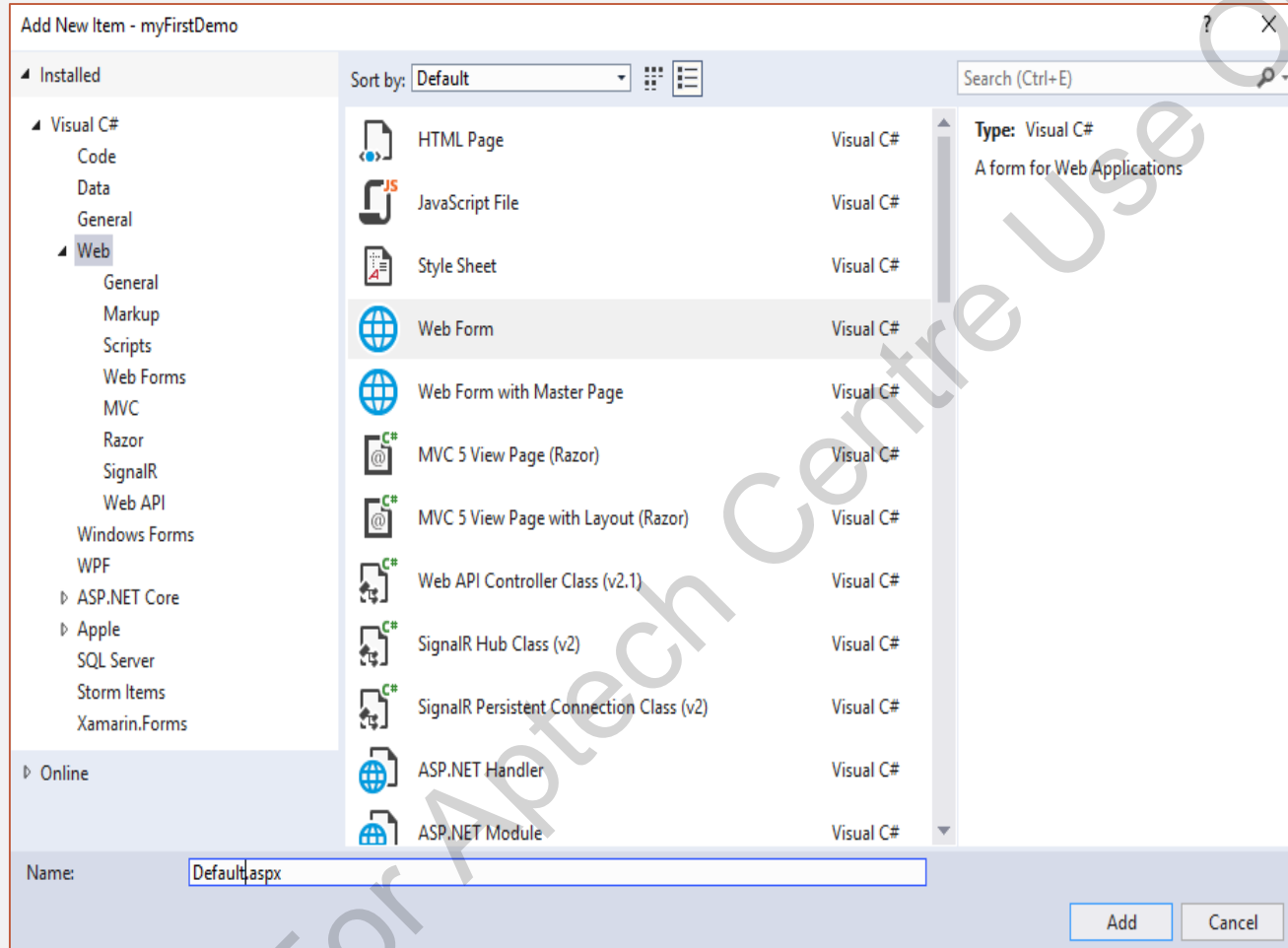
Design Output

Creating an ASP.NET Web Form (5-6)



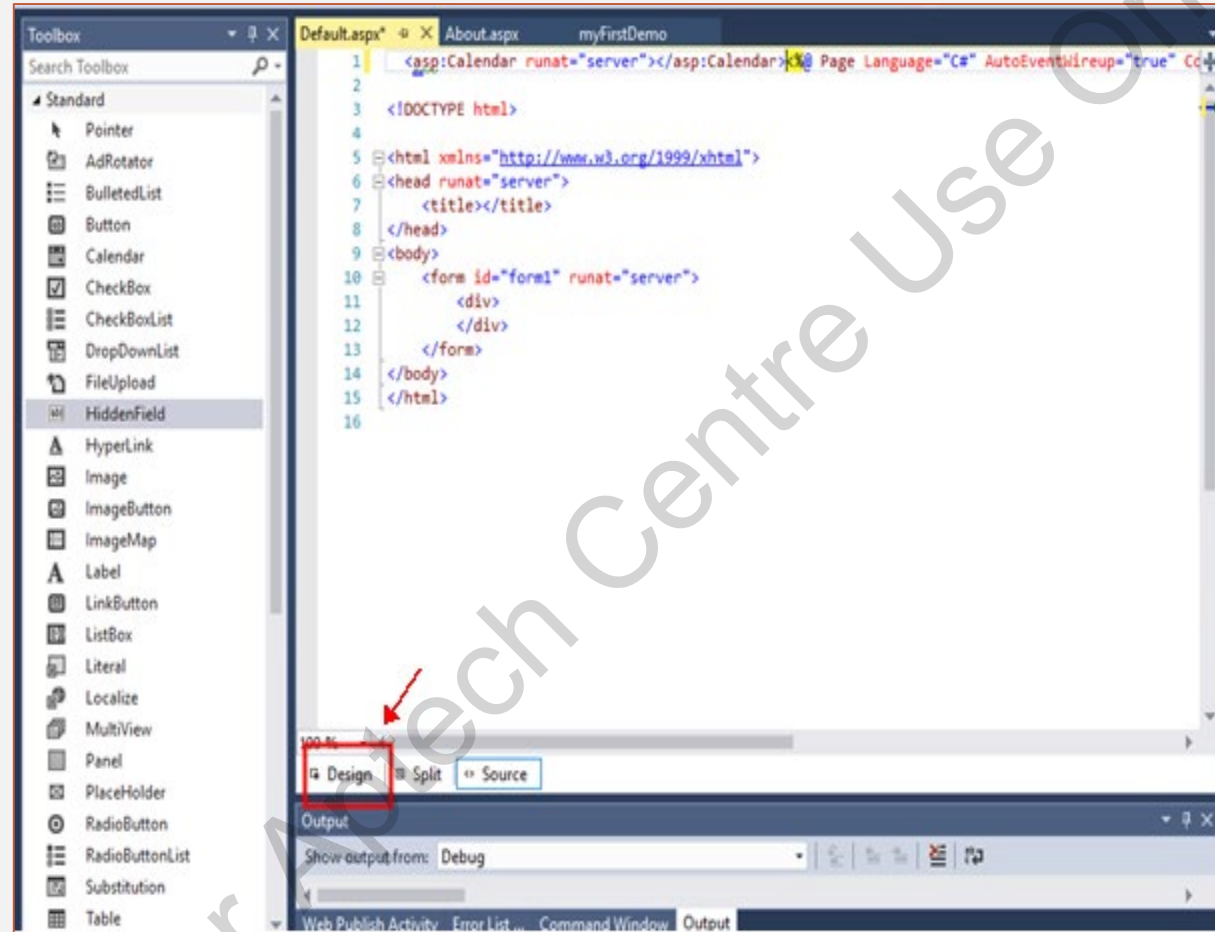
Adding a New Item

Creating an ASP.NET Web Form (6-6)



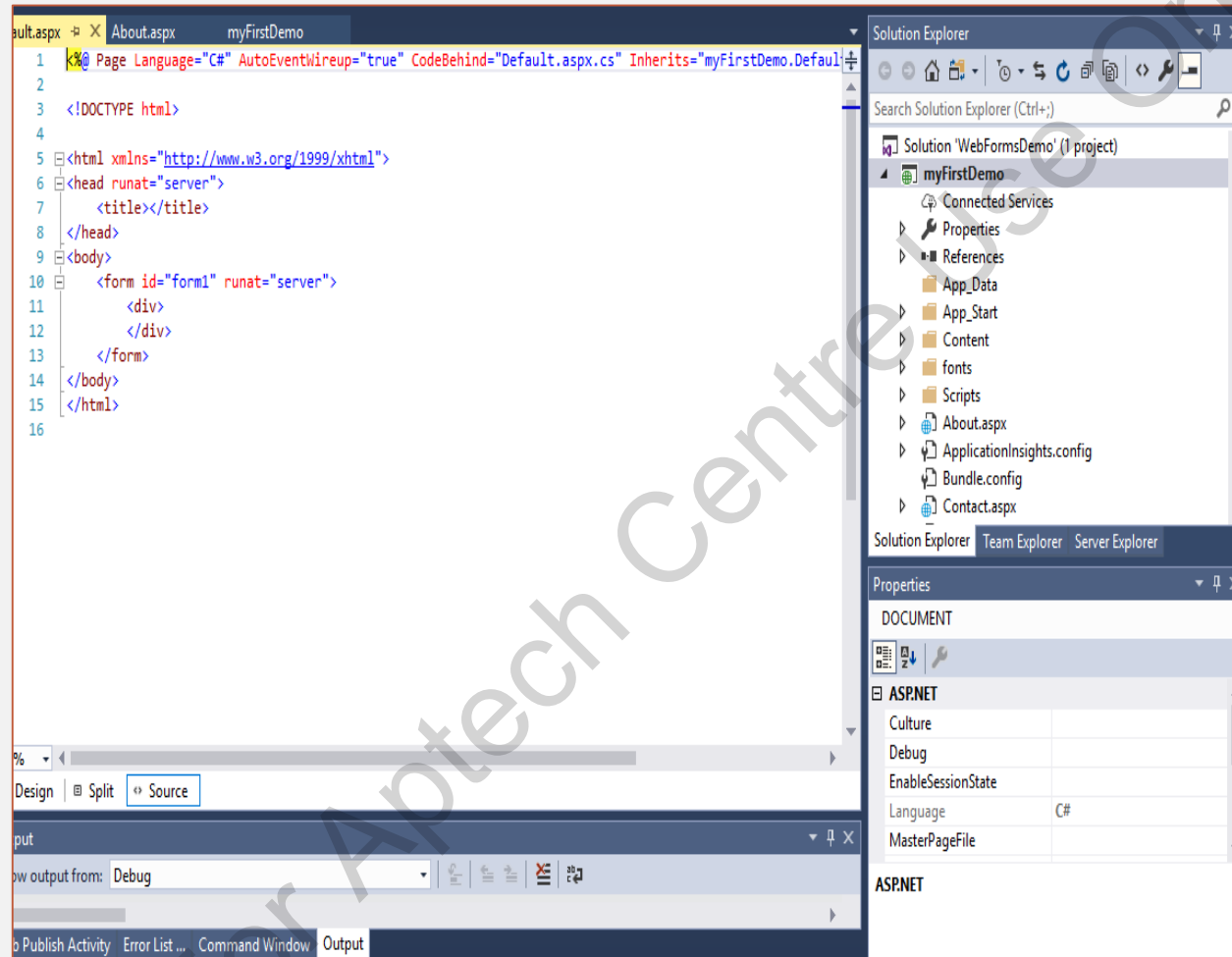
Selecting Web Form

Adding Controls to the Form (1-3)



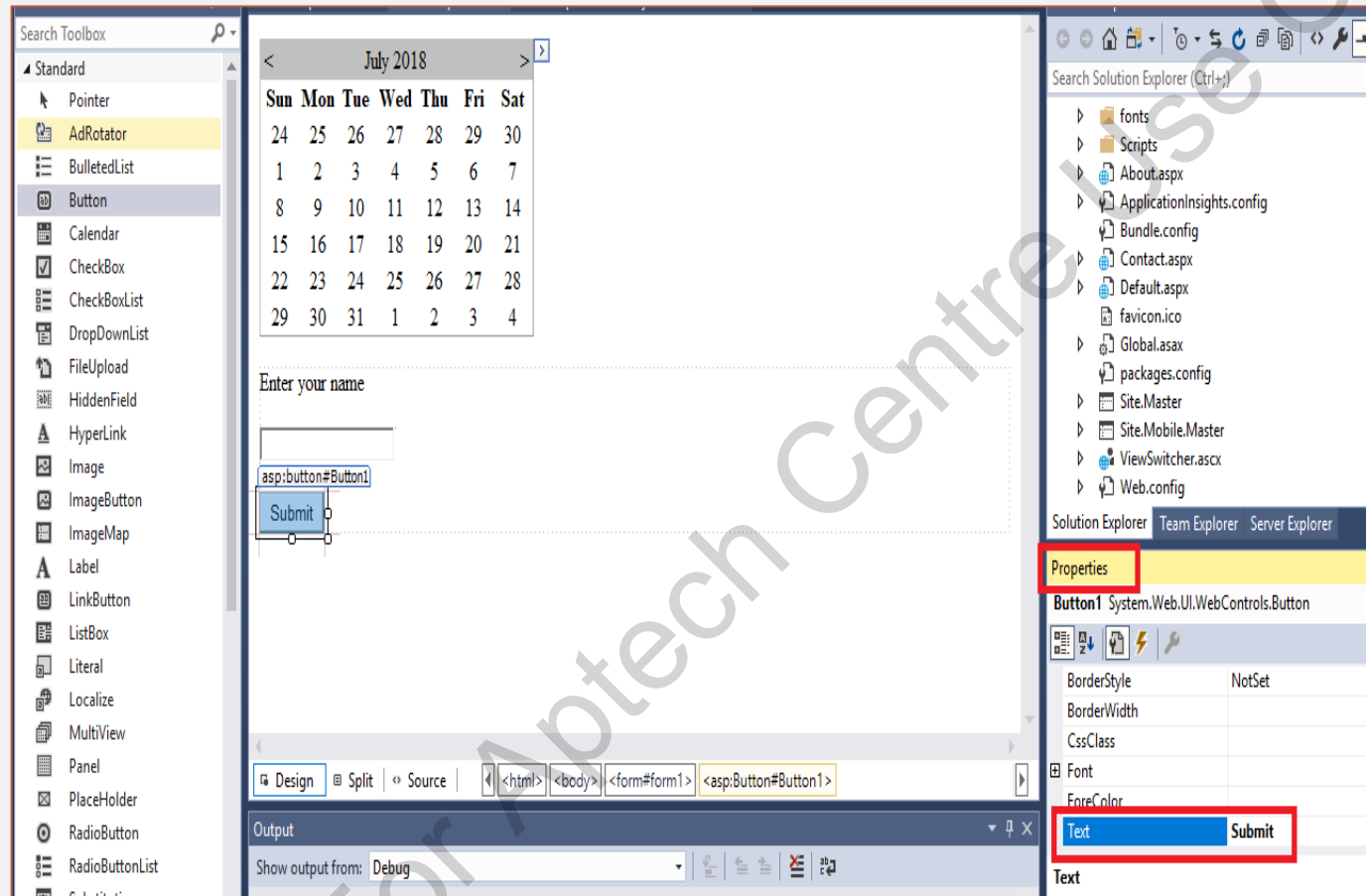
Design Tab

Adding Controls to the Form (2-3)



Selecting a Control

Adding Controls to the Form (3-3)



Creating a Web Form

Controls in ASP.NET

HTML Server Controls - Traditional HTML tags

Web Server Controls - ASP.NET tags

Validation Server Controls - For input validation

HTML Server Controls (1-4)

Advantages of HTML Server Controls over HTML Elements:



Compiled into the assembly with the `runat="server"` attribute



Map to the corresponding HTML tags



Retain their values, whenever ASP.NET page is reloaded



`OnserverEvent` is included in most controls for commonly used events

HTML Server Controls (2-4)

Control Name	HTML Tag with Description
HtmlHead	<code><head></code> element Used to store page Title and CSS, JavaScript links.
HtmlInputButton	<code><input type = button submit reset></code> Similar to HTML Submit Button.
HtmlInputCheck	<code><input type = checkbox></code> Used to Check/Uncheck multiple options.
HtmlInputFile	<code><input type = file></code> Used to browse and upload files.
HtmlInputHidden	<code><input type = hidden></code> Used to store temporary value.
HtmlInputImage	<code><input type = image></code> Used to load and display image.

HTML Server Controls

HTML Server Controls (3-4)

Control Name	HTML Tag with Description
HtmlInputpassword	<code><input type = password></code> Textbox that masks password to *.
HtmlInputRadioButton	<code><input type = radio></code> Used to select single option from multiple options.
HtmlInputreset	<code><input type = reset></code> HTML Form reset button.
HtmlText	<code><input type = Text></code> Similar to HTML textbox.
HtmlImage	<code></code> element Used to display image.
HtmlLink	<code><link></code> element Similar to HTML hyperlink.

HTML Server Controls (4-4)

Control Name	HTML Tag with Description
HtmlAnchor	<code><a></code> element Similar to HTML hyperlink.
HtmlButton	<code><button></code> element Similar to HTML button.
HtmlForm	<code><form></code> element HTML form used to add input controls.
HtmlTable	<code><table></code> element HTML table to show data/control in tabular format.

HTML Server Controls

Web Server Controls

Web Server Control	Description
AdRotator	Displays a sequence of images.
Button	Displays a push button.
Calendar	Displays a calendar.
CheckBox	Displays a check box.
CheckBoxList	Creates a multi-selection check box group.
DataGrid	Displays fields of a data source in a grid.
DataList	Displays items from a data source by using templates.
Image	Displays an image.
ImageButton	Displays a clickable image.
Label	Displays static text that displays information as a response to an action or description of how a control will behave when clicked.
ListBox	Creates a single or multi-selection drop-down list.
Table	Creates a table.

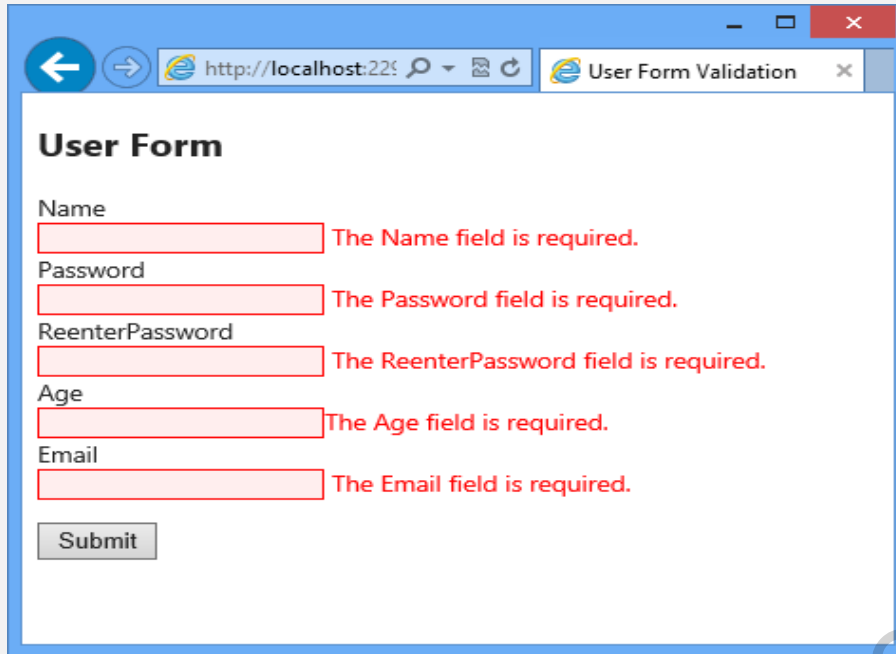
ASP.NET Validation Server Controls (1-2)

Validation Server Control	Description
CompareValidator	Compares the value of one input control to the value of another input control or to a fixed value.
CustomValidator	Allows writing a method to handle the validation of the value entered.
RangeValidator	Checks that the user enters a value that falls between two values.
RegularExpressionValidator	Ensures that the value of an input control matches a specified pattern.
RequiredFieldValidator	Makes an input control a required field.
ValidationSummary	Displays a report of all validation errors that occurred in a Web page.

Syntax

```
<asp:control_name id="some_id" runat="server" />
```

ASP.NET Validation Server Controls (2-2)



User Form

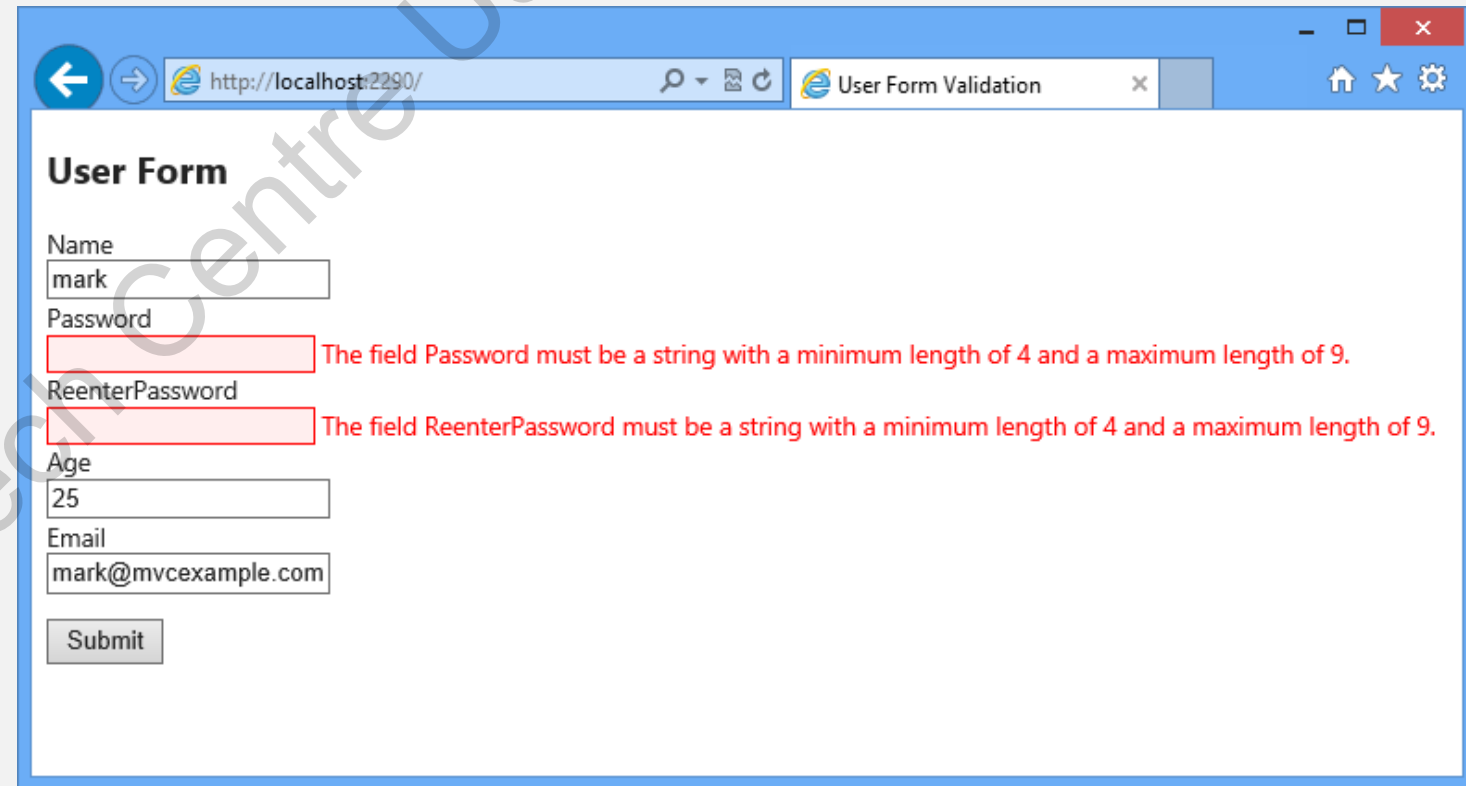
Name
 The Name field is required.

Password
 The Password field is required.

ReenterPassword
 The ReenterPassword field is required.

Age
 The Age field is required.

Email
 The Email field is required.



User Form

Name

Password
 The field Password must be a string with a minimum length of 4 and a maximum length of 9.


ReenterPassword
 The field ReenterPassword must be a string with a minimum length of 4 and a maximum length of 9.

Age

Email

Event Handling in ASP.NET (1-4)

Sequence of steps while handling Button Click event are:

- 
- User clicks a Button in the client (Browser)
 - Click event is raised by the application
 - Browser publishes this event to the server
 - The event handler is executed by server
 - Notifications generated by the system to the user (Browser)

Event Handling in ASP.NET (2-4)

Application and Session Events

Application_Start

- Raised when the application/Website is started.

Application_End

- Raised when the application/Website is closed.

Session_Start

- Raised when a user requests a page from the application.

Session_End

- Raised when the session ends.

Event Handling in ASP.NET (3-4)

- Application state indicates data storage, available for all the classes.
- Session state enables a user to store and access values as one browses the pages.

Page and Control Events



Event Handling in ASP.NET (4-4)

Creating Event Handlers in Visual Studio

Code for creating a simple button control:

```
<asp:Button ID="btnCancel" runat="server" Text="Cancel" />
```

Event	Attribute	Control
Click	OnClick	Button, Image Button, Link Button, and IImage map
Command	OnCommand	Button, Image Button, and Link button
TextChanged	OnTextChanged	Text box
SelectedIndexChanged	OnSelectedIndexChanged	Drop-down List, List Box, Radio Button List, and Check Box List
CheckedChanged	OnCheckedChanged	Check box and Radio Button

Common Control Events

Exception Handling in ASP.NET

- Exceptions are run-time errors that disrupt the execution flow of instructions in a program.
- Upon encountering an exception, the application terminates.

Summary

- ASP.NET Web Forms is the best method to create ASP.NET Websites and Web-based applications.
- A Web form can be created using Visual Studio .NET - ASPX.
- Types of server controls for input validation are namely, HTML server controls (traditional HTML tags), Web server controls (new ASP.NET tags), and validation server controls.
- Events are handled at the server end when raised at the client end in ASP.NET.
- The keywords try-catch-finally are used to attain exception handling in ASP.NET.