

1.AJAX

2.WEBSERVICE

3.WCF

4.WPF

5.SILVER LIGHT

BY

R.N.Reddy

Sathya Technologies

2nd floor, sri sai arcade,

Ameerpet,Hyderabd-500038

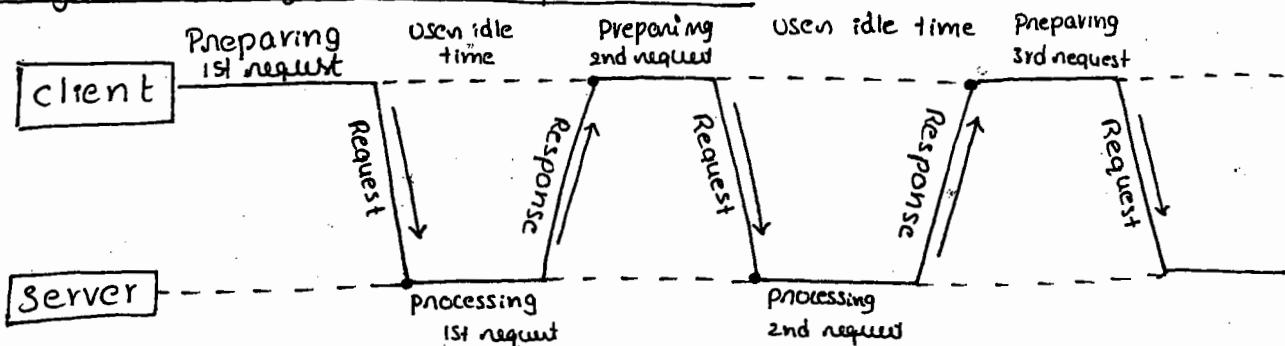
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AJAX

1. Every web-application is depending on some request model.
2. Request Models are two types:
 1. Synchronous Request model
 2. Asynchronous Request model.
3. Till now we are developing web applications by using asp.net, Synchronous Request
4. These web applications will follow Synchronous Request Model.

Synchronous Request Model:- In Synchronous Request Model Every client request has to be processed by the server. Due to that reason user idle time (waiting time) is increasing.

Diagram for Synchronous Request Model:-



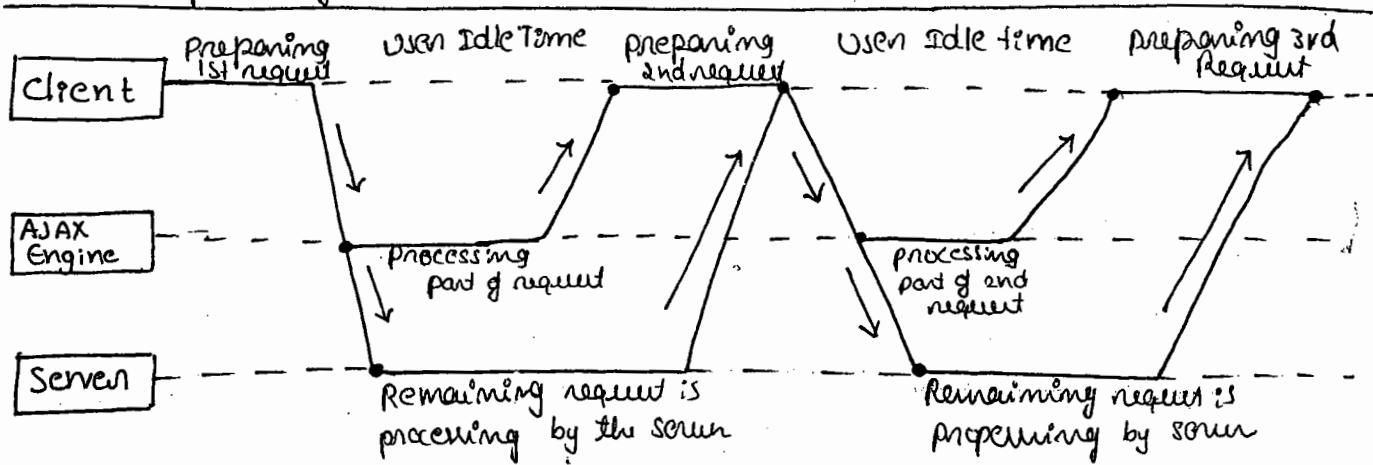
- Step 1:- Client is preparing the 1st request.
- Step 2:- Client is sending the 1st request to Server.
- Step 3:- Server is receiving the 1st request.
- Step 4:- Server is processing the 1st request.
- Step 5:- While processing request client is waiting for the response which is called as "User idle time".
- Step 6:- Server is sending the requested webpage to Client (Response).
- Step 7:- Client is receiving the Response from Server.
- Step 8:- Once Client is received the response from Server then Client will prepare the second request etc.

In this request model every request is processed by the server due to that reason we have following drawbacks:

1. User Idle time is increasing.
 2. Burden on Server is increasing.
 3. Increasing network traffic.
- Because of above drawbacks w/h are affecting the performance of the web-application.
- To overcome the drawbacks of Synchronous Request Model we can go for Asynchronous Request Model.

Asynchronous Request Model :-

1. In Asynchronous Request Model B/w Client and Server we will have a mediator called Ajax engine, it will process the part of the request.



- Step 1:- Client is preparing the 1st request
- Step 2:- Client is sending the 1st request
- Step 3:- Ajax engine will receive the 1st request
- Step 4:- Ajax engine is processing the part of the request & sending the remaining request to server.
- Step 5:- Server is receiving the remaining request.
- Step 6:- While processing the part of the request by Ajax engine Client is waiting for the response, which is called as user idle time.
- Step 7:- Server is processing the remaining request.
- Step 8:- Once Ajax engine completed the part of the request, it will send the part of response to Client.
- Step 9:- Client is receiving response from Ajax engine.
- Step 10:- Once Client received the response from Ajax engine

Step11 Client is preparing 2nd request.

Step12 Once server completed the remaining request processing server will send the response to client.

Step13 Client is receiving the response from server, Client is sending the 2nd request.

In asynchronous request model part of the request is processed by Ajax engine, due to that reason w/h is reducing the user idle time, w/h is reducing the burden on web server and w/h is reducing the N/W traffic, Finally, Asynchronous request model will improve the performance of the web-application.

1. If we want to follow Asynchronous Request Model while developing the web-application, we have to Ajax.
2. Ajax is a latest web-technology which will follow Asynchronous request model.
3. To improve the performance of web-application we can use Ajax.

Ajax:-

1. Ajax stands for Asynchronous Java Script and XML.
2. Ajax is not a single Technology, w/h is a combination of multiple Technologies like below:
 1. HTML
 2. Javascript
 3. XML etc.
3. Ajax was introduced 1st time by Jessy James canet in the year 2005.
4. Jessy James describe about Ajax as mediator b/w Client and Server.
5. By implementing Ajax we can generate dynamic webpages at client side i.e., Ajax is processing the part of the web-request / web-page.
6. After Jessy James has introduced Ajax, so many organisations are introduced Ajax similar frameworks to support their technologies.

Ajax in ASP.NET :-

1. From .Net 2.0 onwards Ajax is supported by .Net Technology.
2. In .Net 2.0 Ajax SW is not integrated, due to that reason in asp.net 2.0 if we want to use Ajax, we have to install Ajax SW explicitly.
3. From .Net 3.5 onwards Ajax is integrated with .Net SW, i.e., From ASP.NET 3.5, if we want to use Ajax we don't require to install Ajax SW explicitly. But we have to add "Ajax controls Toolkit" to ASP.NET toolbox window. This toolkit is a free download w/h is available with in the below website.
codeplex.com

Ajax will support two programming models they are:

1. Server centric programming Model
2. Client centric programming Model.

1. Server Centric Programming Model :-

In server centric programming Model every client request is processing by the web-server. i.e., First request as well as post back request are processing by the webserver only.

2. Client centric Programming Model :-

1. In client centric programming Model 1st request will be processing by the webserver and PostBack request is processing by the client.
2. While developing the Ajax webpage we can use server centric programming model & client centric Programming Model. Both programming Models we can use in a single webpage.

Ajax Parent Controls :-

By default ASP.NET toolBox window will come with 5 controls w/h are called as: Ajax Parent Controls. They are

1. Script Manager
2. Script Manager proxy
3. Timer
4. Update-panel
5. UpdateProgress

ScriptManager:-

1. In Ajax ScriptManager is the Main important parent control whenever we are developing Ajax webpage, first we have to drag and drop Script Manager control.
2. ScriptManager class is the super class for all Ajax control classes.
3. This control class will provide all the Ajax related methods and properties.

UpdatePanel :-

1. UpdatePanel is one of the Ajax container control.
2. UpdatePanel control can contain asp.net controls as well as it can contain ~~asp~~ Ajax Controls.
3. The controls wih we will add to the update Panel will follow client centric Programming Model.

Example for Server centric Programming Model :-

Step1:- Drag and Drop script Manager control.

Step2:- Design webform1.aspx like below.

ScriptManager - ScriptManager1	
EmpNo	<input type="text"/>
EmpName	<input type="text"/>
EmpSal	<input type="text"/>
<input type="button" value="DISPLAY"/>	

Step3:- write the below code in ^{webform1}.aspx.cs.

```
void btnDisplay_Click(-, -)
{
    txtENO.Text = "123";
    txtENAME.Text = "Satya";
    txtEMPSAL.Text = "1000";
}
```

when we run the above application one request will go to the Server for webform1.aspx, it is called as 1st request, wh is handling by server.

when user will click the display button and request will go to the server for the same webpage from the same client which request is called as postBack request, this postBack request is also handling by server because the above webpage is following Server centric Programming Model.

Implement the Above example by using client centric programming Model.

- Step1 :- Drag and drop Script Manager control.
- Step2 :- Drag and drop updatePanel Control.
- Step3 :- Design webform1.aspx like below.

ScriptManager - ScriptManager1	
asp:UpdatePanel # UpdatePanel1	
Emp No :	<input type="text"/>
Emp Name :	<input type="text"/>
Location :	<input type="text"/>
<input type="button" value="Display"/>	

1. when we run the above application from client one request will be generated for webform1.aspx that "request is called as 1st request, which is processing by webserver".
2. when user will click the "Display" button second request will be generated from the same client for the same webpage this request is called as "post Back request", which is processing by client, because the above webpage is following client centric programming Model.

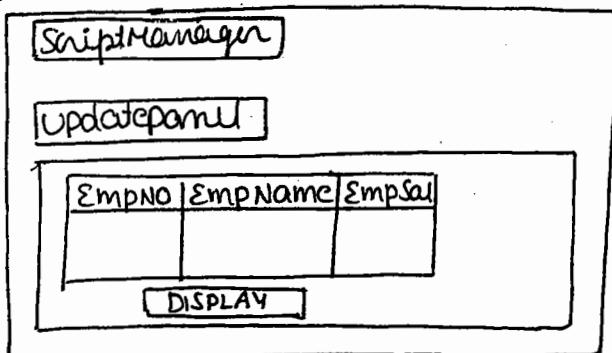
Example for client centric programming model to communicate the database.

Step1: we Design webform1.aspx.

```
<asp: ScriptManager>  
<asp: UpdatePanel >
```

```
<ContentTemplate>
```

```
<asp: GridView ID="GridView1" runat="server" > </GridView>  
<asp: Button ID="btnDisplay" runat="server" Text="Display" />  
</ContentTemplate>  
</asp: UpdatePanel>
```



Step2:- webform1.aspx.cs

namespace ClientCentricExample

```
{
```

```
class webform1
```

```
{
```

```
void btnDisplay_Click(-, -)
```

```
{
```

```
String cs = "Server=. ; Database=company ; uid=sq ; pwd=Satyajit";
```

```
SqlConnection conn = new SqlConnection(cs);
```

```
conn.Open();
```

```
SqlCommand cmd = new SqlCommand("select * from Emp", conn);
```

```
SqlDataReader dr = cmd.ExecuteReader();
```

```
GridView1.DataSource = dr;
```

```
GridView1.DataBind();
```

```
conn.Close();
```

```
.
```

```
} }
```

1. when we execute the above application one request will be generated from the client for webform1.aspx. That request is called as 1st request, which is processing by webserver.
2. when user will click the display button from the same client one more request will be generated for the same webpage which request is called as post-back request. The above webpage is following client centric programming model due to that reason this post back request is processing by client, as part of processing this request it is demanding for "emp table" data due to that reason client will communicate the webserver, & webserver will communicate the ^{Database} webserver to get the "emp table".

Deployment:-

Deployment is one of the SDLC phases
 SDLC phases are (S/w development life cycle)

Phase 1 :- Requirements gathering

URS → Review → SRS → Review

Phase 2 :- Analysis and Design

Design document → Review

Designing the solution by using UML (As part of this they may do the manual design & they may use designing tools like visio or rational rose.)

Note:- Testing people will prepare test cases.

Phase 3 :- Coding or Development

Based on the design the developers write the code by using S/w Technologies like .net & java...

Note:- code Review

Phase 4 :- Testing

Testing team will test the application based on test cases.

Phase 5 :- Deployment

It is a process of Converting source code into exe file or setup file and installing that setup file onto client machine.

phase 6:- User Acceptance Testing (UAT)

UAT is performing by client site people.

Note: To create a setup file for .Net applications we don't require to depend on deployment tool like InstallShield... because .Net framework is providing a separate type of application called setup and deployment to create a setup file for .Net app's. Example to create a setup for .Net windows application & installing that setup file into the client machine successfully.

Step 1:- Creating a Database

create database tmcdatabase

use tmcdatabase;

create table Product (prodId int primary key,
prodName varchar(20),
prodCost Money);

Inserting data

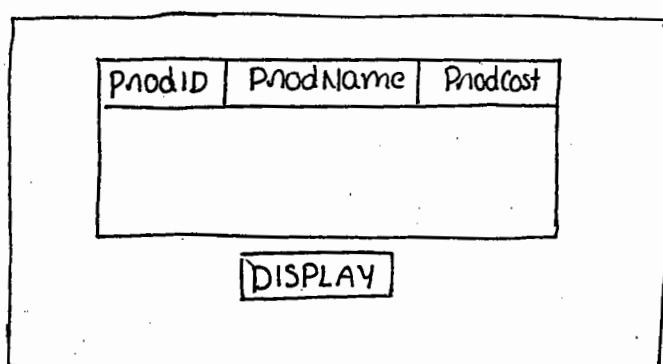
insert into product values(123, 'TV', 15000)

insert into product values(124, 'AC', 2000)

insert into product values(125, 'WH', 3000)

Step 2:- Create windows application rename it as tmcaApp
location as D:\1 Sruthi.

Step 3:- Design form1.cs like below.



Step 4:- Write the below code with in Form1.cs.

using System.Data.SqlClient

{
 namespace tmcaApp

 {
 class Form1

```

void btnDisplay - click(-,-)
{
    string cs = "Server = ; Database = tmcdb; User Id = sa; Password = Sadya;";
    SqlConnection conn = new SqlConnection(cs);
    conn.Open();
    SqlCommand cmd = new SqlCommand("Select * from product", conn);
    SqlDataAdapter da = new SqlDataAdapter(cmd, conn);
    DataSet ds = new DataSet();
    da.Fill(ds, "productnew");
    conn.Close();
    dataGridProd.DataSource = ds.Tables["productnew"];
}

```

Step 5:- Build the solution and Run the application.

Step 6:- Creating setup for above application i.e., tmcApp.

File → New → Project It will open new project window
 here expand other project types & expand setup & deployment then select visual studio installer.

Right side select setup wizard → Rename it as TmcSetup →
 select solution as Add to solution → click OK button.
 It will open setup wizard 1 → click Next It will open
setup wizard 2 ① Create setup for a windows application.

→ Next (It will open setup wizard 3 here check all
 the checkboxes → click Next It will open setup wizard 4
 → click Add button It will open AddFiles window →
 Goto the below path D:\Snuthil\tmcApp\tmcApp here
 select Other than class files click open → click Next →
 click Finish In this process It will open FileSystem on
 Target Machine window → select application folder → Add
 Right click Add Assembly → It will open Select Component
 window ^{here} → click the Browse tab Navigate towards the
 below path D:\Snuthil\TmcApp\tmcApp\bin\Debug here
 Select TmcApp.exe file click OK with this process

TmcApp.exe file will be adding to application Folder.
Select Users Desktop (Right click + Repeat above process) →
Select users programs menu → Add folder → Rename it as
tmcApplication → Now Select TmcApplication Folder →
Right click Repeat above process (Add Assembly) →
Open Solution Explorer It has two files tmcApp and
tmcSetupFolder → Right Click on tmcSetup → Click build →
With this process one setup file will create for the above
application called tmcApp with in the following path.

D:\Snuthil\tmcApp\tmcApp\Setup\Debug.

With in the debug we can identify a file called
TmcSetup (Windows Installer Package).

Step 7:- Installing the setup file into targeted client machine.

Double click tmcSetup file It will open Setup Wizard
window. → Next → Next → Next → Close.

With this process setup file is installed into client
machine successfully.

Note:- If the above application wants to use by the
client then client machine doesn't require .Net S/W but
it requires SQL Server S/W to maintain the application
database.

To maintain the above tmcApp using database called
tmcdB with in the client machine we have to take
the backup from the developer machine that backup file
we have to restore onto clients machine SQL Server
Environment like below.

Creating Backup file for tmcdB database.

Open SQL Server → View Object Explorer → Under databases → Select
tmcdB → Right Click → Tasks → Backup It will open Backup
database window → Click Remove (under destination) →
Click Add It will open Backup destination window →
Browse it will open Locate Database Files window → here
select a location called file type as: Backup files (*.bakdb)

give name of the file tmpdb → ok → ok → In this process we get a message called tmcdbs completed successfully. With in the d:\ dir we can check the backup file called mytmcdb.

Step 8:- Restoring the tmcdbs database with in the client machine.

open sqlserun with in the client machine → open object explorer window → select databases → Right click → select Restore database To database as tmcdbs → select from device click add → from database as select from device click add → go to the location of mytmcdb.back (in Drives) and select that backup file click ok → click ok → It will open Restore database window here Check restore checkbox click ok button with this process we get a message called the restore of database tmcdbs completed successfully. Now we can check tmcdbs database with in the clients sqlserun.

Step 9:- Testing the installed application.

Go to clients desktop → click on TMCAAPP icon.

8

1. write a program to print the no's like below (fabonacci series)
(1, 1 2 3 5 8 13 . . .)

Void main()

{

```
Console.WriteLine ("Enter number");
int n = int.Parse (Console.ReadLine ());
int i = 0, j = 1, r = 0;
Console.WriteLine (i);
Console.WriteLine (j);
while (r <= n)
{
    r = i + j;
    Console.WriteLine (r);
    i = j;
    j = r;
    Console.WriteLine (r)
```

```

    Con. Read();
    }

    main()
    {
        Con. WriteLine("Enter Range");
        int n = int.Parse(Console.ReadLine());
        int i = 0, j = 1, r = 0;
        while (r < n)
        {
            i = j;
            j = r;
            Console.WriteLine(r);
            r = i + j;
        }
        Console.ReadLine();
    }
}

```

Timer Control:-

Using this control we can execute the code repeatedly.

Properties:-

Enabled (true) → default.

- interval :- By default value is 60000 millisecs.

default event :- (Tick) :- Tick event is the default event of the timer control.

→ Tick event will execute for every event interval value.

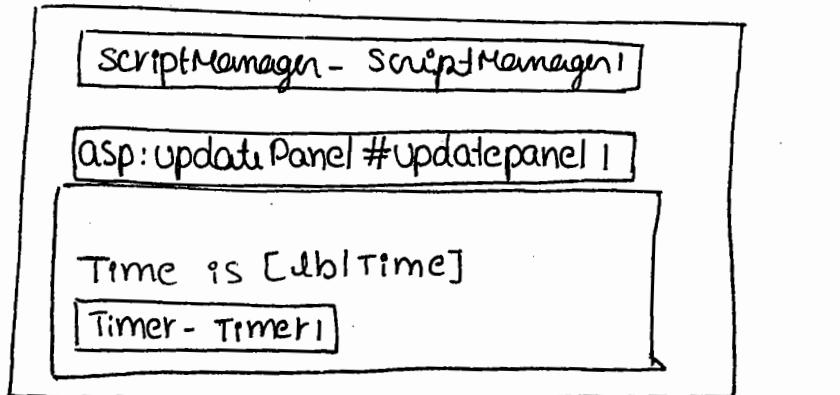
→ For example if we assign interval property as 1000 then tick event will execute for every 1000 milliseconds.

Example for Timer Control:-

Step 1:- Design of webform1.aspx.

1. Drag and drop Script Manager control.

2. Drag and Drop update panel.
3. Within the update panel design drag and drop ~~or~~ two labels and one timer control will like below.



Timer

4. Open properties window change the interval property as 1000.
5. Double click on Timer control which will generate the Tick event skeleton code.

Write the below code within webform1.aspx.cs

```

class webForm1
{
    protected void Timer1_Tick(object, EventArgs)
    {
        lblTime.Text = DateTime.Now.ToString();
    }
}
  
```

Ajax Controls Toolkit:-

1. By default asp.net toolbox window will come with 5 Ajax panel control.
2. If we want to add remaining Ajax controls we have to add Ajax controls tool-kit explicitly to asp.net toolbox window.
3. We can download the AjaxControls from the internet we can see below site. codeplex.com
4. When we will visit the above website we can identify a link called: Ajax Control Toolkit Source Code. When we will double click on the above link it will download a zip formatted file.

5. When we extract the zip formatted file it will produce a visual studio .net project folder.
6. Now open that visual studio .net project & build with this project it will produce a .dll file with in the project debug folder like below:

Ajaxcontrol Toolkit.dll

7. This dll contains Ajax control toolkit.

How to add Ajax control Toolkit to asp.net toolbox window.

Step 1:- open asp.net web application.

Step 2:- Enabled toolbox window. Right click on toolbox window select Add tab Rename it as Ajax controls select AjaxControlsTab → Right Click → select choose items With this process it will open a huge choose tool box items window → click on browse button → here navigate towards the Ajax controls Toolkit dll. and select the dll file click open → with click Yes → click OK. With this process with in the asp.net toolbox window for Ajax controls tab a collection of Ajax controls will add.

Ajax controls are classified into two types:

1. Extender controls.
2. Non-extender controls.

Extender controls:-

1. Extender controls are not individual controls i.e., these controls will not provide any functionality individually.
2. Extender controls will extend the functionality of asp.net existing controls.
3. Every extender control will extend the functionality of one asp.net control.

How to implement extender controls.

Step 1:- Implementation of extender control will be divided into two steps:

(i) adding asp.net targeted control.

(ii) adding extender control to targeted asp.net ctrl.

Non-extender Controls:-

1. These Non-extender controls are individual controls.
2. i.e., Every Non-extender control will provide some individual functionality.

Note:- By default extender and non-extender controls will follow client centric programming Model.

What is the importance of update panel.

1. By default asp.net control are ^{will follow in} server centric programming Model.

2. what ever controls we are adding to "update panel" will follow client centric programming model.

3. whenever we want to make asp.net controls to follow client centric programming mode first we can drag and drop in update panel. with in update panel we can add asp.net controls or ajax controls

Non Extender Controls:-

1. accordion
2. Accordion pane
3. NumericUpDown
4. Rating
5. Reorderlist
6. Tab Container
7. ToolkitScriptManager
8. AsyncFileUpload control

Extender Controls:-

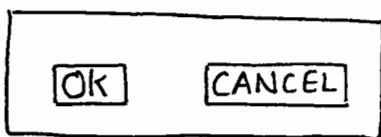
1. Always visible control Extender
2. Animation Extender
3. Auto complete Extender
4. Calendar Extender
5. cascading dropdown
6. Collapsiblepanel Extender
7. Confirm Button Extender
8. DragPanel Extender
9. DropDown Extender
10. Dropshadow Extender
11. Dynamic Populate Extender
12. Filtered TextBox Extender
13. HolmenMenuExtender
14. ListSearch Extender
15. MaskedEdit Extender
16. Masked Edit Validator
17. ModalPopup Extender
18. MultiHandle Slider Extender
19. MutuallyExclusive CheckBox Extender
20. NumericUpdown Extender
21. PagingBandedListExtender

- 22. PasswordStrength
- 23. ReordableControlExtender
- 24. PopupControlExtender
- 25. RoundedCornersExtender
- 26. SliderExtender
- 27. SlideShowExtender
- 28. TextBoxWaterMarkExtender
- 29. ToggleButtonExtender
- 30. UpdatePanelAnimationExtender
- 31. ValidatorCalloutExtender.

Implementation of Extender Controls:-

Confirm Button Extender:-

- 1. This control is extending the functionality of Button control.
- 2. whenever user will click a button for some action, this control will display one message box with the given confirmation message with OK and Cancel Buttons like below.

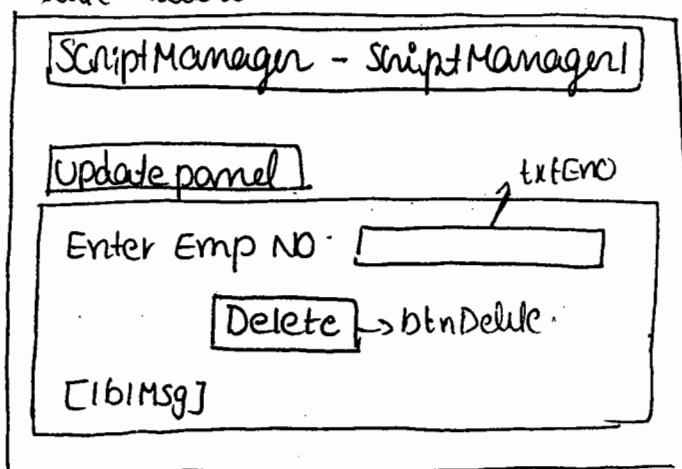


- 3. when user will click OK button concerned button code will execute.
- 4. when user will click cancel button concerned button click event execution will be cancel.

Example for confirm Button Extender.

Step 1:- Design of webform1.aspx.

- 1. Drag and drop Script Manager.
- 2. Drag and drop updatepanel and design update panel like below:



Adding Confirm Button Extender control to btn-delete.

1. Select Delete Button → Right click → select Add Extender → It will open Extender wizard window here select Confirm Button Extender → click ok. with this process Confirm Button Extender control is added to add delete button.
2. With in the .aspx code window Confirm button extender Control code will be generated like below.

```
<cc1 : confirmButtonExtender ID="btnDelete-ConfirmButtonExtender"
    runat="server" confirm="" Enabled="True"
    TargetControlID="btnDelete"> The msg w/h want to display to
</cc1: ConfirmButtonExtender> the user.
```

Open properties window → select btn Delete - Confirm Button Extender → Assign the confirm text property as like below.

Confirm Text | Do you want to delete?

Step 2:- Webform1.aspx.cs.

Using System.Data.SqlClient;

Namespace ConfirmButtonExtenderEx

```
{ class webform1
{
    void - btnDelete - Click (-,-)
    {
        string cs = "server=.; database=company; uid=sq; pwd=abc";
        SqlConnection conn = new SqlConnection(cs);
        conn. open();
        string int eno = int.parse(txteno.text);
        SqlCommand cmd = new SqlCommand("Delete emp where
            EmpNO = @eno", conn);
        cmd.Parameters.AddWithValue("@eno", eno);
```

```
cmd.ExecuteNonQuery();
conn.Close();
```

```
lblMsg.Text = "Record is deleted successfully";
```

}

} properties:-

TargetControlID:- This property will representing the ID of the targeted control.

ConfirmText:- here we have to initialize the confirm message w/h we want to display the user when user will click the concerned button.

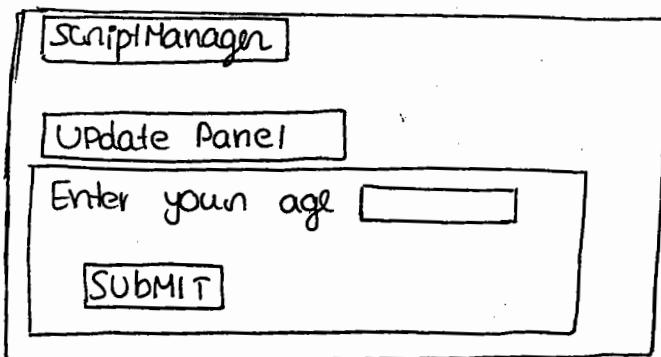
H.W In the above example when user will click the cancel button label should display msg like Record delete is cancelled.

H.W Implement the above example with out using "confirm button extender control".

⇒ Filtered TextBox Extender:-

1. It ^{is used to} extend the functionality of textBox.
2. It filter the user i/p.

Ex:- Step1:- Design of webform1.aspx.



Step 2:- Add filtered Text Extender Control to textbox.

Step 3:- open properties windows → select Filtered TextBox Extender control
→ Filter Type change the filter type as Numbers.

Filter Type:-

1. Custom
2. Number
3. Uppercase Letters
4. Lowercase Letters

How implement the above example filter type as custom by using filterMode validChars & invalidChars.

\Rightarrow calendar extender :-

This control will attach a calendar to the textbox control.

Ex:- Step1:-

The screenshot shows a web page structure. At the top is a "Script Manager" header. Below it is an "Update panel". Inside the update panel, there is a text input field labeled "Enter your date of birth" containing "6/3/2013". To the right of the input field is a calendar control showing the month of June 2013. The calendar has arrows for navigating between months and days of the week. A "SUBMIT" button is located below the input field.

Step2:- Adding calendar extender control to textbox.

Textbox \rightarrow Rightclick \rightarrow AddExtender \rightarrow click calendarExtender \rightarrow OK.

\Rightarrow Password strength control :-

This control will evaluate the entered password strength and shows the strength of the password to the user.

Ex:- Step1:-

The screenshot shows a web page structure. At the top is a "Script Manager" header. Below it is an "Update panel". Inside the update panel, there is a text input field labeled "Enter password" with an associated "txtpwd" ID. Below the input field is a "SUBMIT" button. To the right of the input field, there is a note indicating "Mode: password".

Step2:- adding the password strength control to the textBox.

" Same as above process-

Update the below properties of the "password strength control".

in properties window.

MinimumLowercaseCharacters = 2

MinimumNumericCharacters = 2

MinimumSymbolCharacters = 2

MinimumUppercaseCharacters = 2

PreferredPasswordStrength = 8

PrefixText = "Strength is : "

TextStrengthDescriptions = "poor ; average ; good ; strong ; excellent ;"

H.W Implement the above example without using password strength control.

Numericupdown Extender Control:-

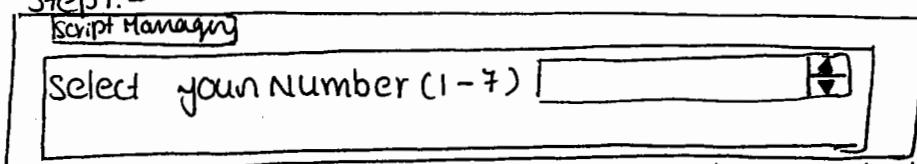
Using this control we can attach to a textbox & this extender control will attach two buttons to the textbox:

- ① up ② down.

When user will click the "up" button the textBox value will be incrementing automatically.

When user will click the "down" button the textBox value will be decrementing automatically.

Ex:-



Step 2:- Adding Numeric Updown extender control to textBox.

Step 3:- After adding the extender control update the below properties of Numeric Updown extender control.

In properties window:

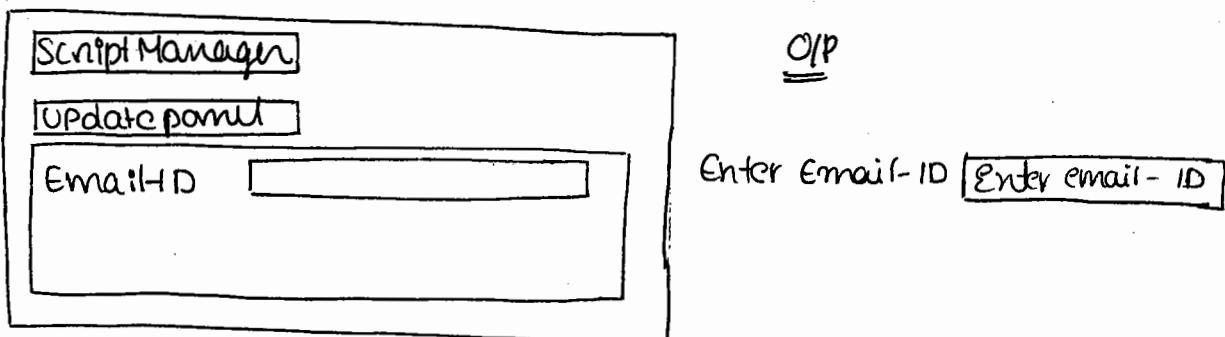
Maximum	7
Minimum	1
Width	120

O/P

TextBox WaterMark Extender:-

This extender control will attach the "water mark" to targeted textbox.

Ex:- Step 1:- Design of webform1.aspx.



Step 2:- Adding textBox Watermark extender control to TextBox.

Step 3:- Update the below property of Extender Control.

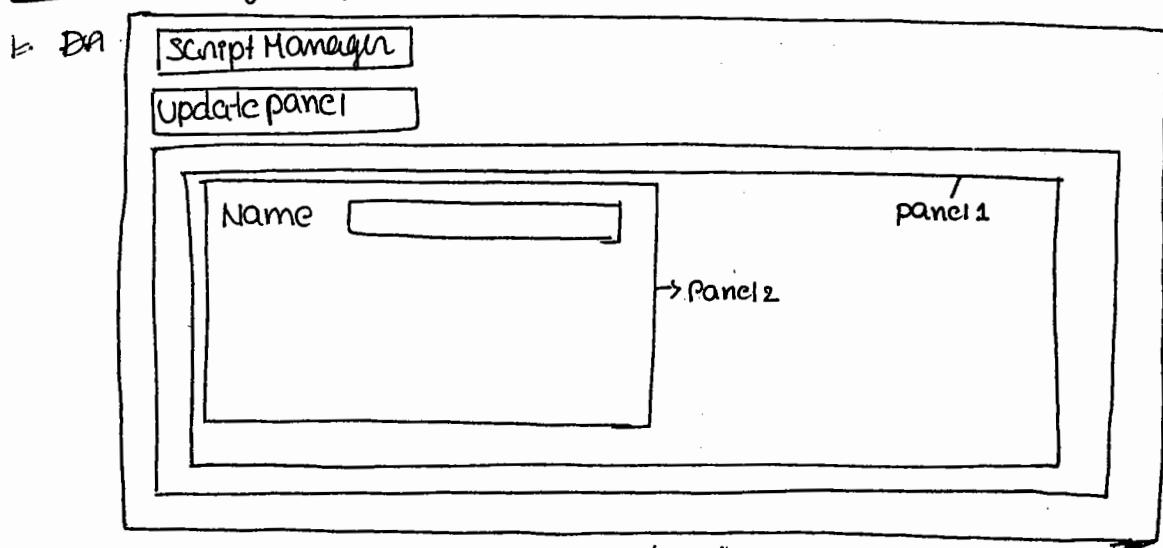
Watermark Text	Enter email - ID
----------------	------------------

⇒ Drag Panel Extender Control :-

1. This control will provide the facility to the user to move the panel from one place to another place with in the webpage.
2. To implement this control we require two panels.
3. Drag and Drop panel1 and expand with in the webpage.
4. Drag and Drop panel2 with in the panel1.
5. With in the panel2 add the controls according to the requirement.
6. Add the drag panel extender to panel2.
7. Update the initialize the extender control one property like below:

Ex:-

Step1 :- Design of webform1.aspx



Step2 :- Add "Drag panel Extender" to panel2.

Step3 :- Update the below extender control property.

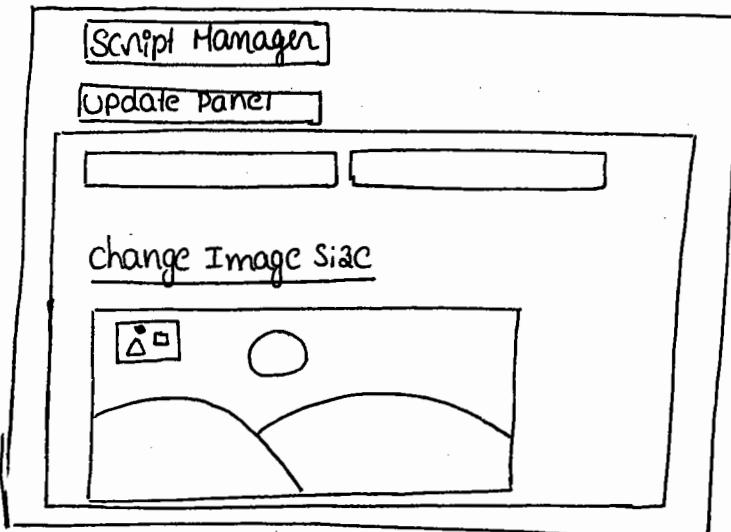
DragHandleID = "panel1" ("The panel where we want to moving")

TargetControlID = "panel2" (The panel w/h we want to moving)

⇒ Slider Extender Control :-

This control will attach the "Slider" to the textbox.

Eg:- Step1 :- Design webForm1.aspx



Note:- Add the image to imagecontrol in design time.

Step 2:- Add slider extender control to TextBox1.

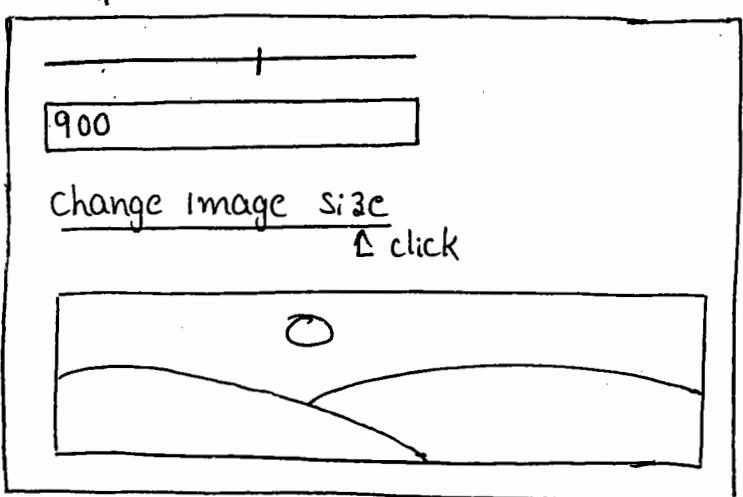
Step 3:- Update slider extender below properties.

Minimum	10
Maximum	1000
BoundControl ID	TextBox2
TargetControl ID	TextBox1

Step 4:- WebForm1.aspx.cs

```
protected void LinkImageSize_Click(object sender, EventArgs e)
{
    int imgSize = Convert.ToInt32(TextBox2.Text);
    Image1.Width = 1 * imgSize;
}
```

Output



How Implement the above example without using link Button.

Whenever I will move the slider the image size should be changed.

⇒ Validator callout Extender :-

This control we can attach to any one of the asp.net validation control. This control will display the targeted validation control validation error message in rich format.

Example:-

Step1:- Design webForm1.aspx

Enter your Name	<input id="txtName" type="text" value=""/>	→ txtName
[RequiredFieldValidator] RVI		
<input type="button" value="SUBMIT"/>		

change the properties of Required Field Validator in properties window : ID : RVI

control to validate : txtName

Error Message : * TextBox Should not be Empty.

Step2:- Adding validator callout extender (control) to required Fieldvalidator control.

Output

Enter your Name	<input id="txtName" type="text" value=""/>	* Δ TextBox Should not be empty
<input type="button" value="SUBMIT"/>		

⇒ ListSearchExtender :-

This control we can attach to a List Box or Drop down list control. whenever List Box is having multiple items it is difficult for the user to select an item. List set extender control will make the user task easy - to search an item among multiple items with in the List Box.

Step 1:- Design of webForm1.aspx.

Script Manager

Update Panel

Pune	Hyderabad
Delhi	Mumbai
Chennai	Noida

O/P

Type to search → H

pune	Hyderabad
Delhi	Mumbai

Step 2:- Adding "SearchExtender" control to listBox.

Whenever user will move the focus on listBox immediately stop of the listBox & will display a label called type to search. here user has to type starting letter of city which we wants to select. Then immediately focus will move to concerned item of the listBox.

⇒ Drop down Extender Controls:-

1. This control we can attach to a textBox. DropDown extender control will attach the given panel as a drop down window to the targeted textBox control.
2. That panel control we can design with radio button list (R) checkbox list (C) Bulleted list control. According to our requirement.

Example:

Step 1:- Drag and Drop Script Manager.

Drag and drop panel i.e., panel1. Within the panel1 we can add bulleted list with 3 items (item1, item2, item3).

Drag and drop textBox control outside the panel.

Step 2:- Add "drop down extender control" to textBox.

After adding the extender control update the below property of the extender control.

dropdown control ID = "panel"

After & we execute the above webpage the O/p will be like below.

Output

Item1
Item2
Item3

H-10 Implement the above example with radio button list one ; checkbox list and timer.

\Rightarrow HoverMenuExtender Control:-

1. This control we can attach to a label.
2. This control will add the given panel as popup menu to the targeted label control.
3. That panel we can design with some other controls, according to our requirement.
4. whenever user will move like "mouse" on label that given panel will display as pop-up menu.

Ex: Step 1:- Drag and drop Script Manager.

Step 2:- Drag and drop label control & change the label text as below:

Text = "color changeable text"

Step 3:- Drag and drop panel control i.e; panel and within the panel drag and drop radio button list control with 9 radio buttons. Every radio button is representing one color name.

Change the below properties of the radiobuttonlist :-

Repeat Columns	3
AutoPostBack	True

Step 4:- Add HoverMenuExtender control to label control.

Step 5:- After adding the extender control update the below property of extender control.

popupcontrol	panel1	PopUpPosition	Bottom
--------------	--------	---------------	--------

Step 6:- Double click on radio button list control, it will generate the radioButtonList skeleton with in the .aspx.cs.

Webform1.aspx.cs

class webform1

{ void RadioButtonList1_SelectedIndexChanged (,)

{ Label1.ForeColor = System.Drawing.Color.FromArgb
(RadioButtonList1.SelectedItem.Text);

Output

Color changeable label text

- Red Yellow Green
- Green Orange Purple
- Blue Pink Brown

For collapsible panel Extender :-

Using this control we can show the panel and hide the panel.

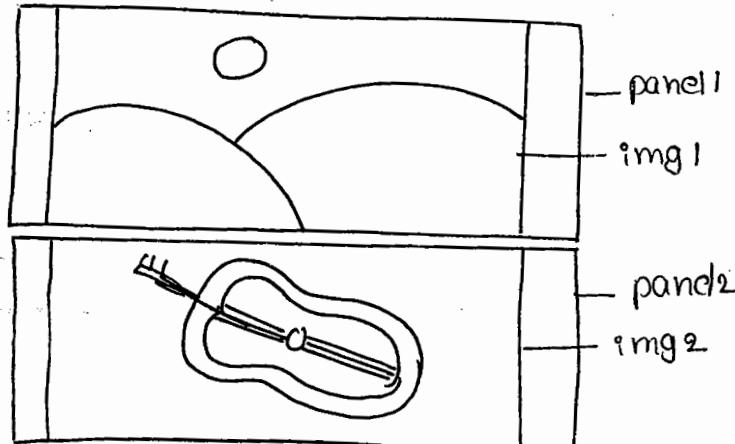
Ex:-

Step 1:- Design webForm1.aspx like below.

Add two images to solution explorer i.e., img1.jpg, img2.jpg.

Script Manager

Label



Step 2:- Adding collapsible extender to panel2.

After adding the extender control update the below properties of the extender control.

ExpandControlID = "panel2"

CollapseControlID = "panel1"

TextLabelID = "Label1"

Collapsed = "true"

CollapsedText = "+"

ExpandedSize = "250"

ExpandedText = "-"

ScrollContents = "true"

=of Mutually Exclusive CheckBox Extender :-

1. This control will change the checkbox control behaviour as radio button.
2. But Every CheckBox we have to add one extender control.

Step 1 :- Design of webform1.aspx.

ScriptManager1
Movies
<input type="checkbox"/> Bollywood
<input type="checkbox"/> Tollywood
Food
<input type="checkbox"/> North Indians
<input type="checkbox"/> South Indians

O/P Movies

- Bollywood
 Tollywood

Food

- North Indians
 South Indians

For every one checkbox add one "mutually Exclusive CheckBox" Extender control.

After adding the extender controls for CheckBox1 and CheckBox2 extender control below property we have to change.

Key = "Movies"

for CheckBox3 and CheckBox4 extender control "key" property change like below.

key = "Food"

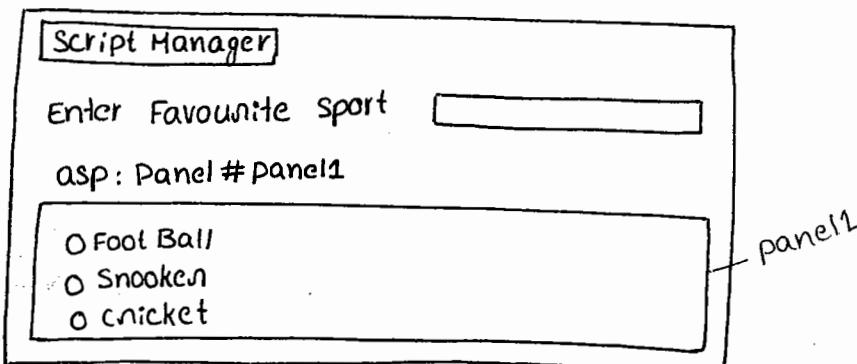
↳ Pop-up control Extender:-

1. This control we can attach to a textbox. This control will add the given panel as a popup window to the targeted textbox.
2. That panel we can design according to our requirement.

Example:-

Steps:- Design of webForm1.aspx.

1. Drag and drop Script Manager.
2. Drag and drop textbox.
3. Drag and drop a panel with in the panel design radio button list control like below.



Step 2:- Add pop-up control extender to the textbox.
After adding the extender control change the below properties of the extender control.

popupcontrol10	panel1
Position	Bottom

After we will execute the above web page the o/p will be like below:

Output Enter Favourite sport
 Football
 Snooker
 Cricket

H.W

In the above example when user is selected one radioButton concerned radioButton text should be initialized to the textbox.

Modal Popup Extender:-

1. This control we can attach to a button (or) link button.
2. whenever user will click on targeted button (or) link button to display the given panel as a popup window.

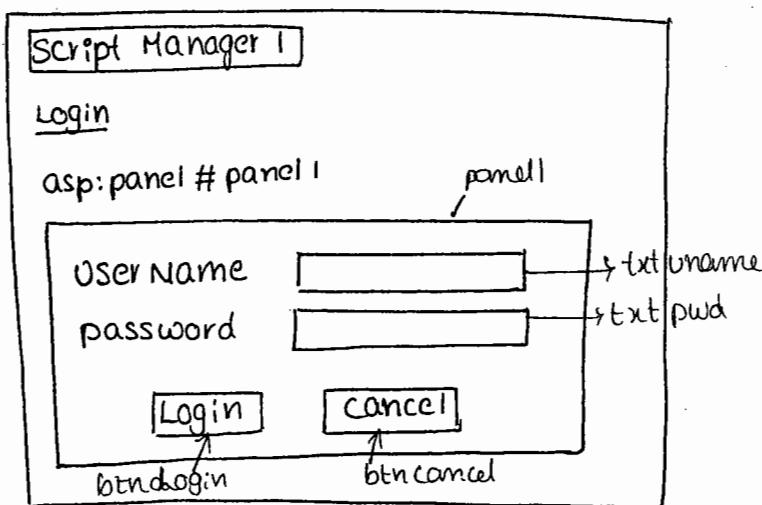
That popup window can contain two buttons like OK and cancel.

whenever user will click any one of these two buttons that panel will hide.

Example for Model popup extender :-

Step 1:- Design webform1.aspx.

1. Drag and drop script manager.
2. Drag and drop link button.
3. Drag and drop panel and design webform1.aspx like below.



Step 2:- Add Modelpopup extender to linkbutton.

After adding the Modelpopupextender change the below properties of extender control.

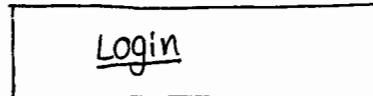
OKButton	OkcontrolID	btnLogin
	cancelControlID	btncancel
	popupcontrolID	panel1

webform1.aspx.cs

btnLogin - click()

{
 // here we have to write login authentication
 code

After we execute the above page 1st we will get only login button like below.



When user will click the login button panel will display like below.

A hand-drawn diagram of a login form. It has a title "Login" at the top left. Below it are two text input fields: "User Name" and "password". At the bottom are two buttons: "Login" on the left and "cancel" on the right.

H.W Implement the above example without using popup menu extender.

=> Resizable Extender (control) // Note:- This extender requires two classes.

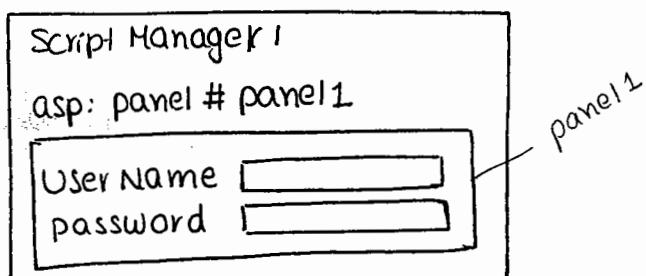
This control we attach to a panel. This control will allow the user to resize the panel.

Example:-

Step 1:- Webform1.aspx design.

1. Drag and drop script manager.

2. Drag and drop panel control and design the panel like below.



Step 2:- Write below css (cascading style sheet) with in the .aspx head section.

```
<html>
<head runat = "server">
< style type = "Text / CSS">
    .handling
    {
        width : 10X ;
        height : 10X ;
        background-color : Red ;
    }

```

```

    • resizing
    {
        padding: 0px;
        border-style: solid;
        border-width: 3px;
        border-color: gray;
        cursor: s-resize;
    }

```

</style>

</head>

</html>

Add resizable control to the panel. After adding the extender control update the below extender control properties.

Handlecss class = "handleing" // 1st class

Handleoff set x = "5"

Handleoff set y = "5"

MaximumHeight = "500"

MaximumWidth = "500"

MinimumHeight = "100"

MinimumWidth = "100"

Resizablecss class = "resizing" // 2nd class

When we execute the above web page the output will be like below:

UserName
password

→ Using this we can resize the panel.

⇒ cascading DropDownList Extender:-

1. This control we can attach to a drop-down list control.
2. This extender whenever we are implementing multiple dropdown list controls, if one dropdown list control is depending on another dropdown list control to get the data, in this type of requirements we have to attach cascading dropdown extender control to every dropdown list control of that requirement.

- 3. Cascading drop down list control is depending on webservice class web methods to bind the data from the database to dropdown list control.

Example:- to implement cascading control in step by step process.

Step 1:- let us assume we have 3 data tables in databases like below.

1. country
2. State
3. city

Country Table

Country ID	Country Name
1	India
2	USA
3	UK
4	Australia
5	Singapore

State Table

State ID	State Name	Country ID
10	AP	1
20	Karnataka	1
30	T.N	1
40	Madya Pradesh	1
50	U.P	1

City Table

City ID	City Name	State ID
100	HYD	10
200	VIZ	10
300	NALGONDA	10
400	BANGALORE	20
500	RJY	10

Step 1:- Design of webform1.aspx

1. Drag drop script Manager.
2. Drag and drop 3 drop down list controls like below.

Script Manager

Select Country	<input type="button" value="▼"/>
Select State	<input type="button" value="▼"/>
Select City	<input type="button" value="▼"/>

3. Add cascading extender drop down extender to the above 3 drop down list controls.
4. update the properties of drop 1 country calendar

like below:

prompt text	Select Country.
Service Method	bindCountry
Service Path	MyWebserviceClass.asmx

user defined webservice class name.

update the dropState extender properties like below:

category	country
parentcontrolID	DropCountryList parent control ID
prompttext	Select State
Service Method	Bind State
Service Path	MyWebserviceClass.asmx

update the dropCity extender properties like below:

category	state
promptcontrolID	DropStateList
prompttext	Select City
Service Method	Bind City
Service Path	MyWebserviceClass.asmx

write the below code with in mywebserviceclass.asmx file.

```
class webservice
```

```
{
```

```
    [WebMethod]
```

```
    bindCountry()
```

```
{
```

// here we have to write the code to bind the country name to dropdown list.

```
}
```

```
    bindStates()
```

```
{
```

// here we have to write the code to bind the state names to dropdown list

```
}
```

```
    bindCity()
```

```
{
```

// here we have to write the code to bind the cities to dropdown list

```
}
```

Output

Select country	select country ▾
Select state	select state ▾
Select city	select city ▾

1. When user will select "India" with in the 1st dropdown list control, and dropdown list control to display only India states.

2. When user will select the "Andhra Pradesh" state then 3rd dropdown list control will display only "Andhra Pradesh cities"

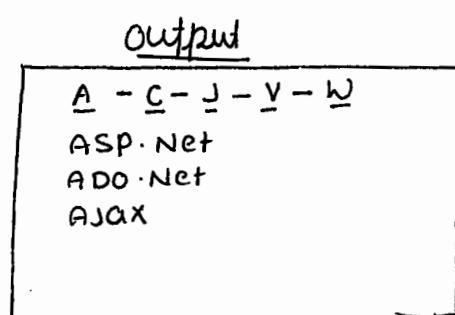
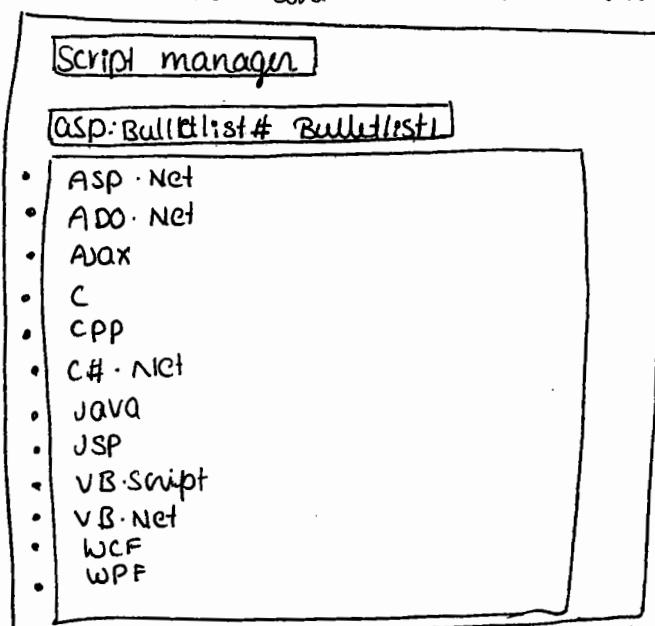
=> Paging Bulleted List Control:-

This control we can attached to bulleted list control whenever bulleted list control is having multiple items, then we can use this extender control.

Paging bulleted list extender control will display the 1st letter of the items of the bulleted list will display horizontally.

Step 1:- Drag and drop list Script Manager.

Step 2:- Drag and drop bulleted list control and add the items to the bulleted list control.



Add paging bulleted list control extended to bulleted list control.

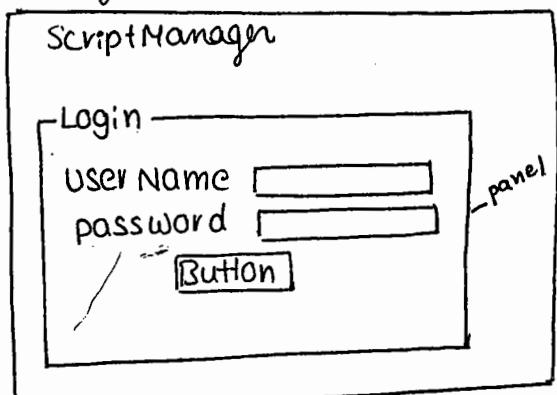
=> Rounded corner Extended control :-

This control we can attach to a panel control. This control will make the panel corners as rounded shape.

Example

step 1:- Design of webForm1.aspx.

1. Drag and Script manager.
2. Drag and drop panel and design the panel like below:

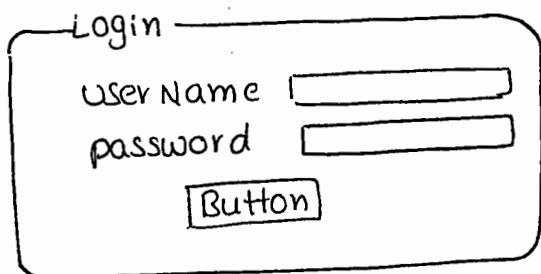


3. Add the rounded corner extended control to the panel.
4. After adding the change the below properties:

color = "Red"

Corners = "All"

Output



=> Drop shadow Extender :-

This control we can attach to a panel. This control will can attach its a shadow to the targeted panel.

=> Always visible Extender :-

1. This control we can attach to a panel.

2. This control will display the targeted panel always irrespective of navigations with in that webpage.

=> Animation Extender :-

Using this control we can implement animations with in the webpage. This control we can attach to

"image" control.

Example:-

Step1:- Design of webform1.aspx.

1. Drag and drop script manager.

2. Drag and drop image control and initialize image called img1.jpg.

3. Add animation extender control to image control.

4. After adding the animation extender control update the extender control code like below:

```
<cc1: AnimationExtender ID="Image1_AnimationExtender"
    Runat="server" Enabled="True" TargetControlID="Image1">
    <Animations>
        <onload>
            <sequence>
                <move Horizontal="300" Vertical="300" Duration="2"
                    FPS="20"/>
                <fadeOut Duration="2" FPS="20" />
            </sequence>
        </onload>
    </Animations>
</cc1: AnimationExtender>
```

=> slideshow Extender:-

1. Whenever we want to display collection of images by using image control in a round robin fashion then we can use "slideshow extender".
2. Slide show extender control will be acting like a mediator between collection of images and image control.
3. Slide show extender control is depending on "WebService" class "webMethods" to fetch the image from the image collection, to supply that fetched image to image control.

Example:-

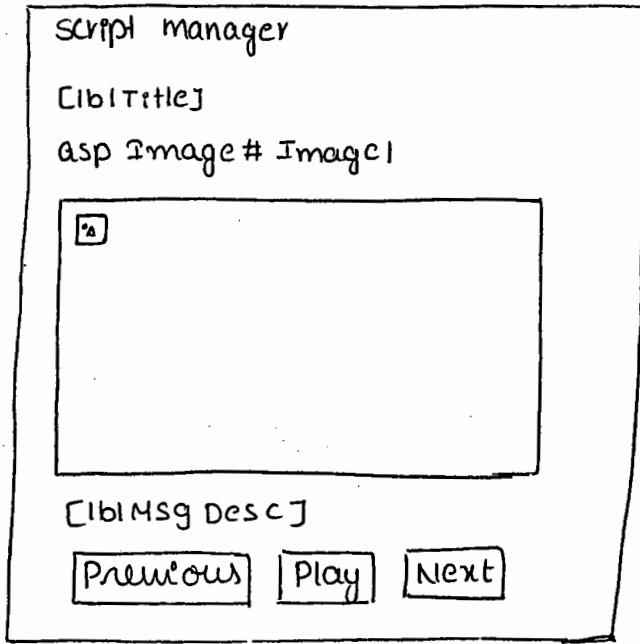
Step1:- Design of webForm1.aspx.

1. Drag and drop script manager.

2. After that design webform1.aspx like below.

3. Add "slideshow" extender control to image control.

4. Open solution explorer create a folder "rename it as "images" and add 5 images to "images" folder they are img1.jpg, img2.jpg, img3.jpg, img4.jpg, img5.jpg.



After adding the extender control and images update the extender control code like below:

```

ImageTitleLabelID = "lblTitle"
ImageDescriptionLabelID = "lblMsgDesc"
Loop = "true"
NextButtonID = "btnNext"
previousButtonID = "btnPrev"
playButtonID = "btnPlay"
playButtonText = "play"           webmethod
slideShowServiceMethod = "GetSlides"
slideShowServicePath = "SlideShowService.asmx" > webservice class.
                                          ↓ webservice class.
</cc1:SlideShowExtender>

```

Write the below code with in webservice class file like below:

```
class SlideShowServiceClass
```

```
{
    [WebMethod]
```

```
    GetSlides()
```

```
{
    // write the code to fetch the images from
    // images folder and supply one by one to image control.
```

```
}
```

```
}
```

Auto Complete Extender Control:-

1. This method we can attach to a textbox control.
2. This control we can attach to a textbox. whenever user will enter 1st letter of the item with in the textbox then this extender control will display a pop up window for bottom of the textbox with in that popup window, it will display all the items which are starting with entered letter, These items this control will get from the "database/ datasource".

Note:- This extender control will also depending on webservice class and webmethods to get the items from the database & to display those fetched items with in the popup window of the textbox.

Example:-

Step1:- Design "country" table like below.

Country ID	Country Name
1	India
2	Iceland
3	Iran
4	America
5	Austria
6	Australia
.	.
:	:

Step2: Design of webform1.aspx.

1. Drag and drop script manager.
2. Drag and drop text-box and design like below.

Script manager
Enter your country name <input type="text"/>

3. Add auto-complete extender control to the textbox.
4. When adding the extender control update the below properties:

MinimumPrefixLength = "1" webservice class
ServicePath = "countrywebserviceclass.asmx"
ServiceMethod = "GetCountries" ← web method

5. Write the below code with in webservice class file.

```
class countrywebserviceclass  
{  
    [webmethod]  
    getService
```

1/ with the code to fetch the items from the database based on the 1st letter wh one entered by user and display with in the popup window of textbox.

When we execute the above webpage the output like below:

Enter your country Name	<input type="text"/>
	A
	America
	Austria
	Australia

=> Masked Edit Extender and Masked Edit Validator :—

1. MaskedEditExtender control we can attach to a textbox.
2. MaskedEditExtender control will restrict the user i/p in textbox with the given format and given type.
3. MaskedEditValidator control we can attach to masked edit extender control, this validator control will validate the masked edit extender control ^{targeted} & a textbox.

Example:

Step 1:- Design of webform1.aspx.

1. Drag and drop script manager.
2. Design webform1.aspx like below.

Script Manager
your salary [9999 format]
Enter your salary <input type="text" value="txtsal"/>
SUBMIT YOUR SALARY
btnsubmit
[Label1]

3. Add maskededitextender control to textbox.
4. After adding the extender control update the below properties.
5. Adding masked edit validator control to the masked edit extender control.

To add this control we have to write below code.

```
<cc1: MaskedEditValidator ID="MaskedEditValidator1" 
    numat="server" controlToValidate="TextBox1"
    ControlExtender="TextBox1-MaskedEditExtender"
    IsValidEmpty="False" → compulsory field validation
    InvalidEmpty="InvalidValueMessage=Input salary"
    EmptyValueMessage="Input Salary">
</cc1: MaskedEditValidators>
```

webform1.aspx.cs

```
void btnSubmit_Click ( , )
{
    lblMsg.Text = "Your submitted salary is :" + txtSal.Text;
}
```

Toggle Button Extender Control:-

1. This control we can attach to a check box control. This control will customize the given image to the checkbox.
2. To implement this for every check-box we have to add one ToggleButton extender control.

Step 1:- Design webForm1.aspx like below.

Script Manager
<input type="checkbox"/> I like facebook
<input type="checkbox"/> I like Twitter
<input type="checkbox"/> I like Orkut
SUBMIT
lblMsg

1. Adding Togglebutton control to check Fb
2. After adding update the below properties of the extender control.
3. Add below two images to the solution explorer.
 1. ToggleButton-Checked.gif
 2. ToggleButton.Unchecked.gif

ImageHeight = "19"

ImageWidth = "19"

UncheckedImageURL = "ToggleButton-Unchecked.gif"

CheckedImageURL = "ToggleButton-Checked.gif"

CheckedImageAlternateText = "check"

UncheckedImageAlternateText = "Uncheck" >

4. Adding another ToggleButton Extender control to checkbox2.
 5. After adding the extender control update the extender control properties like below.
 6. Add another ToggleButton extender control to checkbox3.
 7. After adding the extender control update the extender control properties.

webform1.aspx.cs

```
void btnSubmit_Click(-,-)
```

After we execute the above page the output will be like below:

- I like FaceBook
 - I like orTwitter
 - I like Two Orkut

SUBMIT

SUBMIT
You indicated that you do like Facebook, you do not like Twitter and you do like Orkut.

⇒ Update panel stimulation Extender controls

This control will then attach to update panel control.

This control we can attach to update panel control.
Using this control we can implement animations with
in the update panel of the webpage.

Non-Extender Controls:-

1. Accordion and Accordion Pane :-

1. These 2 are pane controls and these two are container controls. Accordion control can contain only collection of accordion pane controls.

2. Accordion pane control can contain normal controls.

3. Accordion pane control can will have two sections.

1. header section.

2. content section

4. With in header section we will give the heading / title of the requirement.

5. With in the content section we will design the actual requirement display.

6. A single accordion can contain multiple Accordion Pane controls.

Example:-

Step1:- Design of webform1.aspx

1. Drag and drop Script Manager.

2. Write the below code to generate accordion pane and accordion controls.

```
<cc1: Accordion ID="Accordion1" runat="Server">
<panes>
<cc1: AccordionPane
  ID = "AccordionPanel1" runat = "Server">
  <Header> Books </Header>
  <content>
    <asp: RadioButtonList ID = "RadioBooks" runat = "Server">
      <asp: ListItem> HTML </asp: ListItem>
      <asp: ListItem> PHP </asp: ListItem>
      <asp: ListItem> XML </asp: ListItem>
    </asp: RadioButtonList>
  </content>
</cc1: AccordionPane>
<cc1: AccordionPane
  ID = "AccordionPanel2" runat = "Server">
```

```

<Header> Movies </Header>
<Content>
<asp:RadioButtonList ID="RadioMovies" runat="server">
<asp:ListItem> Titanic </asp:ListItem>
<asp:ListItem> Avatar </asp:ListItem>
<asp:ListItem> Terminator </asp:ListItem>
<asp:ListItem> X-man </asp:ListItem>
</RadioButtonList>
</Content>
</cc1:AccordionPanel>
<cc1:AccordionPanel ID="AccordionPanels" runat="server">
<Header> Sports </Header>
<Content>
<asp:RadioButtonList ID="RadioSports" runat="server">
<asp:ListItem> Soccer </asp:ListItem>
<asp:ListItem> Cricket </asp:ListItem>
<asp:ListItem> Football </asp:ListItem>
<asp:ListItem> Tennis </asp:ListItem>
</Content>
</cc1:AccordionPanels>
</panes>
</cc1:Accordion>

```

Output:-

- Books
- HTML
- PHP
- XML
- Movies
- sports

Accordion control will display by default only the titles of the accordion panels and will display by default accordion panel content.

Whenever user will click on accordion panel title then will display only that concerned accordion panel content area.

By this we can say accordion control at a time will display one Accordion Panel content. while implementing these pair controls our user interface make it as "rich user interface" as well as we can save the design space.

TabContainer Control:-

It is a container control which is similar like windows form "Tab" control.

TabContainer control is collection Tab panel. Each TabPanel will have two templates like below:

1. Header Template.
2. Content Template.

Header Template :- It is representing the Tab.

Content Template :- It is representing the container of the Tab / window.

While implementing using TabContainerControl, we can reduce the no. of web pages.

Example :

Step1: Design of webform1.aspx.

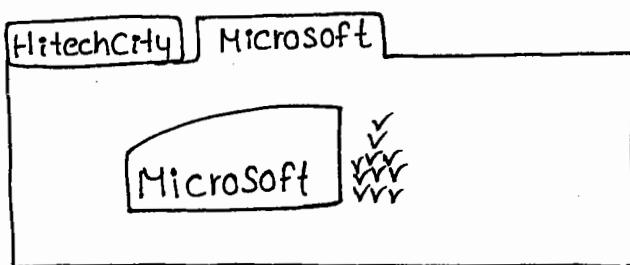
1. Add two images to the solution explorer. Rename them as like below. img1.jpg and img2.jpg.
2. Drag and drop script manager.
3. Write the below code with in webform1.aspx

```
<CC1 : TabContainer  
ID = "TabContainer1" runat="server" ActiveTabIndex="1"  
Height = "236px" width = "414px" >  
<CC1 : TabPanel1 ID = "TabPanel1" runat="server" >  
<HeaderTemplate> Hitech City </HeaderTemplate>  
<ContentTemplate>  
<ASP:Image ID = "Image1" runat = "server" ImageUrl = "img1.jpg" />  
HitechCity</ContentTemplate>  
</CC1 : TabPanel1>  
<CC1 : TabPanel1 ID = "TabPanel2" runat = "server" >  
<HeaderTemplate> Microsoft </HeaderTemplate>
```

```

<contentTemplate>
<asp:Image ID="Image2" runat="server"
    ImageURL = "~/image2.jpg" /> Microsoft , Hyd </asp:Image>
</contentTemplate>
</cc1:TabPanel>
</cc1:TabContainer>
<br/>
Output :-

```



Hitechcity, hyderabad Microsoft, hyd.

Rating Control:-

Using this control we can implement rating facility to the user within the webpage.

To implement this rating control we have to use star.

Step1: Design of webForm1.aspx

1. Add 3 star images to the solution explorer. Rename them as:
EmptyStar.jpg, FilledStar.jpg, SavedStar.jpg.
2. Create the below code with webform1.aspx.

```

<html>
<head>
<style type="text/css">
    .FilledRatingStar
    {
        background-image: url(FilledStar.jpg);
        width: 18px;
        height: 18px;
    }

```

- empty Rating Star

{

```
background-image: url(EmptyStar.jpg);  
width: 18px;  
height: 18px;  
}
```

- Saved Rating Star

{

```
background-image: url(SavedStar.jpg);  
width: 18px;  
height: 18px;
```

}

// Script Manager code write here

Give your rating about this website

```
<cc1: Rating ID="Rating1" runat="server"
```

```
CurrentRating="2" MaxRating="5" BehaviourID=
```

```
"RatingBehaviour1" StarCssClass="ratingStar"
```

```
FilledStarCssClass="filledRatingStar" WaitingStarCssClass=
```

```
"SavedRatingStar" EmptyStarCssClass="EmptyRatingStar"
```

```
FontSize="X-Large">
```

```
</cc1: Ratings>
```

```
<br/>
```

```
<br/>
```

```
<asp: Button ID="btnSubmit" runat="server" Text="Submit" />
```

```
<br/> <br/>
```

```
<asp: Label ID="lblResponse" runat="server" />
```

```
</asp: Label> <br/>
```

write the below code with in webform1.aspx.cs.

```
class Webform1
```

{

```
    btnSubmit_Click()
```

```
{ string rating = "";
```

```
switch (Rating.CurrentRating)
```

```

    {
        case 1: rating = "Average";
        break;
        case 2: rating = "Good";
        break;
        case 3: rating = "Very Good";
        break;
        case 4: rating = "Excellent";
        break;
        case 5: rating = "Marvelous";
        break;
    }

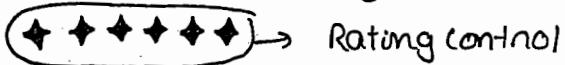
```

lbl Response.Text = "The rating given by yours is "
 + rating + "
";

]

Output

Give your rating about this website



SUBMIT

The rating given by yours is Marvelous

=> NOBOT :-

- 1. Using this control we can provide security to a website.
- 2. To make server busy hackers will generate automatic request to the targeted website by defining hacking programs.
- 3. A server can receive two types of request.
 - 1. Auto request.
 - 2. Manual request.

AutoRequest:- A request which is generated by the hacker program can be called as Auto request.

Manual request:- A request which is generated by the User can be called as Manual request.

while implementing "NoBot" control we can avoid the "auto generated request" in home level.

Example:-

Step 1:- Design of webform1.aspx.

1. Drag and Drop "Script Manager".

2. Write the below code with in webform1.aspx

```
<asp:label ID="Label1" runat="server" Text="NoBot Message"  
Font Bold = "True">  
</asp:label>  
<asp:label ID="Label2" runat="server" Font Bold = "True"  
FontColor = "Red"> </asp:label> <br />  
<cc1:NoBot ID="NoBot1" runat="server"  
CutoffWindow Seconds = "15"  
ResponseMinimumDelay Seconds = "3"  
CutoffMaximumInstances = "4" /> <br />  
<asp:Button ID="btnCheck" runat="server" Text="Check" />
```

Step 2:- webform1.aspx.cs

Using AjaxControlToolkit;

Output

```
namespace NoBotExample  
{  
    class NoBot :  
        AjaxControl  
        ToolkitBase  
        Class Library
```

```
    {  
        void btnCheck_Click()  
        {  
            if (NoBot1.IsValid(out nbs))  
            {  
                Label2.Text = nbs.ToString();  
            }  
        }  
    }
```

```
    else  
    {  
        Label2.Text = nbs.ToString();  
    }  
}
```

Output 1

Output 2

NoBotMessage: Valid

NoBotMessage: Invalid RequestVerySoon.

Check

Check

If continuously click means before
3sec

Web Services

What is web service?

1. A unit of code which is providing services to the multiple ^{client} applications can be called as webservice.
2. An application which is receiving the services can be called Service receiver / client application.
3. An application which is providing the services can be called as service provider / web service.
4. A single webservice can be consumed by multiple client applications, due to that reason a webservice can be called as reusable web component.
5. A webservice can be consumed by any type of client application i.e., client application can be windows appn/ web application ... etc.
6. According to the no. of users applications are classified into two types:
 1. Single user application.
 2. Multi user application.

Single user application:- An application which can be consumed one user at a time can be called as single user application.

Windows applications are single user application.

Ex:- MS office, notepad.

Multi user application:- An application which is consuming by multiple users at a time can be called as multi-user application.

Ex:- Every web application is multiuser appl'n. like gmail, facebook...etc.

Distributed Applications:- If an application logic which is executing with in different locations / different systems at a time that application can be called as distributed application.

Ex:- Let us assume we are developing a website by using

• Net. If we want to develop a website by using .Net we require following technologies.

1. HTML and Javascript

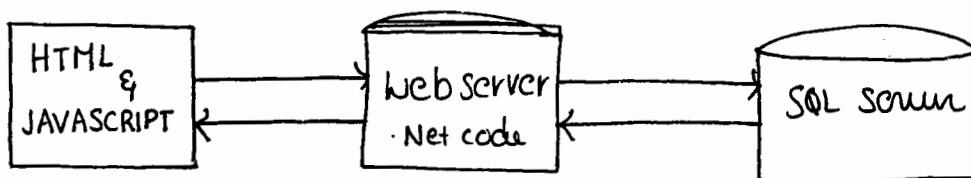
2. • Net

3. SQL Server

1. HTML and Javascript code will execute within the client machine / web-Browser.

2. Dot Net code will execute within the web server.

3. SQL Server code will execute within the database server like below:



a. In the above diagram we can say that every web application is a distributed application.

When we will go for webService?

Whenever we want to

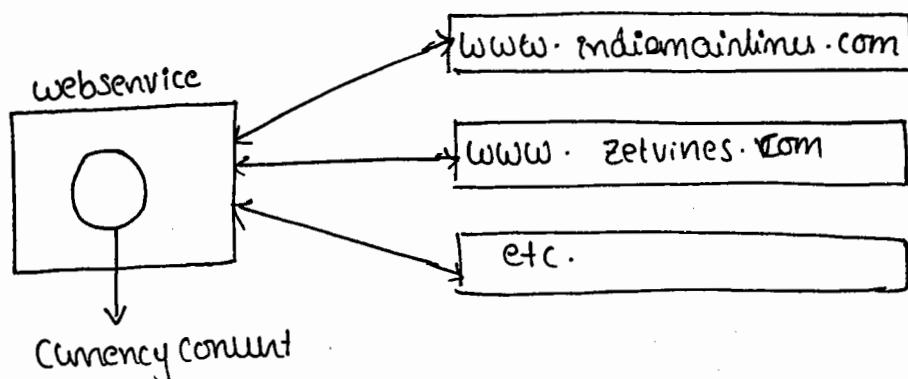
we will go for webservice into two situations.

1. whenever we ^{require} want to implement common functionality within multiple appin instead of writing the same business logic in multiple appin's, we will develop it as a reusable web-component called web service and we will deploy to that web service into some webserver that web service we call from the required client applications.

2. for example currency converter

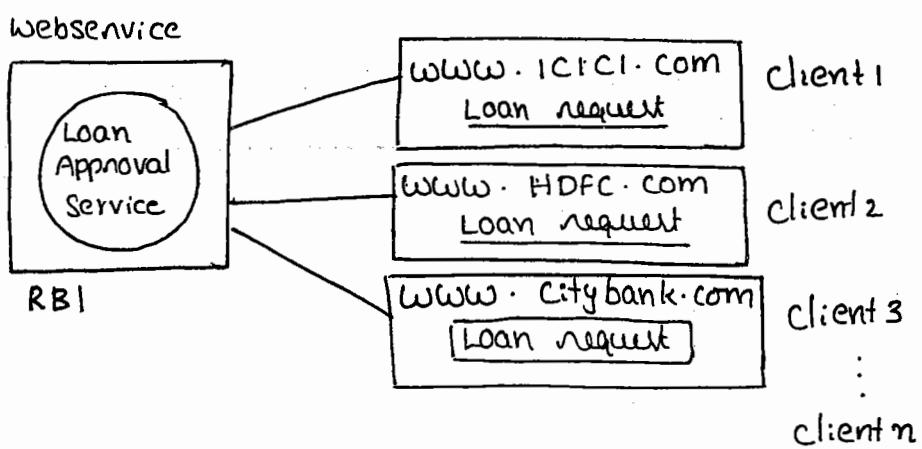
Currency converter is a common functionality which is required by multiple applications.

3. Instead of writing the business logic to develop a currency converter within multiple appin's we will develop it as one web service & it can be consumed by multiple client applications like below:



Second situation :- whenever multiple applics are depending on single application to get the same service we will develop that service as a webservice.

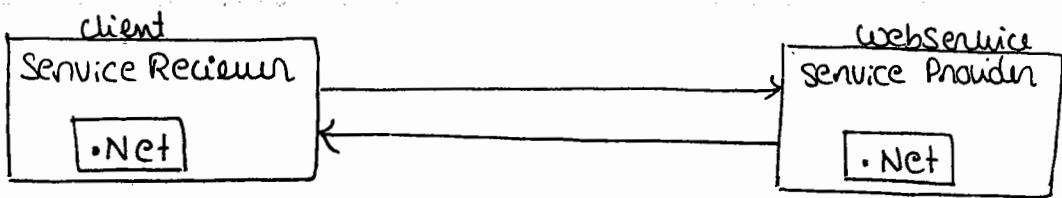
e.g. for example all banks^{applics} are getting the loan approval websites from RBI Application due to that reason this loan approval develop as a webservice with in the RBI website & which can be consumed from all the banking websites like below:



According to the type of technologies which we have used to develop service provider and service receiver the applications are classified into two types:

1. Homogeneous Applications.
2. Heterogeneous Applications.

Homogeneous Applications:- If service provider and service receiver we have developed by using same technology then which can be called as homogeneous applications.
For example.



Heterogeneous Application:-

If we develop service provider ^{by using} one technology and service receiver by using another technology which can be called as heterogeneous applications.

for example.



Interoperability:-

1. Interoperability is nothing but implementing the communication b/w different technology appl'n's. By using .Net web services we can achieve interoperability.
2. Using .Net technology we can develop two type of web services:
 1. Normal web service -
 2. WCF web service. (Windows Communication Foundation).
3. Normal web service we can develop by from .Net 1.0.
4. WCF web service we can develop from .Net 3.0 onwards because WCF was introduced by the Microsoft with .Net 3.0 version in the year 2006.
5. A normal web service is a traditional .Net web service. WCF web service is a advanced .Net web service.

Implementation of web services by using .Net can be divided into following steps:

- Step1:- Creating a web service.
- Step2:- Creating client application
- Step3:- Adding the web service reference to client application.
- Step4:- Consuming the web service from client application.

How to develop a webservice?

- ① Open visual studio .Net → File → New → Website → select language as Visual C# and Select template as Asp .Net web site → OK.
- ② In menu bar → select website → select Add New Item → it will open add new item window → here we select a template called webservice Rename it as mywebservice.asmx click add button. With this process one webservice file add to the solution explorer i.e., Mywebservice.asmx.
- ③ Every webservice will representing with 2 files:
1. .asmx , ② .cs

Structure of mywebservice.cs file

1. It is one of the C#-Net class file and it is webservice class file, which will contain webservice class.
2. This file will coming with one user defined web-service.

Note:- System. Web. Services is the main base class library for .Net webservice programming.

```
class MyWebService : System. Web. Services. WebService
```

```
{
```

```
// here we have to write the business logic according to  
// the requirement by defining web Methods.
```

```
}
```

WebService class:- A class which contains web method can be also called as webservice class.

WebMethods:- A method which is providing services through web can be called as webMethods.

Example to create / implement a simple webservice in step by step process.

Step 1:- Creating a webservice

1. Open a asp .Net website rename it as calculate webservice .
2. Select file → select website → Add new item → here select a

predefined template called webservice rename it as mycalculate webservice.asmx.

3. write the below code with in mycalculate webservice.cs

4. Using System. Web. Services.

5. class MycalculatewebService : system . web . services - webservice

[WebMethod]

```
public int add(int a, int b)
{
    return a+b;
}
```

[WebMethod]

```
public int sub(int a, int b)
{
    return a-b;
}
```

4. Build Service with this process one webservice will be created.

~~Step 2~~ Creating client application:-

1. Open a website → Rename it as mywebclient → Add webForm1.aspx → Set it as start page.

2. Design webForm1.aspx like below:

Enter First NO	<input type="text"/>	txtNum1
Enter Second NO	<input type="text"/>	txtNum2
btADD	<input type="button" value="ADD"/>	<input type="button" value="SUB"/> BtNSub
Result	<input type="text"/>	txtRes

step3:- adding webservice reference to client :-

1. open solution explorer of mywebclient → select mywebclient → right click → select add service reference → it will open add service reference window here go back to calculate webservice application → run that webservice → it will open a webbrowser window. → here copy the url of the

webservice and come back to ^{MyWebClient} "Add service Reference" window
→ here paste that URL with in the address dropdown list
→ Click Go button → OK . With this process web service reference
to the mywebclient Solution Explorer , that reference is
"Service References"

Step 4:- Consuming the webservice from client .
with the below code within webForm1- aspx.cs .

namespace Mywebclient

४

class webForm1

{ webservice reference }

```
    ↗ webservice reference  
Service Reference1. Mycalculate webservice soapclient { @WebService =  
                                ↙ proxy class  
new ServiceReference1. Mycalculate webservice Soap client();
```

```
void btnAdd - click ( )
```

۲

```
ab:55 int n = int.parse(txtNum1.Text);
```

```
int a = int.parse(txtNum1.Text);
```

$\text{obj. add } (\alpha, b);$

```
txtres.text = res.toString();
```

2

void btn sub - click()

三

```
int a = int.parse(txtNum); Text)
```

```
int b = int.parse(TextNum2.Text);
```

int res = obis.sub(a, b);

int res = res.toIntString();

4

How consume the above web service from windows applic.
consume the above web service from console client applic.

Example to create a webservice to communicate the Database.

Step 1:- Creating a webservice.

1. Open a Asp.net website rename it as emp service.
 2. Add a webservice template rename it as empwebService.asmx
- Empwebservice.cs

```
class EmpWebService
{
    [WebMethod]
    public DataSet getData()
    {
        SqlConnection conn = new SqlConnection("Server=.; Database=
        Uid=sa; pwd=sa;");
        SqlCommand cmd = new SqlCommand(conn);
        SqlDataAdapter da = new SqlDataAdapter(cmd);
        DataSet ds = new DataSet();
        da.Fill(ds, "empNew");
        return ds;
    }
}
```

Step 2:- Creating client application

Open asp.net web application → Rename it as empclient.

Design webform1.aspx

col1	col2	col3

Btn display

Step 3:- Add Empservice reference to empclient

Step 4:- Consuming emp service from empclient.

webForm1.aspx.cs

using System.Data

namespace EmpClient

{

serviceReference1.EmpWebServiceSoapClient obj = new
serviceReference1.EmpWebServiceSoapClient();

void btnDisplay_Click()

{

DataSet ds = new DataSet();

ds = Obj.GetData();

GridEmp.DataSource = ds;

GridEmp.DataBind();

}

H.W 1. w.a. p to display the Emp table without using any control.

2. w.a. console program to (get the emp tab) display the Emp table.

3. Creating a plugin / addin / button with in the MS-Word tool bar by using windows form appn.
implement

Example to create a webservice to, insert, update, delete,

Step1 :- Creating a webservice.

① Open a asp.net website → Rename it as ^{web}empService → ok.

select - website → Add new item → select webservice → Rename it as empService.asmx.

EmpService.cs code

using System.Data.SqlClient.

{

class EmpService

{

```
sqlconnection conn = new sqlconnection("server=.; Database=company; Set= Uid=sa; pwd=abc");
```

[WebMethod]

```
//insertRec
```

```
public int InsertRec(int eno, string cname, int sal)  
{
```

```
sqlcommand cmd = new sqlcommand (@eno, @cname, @sal)
```

```
sqlcommand cmd = new sqlcommand ("Insert into emp  
values (@eno, @cname, @sal)", conn);
```

```
cmd.parameters.AddWithValue ("@eno", eno);
```

```
cmd.parameters.AddWithValue ("@cname", cname);
```

```
cmd.parameters.AddWithValue ("@sal", sal);
```

```
conn.open();
```

```
int i = cmd.ExecuteNonQuery(); conn.Close();
```

If returns 'i' when record is inserted.
that's why InsertRec Return type is int.

}

[WebMethod]

```
public int DeleteRec(int eno)
```

```
{
```

```
sqlcommand cmd = new sqlcommand ("Delete emp where  
Empno = @eno", conn);
```

```
cmd.parameters.AddWithValue ("@eno", eno);
```

```
conn.open();
```

```
int i = cmd.ExecuteNonQuery(); conn.Close();
```

```
return i;
```

→ [WebMethod]

```
public int updateRec(int eno, int newsal)
```

```
{
```

```
sqlcommand cmd = new sqlcommand ("update emp set  
sal = @newsal where Empno = @eno", conn);
```

```

cmd.Parameters.AddWithValue("@eno", eno);
cmd.Parameters.AddWithValue("@esal", esal);
conn.Open();
int i = cmd.ExecuteNonQuery();
conn.Close();
return i;
}

```

Build Solution.

Step2:- Creating client application.

1. open a asp.net web application → Rename it as Empclient.
2. Design of webform1.aspx like below.

Design webform1.aspx

EmpNO	<input type="text"/>
Emp Name	<input type="text"/>
Sal	<input type="text"/>
<input type="button" value="INSERT"/> <input type="button" value="DELETE"/> <input type="button" value="UPDATE"/>	

[lblMsg].

Step3:- Adding the empws web service reference to client.

Step4:- Consuming the empweb service from empclient.

Step5:- webform1.aspx.cs

Class webform

name space Empclient
{

 class webform1
 {

 ServiceReference1.empserviceSoapClient obj = new
 ServiceReference1.empserviceSoapClient();

```
btnInsert - Click ()  
{  
    int eno = empno = int.parse(txtEno.Text);  
    string empname = txtName.Text;  
    str int empsal = int.parse(txtSal.Text);  
    obj. inteno = obj.InsertRec(eno, empname, empsal)  
    if (j == 1)  
    {  
        lblMsg.Text = "Record is inserted successfully";  
    }  
    else  
    {  
        lblMsg.Text = "Record is not inserted";  
    }  
}
```

```
btnDelete - click ()  
{  
    int eno = int.parse(txtEno.Text);  
    int j = obj.DeleteRec(eno);  
    if (j == 1)  
    {  
        lblMsg.Text = "Record deleted successfully";  
    }  
    else  
    {  
        lblMsg.Text = "Record not deleted successfully";  
    }  
}
```

```
btnUpdate - click ()  
{  
    int eno = int.parse(lblEno.Text);  
    int Nesal = int.parse(txtSal.Text);  
    int j = UpdateRec(eno, Nesal)  
    if (j == 1)  
    {  
        lblMsg.Text = "Record updated successfully";  
    }  
}
```

```
else
{
    JblMsg.Text = "Record is not updated";
}
```

Hive webservices :-

1. A webservice which is already available on Internet can be called as live webservices.
2. As a .NET programmer we can consume those webservices for that we have to create a client application.
3. Some of the valuable webservices are available on the below website

www.webservicesx.net

Example to consume currency converter live webservice.

Step1:- Currency converter webservice is available on the above website.

Step2:- Creating client application to consume for currency converter webservice.

Note:-

In the above webservice they have defined standard currency codes for every country currency.

USD - USA - (US Dollar)

INR - Indian Rupee

SND - Singapore Dollar.

etc

Open asp.net web application :- Rename it as "currency - converter client"

Design of webform1.aspx.

From Currency	<input type="text"/>
To Currency	<input type="text"/>
[Label]	<input type="button" value="Convert"/>

Step 3: Adding Reference

1. Go to the above website copy the URL of the webservice

http://www.webservicesex.net/currencyconverter.asmx?WSDL

2. Open Solution Explorer of client selected project Add service reference and page with in the address box. → Go & OK.

Step 4: Consuming currency converter from client.

webform1.aspx.cs

```
class WebForm1
```

```
{
```

```
void btnConvert_Click()
```

```
{
```

```
ServiceReference1.CurrencyConverterSoapClient = new  
    proxy class constructor  
    ServiceReference1.CurrencyConverterSoapClient ("currency  
    converter soap");
```

[↑]
end point from webform.config file

```
// obj. ConversionRate()
```

```
String From = txtFrom.Text.ToUpper();
```

```
String To = txtTo.Text.ToUpper();
```

```
ServiceReference1.Currency FromCurrency = (ServiceReference1.  
    currency) Enum.Parse(typeof(ServiceReference1.  
        currency), From);
```

^{To data type} ^{here we are getting} ^{enum}

```
ServiceReference1.Currency ToCurrency = (ServiceReference1.  
    currency) Enum.Parse(typeof(ServiceReference1.currency),  
    To);
```

^{To variable}
String (From value)

```
double rate = obj.ConversionRate(FromCurrency, ToCurrency);
```

[↓] ^{Currency type (enum)}
lblRate.Text = "Conversion rate is :" + convert.ToString(rate);

}

Note:- In the above example go to the web.config and copy the web endpoint name i.e., currency converter soap and it initialize to proxy class constructor.

To Implement one simple windows from example to convert like below.

① converting from int to enum. ② enum to int
int String to enum ④ enum to string.

Example to consume the SendSMS India live webservice

Step1:- Send SMS India webservice is already available with in the below website.

www.webservicesx.net

Step 2:- Creating client application.

1. Open asp.net web application.
2. Rename it as SMSclient.

Design of webform1.aspx

Enter Mobile NO	<input type="text"/>	txtNum
From Email Address	<input type="text"/>	txtMailId
Enter Message	<input type="text"/>	txtMessage
<input type="button" value="send"/>	btNSend	
<input type="label" value="Label"/>	lblMsg	

Step 3:- Adding Service Reference to client

Step 4:- Consuming the webservice from client.

webform1.aspx.cs

Class webForm1

{
ServiceReference1.SendSMSSoapClient objSMS = new
ServiceReference1.SendSMSSoapClient(
endpoint from web.config ("SendSMSSoap"));
}

```
btnclick_Click()
```

```
{
```

```
    obisms.SendSMSToIndia(*txtNum.Text, txtmailId.Text,  
    ↓  
        txtMsg.Text);
```

```
    serviceReference1.SMSResult msg =
```

```
    lblMsg.Text = msg.ToString();
```

```
}
```

```
}
```

H.W Create a client to consume the global weather live web-service.

* SendsMSWorld

3. Create a client to consume SendsMSWorld live webservice.

4. Create a client to consume the US Address verification.

1. Webservice is enhanced from COM & DCOM architectures.

2. COM stands for component object Model

3. DCOM stands for Distributed component object Model.

4. A webservice in .Net is also known as XML web-Services because .Net webservice is integrated with XML.

5. An XML webservice is a language independent and platform independent.

6. In general an XML webservice will contain following things:

1. Client
2. Proxy
3. Formatter
4. Server

7. proxy will generated in client side whenever reference will be added.

8. proxy will contain all function signatures of server component.

9. To create this proxy at client, some component will

contain WSDL file.

WSDL :-

1. WSDL stands for webservices description language.
2. WSDL is completely open standard format in XML.
3. In .NET webservices ^{the} data exchanging b/w service provider and service receiver in the form of XML.
4. That XML data is transferring by using a protocol called SOAP

SOAP(Envelope)

1. SOAP stands for Simple Object Access Protocol.
2. In webservices there are two open standard formats:
 1. SOAP Format
 2. HTTP format.
1. **SOAP Format:-**
 1. SOAP is open standard format which is in the form of XML.
 2. SOAP transfers the data in the form of envelop called as SOAP Envelop.
 3. SOAP Envelop will contain two parts:
 1. SOAP Header
 2. SOAP Body.
 4. To check how the data is transferring from service Receiver to service provider, let's implement the below example.
 5. Let us assume we have define webservice as class with 2 fields like below:

```
class PurchaseOrder
{
    string item = "socks";
    int amount = 1;
}
```

In the following we will see how the above record is processed internally through the webservice component.

~ XML Component

```
<purchaseOrder>
  <item> Socks </Item>
  <amount> 1 </amount>
</purchaseOrder>
```

SOA: The above XML component we will converted into i.e; SOAP Envelope like below:

SOAP Envelope

```
<s: Envelope>
  <s: Header>
  </s: Header>
  <s: Body>
    <n: purchaseOrder </n>
      <n: item> Socks </n: Item>
      <n: amount> 1 </n: amount>
    </ purchaseOrder>
  </s: Body>
</s: Envelope>
```

Note:- Soap is originally developed by Microsoft and IBM together for their internal communication purpose.

Soap is XML based protocol, it is backbone for webservices and WCF

SOA (Service Oriented Architecture) :-

The programming languages which are introduced in the following order.

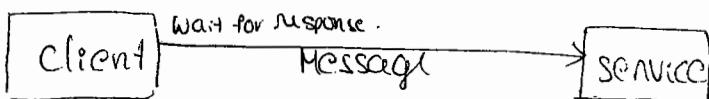
1. Machine level languages.
2. Assembly languages.
3. High level languages.
4. Procedural programming languages.
5. Structured oriented programming languages.
6. Object oriented programming.

- 7. Event driven programming (Windows Forms & Webforms)
 - 8. Service oriented programming.
1. Windows applications and web applications are B2C apps (Business to customer), because which are all directly interacting by the client (end user).
 2. webservices are B2B applications (Business to Business) because these webservices are not directly interacting do the end-user, which are all interacting by the another application.
 3. .Net webservices are based on Service oriented architecture.
 4. In service oriented architecture we will have two applications.
 1. Service provider (webservice)
 2. Service Receiver (Client Application)

Message passing Mechanism in WCF :- (Message Exchange format in WCF)

- 1. Message exchange pattern will indicate how client & service will interact with each other. i.e., client to service & service to client.
- 2. WCF supports 3 types of Message exchange patterns.
 1. 1-way communication / 1-way contract.
 2. + way Request - Reply communication
 3. Two-way communication / Duplex communication.

1 way comm:- In this client will send the request & wait for response. i.e., client will send the request & forget about response (fire & forget). In this pattern the client doesn't know whether the request is reach to the server or not.



goto start → Run → devenv - OK.

File - new → website → select WCF service template → Add.

goto IService.cs

[Service contract]

public interface : IService

{
 [OperationContract]}

 void waitforsometime (int sometime)

}

goto service.cs & write the code.

using System.Threading;

public class service : IService

{
 public void waitforsometime (int sometime);
}

}

Press F5 copy the url

goto → Solution Explorer → rc on the path → Add service reference
paste the URL → Add

Using ServiceReference1;

class program

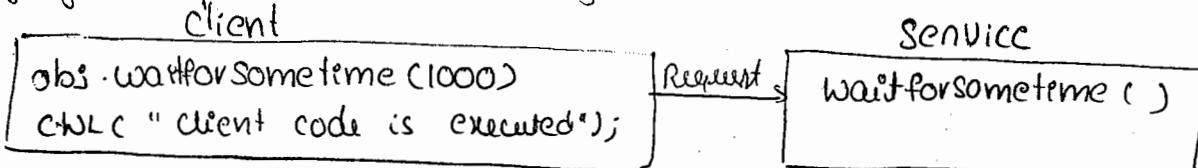
{ static void Main()

 ServiceReference1.ServiceClient obj = new ServiceClient();
 obj.WaitForSometime(1000);

This code is executed
after 10secs } Con.WriteLine("client code is executed");
 Con.ReadLine();

}

Observations:- whenever client gives the request to consume the WCF service i.e., here the request is calling WaitForSometime method (1000). so client has to wait for the response & after 10secs the response will come & the remaining client code will get executed. when you press F5 after 10sec it will display a message client code is executed. Until the response is coming the remaining client side code will not execute. so here indirectly the client code is blocked up to 10secs. To overcome the above problem, we can go for ISOneWay i.e.; Fine and Forget i.e., fine the request & forget response in one way contract.



In one way communication client will send request & forget about response in mean while the remaining client code will get executed. To make the method as one way
go-to IService1.cs and modify the code.

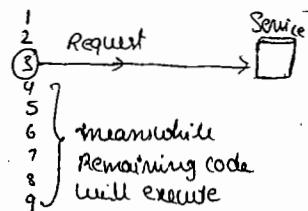
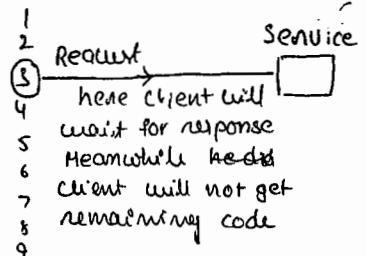
[SERVICE CONTRACT]

Ex public interface IService

[OperationContract (ISOneWay = true)]

void WaitForSometime (int sometime);

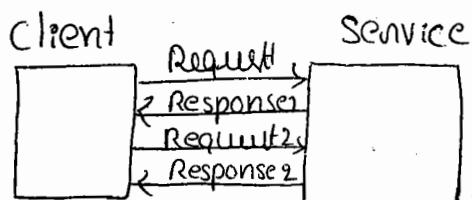
consume the service & press F5 the client code will get executed before 10sec only here client is sending the request



& forget about response in the mean while the remaining client code will get executed.

2. Request-Reply communication:-

In this method (request-reply) client will send the request to the service & client will expect the response from the service.



here in request reply communication here both client and service can not communicate each other at a time i.e., when client send the request then it has to wait for the response then after getting the response only client can send another request. By default WCF follows Request Reply communication

Pooling & pushing:-

pooling:- In pooling mechanism browser will keep requesting the server i.e., for every $\frac{1}{sec}$ time period browser will give the request for certain time updates & server will give response. Pooling is a mechanism of periodically if we give the request to the server for time updates.

pushing:- In pushing mechanism a client will ask for the update for the next 2nd time onwards if any updates are there then server will directly push the response to the client. In case of pooling approach for every 10secs we are generating the request so the burden on the server will increase & performance will be decrease but in pushing approach hardly we are giving 4 to 5 request for the server i.e., in this case pushing mechanism is better than pooling.

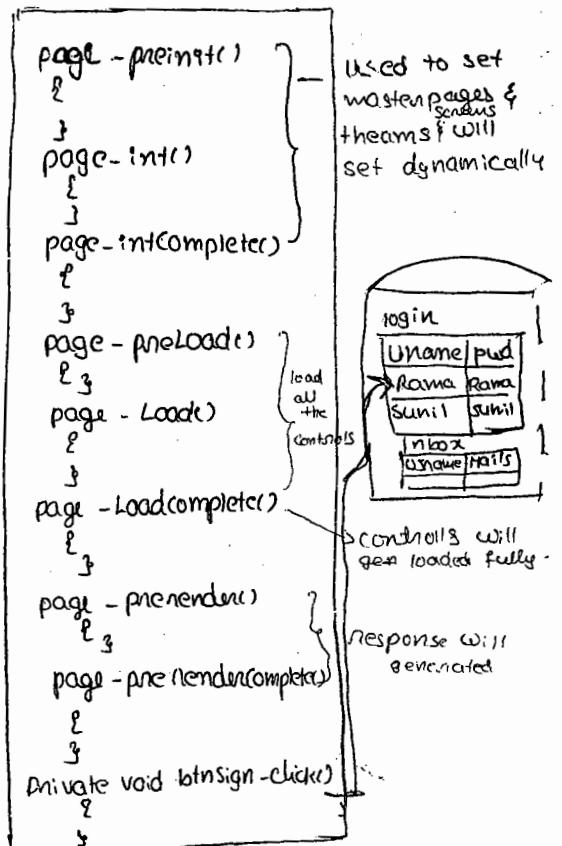
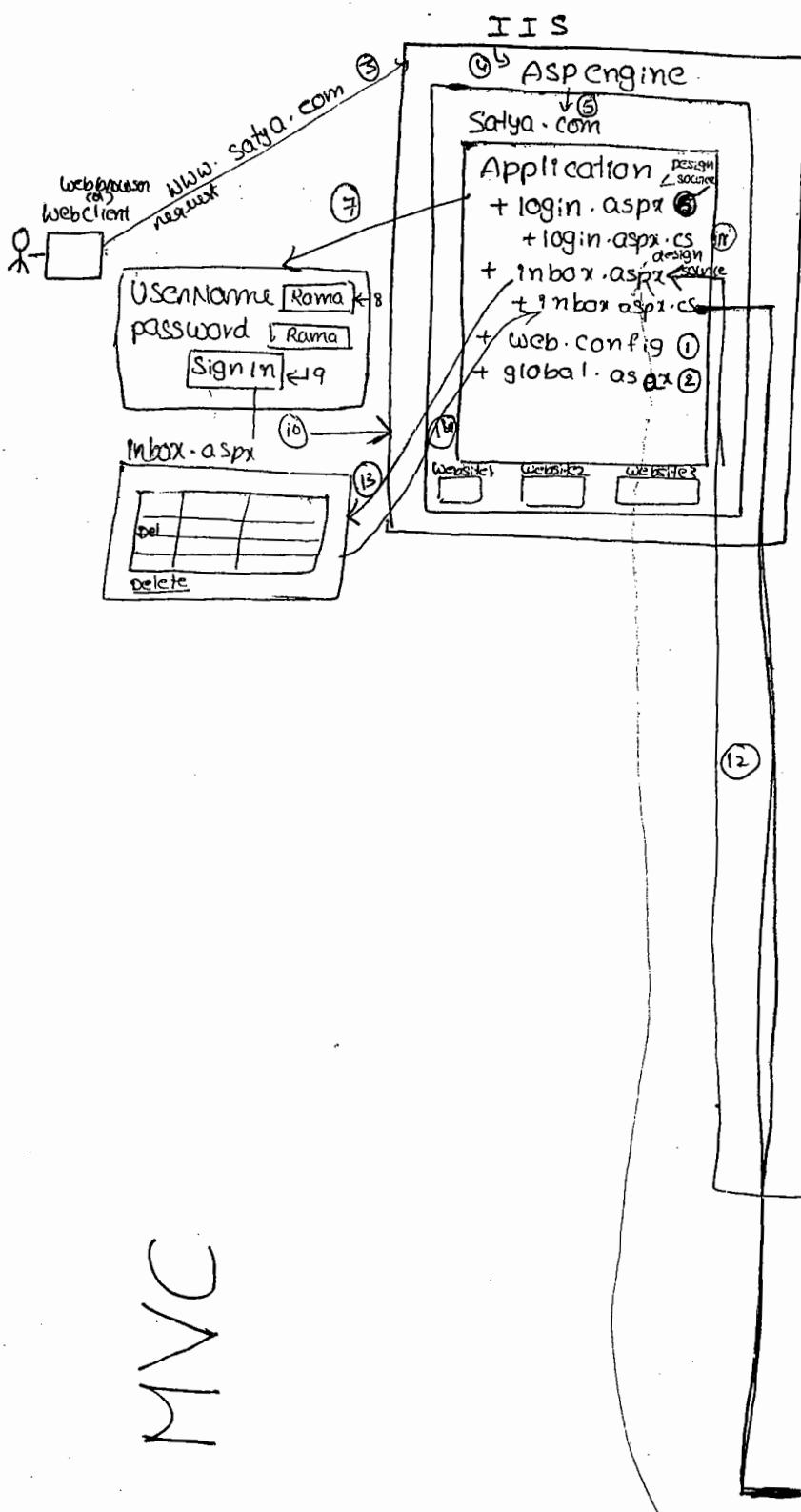
In pushing mechanism if we consider any website having time updates for every sec if server is sending all the updates at a time then the in meanwhile the remaining updates will be queued. i.e., it will

delay the response in this case it is better to go for pooling.

~~on~~

ASAX - active server application extension.

MVC Model View controller (Kannababu Sir)



```

Sqlcon con = new SqlConnection(" ");
SqlCommand cmd = new SqlCommand("select * 
from login where Uname = "+txtuname.Text+
" and pwd = "+txtpwd.Text+"");
con.open();
SqlDataReader dr = cmd.ExecuteReader();
if(dr.HasRows)
{
    if(dr.Read())
    {
        Response.Redirect("inbox.aspx");
    }
    else
        res.Redirect("login.aspx");
}
else
    lblMsg.Text = "Invalid User";
  
```

```

page-load()
{
    SqlConnection =
    da =
    ds
    inbox.aspx
  
```

MVC

- I. whenever the appn is hosted on the webserver i.e under IIS.
- 2. IIS is the webserver for all the ASP.NET webappn.
- 3. IIS will host the appn under ASP Engine.
- 4. When the appn is hosted all the files that are related for the appn will be copied under ASP Engine.
- 5. Initially web.config file will be loaded.
- 6. Web.config file is used to maintain the configuration settings that are required for the ASP.NET webAppn.

II. Global.asax file will be loaded here appn-startEvent will fire & the code that we have written inside that event will gets executed.

III. User will enter the URL in the Browser www.satya.com. Then Browser will forward the request to IIS.

IV. IIS will forward the request to aspengine.

V. Under ASP Engine it will search for www.satya.com & it will execute login.aspx (set as start page) [source]

VI. The response will be displayed in the browser i.e. login design will displayed in the browser.

VII. User will enter Username & password in login.aspx.

VIII. Click on sign in button. Then browser will forward the request to IIS & IIS will forward to ASP Engine

IX. Control goes to login.aspx.cs & it will execute the code that we have written inside button1_Click().

X. The connection string, Username & password will check with database & if the login user is valid it will return the

XI. Username & password to SqlDataReader.

XII. If the login user is valid the response will be forwarded to inbox.aspx.

13, 14. The control goes to inbox.aspx.cs and execute the code that we have written inside page-load event & display the marks in inbox.aspx page

// Drawbacks

Advantages of MVC :-

Model View Controller

MVC is a Design pattern.

What is Design Pattern?

1. Design pattern is a ready made solution for already existed problem.
2. MVC is a design pattern which will separate the appn into 3 main components.
 1. Model
 2. View
 3. Controller
3. MVC is an alternative for asp.net web appn.

Model :-

1. The MVC model is basically a c# / vb.net class.
2. Model is used to pass the data from controller to view.
3. A view can use model to display the data in browser.
4. The MVC model contains application logic (Business Logic, validation logic & Data Access logic)
5. Model class must be declared as 'public'
6. The class must consists of default constructor only.
7. The class must consists of "private" variables & "public" properties.
8. The class methods may consists of methods.

View :-

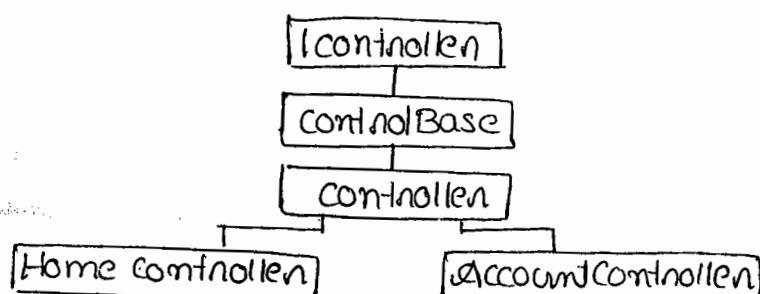
- * A view is an aspx page without having business logic on it.
 2. In MVC we can not find default.aspx.cs.
 3. View consists of HTML code, ASP code.
 4. We can use inline code (server tags) to develop dynamic pages.
- View can support
HTML5.
5. In MVC,

- 6. A request to the view can be made only from the controller's Action Method.

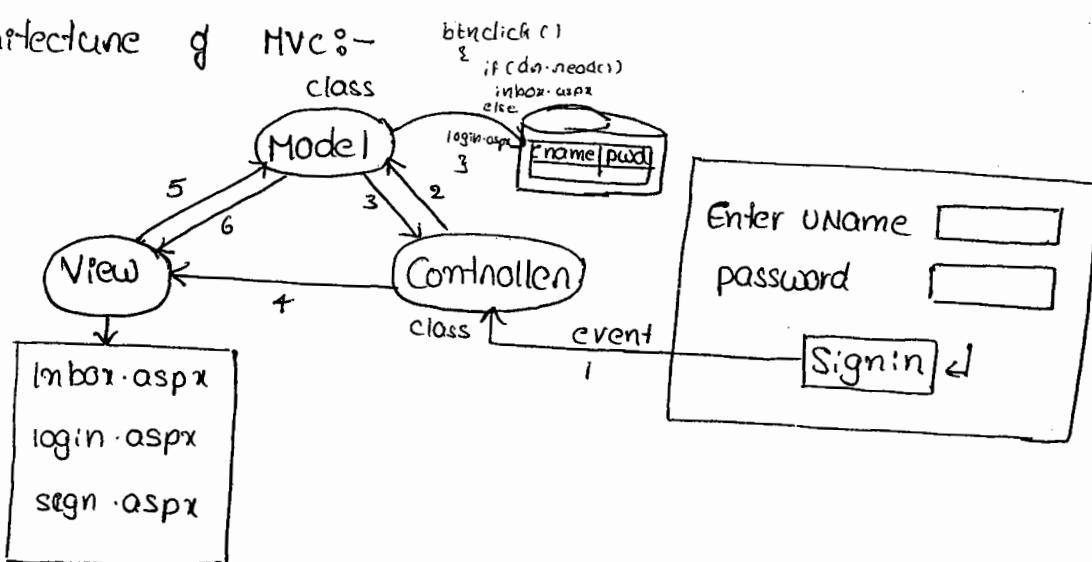
Controllers:-

1. Controller is basically a C# .Net or VB .Net class.
2. Controller class is inherited from System. MVC. controller namespace.
3. Controller is the heart of MVC architecture.
4. All the events originated from the view is handled by the controller.
5. Controller will inform to the Model on behalf of view that some event happened on view and some new data might be required.
6. Inside controller class action methods will be implemented which are responsible for responding to browser or calling views.

=> Hierarchy of controller class



=> Architecture of MVC :-



- Whenever user enters Username & password then he will click on Signin then an event will fire it will invoke the controller.

2. Controller will respond to event & it will invoke the model i.e., on behalf of view the controller will interact to the model that an event has been raised & some new data might be required.
3. Model will respond to controller action & it will communicate with database & check whether the login user is valid or invalid if the login user is valid then it has to return to inbox.aspx if it is invalid it has to return to login.aspx page.

Notes - here Model will not directly intimate to the view, Model will intimate to controller that the code was executed.

4. Controller will respond to model & it will invoke inbox.aspx if the login is successful else login.aspx if the login is failure.
5. Inbox.aspx will communicate with Model & get the response & display the output on the browser.

Features of MVC :-

1. Separation of appn like input logic, business logic, UI logic
2. Unit Testing is fast & flexible
3. easily replaced & customized
4. powerful UI mapping component. Ex: Home / inbox //
5. Easy integration with javascript.
6. MVC enable RESTful urls that enables SEO (Search Engine optimization)
7. "Rest" is a principle followed by any application that was developed on MVC.

REST :- Representation State Transfer which means url should be identity to operate the appns.

URL should be human readable format so that anyone can access & get idea of operating easily.

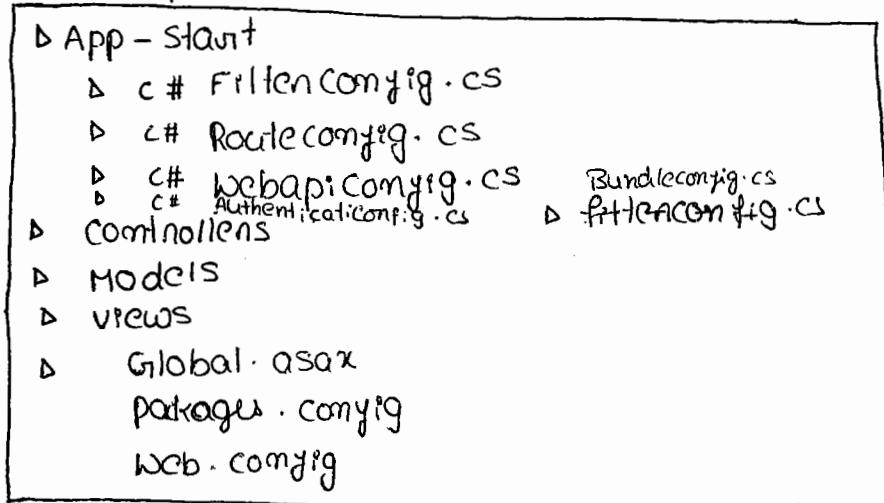
8. The loosely coupled:- The loosely coupling b/w 3 main components of an MVC appn also promotes parallel development. i.e., one developer can work on view, other on model & other on controller.
9. No postbacks
10. No viewstates
11. Inbuilt HTML5 support.

- If you want to communicate with other websites we can go for authen.config
- Bundleconfig.cs (jquery, javascript, CSS code bundle here)
- Filterconfig checking the availability (ex:- In bank we check the user account before withdraw the money.)
- Routeconfig.cs :- It shows the route which controller will execute first → In that which view execute. (View is nothing but method)
- Webapi config.cs

* aspx - active server control extension

Steps to work with MVC :-

1. Install MSVS 2012 → go to Start → run → devenv → OK → File → New → Project → Select Language = Visual C#, Template = Asp.net MVC 4 Web application → ^{Empty} Click on Add.
2. Go to Solution Explorer



Global.asax :- This file consists of app level events.

This event will fire whenever the user will give the request for first time to access the website.

1. AuthConfig.cs :- It used to let users of this site log in using their accounts from other sites such as Microsoft, Facebook etc.
2. BundleConfig.cs :- This file consists of CSS & jquery code
3. FilterConfig.cs :- This file is used to write the validations before communicating with database.

4. RouteConfig.cs :- This file will show the route map that which controller will get executed and which view is returning. The default controller name & view name can set in 'RouteConfig.cs'.

go to Routeconfig.cs & see the below code.

```
controller = "Home", action = "Index"
```

It means that in HomeController we are executing "Index" page.

Q) webapiconfig.cs :- It is used to register the API's that are required for MVC.

Go to Solution Explorer RC on controller → Add controller → name = HomeController → Add

```
public class HomeController : Controller {  
    public ActionResult Index()  
    {  
        return View();  
    }  
}
```

• Keep the break point in HomeController and press F5.
In Routeconfig.cs we have set HomeController as default controller and index page as default view.

• but there is no index page i.e. not available so error will come
go to → HomeController.cs → RC on index → Add view → Name = index → Add goto → index.aspx → ; am index page press F5 and check the o/p.

Q) how to set the default controller and view?

go to RouteConfig.cs :-

```
controller = "controllerName", action = "viewName"  
or controller = "Home", action = "Index"
```

Q) how to invoke the controller dynamically?

Press F5 & check the o/p in the browser or type

<http://localhost:8715/controllerName/viewname>

`http://localhost:8715/HelloWorld/Index`
i.e; we are invoking index page in HelloWorld controller.
asp.net MVC offers us 4 options to maintain the data b/w
controller and view they are:

1. ViewBag
2. ViewData
3. TempData
4. Sessions

These 4 options helps us to maintain the data when we move from controller to view.

`ViewData` :- It is used to maintain the data in the form of Dictionary of objects that was derived from `ViewDataDictionary` class.

• It is used to maintain the data in the form of keys & string.

Syntax:-

```
ViewData["key"] = "value";
```

Note:- what is @ ?

@ in MVC is used to switch b/w c# code and HTML code.

Eg:-

Go to Solution Explorer → rc on controller → Add controller → Name = Homecontroller → Add

```
public class HomeController : Controller
{
    // GET : /Home/
    public ActionResult Index()
    {
        ViewData["name"] = "Satya Technologies";
        return View();
    }
}
```

rc on index → Add view → Name = index → Add goto → index.cshtml and write the code

```
@{
    ViewBag.Title = "index";
```

<h2> Index </h2>

<h1> welcome @ ViewData["name"] </h1>

③ Use ViewBag to store the list of colors in ViewData and display them in view.

Goto homeController.cs

```
public homeController : Controller
```

```
{
```

```
    public ActionResult index()
```

```
{
```

```
        List<string> colors = new List<string>();
```

```
        colors.add("Red");
```

```
        colors.add("blue");
```

```
        colors.add("green");
```

```
        colors.add("Yellow");
```

```
        ViewData["mycolors"] = colors;
```

```
        return View();
```

```
}
```

VC On index → add View name = "index" & write the following code in index.cshtml

```
@{ ViewBag.Title = "Index"; }
```

<h2> Index </h2>


```
    @foreach (string s in ViewData["mycolors"] as
```

```
        List<string>)
```

```
{
```

```
    <li> @ s </li>
```

```
}
```


drawbacks :- Type casting required in ViewData

④ ViewBag :- 1. ViewBag is a dynamic property that was used to maintain the data from controller to view by using a concept that was introduced in c# .net 4.0 i.e., Dynamic Properties

- ViewBag does not required type casting for complex datatype like ViewData

Syntax for the storing the value in ViewBag

`ViewBag.propertyName = Value;`

Eg:- Go to Homecontroller.cs and write the below code.

```
public class HomeController : Controller
{
    public ActionResult Index()
    {
        ViewBag.Name = "Satya Technologies";
        return View();
    }
}
```

Go to index.cshtml & write the code

```
@{ ViewBag.Title = "index"; } <h2> Index </h2>
<h2>@ ViewBag.Name </h2>
```

Write program to store the list of course names in ViewBag & display them in ordered list.

Go to homecontroller.cs & write the code

```
public class HomeController : Controller
{
    public ActionResult Index()
    {
        List<string> courses = new List<string>()
        {
            "C#",
            "C",
            "Asp.Net",
            "ADO.Net"
        };
        ViewBag.Course = courses;
    }
}
```

go to index.cshtml & write the code

```
@{ ViewBag.Title = "Index"; }  
<h2> Index </h2>  
<ol>  
@foreach (string s in ViewBag.Course)  
{  
    <li> @s </li>  
}  
</ol>
```

3. TempData :-

- ViewBag and ViewData will not maintain the data when we move from one action to another action.
- If we want to maintain the data b/w one action to another action we can go for TempData.

Syntax for storing the value in TempData.

```
TempData["variableName"] = value;
```

Go to Solution Explorer → right click on controller → Add controller → Name = Homecontroller.cs .

Homecontroller.cs :-

```
public class HomeController : Controller  
{  
    public ActionResult Sample()  
    {  
        TempData["Time"] = DateTime.Now;  
        return RedirectToAction("Sample");  
    }  
    public ActionResult Sample()  
    {  
        string s = TempData["Time"].ToString();  
        return View();  
    }  
}
```

```

rc on Sample → Add View
rc on sample1 → Add View
goto sample1.cshtml →
@{ ViewBag.Title = "Sample1"; }
<h2> Sample </h2>
<h1> @TempData["name"] </h1>

```

Session:-

- Session is a technique whr is used to maintain the data throughout the appn. i.e., controller to view / controller to controller.

Syntax:-

`Session["variable name"] = value;`

* properties are used to access the values & set the value of private data members of a class. /

* Method is used to change the values state of the value.

* Constructor is used to initialize the class members.

* By default members of a class is private (variable, method, properties..)

* internal scope is within the assembly (class default access specifier).

* public scope is outside the assembly also.

* properties are used to access the private variables from one class to another class.

* Using properties we can achieve 100% Data Abstraction.

* At the time of setting the value we can validate also.

Data Abstraction Ex is Properties.

```

class Employee
{
    int age;
    public int Age
    {

```

```

        set
        {
            if (age > 0)
                age = value;
            else
                age = 0;
        }
    }

```

```

        get
        {
            return age;
        }
    }
}

```

* when we use private variables & public properties in the class that class is called tightly encapsulated

can we declare properties in interface?

Yes, automatic properties.

Ex
class Employee

 {
 public int Age

 {

 set; get;

 }

class program

{

 p.s.v.m()

{

 Employee e = new Employee();

 e.Age = 20;

 e.wl(e.Age);

}

Q, abstract class A

{

 abstract sample();
 abstract s1();
 abstract s2();
 abstract s3();

}

Abstract class B : A

{

 sample()

{

 s1()

{

}

here error will come because s2 & s3 methods will not implemented so this class has become abstract, so we declare

class B as abstract, then error will not come.

class C: B

{

S₀ S₂
 {
 }

// Concrete class

S₃
 {
 }

{
 }

We have concrete class & interface using this we can achieve abstract class features. Then why will we go for abstract class?

Abstract class :- we can't create obj for abstract class.

But single reference we can create multiple objects.

But at a time only one object is active. Remaining one unsubscribe / deactivate.

Ex:-

abstract class A

{

{

A a₁ = new b();

a₁ = new c();

a₁ = new d();

here b, c & d are concrete classes.

Namespace :- we can access the outside the assembly / appn.

Model :-

Model is the class where we will do write the database code / business logic.

*

Ex) wap to display the employee details in table tags?

goto Solution Explorer → rc → Models → Add class.

Name = "Employee.cs" → Add.

Employee.cs under Model

namespace MvcApplication1.Models

{

public class Employee

{

public int EmployeeId { set, get }

public string EmployeeName { set, get }

public string Gender { set, get }

public string Design { set, get }

}

goto Solution Explorer → rc on controller → Add controller Name = HomeController → Add

Using MvcApplication1.Models;

public class HomeController : Controller

{

public ActionResult Index()

{

Employee e1 = new Employee()

{

EmployeeId = 101,

EmployeeName = "Srujan",

{

EmployeeGender = "Female",

Design = "Dev".

}

return View(e1);

}

rc on → Index → Add view → Name = Index Create a Strongly Typed
view select Employee Mvc1.Models Add.

Build → Build Solution.

go to → Index.cshtml and write the code

```
@model MVCApplication3.Models.Employee
```

```
@{ ViewBag.Title = "Index"; }
```

```
<h2>Index </h2>
```

```
<table> <tr> <td> EmployeeId </td>
```

```
    <td> @Model.EmployeeId </td> </tr>
```

```
    <tr> <td> EmployeeName </td>
```

```
        <td> @Model.EmployeeName </td> </tr>
```

```
    <tr> <td> Gender </td>
```

```
        <td> @Model.Gender </td> </tr>
```

```
    <tr> <td> designation </td>
```

```
        <td> @Model.Designation </td> </tr>
```

```
</table>
```

Press F5 check the o/p.

HTML Helper classes in MVC:-

1. By using helper classes of html we can reduce the amount the Html code that we have to write inside the view.
2. Views should be as simple as possible.
3. By using Html Helper classes we can easily integrated C# .net code to HTML.

Syntax for controls in HTML Helper classes

```
Form :- @using(Html.BeginForm("ViewName", "ControllerName",  
    "MethodName")) { } 
```

The relevant Html code is,

```
<form name="form1" action="Home/Success"  
method="post">  
</form>
```

Label :- @Html.Label("controlId")

TextBox :- @Html.TextBox("controlId")

```
Ex @Html.TextBox("txtuname");
```

```
(8) @Html.TextBox("controlId", "value", new { type })
```

Ex:

```
@html.TextBox("txtPwd", "", new { type = "password" })
```

Syntax for check Box

```
@ html:: checkBox ("controlId", true/false)
```

If true by checkBox checked property will be true.

Syntax for RadioButton

```
@html.RadioButton("controlid")
```

```
ex @ htm.RadioButton("Rdi", "gender") <space> Male <space>  
      " " " " <space> female <space>
```

Male Female

Syntax for Submit Button

```
@Html.TextBox("clickme", "submit", new { type = "submit" })
```

→ Developing a Registration page using HTML Helper classes in MVC.

goto → Solution Explorer → controllers → Add controller → Name =
HomeController → Add

public class Homecontroller : controller

```
{ public ActionResult Index()
```

```
{ return view();
```

3 1 2 3 -6?

10

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Ifc on Index → Add new

fly rc on success → Add view

• goto → Index.cshtml and write the following code

```

@{ viewBag.Title = "Index"; }

<h2> Index </h2>

<html> <body> <div>

@using (Html.BeginForm ("Success", "Home", FormMethod.Post))
{
    <table>
        <tr> <td> @Html.Label("Enter UserName") </td>
            <td> @Html.TextBox("txtuname") </td> </tr>
        <tr> <td> @Html.Label("Enter Password") </td>
            <td> @Html.Password("txtpwd") </td> </tr>
        <tr> <td> @Html.Label("Select course") </td>
            <td> @Html.CheckBox("chk1", true) <span>c </span>
            <td> @Html.CheckBox("chk1") <span>C# .NET </span>
        <tr> <td> @Html.RadioButton("gender", "M") <span> Male </span>
            <td> @Html.RadioButton("gender", "F") <span> Female </span>
        <tr> <td> UPLOAD PROFILE </td>
            <td> @Html.TextBox("RESUME", "", new { type = "file" })
        </td> </tr>
        <tr> <td> @Html.TextBox("Submit", "Submit", new
            { type = "submit" })
            <td>
                </td>
            </tr>
    </table>
}

```

=> working with dropdownlistcontrol :-

Syn :-

```
@Html.DropDownList("controlId", new SelectList(modelObject, id, value))
```

↓ ↓
properties

Goto → Solution Explorer → Models → Models → rc on Model → Add
 class → name = Student.cs → Add

```
namespace MVCApplication2.Models
{
    public class Student
    {
        public int Id { get; set; }
        public string Name { get; set; } }
}
```

Go to HomeController.cs & write the code.

```
public class HomeController : Controller
{
    public ActionResult Index()
    {
        return View();
    }
}
```

Add index.cshtml page select

```
@ Model MVCApplication2.Models.Student
@ { ViewBag.Title = "Index";
List <MVCApplication2.Models.Student> q1 = new
List <MVCApplication2.Models.Student>();
q1.Add(new MVCApplication2.Models.Student()
{
    Id = 1, Name = "Btech" });
q1.Add(new MVCApplication2.Models.Student()
{
    Id = 1, Name = "BE" });
<h2> Index </h2>
@ Html.DropDownList("qualification", new SelectList
(q1, "Id", "Name")) .
```

I.Q → Validating the variables then we can go for properties.

```
private int marks;
public int Marks
{
    if (marks > 0 && marks < 100)
    {
        set marks = value;
    }
    else
    {
    }
}
```

} return marks;

Automatic property :- There is no validating the variables then we can declare automatic properties.

ORM TOOLS :- Object Relation Models Mapping.

Every obj we have state (variables), identity (reference name) behaviour (methods)

① what is ORM Tool?

ORM :- here mapping means the variables which are having in the class ^{object} that are matched with the database table columns.

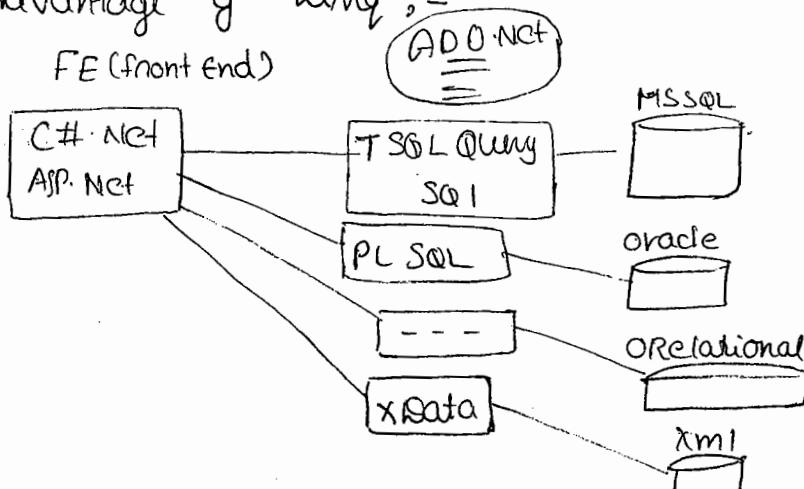
② what is Linq?

Linq is a ORM tool that are used in .Net. It is advanced of ADO.NET.

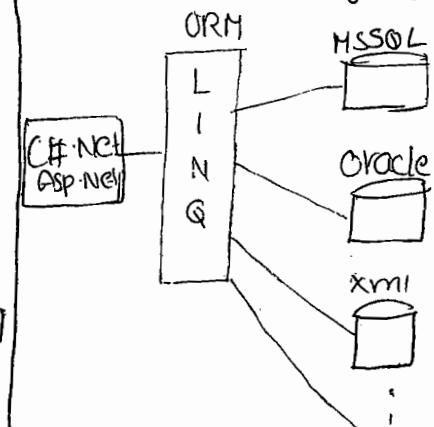
The variable which are having in the object these are mapping with database columns is called as ORM.

Advantage of Linq :-

FE (front end)



dbML database Markup language.



- LINQ can communicate with any database
- This is third party tool.
- First the linq is communicating the dB next time onwards we will use the object.
- dbase errors throw in compile time only. (PK constraint errors)
in the form of
- * By using linq we can pass the data objects instead of plain text.

LINQ (Language in Integrated Query).

Showbacks of ADO.NET ?

ADO.NET is database object Model. whi is used to ^{create the} communi-
cation b/w Frontend appn & Backend appn.

In ADO.net we have to open the connection & close the
conn explicitly. Until unless user closes the connection
the connection to the database was maintained generally
in Realtime we have to open the connection in try block
& close the connection in finally block.

At the time of executing the program if any exception
occurs in try block, catch block will handle the exception
& Finally block will close the connection so as a programmer
we must close the connection, if the programmer is not
closing the connection then the N/w traffic will be increased
& the burden on the server will be increased & the
performance will be decreased but ADO.net is not
responsible to close the connection.

II. In ADO.NET we need to write SQL commands in various
places. After developing the program of the table structure
was modified then ADO.NET program does not work, so again
we have to modify compile & redeploy the appn which
is tedious.

III ADO.NET will generate database related error codes ~~as~~
are in front end & it is difficult for the front end
developer to identify / understand the error.

IV. In Enterprise appn development the data flow
with in an appn from class to class will be in the
form of objects but in ADO.NET the data transfer will
be in the form of plain text. i.e; ADO.NET does not
transfer objects directly. ADO.NET code is database dependent
if any changes in the db will become complex & will
disturb business logic.

To overcome these problems we have to go for Object
Relation Mapping. (ORM)

ORM :- (Object Relation Mapping) :-

1. It is a process of mapping C# .Net class with database Table i.e., Mapping the C# .Net instance variables with database Table columns.

Different Types of ORM Tools in .Net are:-

1. ADO .Net entity Framework which was included from .net 3.5 and above version.
2. LINQ (Language Integrated Query 3.5)
3. NHibernate
4. Database objects .net } These are open source.

Advantages of ORM :-

1. We can easily provide CRUD (Create, Retrieve, Update, Delete) operations.
2. Easily maintain one to one, 1-many, many-many relationships.
3. By using ORM we can easily replace the database so change of database from a running project becomes easy.
4. ORM can connect to any database.

* LINQ is a uniform programming model for any kind of data access. LINQ is the ORM tool that was given to transfer data between C# (object) and a database in the form of objects.

LINQ will interact with different datasources / databases.

Before working with LINQ we have to understand 3 concepts to write LINQ query.

1. Anonymous Types
 2. Object initializer
 3. Collection initializer.
1. Anonymous Types:-

1. Anonymous types must be defined with var keyword.
2. Anonymous types are also called as implicitly typed local variables.
3. The datatype of the anonymous type will be decided by the compiler at compile time.
4. Anonymous type was introduced from .net 3.0 & above.

Q) can we declare anonymous type as global variable?

No, Anonymous type must declare as local variable.

class A

{

Var x = 10;

void show()

{

}

(X)

Q) can we declare Anonymous type as local variable?

yes

class A

{

void show()

{

Var x = 10;

}

(✓)

}

Q) Is it mandatory to initialize the value for the anonymous type.

yes

class A

{

void show()

{

Var x;

}

(X)

}

Q) can we declare multiple variables in anonymous Type:

No.

Var a, b, c; (X)

- If you assign as int, b as string & c as float the compiler can not understand the datatype.
- Implicitly typed - local variables can't have multiple declarations.

class program

{

Static void main()

{

```

    {
        van a = 10;
        van b = "satya";
        van c = 2.3f;
        con. WL(a);
        con. WL(b);
        con. WL(c);
        con. RL();
    }

```



```
class program
```

```

    {
        s. v. main()
        {
            int [] A = new int[4] { 10, 20, 30, 40 };
            foreach (van i in A)
            {
                con. WL(i);
            }
            con. RL();
        }
    }

```

Object Initializers:-

- It is used to assign the values through any accessible field / properties of an object at creation time with out calling the constructor.
- Object initializers can be used especially for writing long query expressions.
- Query expressions will frequently use anonymous types which can be initialized by using object initializer.

~~Ex:-~~ class Employee

```

    {
        public int Eno { get; set; }
        public string Ename { get; set; }
    }

```

```
class program
```

```

    {
        sm void main()
        {
            Employee e = new Employee { 1, "Rama" };
        }
    }

```

```

Con. WL (cl. Eno);
Con. WL (cl. Ename);
Con. RLC();
}

```

101)

Employee e = new Employee { Eno = 101, ename = "Rama" }

=> Collection Initialization -

- It is used to initialize multiple object values at once.
- Generally collection initializers are created by using list collection.
- ListCollection is a class that is inherited from IEnummable interface.

Class Student

```

public int stno { set; get; }
public String Stname { set; get; }
}

```

class program

```

P. S. V. main (String args[])
{

```

List <Student> li = new List <Student>()

new Student { Stno = 101, Stname = "Rama" },

new Student { Stno = 102, Stname = "Sita" },

new Student { Stno = 103, Stname = "Hanuma" }

}

foreach (var i in li)

{

Con. WL (i. stno);

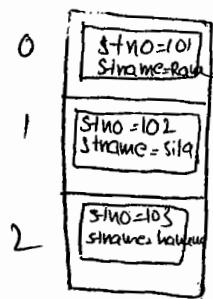
Con. WL (i. Stname);

Con. RLC();

}

}

Li



Li(0). stno = 101
Li(0). Stname = Rama
Li(1). Stname = 102

→ Working with linq Queries:-
Linq query is divided into 3 parts:

1. From clause
2. Where condition
3. Select command

Syntax :-

var	variable =	From	item	in	collection
		Where	condition		
		Select	item		

Ex:-1 print even no's;

Using System.Linq;

using System.Collections.Generic;

Class Program

{
 p. s. v. main(string args[])

{

List<int> li = new List<int> { 2, 4, 3, 5, 6, 7, 8 };

Var nes = From x in li Where x % 2 == 0 Select x;

foreach (var i in nes)

O/P

{

Con.WL(i);

2
4

}

Con.RL();

6
8

}

}

Ex:-2 print oval deHens.

Using System.Linq;

using System.Collections.Generic;

Class program

{
 s. v. main()

{

Var nes = F.

```
List<char> l1 = new List<char> { 'a', 'e', 'i', 'o', 'u',  
                                'k', 'l' };
```

```
Var Vowel = From letter in l1 where letter == 'a' ||  
            letter == 'e' || letter == 'i' || letter == 'o' || letter == 'u'  
            select letter;
```

```
Foreach (Var c in vowel)
```

```
{  
    Con. WL(c);  
}
```

```
Con. RL();
```

```
}
```

```
3  
3
```

Delegate:- A delegate is a type safe function pointer which is used to store the information of method.

Steps to work with delegate:-

1. Create a delegate

```
<A.M> delegate return type delegateName();
```

2. Create a method for the delegate

3. Create an obj for the delegate & store the method name in delegate object.

```
delegateName objname = new delegateName (MethodName)
```

4. call the delegate obj

```
objectname();
```

Ex: Using System;

```
namespace ConsoleApplication
```

```
{  
    // Create a delegate
```

```
public delegate void MyDelegate (int n, int y);
```

```
class Program
```

```
{
```

```

// Create a method for a delegate
public static void Add(int x, int y)
{
    con. WL(x+y);
}

public static void mul (int x, int y)
{
    con. WL(x*y);
}

public static void sub (int x, int y)
{
    con. WL(x-y);
}

public static void div (int x, int y)
{
    con. WL(x/y);
}

static void main()
{
}

```

// Create an ob; for delegate & assign the method info
in delegate object.

```

Mydelegate mc = new Mydelegate(Add);
mc += new Mydelegate(Sub);
mc += new Mydelegate(Mul);
mc += new Mydelegate(Div);

con. RL();
}

```

Invoking the delegate by using "Invoke()": -

// Create a delegate

```
public delegate void Mydelegate(int x, int y);
```

class Program

// Create a method for delegate

```
public static void add (int x, int y);
```

```
{
    con. WL(x+y);
}
```

```
Static void main()
{
    Mydelegate obj = Add;
    obj.invoke(10, 20);
    con.RL();
}
```

O/P = 30

Anonymous Methods:-

1. Anonymous Method is a method whi is code inline.
2. Anonymous Method is nameless method which was introduced with .Net 3.0 & above.
3. A method where a block of code was written inside the function & then we can point the delegate to the block the code Anonymous method will help us to avoid overhead of creating for simple lines of code & to increase the performance.

Example for Anonymous Method:-

// Create a delegate

```
public delegate void Mydelegate(int x, int y)
```

class program

```
{
    static void Main()
```

{

```
    Mydelegate Mc = delegate (int x, int y)
```

{

```
    con.WL(x+y);
```

}

```
    Obj.invoke(10, 20);
```

O/P: 30

```
    con.RL();
```

}

Ex:-

```
public delegate void Mydelegate(int x, int y)
```

class program

{

```

void main()
{
    Mydelegate obj = delegate (int x, int y)
    {
        return (x+y);
    };
    Con WL( obj. invoke(10, 20));
    Con RL();
}

```

O/P
30

Ex:3

πr^2
3.14, r*r;

```

class double
// delegate void Mydelegate (int x
{
    public delegate double calculateArea (int x);
    class program
    {
        static pi = 3.14;
        calculateArea obj = delegate (int x)
        {
            return (pi * x * x);
        };
        Con WL( obj. invoke (2));
        Con RL();
    }
}

```

O/P: 12.56

Lambda Expressions:-

1. By using lambda Expressions we can made the code simpler.
2. LINQ is always associated with lambda Expressions.
3. Lambda Expressions are introduced from .NET 3.5 to consider the concept of Anonymous method.

Syntax:-

VariableName \Rightarrow logic
↑ if parameter

```

// create delegate
public delegate int Mydelegate (int value);
class program
{
    s. v. main()
    {
        Mydelegate obj = value => value + 2;
        console.wL( obj.invoke(2) );
        con.RL();
    }
}

```

O/P.
4

Observation:- The meaning of $\text{value} \Rightarrow \text{value} + 2$ is just similar to declare a method. the first value indicates the arguments that we pass in a method & the one after the \Rightarrow operator is the body of the method i.e if we want we can pass as many arguments as we can for method.

Ex:2

```

// create delegate
public delegate int Mydelegate (int x, int y);
class program
{
    p. s. void main()
    {
        Mydelegate obj = (value1, value2) => value1 + value2;
        con.wL( obj.invoke( 10, 20 ) );
        con.RL();
    }
}

```

Ques to write whether the given no. is even no or not?
 $\text{public delegate string Mydelegate (int n);}$

```

class program
{
}

```

p.s.v. main()

{

```
Mydelegate obj = {value1} => value1 % 2 == 0 int i = obj.  
                           invoke();  
if (value1 == 0)  
{  
    console.wL ("Even no");  
}  
else  
{  
    con.wL ("odd");  
}  
con.RL();
```

}

LINQ to SQL

1. goto → SQL server mgmt studio → create a DB with name emp → create a table with emp, with columns eno(PK), ename, gender, city.
2. Goto → start → run → denenv → OK
file → new → project → select windows forms appn → add.
3. Goto → project → Add windows forms → select linq to sql class template → Name = Employee.dbml → add.
4. Goto → server Explorer → RC on dataconnections → add connections → Name = Servername → select sql server authentication & give username & password → select the DB = emp → Test connection → OK → OK.
5. open emp DB in server explorer → Drag & drop emp table in employee.dbml.

Observation:- Here if you observe the table name will become as class name & the column names will become as properties.
→ goto → form1.cs → [Design]

Enter eno	<input type="text"/>
Enter ename	<input type="text"/>
Enter gender	<input type="text"/>
Enter city	<input type="text"/>
<input type="button" value="Insert"/>	

→ double click on Insert button & write the code -

```
private void button1_Click()
{
    using (EmployeeDataContext db = new EmployeeDataContext())
    {
        Emp e1 = new emp();
        e1.empno = int.Parse(textBox1.Text);
        e1.Ename = textBox2.Text;
        e1.Gender = textBox3.Text;
        e1.City = textBox4.Text;
        db.Emps.InsertOnSubmit(e1);
        db.SubmitChanges();
    }
}
```

Note:- Employee Data context class is used to call the connection string.

Design

Enter Empid	<input type="text"/>
<input type="button" value="Display"/>	
Ename	<input type="text"/>
Gender	<input type="text"/>
City	<input type="text"/>
<input type="button" value="Update"/>	

Requirements:- whenever user enters empno in textbox & click on Display button then display ename, gender, city in textboxes.

→ when user clicks on update button then update the keywords records to the database?

Windows Communication Foundation (WCF)

WCF :-

1. With .Net 3.0 Microsoft has introduced foundation technology concepts like WCF, WPF and so on.
2. WCF is an advanced webservice technology in .Net.
3. Using WCF we can develop advanced webservice.
4. Dot Net Technology will support two types of webservices.
 - .aspx webservices (Traditional)
 - WCF (Advanced) → Releas'd with .Net 3.0.

How to create a WCF webservice ?

1. Open Visual Studio .Net → New project → select language as visual C# → application type as WCF service application → Rename it as "My WCF Service App" → click OK.

WCF service application Development Environment will come with

- 3 important files :-
1. IService1.cs → Interface File
 2. Service1.svc → Service File
 3. Service1.svc.cs → Class File

IService1.cs :- This file is coming with one interface structure of IService1.cs file

[ServiceContract]
interface IService1
{
 // here we have to declare members
}

Service1.svc.cs :- This file is coming with one class i.e., Service1 which is the derived class of IService1 interface like below.

Structure of Service1.svc.cs file :-

class Service1 : ^{derived class} IService1 {
}

Here we have to implement the IService1 interface members.

Creating or developing WCF service can be divided into two steps : 1. designing

1. According the requirement declaring the members with in IService1 Interface.
2. Implementing the IService1 interface members with in the IService1 interface derived class i.e., Service1.

What is the root namespace / root base class library for WCF programming?
System.ServiceModel

Implementation of WCF service can be divided into 4 steps:

1. Creating a WCF service according to the requirement.
 2. Creating client application.
 3. Adding WCF service reference to client application.
 4. Consuming WCF service from client application.
- A WCF service can be consumed by multiple client applns.
 - That client appln can be windows application / web appln / any type of appln.
 - As well as a WCF service can be consumed by any technology developed client i.e., a WCF service can be consumed by .Net client appln as well as Java client appln and vice versa - it is nothing but "interoperability".

Example to implement WCF service in step by step process.

Step:- Creating WCF service

Open Visual Studio .NET → Select language as C# -type of application

Step :-

Write the below code with in IService1.cs.

namespace MyWCFService
{

[ServiceContract]

public interface

{

[OperationContract]

int add (int a, int b);

[OperationContract]

int sub (int a, int b);

Step:- write the below code with in service1.svc.cs

```
namespace MyWCFService
{
    class Service1 : IService1
    {
        // implement interface members
        public int add(int a, int b)
        {
            return a+b;
        }

        public int sub(int a, int b)
        {
            return a-b;
        }
    }
}
```

build solution. With this process one WCF service will be created

Step 2:- Creating client

1. Open asp.net web application rename it as WCF Client.
2. Design WebForm1.aspx like below.

The form contains the following elements:

- Enter First Number:
- Enter Second Number:
- ADD button:
- SUB button:
- Result:

Step 3:- adding wcf service reference to client application.

- Open Solution Explorer of WCF Client, Select WCF project name of WCF Client → Right click → Add Service Reference → It will open Add Service Reference window. here we have to go back to my-WCF service application → add we have to run the MyWCFservice application in this it will open WCF Test Client window → here copy the URL of the WCF service → And return back to WCF Client and paste that URL with in the Addressbox of

then click go and ok button.

- With this process WCF Service reference will add to the WCF client solution explorer that reference name is ServiceReference1.

Step 4:- Consuming the WCF service from WCF client.

→ write the below code within webForm1.aspx.cs.

```
namespace WCFClient
{
    class webForm1
    {
        // Web service proxy class
        serviceReference1.Service1Client objservice = new serviceReference1.ServiceReference1.Service1Client();
        void btnAdd_Click()
        {
            int x = int.Parse(txtNum1.Text);
            int y = int.Parse(txtNum2.Text);
            int res = objservice.add(x, y);
            txRes.Text = res.ToString();
        }
        void btnSub_Click()
        {
            int x = int.Parse(txtNum1.Text);
            int y = int.Parse(txtNum2.Text);
            int res = objservice.Subsub(x, y);
            txRes.Text = res.ToString();
        }
    }
}
```

Q.2 write a program to define 3 methods within the WCF service class. They are: ~~String~~ findPrimeNo(int num1);

- ② string findEvenNum(int num1);
- ③ string findOddNum(int num1);

Consume above WCF service with the following types of client application
a) asp.net webappl'n
b) windows forms appl'n
c) console appl'n

Ex-2 Implement a WCF service to insert the user details into database and fetch the Retrievr fetch the userdetails from database.

Step1:- Design userslist table with in the sqlserver like below

UserName	password	country	EmailId

Step1:- Creating WCF Service.

Open WCF service appn and rename it as "WCF UsersListService".

Write the below code with in IService1.cs

using System.Data
namespace WCFUsersListService

{

[ServiceContract]

public interface IService1

{

[OperationContract]

dataset SelectUsersList();

[OperationContract]

string InsertUsersList(UserDetails userInfo);

}

[DataContract]

public class UserDetails

{

public string Username, Password, Country, EmailId;

[DataMember]
public string PUsername

{

get

{

return Username;

}

set

{

Username = value;

}

}

```
public string Ppassword
```

```
{
```

```
get
```

```
{
```

```
return password;
```

```
}
```

```
set
```

```
{
```

```
password = value;
```

```
}
```

```
} [DataMember]
```

```
public string Pcountry
```

```
{
```

```
get
```

```
{
```

```
return country;
```

```
}
```

```
set
```

```
{
```

```
country = value;
```

```
}
```

```
} [DataMember]
```

```
public string PemailID
```

```
{
```

```
get
```

```
{
```

```
return emailid;
```

```
}
```

```
set
```

```
{
```

```
emailid = value;
```

```
}
```

```
}
```

```
}
```

```
[OperationContract ContractName = "IUserManagement"]
```

```
string InsertUser(string (UserDetails userinfo);
```

while the below code with Service1.svc.cs

```
namespace Service1 : IService1
{
    //implementing interface members
    public dataset SelectUserList()
    {
        SqlConnection conn = new SqlConnection("UserId=sa; Pwd=abc;
                                                Server=.; Database=company;");
        public dataset SelectUserList()
        {
            SqlCommand cmd = new SqlCommand("Select * from UsersList",
                                            conn);
            SqlDataAdapter da = new SqlDataAdapter(cmd);
            SqlDataAdapter ds = new dataset();
            da.Fill(ds, "UsersListNew");
            return ds;
        }

        public string UserList(UserDetails userinfo)
        {
            SqlCommand cmd = new SqlCommand("Insert into UsersList
                                                values (@uid, @pwd, @country, @mailid)", conn);
            cmd.Parameters.AddWithValue("@uid", userinfo.Pusername);
            cmd.Parameters.AddWithValue("@pwd", userinfo.Ppassword);
            cmd.Parameters.AddWithValue("@country", userinfo.Pcountry);
            cmd.Parameters.AddWithValue("@mailid", userinfo.Pmailid);
            conn.Open();
            int i = cmd.ExecuteNonQuery();
            conn.Close();
            if (i == 1)
            {
                return "Record is inserted";
            }
            else
            {
                return "Record is not inserted";
            }
        }
}
```

3
3

Build solution.

Step 2:- Creating client application

Open asp.net web appln rename it as UserListClient
Design webform1.aspx like below

Username
password
Country
Email ID

GridUsers

Step 3:- Adding the WCF Service to Client appln

Step 4:- Consuming the WCF app service to Client appln.

Write the below code with in webform1.cs.

```
using System.Data;  
namespace UserListClient
```

```
{  
    public class Webform1  
    {  
        serviceReference1.Service1Client obj = new serviceReference1.  
        serviceClient();  
        public void getdata()  
        {  
        }  
    }
```

```
serviceReference1.UserDetails objUser = new serviceReference1.  
UserDetails();
```

```

public void getdata()
{
    dataset ds = new dataset();
    ds = objser.SelectUsersList();
    GridUsersens.DataSource = ds;
    GridUsersens.DataBind();
}

public void page_Load()
{
    getdata();
}

void btnInsert_Click(-, -)
{
    objUseren.pusername = txtuid.Text;
    objUseren.ppassword = txtpwd.Text;
    objUseren.Pcountry = txtCountry.Text;
    objUseren.PemailId = txtMailId.Text;

    iblInsert.Text = objser.InsertUsersList(objUseren);
    getdata();
}

```

w.a. WCF Service to define following functionalities.

1. Deleting employee record.
2. Updating employee salary.

Design "emp" table like below.

empno	empName	sal
1	ram	1000
2	Satya	2000

Step1: Creating WCF Service :-

Open a WCF Service application rename it as "emp service".

- write the below code with in IService1.cs

Using System.Data

```
namespace empService
{
    [ServiceContract]
    public interface IService1
    {
        [OperationContract]
        int DelRec( empDetails obj );
        [OperationContract]
        updateRec( empDetails obj );
        updateRec( empDetails obj );
    } // interface
    [DataContract] // user defined class
    public class EmpDetails
    {
        public int empno, sal;
        [DataMember]
        public int pempno
        {
            get
            {
                return empno;
            }
            set
            {
                empno = value;
            }
        }
    }
}
```

[DataMember]

public int psal

{

get

{

return sal;

}

set

{

sal = value;

}

}

} // class.

=> write the below code with in Service1.svc.cs.

using System.sqlclient;

namespace empservice

interface

{

public class Service1 : IService1

{

// implement interface Members.

sqlconnection conn = new sqlconnection("server = .; database = company;
uid = sa; pwd = abc;");

public int DeleteRec(Empdetails obj)

{

sqlcommand cmd = new sqlcommand("Delete emp where
Empno = @empid", conn);

cmd.parameters.addwithvalue("@empid", obj.empno);

conn.open();

int i = cmd.executeNonQuery();

conn.close();

return i;

}

public int updateRec(Empdetails obj)

{

sqlcommand cmd = new sqlcommand("Update emp set
empsal = @sal where empid = @empid", conn);

```

cmd.Parameters.AddWithValue("@csal", obj.psal);
cmd.Parameters.AddWithValue("@empid", obj.pempno);
conn.Open();
int i = cmd.ExecuteNonQuery();
conn.Close();
return i;
}
}

```

3 // namespace

Build Solution

Step 2:- Creating Client application

1. Open asp.net web application rename it as empclient.
2. Design webform1.aspx like below.

Employee NO	<input id="txteno" type="text"/>
Employee salary	<input id="txtnewsal" type="text"/>
<input type="button" value="Update"/> btnupdate	<input type="button" value="Delete"/> btndelete
lblMsg	

Step 3: add empservice reference to emp client.

Step 4: consuming empservice from empclient.

namespace Empclient

Write below code with in webform1.aspx.cs

namespace empclient;

class webform

// here we have to create the objects for service client and derived classes (implementation class)

Service Reference1. ServiceClient objsen = new ServiceReference1.
ServiceClient();

Service Reference1. EmpDetails objemp = new ServiceReference1.
EmpDetails();

```

void btnDelete_Click()
{
    objemp. pempno = int.parse(txtENO.Text);
    int i = objsen.DeleteRec(objEmp);
    if (i == 1)
    {
        lblMsg.Text = "Record is deleted";
    }
    else
    {
        lblMsg.Text = "Record is not deleted";
    }
    txtENO.Text = "";
    txtENO.Focus();
}

void btnUpdate_Click()
{
    objemp.pempno = int.parse(txtENO.Text);
    objemp.psal = int.parse(txtnewsal.Text);
    int i = objsen.UpdateRec(objemp);
    if (i == 1)
    {
        lblMsg.Text = "Record is updated";
    }
    else
    {
        lblMsg.Text = "Record is not updated";
    }
    txtENO.Text = "";
    txtnewsal.Text = "";
    txtENO.Focus();
}

```

Q Create a WCF Service to implement following service functionalities

1. Retrieving the cus. table data.
 2. Inserting customer information into customer table.
 3. Deleting customer record from the customer table.
 4. Updating the customer location.
- The customer table will have 3 columns like below:
- | | | |
|--------|-----------|---------------|
| custid | cust-name | cust-location |
|--------|-----------|---------------|

① Consume the above WCF service from window appin client ② From one webapplication client.

Create a WCF Service to insert the image into the database to retrieve the image from the database.

1. Design "empnew" table like below

Emp No	EmpName	photopath
		→ varchar

Step 1 :- Creating WCF Service.

1. Open a WCF Service application and Rename it as "WCF-Image-Service"
2. Write the below code with in IService1.cs

Using System.Data;
namespace WCFImageService
{

[ServiceContract]

public interface IService1

{

[OperationContract]

DataSet GetEmp();

[OperationContract]

int InsertEmp(EmpDetails obj);

} // interface

[DataContract]

```
public class Empdetails
{
    int eno;
    string ename, path;
```

[DataMember]

```
public int peno
```

```
{
```

```
get
```

```
{
```

```
return eno;
```

```
}
```

```
set
```

```
{
```

```
eno = value;
```

```
}
```

```
}
```

[DataMember]

```
public string pename
```

```
{
```

```
get
```

```
{
```

```
return ename;
```

```
}
```

```
set
```

```
{
```

```
ename = value;
```

```
}
```

```
}
```

[DataMember]

```
public string ppath
```

```
{
```

```
get
```

```
{
```

```
return path;
```

```
}
```

```
set
```

```
{
```

```
path = value;
```

```
}
```

```
}
```

} // class.

Unit the below code with in Service1.svc.cs.

```
using System.Data;
using System.Data.SqlClient;
namespace WCFImageService
{
    public class Service1 : IService1
    {
        SqlConnection conn = new SqlConnection("server=.; database=Company;
                                                uid=sa; pwd=abc");
        public DataSet getEmp()
        {
            SqlCommand cmd = new SqlCommand("select * from emp", conn);
            SqlDataAdapter da = new SqlDataAdapter(cmd);
            DataSet ds = new DataSet();
            da.Fill(ds);
            return ds;
        }
        public int InsertEmp(Empdetails ob)
        {
            SqlCommand cmd = new SqlCommand("insert into
                Empnew( @eno, @ename , @path )", conn);
            cmd.Parameters.AddWithValue("@eno", ob.eno);
            cmd.Parameters.AddWithValue("@ename", ob.ename);
            cmd.Parameters.AddWithValue("@path", ob.path);
            conn.open();
            int i = cmd.ExecuteNonQuery();
            conn.Close();
            return i;
        }
    }
}
```

Step 2:- Creating client application.

1. Open asp.net web app'n rename it as "WCFImageclient".
2. Design webform1.aspx like below.

Emp NO	<input style="width: 100px; height: 20px; border: 1px solid black; border-radius: 5px;" type="text" value=""/>	txteno
Emp Name	<input style="width: 100px; height: 20px; border: 1px solid black; border-radius: 5px;" type="text" value=""/>	txtname
Image	<input style="width: 100px; height: 20px; border: 1px solid black; border-radius: 5px;" type="text" value=""/>	<input style="border: 1px solid black; border-radius: 5px;" type="button" value="Browse"/> Fileupload1
<input style="border: 1px solid black; border-radius: 5px; width: 100px; height: 30px; font-size: 10px; margin-left: 10px;" type="button" value="SUBMIT"/>		

[lblMsg]

Employee NO	Employee Name	Photo
		
		

To get the above gridview we have to write the below code with in webform1.aspx.

```
<asp:GridView Id="GridEmp" AutoGenerateColumns=False  
    runat="server">  
    <Columns>  
        <asp:TemplateField HeaderText="Employee NO">  
            <ItemTemplate>  
                <%# Eval("EmpNO") %>  
            </ItemTemplate>  
        </asp:TemplateField>  
        <asp:TemplateField HeaderText="Employee Name">  
            <ItemTemplate>  
                <%# Eval("EmpName") %>  
            </ItemTemplate>  
        </asp:TemplateField>  
        <asp:TemplateField HeaderText="photo">  
            <ItemTemplate>
```

```

<asp: Image id="Image" runat="server"
    ImageUrl = "<% # Eval("photopath") %>" />
    ^ column name of the Empnew
    table
</ItemTemplate>
</asp: Template>
</columns>
</asp: GridView>

```

Step 3:- Adding WCF-Image Service reference to WCF Image client.

Step 4:- Consuming WCF Image Service from WCF Image Client.

Note:- Open WCF Image Client Solution Explorer Create a new folder rename it as photos.

- Write the below code with in webform1.aspx.cs.

using System.Data

namespace WCFImageClient

{

public class WebForm1

{

ServiceReference1.ServiceClient ob^{sen} = new ServiceReference1.
ServiceClient;

ServiceReference1.Empdetails ob^{emp} = new ServiceReference1.
Empdetails;

public void Getdata()

{

dataset ds = new dataset()

ds = ob^{sen}.Getemp()

gridEmp.DataSource = ds;

gridEmp.DataBind();

}

page_Load()

{ Getdata();

}

```

void btnSubmit_Click()
{
    Objemp.empno = int.Parse(txteno.Text);
    Objemp.empname = int txtename.Text;
    String fname = Fileupload1.Filename;
    Fileupload1.PostedFile.SaveAs(MapPath("~/photos/" + fname));
    Objemp.empPath = "~/photos/" + fname; foldername
    int obssen.InsertEmp(ObjEmp); variable which contains the filename.
    path of the image
    if (i == 1)
    {
        lblMsg.Text = "Record is inserted";
    }
    else
    {
        lblMsg.Text = "Record is not inserted";
    }
    getAcc();
}
}
}

```

H.W Implement the above service instead of storing the images in folder. Storing the path of the image into database store the image directly into database.

H.W develop an asp.net webpage with following functionalities

1. It allows the user to record video.
2. It allows provides to user video playing.
3. It allows the user audio recording.
4. It allows the user it should play audio file.

~~⇒ W.A. WCF Service to define a sending email.~~

Step 1:- creating WCF Service.

1. open WCF Service application rename it as Email Service
2. write the below code with in IService1.cs,

Namespace EmailService

[ServiceContract]

public interface IService

{

[OperationContract]

string Send Mail (Data d);

 ^
 Userdefined class

}

[DataContract]

public class Data

{

string FromAddress, ToAddress, Subject, matter, password;

[DataMember]

public string PFromAddress

{

get

{

 return FromAddress;

}

set

{

 FromAddress = value;

}

}

[DataMember]

public string PToAddress

{

get

{

 return ToAddress;

}

set

{

 ToAddress = value;

}

}

[DataMember]

public string PSubject

{

get

{

return subject;

}

set

{

subject = value;

}

}

[DataMember]

public string PMatten

{

get

{

return matten;

}

Set

{

matten = value;

}

}

[DataMember]

public string PPassword

{

get

{

return password;

}

Set

{

password = value;

}

}

}

Write the below code with in Service1.svc.cs file.

```
using System.Net;
using System.Net.Mail;
namespace EmailService
{
    public class Service1 : IService1
    {
        //implement the IService1 methods (SendMail(Data d))
        public string SendMail(Data d)
        {
            string msg;
            try
            {
                MailMessage mm = new MailMessage(d.FromAddress, d.ToAddress,
                                                d.Subject, d.Body);
                mm.IsBodyHtml = false;
                NetworkCredential nc = new NetworkCredential(d.FromAddress,
                                                               d.Password);
                SmtpClient sc = new SmtpClient("smtp.gmail.com", 587);
                sc.UseDefaultCredentials = false; // port number
                sc.Credentials = nc;
                sc.EnableSsl = true;
                sc.Send(mm);
                msg = "Mail delivered successfully";
            }
            catch (Exception ex)
            {
                msg = ex.Message;
            }
            return msg;
        }
    }
}
```



appln and to deliver the email to SMTP server.

This class is having following properties:

- (a) credentials
- (b) Enable SSL (Secure Sockets Layer)
- (c) Host
- (d) Port
- (e) Timeout
- (f) UseDefaultCredentials.

This class is having one important method i.e.,

Send():

Send():- This method will take :/p as from emailId,
TO emailId, Subject and message and so..

2. This method will send the given mail/message to the targeted email-id.

H.W

1. Create a asp.net web appln to insert the image into the database as well as image from database.
2. Create a .aspx webservice to insert the image to the database, to retrieve the image from the database. Finally consume this service from one windowform client and one wcf client.
3. Define asp.net appln to implement send mail.
4. Define .aspx webservice to send email and consume that webservice from windowclient and from one webclient.

Step 2:- Creating Client Application.

1. Open asp.net webapplication . Rename it as "emailclient".
2. Design webform1.aspx like below.

Enter From Email ID	<input type="text"/>	txtFrom
Enter Password	<input type="password"/>	txtPwd textMode = password
Enter To Email ID	<input type="text"/>	txtTo
Enter Subject	<input type="text"/>	txtSub
Enter Message	<input style="height: 100px; width: 100px;" type="text"/>	txtMsg TextMode = Multiline
[SUBMIT] btnSend		
[lblMsg]		

Step 3:- Adding emailService reference to email client.

Step 4:- Consuming the ^{from} email service to email client.

Write the below code with in WebForm1.aspx.cs

```
class WebForm
{
    ServiceReference1.ServiceClient objSen = new ServiceReference1.
                                                ServiceClient();
    ServiceReference1.DataObjet objDt = new ServiceReference1.
                                         DataObjet();
    protected void btnSubmit_Click (Object sender, EventArgs e)
    {
        objDt.PfromAddress = txtFrom.Text;
        objDt.PtoAddress = txtTo.Text;
        objDt.Psubject = txtSub.Text;
        objDt.Ppassword = txtPwd.Text;
        objDt.PMallen = txtMsg.Text;
        lblMsg.Text = objSen.SendMail (objDt);
    }
}
```

1. To implement sending email functionalities we are using the below base class libraries.

1. System. Net
2. System. Net. Mail
3. System. Web. Mail

System. Net:- This base class library contains two important classes:-
1. NetworkCredentials
2. WebClient

System. Net. Mail:- This base class library contains the following classes:

(a) Attachment (b) Attachment collection (c) Mail Address collection

(d) Mail Message (e) SMTP Client (f) SMTP Exception.

System. Web. Mail:- This base class library containing.

(a) Mail Attachment (b) SMTP Attachment (c) Mail Message.

In the above example we are using three main classes for sending mail.

1. Network Credential class:-

It is used to get the permission / authentication from the server over the Network.

This class having 3 important properties. They are

(a) Domain (b) Username (c) Password.

2. Mail Message class:-

This class is used to prepare a message / mail that is to be delivered to the SMTP server.

This class is having below important properties.

(a) Attachments	(b) cc	(c) priority
(d) Bcc	(e) From	(f) Subject
(g) Body	(h) IsBody	(i) To

3. SMTP Client class:-

This class contains various functions and properties which are helpful to make our website as a client

Interview Questions

1. Can we invoke an event explicitly?

Yes: ex: Course.Load(s, e);
event name

2. When we will use abstract class?

3. When we will use interface?

4. Differences b/w values types and reference types?

5. Differences b/w parsing & converting

6. Differences b/w boxing & unboxing.

7. Explain CLR

8. What is JIT Compiler.

9. What is CLS and CTS.

10. Explain .Net appn execution process.

11. What is MSIL code?

12. What is the role of .Net language compiler.

13. Explain .Net framework architecture.

14. Differences b/w class and structure.

15. When we will use ^{go for} Read Only, constant.

16. What is diff b/w Ref parameter & out parameter.

17. Diff b/w function overloading & function overriding.

18. Diff b/w Abstract & Interface.

Name Space Console Application

{
 class MyClass

{
 public int a = 10;

}

Class Program

{

 Static void main()

{

 MyClass mc = new MyClass();

 Con.WL(mc.a);

 Con.RL();

}

↓

output is compile time error because by default access modifier of a instance variable (Non-static) is private. which we can access only with in that class.

what is the default access modifier of a class

internal

Q. write the o/p for the below program?

name space programmes

```
class myclass
{
    int a;
    string s;
public void display()
{
    console.WriteLine(a);
    console.WriteLine(s);
}
```

```
class program
{
    void main()
    {
        myclass mc = new myclass();
        mc.display();
        cons.ReadLine();
    }
}
```

O/P
0

In the above program myclass is having how many no. of constructors. Ans: 1

1. With in the class if we didn't define any constructor then CLR will provide one default constructor,
2. In the above program when the control is executing below statements.

```
myclass mc = new myclass();
```

here control will invoke the default constructor of the myclass which is provided by the CLR. As part of the default constructor execution, it will initialize to the default values to a and s because programmer is not initialize any values to a and s.

what are default values for the .Net ^{instance}, variables?

1. For all integer & floating type variable value is 0.
2. For string variable and char variable is null.
3. Bool variable default value is false.

what is the importance of "this" keyword?

```
namespace thisex
```

```
{
```

```
class thisex1
```

```
{
```

```
public int a=5; } instance  
public int b=5; } variables
```

```
void displa[ int a, int b)
```

```
{
```

local variables

```
-this.a=a+5;
```

```
this.b=b+5;
```

```
console.writeline(a); this.a
```

```
console.writeline(b); this.b
```

```
}
```

```
class Program
```

```
{ void main()
```

```
{
```

```
thisex1 mc = thisex1();
```

```
mc.display(10,20);
```

```
// Con. WLC @mc.a );
```

```
// Con. WLC ( mc.b );
```

```
Con. Readline();
```

O/P

10

25

1. whenever we have declared instance variable and local variable with the same name in the method control will give the priority for variable to overcome other and we have to access the instance variable with the help of "this" keyword.

2. This keyword is representing the current class instance.

```
namespace Myprogram
```

```
{
```

```
class MyClass
```

```
{
```

```
    public int a;
```

```
    public void Show()
```

```
{
```

```
    int b;
```

```
    con.wL(b);
```

```
    con.wL(a);
```

```
}
```

```
class program
```

```
{
```

```
    void main
```

```
    MyClass mc = new MyClass();
```

```
    mc.Show();
```

```
    Con.Rdline();
```

O/P

Ques:- because local variables we should initialized with some value , before accessing .

Ques asp.net -

we can how many web.config files can contain asp.net applications?

• Multiple web.config files it is depending on requirements .

WCF Interview Questions:-

1. what is WCF ?

1. WCF is a programming platform for building service oriented application (SOA).

2. WCF is basically a Unified programming Model for developing , configuring and deploying distributed services.

3. Microsoft has unified all its existing distributed technologies like COM , DCOM , .Net Remoting , MSMQ webservices , Microsoft Enterprise services , MSMQ into the WCF platform .

4. The code name for WCF is indigo

Note:- Code name for asp.net ajax is ~~Atlas~~.

2. why we have to use wcf ? what are the advantages of in wcf ?
 1. Service orientation is one of the key advantages of wcf.
We can easily build service orientated appn by using wcf.
 2. Compared with asmx web service wcf services will provide reliability , security with simplicity.
 3. As opposed to .Net Remoting WCF services are interoperable.
 - 4 Various clients can interact with same service using different communication mechanism.
 5. A single wcf service can have multiple end points.
 6. Extensibility is another key advantage of wcf.
3. what are core components of the wcf service ?
 - 1) wcf service mainly having the following core components
1. Service class :- A service class can implemented using any CLR based language with atleast one method.
2. Hosting Environment :- A managed process for running the service.

3. End point :- For used by a client to communicate with the service.

4. what is the difference between webservices and wcf service
The basic difference is that ASMX webservices is designed to send and receive messages using SOAP format over HTTP only, where as wcf service can exchange message using any format (SOAP is the default) over any ^{transport} protocol like HTTP, TCP/IP, MSMQ, Named pipes etc.

5. what is the importance of end points in wcf ? Explain the ABC's of end points ?

For wcf service to be consumed its necessary that it must be exposed. Clients needs information about the service to communicate with it.

This is where service end points play their role .

ABC's of endpoints:- A service endpoint has three basic elements also called the ABC's of an endpoint they are:

1. Address
2. Binding
3. Contract.

Address:- It defines the "where".
The address is the URL that identifies the location of service.

Binding:- It defines "How".

The binding defines how the service can be accessed.

Contract:- It defines "what"

The contract identifies what is exposed by the service.

⑥ System.ServiceModel is the main base class library
for WCF.

⑦ What is WCF Binding? How many different types of bindings are available in WCF? What is the default binding of WCF?

1. Binding in WCF defines how to communicate with the services.
2. Binding specifies the communication protocol as well as encoding method to be used.
3. Optionally binding can specify other important factors like transactions, reliable sessions and security.

Types of Bindings:-

1. BasicHttpBinding.
2. WSHttpBinding.
3. WSDualHttpBinding
4. WSFederationBinding
5. NetNamedPipeBinding.
6. NetTCPBinding.
7. NetPeerTcpBinding
8. NetMsmqBinding
9. NetMsmqTopicBinding.

10. Mex TCP Binding (Mex Means MetaData Exchange).

11. Custom Binding.

Note:- Default WCF binding is WSHTTPBINDING.

8. Can we have multiple endpoints for different binding types
in order to serve various types of clients?

Yes, we can have multiple endpoints for different binding
points. for ex:- An endpoint with "WSHTTPBinding" &
another one with NETTCPBinding.

9. What are the contracts in WCF?

A contract is basically an agreement b/w two end parties
i.e., a service and client. In WCF contracts can be
categorized as behavioural and structural.

Behavioural Contracts:-

Defines what operations a client can perform on a service.

They are:

1. Service Contracts - This attribute is used to mark a type as
service contract contains operations.

2. Operation Contracts - This attribute is used to mark the operations
that will be exposed.

3. Fault Contracts - It defines what errors are raised by the
service being exposed.

Structural Contracts:-

1. DataContracts - This attribute defines type that data will be
moved b/w the parties.

2. Message Contracts - This attribute defines the structure of SOAP Message.

<sup>V.N
V.V.
V.V.MP</sup> What are the available hosting option for WCF service?

10. WCF supports four types of hosting options.

1. Self Hostings / Managed Hosted

1.1. Hosting in console appn

1.2. Hosting in Windows appn.

2. Hosting in Windows Services.

3. Hosting in IIS.

4. Windows Process Activation Service Hosting.

Self Hosting:-

1. In self hosting we will create a WCF service with in a console appn / windows appn and we will make run that service.
 2. Then we will create a client appn, that service, which is hosted in console/ window appn we will add ^{reference} to the client appn.
 3. Now client appn can consume that WCF service which is hosted with in the console appn / windows appn.
 4. To implement self hosting we will use a predefined class called "ServiceHost".
 5. "Service Host" class is a part of "System.ServiceModel" base class library.
- Methods of ServiceHost class:-
- Open(): - Start the WCF service
 - Close(): - Stop the WCF service normally.
 - Abort(): - Stop the WCF service abnormally.
 - SendSetEndpointAddress(): - This method is used to create an endpoint in programmatically.

Example for selfhosting / Managedhosting (or) implementation of selfhosting in step by step process.

- Step 1:- Open a "console application" rename it as "mycalculator".
- adding WCF service to console application.
- open Solution Explorer → select Mycalculator → Right click → Add new item → select a template called WCF service and rename it as "calculator.svc.cs".

IcalculatorService.cs

```
namespace Mycalculator
{
    [ServiceContract]
    public interface IcalculatorService
    {
```

```
[OperationContract]
int Add(data d);

[OperationContract]
int Sub(data d);

[OperationContract]
int Mul(data d);

[OperationContract]
int Div(data d);

}

[DataContract]
public class data
{
    int num1, num2, num3, res;

    [DataMember]
    public int Num1
    {
        get { return num1; }
        set { num1 = value; }
    }

    [DataMember]
    public int Num2
    {
        get { return num2; }
        set { num2 = value; }
    }

    [DataMember]
    public int Res
    {
        get { return res; }
        set { res = value; }
    }
}
```

calculator service.cs :-

```
class calculatorService : IService
{
    // implement interface members
    public int Add(data d)
    {
        d.Res = d.Num1 + d.Num2;
        return d.Res;
    }
    public int Sub(data d)
    {
        d.Res = d.Num1 - d.Num2;
        return d.Res;
    }
    public int Mul(data d)
    {
        d.Res = d.Num1 * d.Num2;
        return d.Res;
    }
    public int Div(data d)
    {
        d.Res = d.Num1 / d.Num2;
        return d.Res;
    }
}
```

} // class

Program.cs code:-

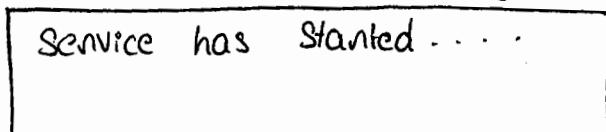
```
using System.ServiceModel;
namespace Mycalculator
{
    class program
    {
        void main()
        {
    }
```

```

ServiceHost host = new ServiceHost(typeof(CalculatorService));
host.Open(); object WCF className
Console.WriteLine ("Service has started..."); 
Console.Read();
host.Close();

```

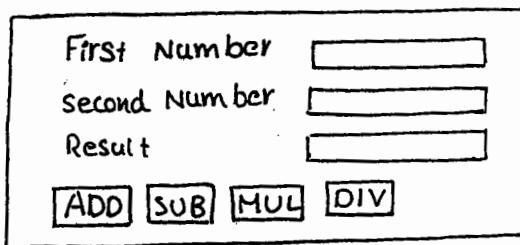
Build the solution and run the appn. With this process WCF service will host with in a console application. And console appn main method will start the WCF service. And it will display the console window like below.



Whenever user will press any key from the keyboard then service will stop, till that time WCF service will run to provide the services to client.

Step 2:- Creating client application.

1. Open a windows appn → Rename it as calculator.
2. Design Form1.cs like below.



Adding WCF service reference to client application.

Step 3:- Open Solution Explorer of client → Select "calculator" project then Right click "Add Service Reference" → Go Back to MyCalculator → Open - Solution Explorer and open "app.config" file with in the "BaseAddress" we can identified the URI, copy that URI & paste with in "Add Service Reference" window → Go → OK.

Step 4:- Consuming the WCF service from client application.

Form1.cs code

```

namespace calculator
{

```

```

    class Form1

```

```

        ServiceReference1.CalculatorServiceClient objen = new ServiceReference1.
            CalculatorServiceClient();

```

```

serviceReference1. data dt = new ServiceReference1.Data();
private btnAdd_Click()
{
    dt.Num1 = int.Parse(txtFno.Text);
    dt.Num2 = int.Parse(txtSno.Text);
    txtRes.Text = obisen.Add(dt).ToString();
}

btndsub_Click()
{
    dt.Num1 = int.Parse(txtFno.Text);
    dt.Num2 = int.Parse(txtSno.Text);
    txtRes.Text = obisen.Sub(dt).ToString();
}

btndMUL_Click()
{
    dt.Num1 = int.Parse(txtFno.Text);
    dt.Num2 = int.Parse(txtSno.Text);
    txtRes.Text = obisen.Mul(dt).ToString();
}

btndDiv_Click()
{
    dt.Num1 = int.Parse(txtFno.Text);
    dt.Num2 = int.Parse(txtSno.Text);
    txtRes.Text = obisen.Div(dt).ToString();
}
}

```

- Whenever a desktop app or Remote Desktop app wants to consume the WCF service then we will go for 'Self Hosting'.
- BCW in self hosting that consumer app where we are hosting the WCF service should be running.../on..
- To overcome the drawback of the selfhosting we will go for "hosting in windows Services".

Hosting in Windows services:-

To implement this hosting to we will implement the following phases.

phase1:- creating console appn & creating wcf service.

Step 2:- creating a client appn.

Step 3:- adding the wcf service Reference to client.

Step 4:- Consuming the wcf service from client.

Step 5:- Creating a windows service.

Step 6:- Adding the wcf Reference to windows service.

Step 7:- Invoking the wcf service from windows Service onstart() method and stopping the wcf service from windows service onstop() method.

Step 8:- Installing windows service in windows operating system.

Step 9:- Starting the windows service manually which will invoke the wcf service manually.

Example for Hosting in Windows Service.

Note:- Step1, Step2, Step3, Step4 same as self hosting example.

Step 5:- Creating windows service

1. open a windows service appn rename it as ABC service.

2. adding wcf serviceReference to windows service.

3. invoking the wcf service from windows service

Write the below code with in service1.cs file of ABC service.

using System.ServiceModel;

namespace ABC Service

{

class Service1

{ serviceHost shost;

protected override void OnStart()

{

 wcf Service Reference name

,

 shost = new ServiceHost(typeof(ServiceReference1.Calculator

 ServiceClient));

 shost.Open();

 wcf Service class name

}

```
protected override void OnStop()
```

{

host.Close();

}

}

- Enable the windows service designer window → Right click AddInstaller →

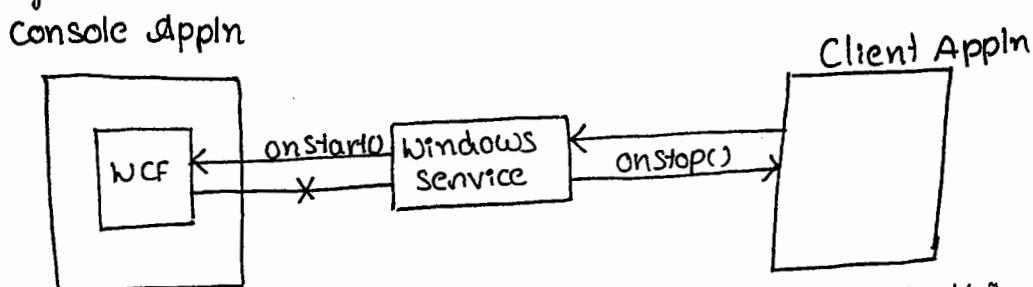
Note! - update the installers controls property according to requirement
(Refer Windows Service Notes).

Build the windows service.

- Install windows Service into windows operating System through command prompt.

- Starting the windows Service } Refer windows Service

Conclusion:- When we will host the wcf service with in the windows service even though we have closed the console appn where we have hosted wcf service but still that wcf service will be available for client application because WCF service is controlling by windows service and windows service will be controlling by windows operating system like below:



In this concept windows service is controlling the WCF service.

3) Hosting IIS :-

By default we will host the wcf service with in the IIS like below.

Step1:- Creating Virtual Directory.

Step2:- Creating wcf service appn with in Virtual Directory.

Step3:- creating client appn.

Step4:- adding wcf service reference to client.

Step5:- Consuming the wcf services from client appn.

④ Windows Process Activation Service Hosting (WAS):-

This hosting will be implement when we are using windows vista or windows server 2008 OS. That means WAS is a system service available in these operating systems.

(ii) what message Exchange patterns (MEP) are supported by WCF?

WPF

1. what is WPF?

1. WPF stands for Windows Presentation Foundation.
2. WPF is Next version/ Next generation of .Net windows forms.
3. WPF is a .Net advanced windows technology.
4. WPF was introduced by Microsoft with .Net framework 3.0 in the year 2006.
5. Using .Net windows forms we can develop a traditional windows application as well as using .Net WPF we can develop a advanced windows application.
6. WPF is integrated with 2D Graphics, 3D Graphics, animations and multimedia.
7. Whenever we want to implement animations with in a desktop application the best choice is WPF.

② How to create a new WPF Application?

Open visual studio.net → New project → select language as visual c# → select application type as WPF Application → Rename it as MyWPF application.

With this process ^{will} open WPF Appn development environment. By default WPF development Environment will come with two important files they are ① app.xaml
② MainWindow.xaml

xaml:-

1. xaml stands for Extensible Application Markup language.
2. xaml was introduced by Microsoft for WPF programming.

Note:- Windows Forms user interface will be called as forms & WPF user interface can be called as window.

By default WPF windows application will come with single user interface i.e., "MainWindow.xaml".

WPF user interface similar like asp.net user interface.

In ASP.NET we will have two files they are .aspx & .aspx.cs
Similarly every WPF user interface will be representing with two

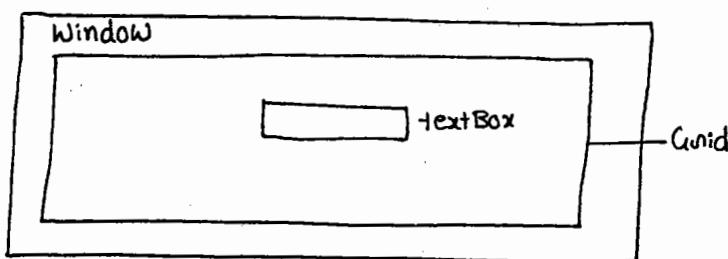
files they are:
• xaml
• xaml.cs

① xaml file:- This file will support two modes:

- ① Design Mode
- ② xaml Mode

Design Mode:-

In this mode it will display WPF User Interface designer window like below:



xaml Mode:-

In this Mode it will display the WPF designer code window.

This code is implementing in xaml

Structure of xaml Mode window:-

```
<Window>
    <Grid>
        // here we have the controls code.
    </Grid>
</Window>
```

② • xaml.cs file:- It is C# .Net class file.

Structure of • xaml.cs file :-

```
using System.Windows
namespace MyWPFApplication
```

```
{ public partial class MainWindow : Window
```

```
{
```

```
// here we have to write the business logic of WPF window
```

```
}
```

```
}
```

By default every WPF user interface is representing as a user defined class i-e; MainWindow, Window, window....

Window.

- for all these classes Microsoft is providing a predefined class called "Window" as super class.
- This window predefined class is part of System.Windows base class library.

Implementation of WPF user-interface will be divided into 2 steps:

Step 1:- Designing the WPF user-interface.

This we can do in two ways:

- (a) Drag and Drop the control
- (b) Writing the controls code by using XAML.

Step 2:- Defining the business logic of WPF user interface with in the WPF XAML.cs file.

In WPF a property of a control in design time we can access in two ways:

- ① By using properties window
- ② By using XAML code window.

Write a WPF program to display the employee information.

Step 1:- Design of MainWindow.xaml

Emp NO	<input type="text" value=""/>	txteno
Emp Name	<input type="text" value=""/>	txtename
salary	<input type="text" value=""/>	txtsal
<input type="button" value="Display"/>		btndisplay

Step 2:- MainWindow.xaml.cs code

class MainWindow : Window

{

 btndisplay.click(, -)

{

 txteno.Text = "111";

 txtename.Text = "Satya";

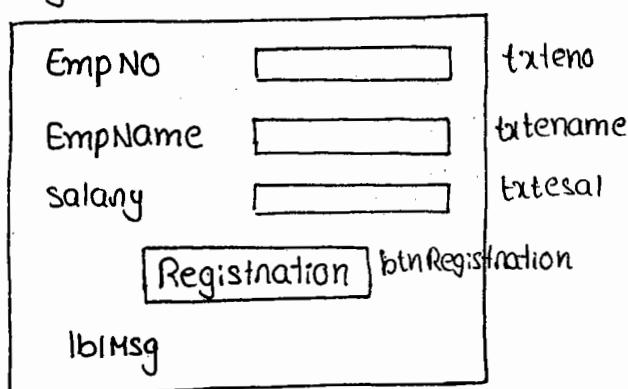
 txtSal.Text = "1000";

}

3

Example to insert an employee information into database from WCF WPF interface.

Step 1:- Design MainWindow.xaml



Step 2:- MainWindow.xaml.cs code

```
using System.Data.SqlClient;
namespace WPFApplication1
{
    class MainWindow
    {
        btnRegistration_Click()
        {
            SqlConnection conn = new SqlConnection("server=.; Database=company;
                uid=sa; pwd=abc", conn);
            SqlCommand cmd = new
            {
                int eno = int.Parse(txteno.Text);
                string ename = txtename.Text;
                Double esal = Double.Parse(txtesal.Text);
            };
            SqlCommand cmd = new SqlCommand("Insert into emp values
                (@eno, @ename, @esal)", conn);
            cmd.Parameters.AddWithValue("@eno", eno);
            cmd.Parameters.AddWithValue("@ename", ename);
            cmd.Parameters.AddWithValue("@esal", esal);
            conn.Open();
            int i = cmd.ExecuteNonQuery();
            conn.Close();
            if (i == 1)
            {
                lblMsg.Content = "Record is inserted";
            }
        }
    }
}
```

```
else
    dbmsg.ContentText = "Record is not founded";
    dtlno. clean();
    txtename. clean();
    txtesal. clean();
    txteno. focus();
}
}
```

History of WPF ?

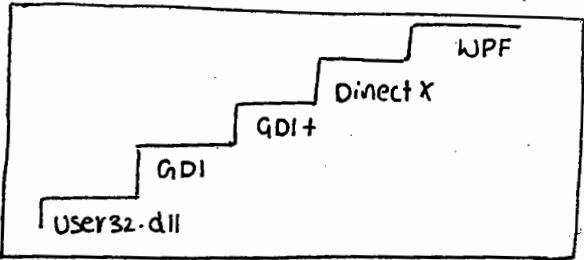
1. Microsoft introduced first GUI Based application environment with windows 90.
2. In this Microsoft was using a component called User32.dll
3. User32.dll was providing complete GUI features. But it was not supporting to create 2Dimensional facilities and it is not supporting to access hardware acceleration facilities.
4. To overcome this drawback Microsoft has enhanced to GDI (Graphical Design Interface).

GDI :- This GDI provided 2D facilities with the help of H/W acceleration but GDI is unable to provide 3D facilities.

5. To overcome this drawback to provide 3D facilities completely , Microsoft enhanced GDI to GDI+
6. GDI+ :- GDI+ is completely concentrated to providing 3D facilities But GDI is not providing "Gaming Features" for Gaming Applications Microsoft has enhanced GDI+ to DirectX.
7. DirectX :- DirectX is completely concentrated on Gaming development only , it was unable solve the appln development facilities like Financial apps and health care Apps.
8. To overcome this drawback and to provide very good GUI towards application development side Microsoft enhanced DirectX to WPF.
9. In this way WPF came into the Industry .
10. WPF combines application UI's, 2D Graphics, 3D graphics, documents and Multimedia and Gaming environment (DirectX) into one

Single framework

WPF = User32.dll + GDI + GDI+ + DirectX + WindowsForms like below



Features of WPF :-

1. Declarative UI with XAML :— To define the WPF user interface appearance Microsoft is providing a separate language called XAML. To define the functionality / behaviour of WPF user interface we can use any one of .Net language called C# .Net / VB .Net etc.

2. Multi Media Support:-

Using WPF we can develop audio & video Apps.

3. Skinning Support:-

We can develop themes and skins.

4. XPS Document:-

1. XPS stands for XML paper Specification.

2. XPS is similar to Adobe Reader, when we create a XPS

3. document that data can not be modified.

4. XPS is completely XML based and developed by Microsoft.

5. Every XPS document will have default extension as .xps.

6. Using WPF App we can create XPS documents directly.

How to create XPS doc from MS office.

Open MS Word document → file → print → print → "select Microsoft XPS Document writer" if we will save this document it will save as .xps document.

5. 3D Programming:-

Using WPF we can implement 3D Graphics.

6. Highly Composable:-

Using WPF we can develop normal windows forms apps & XAML based windows applications.

7. Animations and Timelines:-

WPF will support animations. Animation is nothing but 2D & 3D objects.

8. Powerful DataBinding:-

WPF will support simple and powerful data-binding.
for Example:-

```
<StackPanel DataContext = " { StaticResource MyCustomer } " >
<TextBox Text = " { Binding FirstName } " />           ↓ TableName
<TextBox Text = " { Binding LastName } " />
<TextBox Text = " { Binding City } " />
<TextBox Text = " { Binding Street } " />
</StackPanel>                                         ↓ column name of Table (MyCustomer)
```

9. Resolution Independent:-

If we increase the resolution of our screen, the WPF user interface stays the same size.

10. Vector Based Rendering:-

In WPF Even though we increase the size of the image but clarity will not reduce.

11. H/W Accelerated:-

WPF not renders and presents graphics through the DirectX.

Types of Application which we can develop by using WPF:-

1. Windows Based Desktop Apps (similar to Win Forms)
2. Navigation Apps
3. XAML Browser Apps
4. Custom Control Libraries.
5. Class Libraries

Rooted Events:-

In WPF all the available events are called as "Rooted Events" because the rooting flow may be from parent control to child control (or) child control to parent control.

Rooted Events are classified into 3 categories:-

1. Direct Events:-

1. These events will not have any event flow from child to parent and parent to child.
2. These are normal events which we have seen in windows Forms and Asp.net.

Ex:- Click Event

2. Bubbling Events:-

In this events the events flow will be routed from child controls to parents controls.

Flow:- Control → Grid → Window

Ex:- Mouse-Down-Event , keyDocument

3. Tunneling Events:-

In this events the event flow will be routed from parent control to child control.

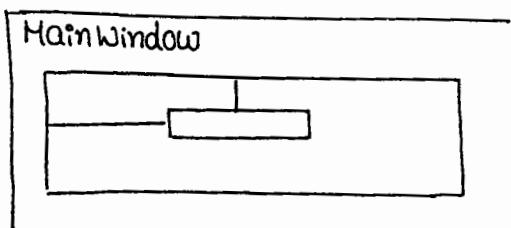
This events will fire reversed direction.

Flow:- Window → Grid → control event will fire.

Ex:- previewdownkey and previewMouseDown.

Example for Bubbling events:-

Steps:- Design window like below



1. Select label control → open properties window → Click Events icon
→ Select Mouse Down and Double click.
2. Select grid open properties window generate Select Mouse Down Event of grid.
3. select window → open properties window, → click Events icon
→ Select Mouse Down and Double click.

Step2:- write the below code with in mainwindow.xaml.cs.

namespace bubblingevent Example

{

class MainWindow

{

void label1 - MouseDown (-,-)

{

MessageBox . Show (" hi from label");

}

void grid - MouseDown (-,-)

{

MessageBox . Show (" hi from Grid");

}

void window - MouseDown (-,-)

{

MessageBox . Show (" hi from Window");

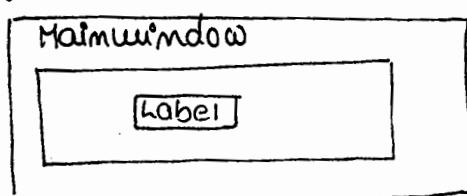
}

}

Conclusion:- In the above example when the user click on label first label MouseDown event will be firing, then grid MouseDown event will be firing after that window MouseDown event will be firing.
Because MouseDown events are bubbling event. This events control flow will be child to parent.

Example Tunnelling Events:-

Step1:- Design of window (WPF window)



- Select Label & generate preview - MouseDown event.
- Select Grid & generate previewMouseDown event.
- Select window and generate grid previewMouseDown event.

Step2:- Mywindow . xaml.cs code

namespace Tunnellingevent Example

{

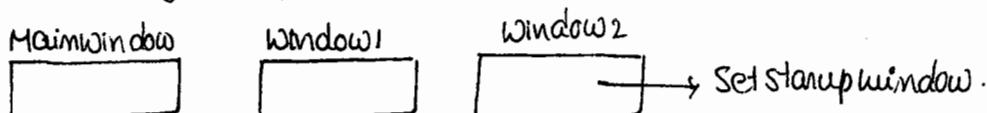
```

class Mainwindow
{
    void label - previewMouseUp (-, -)
    {
        MessageBox.Show ("hi from label");
    }
    void grid - previewMouseUp (-, -)
    {
        MessageBox.Show ("hi from grid");
    }
    void window - previewMouseUp (-, -)
    {
        MessageBox.Show ("hi from window");
    }
}

```

Example to set startupform window

Step1 :- Design Mainwindow, window1, window2.



With this update the below code with in app.xaml
Goto "App.xaml" file in that file change like below

StartupUri = "window.xaml"

Default event of the WPF window :-

"Loaded" event is the default event of the WPF window.
This event will fire after loading the WPF window.

Example for window loaded event.

Step1:- .xaml.cs code.

class Mainwindow.

```

{
    void window - Loaded (-, -)
    {
        MessageBox.Show ("loaded Event is firing");
    }
}

```

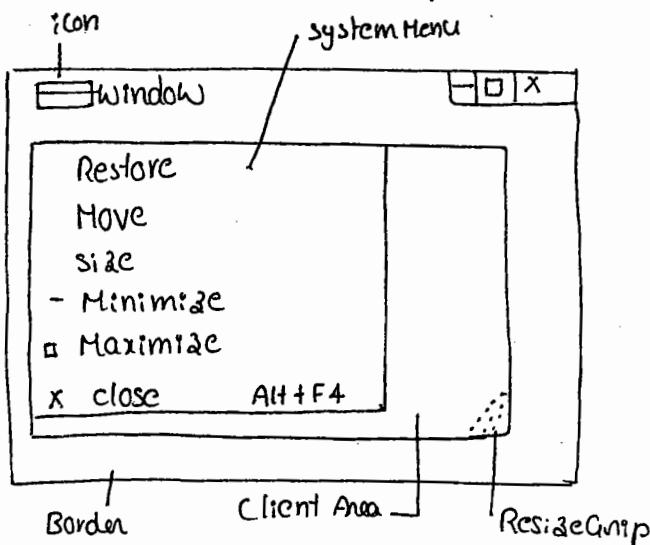
WPF Window:-

WPF User Interface can be divided into two parts:

① Client area.

② Non-client area.

Structure of WPF User Interface:-



Client Area:-

With in the WPF window the area which we will use to design the controls is called as client area.

Non-client Area:-

With in the WPF window the area which is occupied with System Menu, icon, Border... etc is called as Nonclient Area.

Life Time of WPF Window:- It contains following phases.

1. Instantiation - It is starting phase of window
2. Open
3. Activate
4. Deactivate
5. close.

Open :- When window is open then it will enter into 2nd phase. window can open because of App.xaml.cs by using `Show()`.

Activation :- When a window is open automatically, it will become active, the active window is the window which is currently accepting the user i/p. When a window becomes active it raises the activated event.

- To activate the window programmatically we can use a method called "activate".
- Deactivate / Window Deactivation:-
 - There is no predefined method to deactivate the window programmatically.
 - When control switches from current window other window then current window will become "deactivated".
 - Using `window.isActive` property we can check whether the window is activated or not.
 - '`isActive`' is a boolean property, it will return "true" when the window is activated otherwise it will return false.

close():-

- The life cycle of window comes to end by closing the window.
- If we want to close the window programmatically we can use `close()` method.
- When a window is closed object of the concerned window class will be destroyed.
- When a window closes it raises two events:

- (1) `Closing`
- (2) `closed`.

closing:- `Closing` is raised before close the window.

(2) In this event we can write some code to prevent to close the window.

closed:- `Closed` event is fire after closing the event and set before window actually closed.

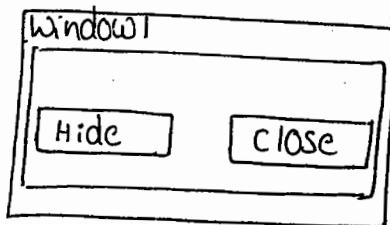
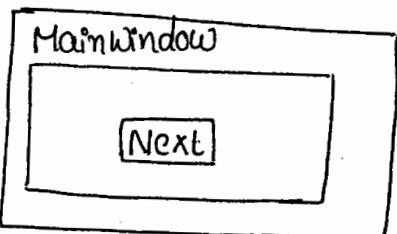
(2) At this point a window can't be prevented from closing.

Methods within the `Window` class:-

- (1) `Show()`:- opening a window.
2. `active()`:- Making window as active.
3. `close()`:- This method is used to close an opened window - when window is closed it destroys the object of the window.
4. `Hide()`:- This method will hide window, i.e., window will disappear from the screen but window object will not destroy.

Example for window show, hide & close

Step1:- Design Mainwindow and window like below:



Mainwindow.xaml.cs :-

```
class Mainwindow : Window
{
    Window1 obj = new Window1()
    private btnNext_Click()
    {
        obj.show();
    }
}
```

Window.xaml.cs :-

```
class Window1 : Window
{
    private btnHide_Click()
    {
        this.Hide();
    }
    private btnClose_Click()
    {
        this.Close();
    }
}
```

2D Graphics or 2D Drawings in WPF :-

In WPF we can draw below items:

- ① Line
- ② Ellipse
- ③ Rectangle
- ④ Polygon

Example to draw a line:-

Write the below code with in Mainwindow.xaml.

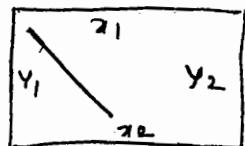
```
<Grid>
```

```
    <Line X1 = "10" Y1 = "10" X2 = "250" Y2 = "250"
```

```
        Stroke = "Green" StrokeThickness = "6" Margin = "0,0,12,23" />
```

```
</Grid>
```

QP



Example to clipse:-

```
<Grid>
```

```
    <Ellipse Height = "100"
```

```
        HorizontalAlignment = "Left"
```

```
        Margin = "194,140,0,0"
```

```
        Name = "ellipse1"
```

```
        Stroke = "Black"
```

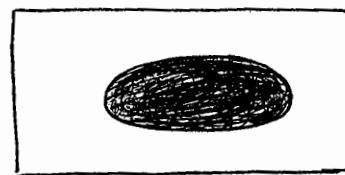
```
        Fill = "Blue"
```

```
        StrokeThickness = "5"
```

```
        VerticalAlignment = "Top"
```

```
        Width = "200" />
```

```
</Grid>
```



Example to Circle:-

```
<Grid>
```

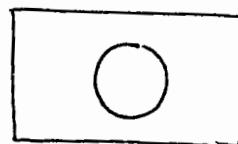
```
    <Ellipse Height = "100"
```

```
        Width = "100"
```

```
        Stroke = "Black"
```

```
        Margin = "194,140,0,0" />
```

```
</Grid>
```



Example to draw the Rectangle:-

```
<Grid>
```

```
<Rectangle
```

```
    height = "100"
```

```
    width = "200"
```

```
    HorizontalAlignment = "Left"
```

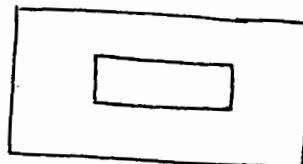
```
    Margin = "148,102,0,0"
```

```
    Stroke = "Black"
```

```
    VerticalAlignment = "Top"
```

```
    Name = Rectangle1 />
```

```
</Grid>
```



Working with Polygons:-

- To create any kind of polygon we can use below code.
- Polygon can be used to draw a line, Rectangle, Triangle, Pentagon... etc.

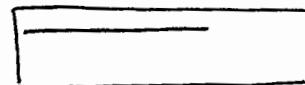
Example to draw a line using polygon:-

<Grids>

< polygon points = "20, 20 200, 20"

stroke = "red"

strokeThickness = "3" />



</Grids>

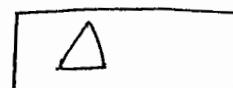
Example to draw a triangle by using polygon:-

<Grids>

< polygon points = "100, 20 20, 100 200, 100"

stroke = "red"

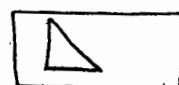
strokeThickness = "3" />



Example to draw a Line like Die using polygon:-

< polygon points = "20, 20 20, 200 250, 300"

strokeThickness = "3" />



Example to draw the below polygon

< polygon points = "50, 100 200, 100 200, 200 300, 300"

stroke = "Black"

strokeThickness = "4" fill = "Yellow" />



Working with Path Tag:-

<path> is capable of drawing two dimensional (2D) with images like rectangle, circle & ellipse and so on...

Advantages:-

We can draw combination figures like unions, intersections and so on.

Types of geometrics supported in <path> is:

- ① Combined geometry
- ② Ellipse' geometry
- ③ Group geometry
- ④ Path geometry

- ⑤ Rectangle geometry
- ⑥ Strength geometry
- ⑦ Line geometry

1. Example to draw a line geo using a line geometry with in path

Step1:- • xaml code

<grid>

```
<path stroke = "Green"
      strokeThickness = "5" >
```

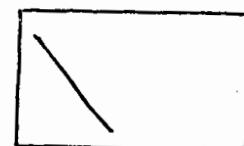
<path. Data>

```
<LineGeometry StartPoint = "20, 30"
               End Point = " 200 , 200" >
```

</path. Data>

</path>

</grid>



2. Example to draw the circle with Ellipse geometry with in the path.

<path stroke = "Red" strokeThickness = "5"

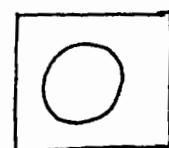
Margin = " 72 , 7 , 124 , 9 " >

<path. Data>

```
<EllipseGeometry center = " 150 , 150 "
                   RadiusX = "150" RadiusY = "150" />
```

</path. Data>

</path>



3. Example for GroupGeometry with in the Path.

<path stroke = "Red" strokeThickness = "4"

<path. Data>

<GeometryGroup fillRule = "EvenOdd" >

<EllipseGeometry center = " 150 , 150 "

RadiusX = "100" RadiusY = "100"

</EllipseGeometry >

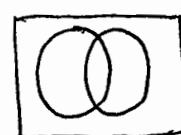
<EllipseGeometry center = " 250 , 150 "

RadiusX = "100" RadiusY = "100" >

</EllipseGeometry >

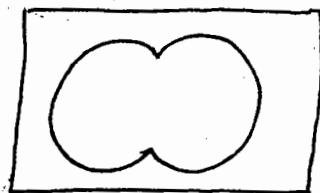
</GeometryGroup >

</path. Data>



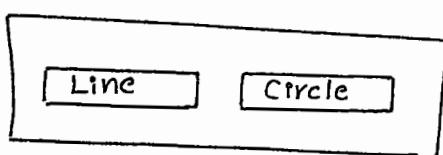
Example for combined Geometry to draw Venn diagram with union.

```
<path stroke = "Red" strokeThickness = "5">
  <path.Data>
    <combinedGeometry GeometryCombineMode = "Union">
      <combinedGeometry.Geometry1>
        <ellipseGeometry center = "150,150" RadiusX = "100"
          RadiusY = "100">
        </ellipseGeometry>
      </combinedGeometry.Geometry1>
      <combinedGeometry.Geometry2>
        <ellipseGeometry center = "250,150"
          RadiusX = "100" RadiusY = "100">
        </ellipseGeometry>
      </combinedGeometry.Geometry2>
    </combinedGeometry>
  </path.Data>
</path>
```



Example to draw the shapes by using code / programmatically .

Step1:- Design MainWindow.xaml like below:



Note:- for grid tag assign the name as g1.

Step2:- MainWindow.xaml.cs :-

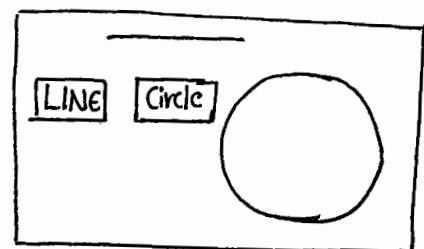
```
class MainWindow
{
  private void btnLine_Click()
  {
    Line obj = new Line();
    obj.X1 = 20
    obj.Y1 = 30
    obj.X2 = 300
    obj.Y2 = 30
    obj.Stroke = System.Windows.Media.Brushes.Red;
```

```

    obj. StrokeThickness = 5;
    gr. Children. Add (obj);
}

provide void bincircle_Click()
{
    Ellipse obj = new Ellipse();
    obj. Height = 250;
    obj. Width = 250;
    obj. Stroke = System. Windows. Media. Brushes. Red;
    obj. StrokeThickness = 5;
    obj. Fill = System. Windows. Media. Brushes. Green;
    gr. Children. Add (obj);
}

```



Example to draw a line by using MouseMove Event:-

MouseMove:- This event will fire when user will move mouse with in the WPF window.

MouseDown:- This event will fire when user will press the mouse button.

MouseDoubleClick:- This event will fire when user will double click the mouse event within the WPF window.

Step1:-

Using properties window generate the MouseMoveEvent.

Step2:- Mainwindow.xaml.cs code:

```

class Mainwindow
{
    point p1 = new point();
    point p2 = new point();
    bool a = true;

    private void Window - MouseMove (-, -)
    {
        if (a == true)
        {

```

```

P1 = e.GetPosition(g1);
a = false;
}
p2 = e.GetPosition(g1);
DrawLine();
}

public void DrawLine()
{
    Line obj = new Line();
    obj.X1 = P1.X;
    obj.Y1 = P1.Y;
    obj.X2 = P2.X;
    obj.Y2 = P2.Y;
    obj.Stroke = System.Windows.Media.Brushes.Red;
    obj.StrokeThickness = "5";
    g1.Children.Add(obj);
}
}

```

Layout in WPF:-

1. WPF will support various layouts to design WPF user interface.
2. Layout is nothing but a container which we can use to design our controls within the user interface.
3. Layout can be created with absolute positioning and dynamic positioning.

Layout panels of WPF:-

1. Grid Panel
2. Stack Panel
3. Dock panel
4. Wrap panel
5. Canvas panel.

Grid Panel:-

1. Grid is used to display the controls independently or in the form of rows and columns.

TextBlock:- The TextBlock in WPF is same as label control but it is advanced label control.

Example for grid panel:-

Step1:- .xaml code:

```
<grid Name = "Grid1" width = "400" Background = "LightSteelBlue"
      ShowGridLines = "True" Height = "173">
    <Grid.ColumnDefinitions>
      <ColumnDefinition/>
      <ColumnDefinition/>
      <ColumnDefinition/>
    </Grid.ColumnDefinitions>
    <Grid.RowDefinitions>
      <RowDefinition height = "30"/>
      <RowDefinition height = "30"/>
    </Grid.RowDefinitions>
    <TextBlock Grid.Row = "0" Grid.Column = "0" Text = "Author
Name"/>
    <TextBlock Grid.Row = "0" Grid.Column = "1" Text = "Age"/>
    <TextBlock Grid.Row = "0" Grid.Column = "2" Text = "Book"/>
    <TextBlock Grid.Row = "1" Grid.Column = "0" Text = "Scodd"/>
    <TextBlock Grid.Row = "1" Grid.Column = "1" Text = "30"/>
    <TextBlock Grid.Row = "1" Grid.Column = "2" Text = "UNIX"/>
</grid>
```

The above design code will generate the WPF window like below:

Author Name	Age	Book
scodd	30	UNIX

Stack Panel:-

1. The layout is used to arrange its child controls in the form of a stack either horizontally or vertically.
2. By default it will display the controls in vertical manner.
3. The child controls will not be changing their size when the stack panel size is increased/decreased.

Property :

Orientation : If representing 2 values.

- ① vertical (default)
- ② Horizontal

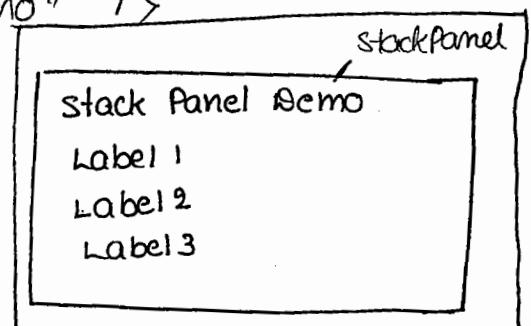
Example to stack panel :-

Step :- • xaml code

{Grids}

```
<StackPanel Margin = "81, 25, 21, -12" Orientation = "Vertical">
    <Label Content = "Stack Panel Demo" />
    <Label Content = "Label 1">
    <Label Content = "Label 2">
    <Label Content = "Label 3">
</StackPanel>
```

{Grids}



3. Dock Panel :-

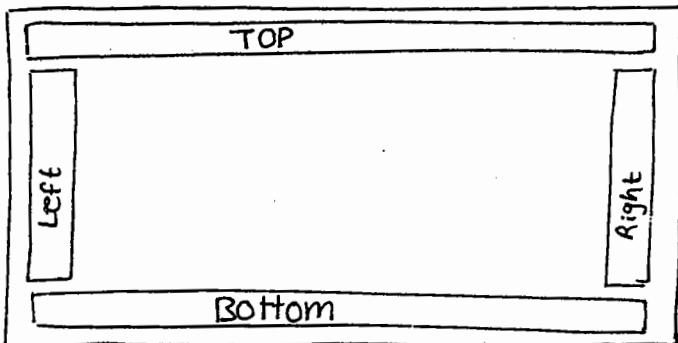
1. This control is used to provide docking facility to the child control.
2. We can place the child control on the top / left / bottom / right borders of the window using 'Dock panel'.
3. Example :-

xaml code,

{Grids}

```
<DockPanel Name = "dcpnl">
    <Button Name = "TopRect" DockPanel.Dock = "Top" Background = "Green"
        Content = "Top" />
    <Button Name = "TopLeftRect" DockPanel.Dock = "Left"
        Background = "Red" Content = "Left" />
    <Button Name = "RightRect" DockPanel.Dock = "Right"
        Background = "Blue" Content = "Right" />
    <Button Name = "BottomRect" DockPanel.Dock = "Bottom"
        Background = "Yellow" Content = "Bottom" />
</DockPanel>
</Grids>
```

The above code will generate the WPF window like below:



WrapPanel:- when we increase the wrap panel size which will not effect the size of child controls. But child controls locations will be changing.

Example for Wrap panel :-

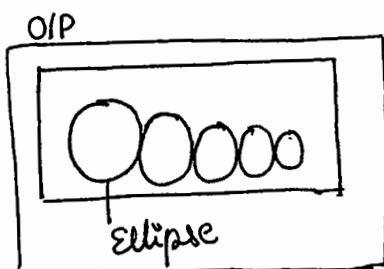
Step1:- .xaml code

<Grid>

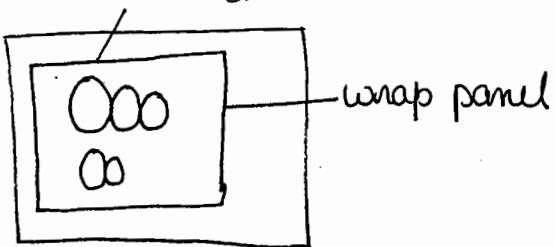
```
<WrapPanel Margin = "0,22,165,73">
    <Ellipse Width = "100" Height = "100" Fill = "Red" />
    <Ellipse Width = "80" Height = "80" Fill = "Red" />
    <Ellipse Width = "60" Height = "60" Fill = "Red" />
    <Ellipse Width = "40" Height = "40" Fill = "Red" />
    <Ellipse Width = "20" Height = "20" Fill = "Red" />
```

</WrapPanel>

</Grid>



when resize the wrappanel
child control location move like
this.



Canvas Panel:- Using this control we can place the child control with in fixed location.

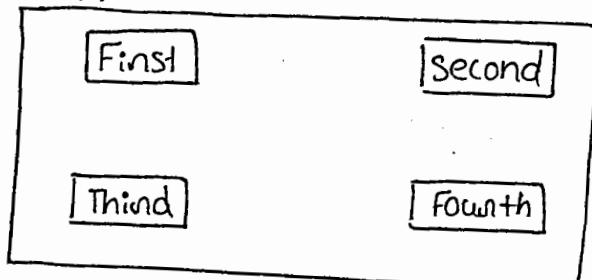
Example

```

<canvas Background = "pink" Width = "250" Margin = "126,30,126,46">
<Button canvas:left = "5" canvas:top = "10"> First </Button>
<Button canvas:left = "200" canvas:top = "10"> Second </Button>
<Button canvas:left = "10" canvas:top = "200"> Third </Button>
<Button canvas:left = "200" canvas:top = "200"> Fourth </Button>
</canvas>

```

O/P



Working with brushes in WPF:-

1. Brushes and pens are objects used to draw and fill graphical objects.
2. A brush is used to describe the background of a control and foreground of a text and fill of a shade.
3. In WPF we have 6 type of brushes:
 1. Solid color Brush
 2. LinearGradient Brush
 3. Radial Gradient Brush
 4. Drawing Brush
 5. Visual Brush
 6. Image Brush.

Solid color Brush:- Using this we can fill only one color with in the control (or) shape.

Ex: .xaml code:-

```

<Rectangle width = "200" height = "40" stroke = "Blue"
strokeThickness = "1">
<Rectangle.Fill>
  <SolidColorBrush color = "Red"/>
</Rectangle.Fill>
</Rectangle>

```

O/P



2. Linear Gradient Brush:-

1. This Brush is used to give combination of two or more colors with in a control / shape.
2. Using this brush we can fill the color in diagonal or horizontal or vertical.

Properties:-

1. Start point
2. Stop point (end point)

If these properties are ignored the 2 colors are going to painted the diagonal manner to fill the shape.

To paint the colors in vertical manner:

Start point = 0,0

Stop point = 1,0

To paint colors in horizontal manner we can use

Start point = 0,0

Stop point = 0,1

Example to paint the colors in diagonal manner:-

• XML code

<Aniids>

<Rectangle width = "200" height = "40" stroke = "Blue"
strokeThickness = "3" >

<Rectangle.Fill>

<LinearGradientBrush>

<GradientStop offset = "0.0" color = "Red" />

<GradientStop offset = "0.3" color = "Green" />

<GradientStop offset = "0.6" color = "Maroon" />

<GradientStop offset = "1.3" color = "Yellow" />

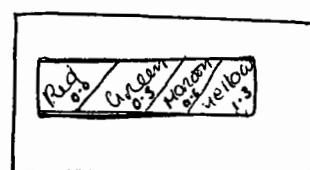
</LinearGradientBrush>

<Rectangle.Fill>

</Rectangle>

</Aniids>

Output



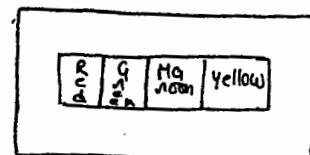
Example to display (fill) vertical manner

- xaml code

In the above program code update the with below properties.

```
<LinearGradientBrush StartPoint = "0,0" EndPoint = "1,0">  
    <!--  
    </LinearGradientBrush>
```

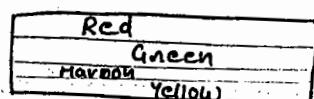
O/P



Example to fill horizontal manner.

- xaml code

```
<LinearGradientBrush StartPoint = "0,0" EndPoint = "0,1">  
    <!--  
    </LinearGradientBrush>
```



3. RadialGradientBrush:-

This is used to paint the colors by taking from a center point radially.

Properties:-

- ① center
- ② RadiusX
- ③ RadiusY

These properties are set / get the length on x and y axis both that indicate how long that color should continue.

Example:-

<Ani>

```
<Rectangle Width = "300" Height = "300" Stroke = "Black"  
    StrokeThickness = "2">
```

```
<Rectangle.Fill>
```

```
<Rectan <RadialGradientBrush
```

```
    GradientOrigin = "0.1,0.4"
```

```
    Center = "0.6,0.5"
```

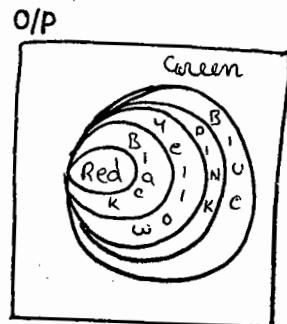
```
    RadiusX = "0.5"
```

```
    RadiusY = "0.5" >
```

```

<GradientStop color = "Red" offset = "0" />
<GradientStop color = "Black" offset = "0.20" />
<GradientStop color = "Yellow" offset = "0.40" />
<GradientStop color = "Pink" offset = "0.60" />
<GradientStop color = "Blue" offset = "0.80" />
<GradientStop color = "Green" offset = "1.0" />

```



</Rectangle>

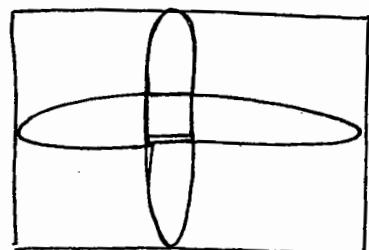
</Rectangles>

</Grid>

DrawingBrush:-

A Drawing Brush uses drawing objects Geometry Drawing, Image Drawing, Video Drawing, GlyphRun Drawing to draw shapes, Images, Video & text respectively.

XAML code:-



WPF Controls:-

ToggleButton:- It is like a button, but remains pressed down after it is clicked.

Text related Controls:-

password TextBox:- It is like a textbox but masks the characters. It is acting a password TextBox.

RichTextBox:- An editable version of a TextBlock.

Note:- TextBox and RichTextBox have built in spell checkings.

Example for TextBox and RichTextBox:-

Step:- XAML code-

<Canvas>

```

<RichTextBox width = "180" height = "80" SpellCheck = "Enabled" = "True" Canvas.Top = "90" />

```

Visual Brush:- Visual Brush is used to fill UI elements.

Step1:- xaml code

ImageBrush:- An image brush uses to paint the required images within graphical shape.

Satya Technologies

xaml code

<Grid>

<Ellipse Stroke = "Black" StrokeThickness = "3" Margin = "25,12,124,27" />

<Ellipse.Fill>

<ImageBrush ImageSource = "Microsoft.jpg" />

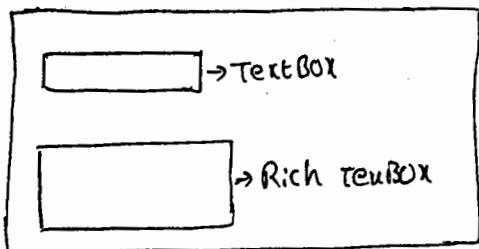
</Ellipse.Fill>

</Ellipses>

</Grids>

Note:- Add one image to the solution explorer rename it as Microsoft.jpg

→ <TextBox Width = "100" Height = "41" Canvas.Top = "20" SpellCheck.IsEnabled = "True" /> </TextBox> </Canvas>



Containers:-

GroupBox:- Draws a header and rectangle around a group of controls.

Expander:- Basically a collapsible version of the GroupBox.

TabControl:- Divides controls into different pages and only displays one tabpage at a time.

Example for Groupbox, Expander and Tabcontrol:-

xaml code

<Canvas>

<Canvas>

<GroupBox Header = "GroupBox control" canvas. left = "0"

canvas. top = "0">

<StackPanel>

<Button> 1 </Button>

<Button> 2 </Button>

<Button> 3 </Button>

</StackPanel>

</GroupBox>

<Canvas> <Expander Header = "Expander control"

Expander.

canvas. left = "100" canvas. top = "0">

<StackPanel>

<Button> 4 </Button>

<Button> 5 </Button>

<Button> 6 </Button>

</StackPanel>

<Expander>

<TabControl> canvas. left = "0", canvas. top = "100">

<TabItem Header = "Tabpage1">

<StackPanel>

<Button> 7 </Button>

<Button> 8 </Button>

<Button> 9 </Button>

</StackPanel>

</TabItem>

<TabItem Header = "Tabpage2">

<StackPanel>

<Button> 10 </Button>

<Button> 11 </Button>

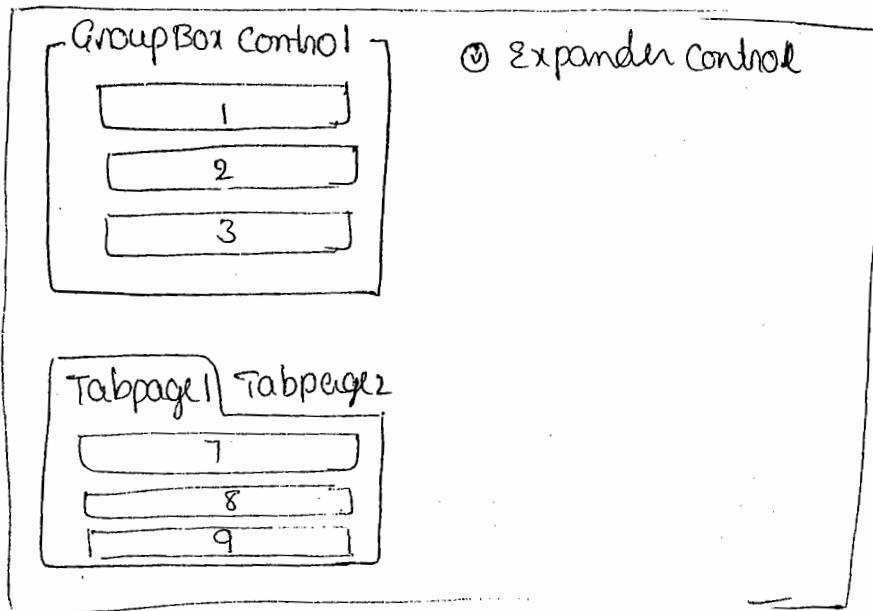
<Button> 12 </Button>

</StackPanel>

</TabItem>

<TabControl>

<Canvas>



Note - Remaining control notes will be available in following slide www.mreddy.com.

Data Binding in WPF :-

Data Grid Control :- It is a WPF data bound control. Using this control we can display the data in rows and column format. We can customize the datagrid control according to our control like asp.net gridview control.
Example to display the Emp table with in the datagrid by setting autogenerate columns = "True".

Step 1 :- • xaml code.

```
<Grid>
  <DataGrid AutogeneratedColumns = "True" Height = "200"
    HorizontalAlignment = "Left" Margin = "57,12,0,0"
    Name = "dataGrid1" VerticalAlignment = "Top" Width = "330"
    DataContext = "{Binding}"
    ItemsSource = "{Binding}"
  </DataGrid>
</Grid>
```

Step 2 :- • xaml.cs code

namespace DataGridExample

```
{ class MainWindow : Window
{ }
```

```

private void window_Loaded (-, -)
{
    SqlConnection conn = new SqlConnection("Server=. ; database=-
        Snuthi ; uid=sa; pwd=pwd");
    SqlCommand cmd = new SqlCommand("select * from Emp", conn);
    SqlDataAdapter da = new SqlDataAdapter(cmd);
    DataSet ds = new DataSet();
    da.Fill(ds, "Empnew");
    dataGridView1.DataSource = ds.Tables["Empnew"];
}

```

↓
↓
↓
Example to display the emp table with in DataGridView by setting AutoGenerate columns = - false :-

DataGridView columns we can contains sub tags like below.

① DataGridView checkbox column.

- ② DataGridView check combobox "
- ③ " hyperlink "
- ④ " template "
- ⑤ " text "

All other subtags will have two important properties.

① header ② Binding.

① header:- for this property we have to initialize header of the column which we want to display.

② Binding:- for this property we have to initialize the column name of the table which we want to bind.

Step1:- . xaml code:-

```

< DataGridView AutoGenerateColumns="false"
    Width="318" Height="200"
    DataSource=" { Binding " } "
    DataContent=" { Binding " } "
    AutoGenerateColumns="false" />

```

```

<DataGrid.Columns>
    <DataGridTextColumn Header = "Employee NO"
        IsReadOnly = "true" Binding = "{Binding EmpNO}" />
    </DataGridTextColumn>
    <DataGridTextColumn Header = "Employee Name" IsReadOnly = "true"
        Binding = "{Binding EmpName}" />
    </DataGridTextColumn>    <DataGridTextColumn
        Header = "Salary" IsReadOnly = "true" Binding =
        "{Binding .Sal}" />
    </DataGridTextColumn>

```

xaml.cs code:-

```

class MainWindow
{
    private void Window_Load()
    {
        // init the program same as above program
        loaded client
    }
}

```

Note:- By default WPF DataGrid column will be in editable mode.
If you want to make it as read only we have to use
below property. IsReadOnly = "True";

Example to update the salary by using DataGrid control.

4

Silverlight

history of silverlight :-

Web Technologies are classified into two types:

1. Client-side web technologies.
2. Server-side web technologies.

Client side web technologies:-

1. Ex:- HTML, Javascript and VBScript.
2. Using plain HTML we can develop a static website but which will not have any user interactivity.
3. To overcome this we have to use client side scripting languages like Javascript, VBScript and so on.
4. Using these client side scripting languages we can add user interactivity to a static website.
5. But these languages are light-weight programming languages which are having some limitations, to overcome this we have to go for server side (script) web technologies.

Server side web technologies:-

- Ex:- Asp .Net, JSP, PHP... etc.
1. Using Microsoft server side technology called asp .net we can develop a dynamic web-site.
2. But by asp .net we can not implement graphics and animations.
3. To implement graphics with in asp .net web page we are depending on third party designing tools called photoshop, Adobe flex, Dreamweaver etc.
4. To overcome this Microsoft has introduced its own UI (User Interface) designing s/w called "Silverlight".

What is Silverlight ?

Silverlight is the new Microsoft Technology on the web platform for rich internet application in 2007 was launched in the year 2007.

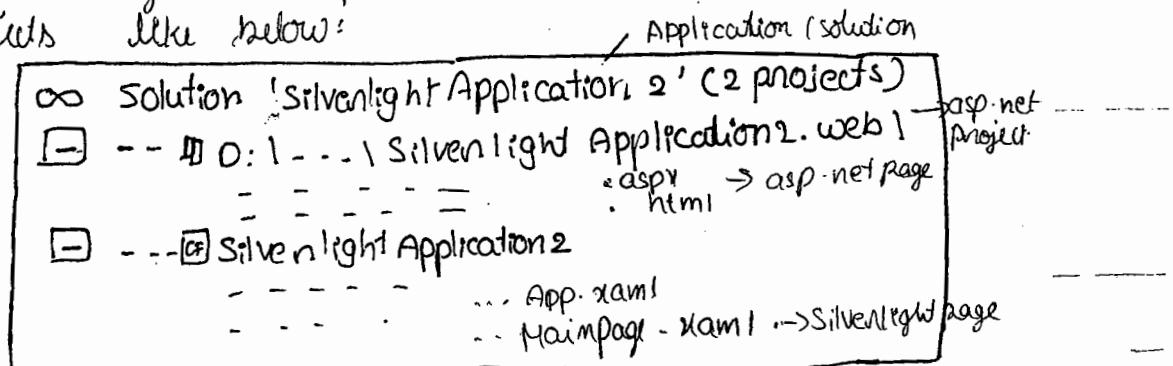
Silverlight supports multiple browsers called "Cross Browser Technology", which includes IE, Firefox & safari, opera etc

2. Silverlight supports multiple operating systems called "Cross platform technology" which includes windows family of OS, mac, linux...etc
3. Silverlight also supports multiple devices called "Cross device" technology which include mobile devices to desktop browsers.
4. Silverlight is a browser plug-in approximately 4MB in size, it is a client side free s/w, easy & fast, & has less than 10 sec one time installation.
- * If we want to implement animations in .Net Windows appn we have to use WPF.
- * If we want to implement animations in .Net web appn we have to use Silverlight.
- * WPF is next version of Windows Forms.
- * Silverlight we have to use with ASP.NET i.e., ASP.NET + Silverlight = .Net Rich Internet Application.

How to create a ASP.NET Silverlight Application?

1. open Visual Studio .Net
2. File → new → project → Select language as visual c# and type of application as silverlight Application. Click OK button.
→ It will open new silverlight application window here under new web project type → we have to select ASP.NET web site. → click OK button with this process
It will open silverlight appn development environment.

By default silver light development environment will come with two projects like below:



By default silverlight project will come with one page i.e., "Mainpage.xaml".

Note:- To define the Silverlight User Interface we have to use XAML programming due to that reason every silver light User Interface extension will be .xaml.

• XAML stands for extensible Application Markup language.

→ Every silver light user interface will come with two files.

- XAML
- XAML.cs

• XAML file :- It will support two modes :

- ① Design Mode
- ② XAML Mode.

Design Mode :- In design mode this file will display the Silverlight designer window.

XAML Mode :- In this mode it will display the XAML code window like below.

<Usercontrol>

```
<Grid>           // here we have to write the appearance related code.  
</Grids>
```

</Usercontrol>

• XAML.cs :- It is C#, NET class file.

Structure of XAML.cs file

Using system.windows.controls;

Namespace SilverlightApplication

```
{  
    class Mainpage : UserControl → predefined class.  
    {  
        → user defined class
```

// here we will write the business logic.

}

Example to implement Silverlight appn in step by step process.

- Step1:- Open a Silverlight appn & rename it as MySilverlight
- Step2:- Drag and Drop calendar control to .aspx appn
- Step3:- Drag and Drop TextBlock control to .xaml window.
- Step4:- Change the TextBlock control XAML code like
below with in the .xaml window.

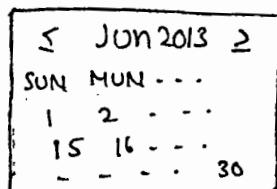
<UserControl>

<Grid>

```
<textBlock Name="txtWelcome" Text="Welcome to Silverlight"  
FontSize="28" Foreground="Red" />  
</Grid>  
</UserControl>
```

cdyten Run the application.

O/P



→ asp.net control

Welcome to Silverlight → Silverlight Control.

⇒ Panels of Silverlight / Layouts of Silverlight :-

There are 6 types of panels in Silverlight like below.

1. Grid
2. Canvas
3. StackPanel
4. ScrollViewer
5. Border
6. ViewBox

⇒ Animations in Silverlight :- To implement Silverlight we have to import a base class library called System.Windows.Media.Animation.

2. In Silverlight we have various types of animations like WPF.
They are
1. Color Animation
 2. Double Animation
 3. Matrix Animation
 4. Point Animation etc

Every animation is represented as predefined class, w/h
one all part of System.Windows.media.Animation.
i.e., Color Animation, Double Animation etc are predefined
classes.

To implement animations other than these animation classes
we will use two more class predefined classes. They are

- ① Timeline (Abstract class)
- ② StoryBoard (Sealed class).

Timeline:-

1. Timeline is the Base Abstract class which is part of System.Window.media.Animation namespace.
2. All the animation classes are inherited from "Timeline" abstract class. With in "Timeline" class Microsoft defined some common properties they are Timespan, duration, FillBehaviour, RepeatBehaviour

Storyboard:-

1. StoryBoard is a predefined "Sealed class", which is part of System.windows.media.Animation.
2. StoryBoard is a derived class of Timeline class.

What is the role of Story Board in Silverlight?

1. StoryBoard Class plays very important role in Silverlight Animations.
2. StoryBoard is a container control.
3. StoryBoard control is acting like a parent control for all animation controls.
4. StoryBoard control can contain one or more animations like controls like ColorAnimation, Double Animation and
5. StoryBoard control will give the instruction to animation control

to play animation.

6. Within StoryBoard class we have various methods like begin, stop, pause & resume.

StoryBoard class important properties:-

TargetName:- The objectName which we are animating.

TargetProperty:- Here we have to writing property name which we are using for animation.

StoryBoard Methods:-

Begin() :- Starts the animation.

Pause() :- Pause the animation.

Resume() :- callback pause animation.

Stop() :- Stops the animation.

How to implement the Animation ?

Implementation of animation in Silverlight can be divided into four steps.

- 1. Create object
- 2. Create Animation
- 3. Define the StoryBoard
- 4. Associate the storyboard with an event.

An example to change implement color Animation on Ellipse.

Step1:- xaml code

```
<StackPanel>
    <StackPanel.Resources>
        <Storyboard x:Name="myStoryboard"
            AutoReverse="True" Duration="0:0:5">
            <colorAnimation Storyboard.TargetProperty="Color"
                Storyboard.TargetName="myBall" From="Yellow" To="Green"/>
        </Storyboard>
    </StackPanel.Resources>
    <Border x:Name="brdTest" BorderBrush="Green"
        BorderThickness="4" Width="400" Height="400">
```

```

<Ellipse Width = "200" Height = "200">
  <Ellipse.Fill>
    <SolidColorBrush Color = "Yellow" x:Name = "myball">
    </SolidColorBrush>
  </Ellipse.Fill>
</Ellipse>
</Borders>
<Button Content = "Start" HorizontalAlignment =
Width = 400 Height = 300 />

```

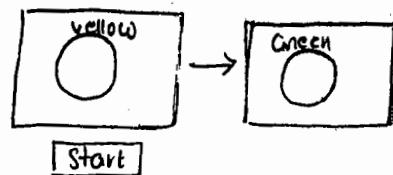
xaml.cs

```
private void Button_Click()
```

{

```
  myStoryboard.Begin();
```

}



① Example for Double animation to implement on Ellipse.

xaml code

```
<StackPanel>
```

Example for line geometry in point animation.

Example codes will be available in www.anreddy.com.

LINQ (Language Integrated Query)

1. LINQ stands for Language Integrated Query.
2. LINQ is a data access object which was introduced by Microsoft with .NET framework 3.5.
3. LINQ is Next version of ADO.NET.
4. Using ADO.NET a .NET appn can communicate the Datasources.
Similarly LINQ is allowing .NET appn to communicate Datasources.
5. ADO.NET is a tradition Data Access Object but LINQ is an advanced Data access Object.
6. Finally both are data access objects which are acting as a mediator b/w .NET appn's & Datasources like below:



7. by using ADO.NET we can communicating the Datasources with the help of SqlCommand like (select, insert, update...).
8. By using LINQ we can communicating the Datasources with the help of ^{same} SQL commands with .NET language like C# .NET & VB .NET ...
9. To retrieve the data from datasources LINQ is providing one query which is called as "LinqQuery" it is similar like SQL select command.

Syntax for LinqQuery :-

where/orderby/having/
groupBy

Select-class

Userdefined

↑ ↑ ↑

From	variable name	in	Datasource [clauses]	select	variable name
↓	↓	↓	↓	↓	↓
keyword	userdefined	keyword	It can be collection / Database / XML file		

10. Microsoft is providing one predefined tool called OR Tool (Object Relational tool), This tool is providing one predefined class with in that predefined class Microsoft defined various predefined methods to perform remaining operations like insert, update, delete and so on.
11. whenever we want to perform the above operations we have to create an object for this predefined class and using that object we have to access the concerned methods according to

Our requirement -

12. OR Tool is treating our database table as a class and columns as properties.
13. Hence as a programmer we have to create an object for DataTable class. & we have to access the columns of the table by using Table class object.
14. Using LINQ we can communicate the DataSources like below:
 - (1) LINQ to SQL Server
 - (2) LINQ to collections
 - (3) LINQ to XML

1. LINQ to collections:-

1. Write a console program to retrieve data from list collection.

emplist [20 | 10 | 30 | 5 | 40]

Class program

```
{  
public void main()  
{  
    List<int> empList = new List<int>() { 20, 10, 30, 5, 40 };  
    foreach (int id in empList)  
    {  
        Console.WriteLine(id);  
    }  
    Console.ReadLine();  
}}
```

O/P
20
10
30
5
40

2. Write a console program to display the employee numbers which are greater than 20

Class program

```
{  
public void main()  
{
```

```
List<int> empList = new List<int>() { 20, 10, 30, 5, 40 };  
var v1 = from eno in empList where eno > 20 select eno;
```

```
foreach (int id in var v1)
{
    con.WL(id);
}
con.RL();
```

w.a. console program to display employee Nos which are greater than 5 in ascending order.

```
void main()
{
```

```
List<int> emplist = new Emplist<int>() {20, 10, 30, 5, 40};
```

```
var v1 = from eno in emplist where eno > 5 orderby eno select eno
```

```
foreach (int id in v1)
{
```

```
    con.WL(id)
```

```
}
```

```
con.RL();
```

```
}
```

w.a. console prgm to display the employee NO which are greater than 5 in descending order

```
void main()
{
```

```
List<int> emplist = new Emplist<int>() {20, 10, 30, 5, 40};
```

```
var v1 = from eno in emplist where eno > 5 orderby eno descending select eno
```

```
foreach (int id in v1)
```

```
{
```

```
    con.WL(id);
```

```
}
```

```
con.RL();
```

```
}
```

w.a. console program to display employee No's which are greater than 5.

Using system::collection::generic;

class program

{

void main()

{

Stack<int> emplist = new Emplist();

Stack<int> emphist = new Stack<>();

emplist.push(20);

emplist.push(30);

emplist.push(10);

emplist.push(5);

emplist.push(40);

var v1 = from eno in emplist where eno > 5 select eno;

foreach (int id in v1)

{

con.WL(id);

}

con.RL();

}

O/P

40

5

10

30

20

w.a. console program to display empNo's of stack which are greater than 5 in ascending order.

var v1 = from eno in emplist where eno > 5 orderby eno

select eno;

O/P

10

20

30

40

w.a. console program to retrieve the employee Nos of a "queue" which are greater than 5 in ascending order by using linqquery.

```
public IService  
{  
    private String username;  
    public String getUsername();
```

Class Program

{

```
public void main()  
{
```

```
Queue<int> empList = new Queue<int>();
```

```
empList.enqueue(20);
```

```
empList.enqueue(10);
```

```
empList.enqueue(30);
```

```
empList.enqueue(5);
```

```
empList.enqueue(40);
```

```
var vi = from eno in empList where eno > 5 order by  
eno select eno
```

```
foreach (int id in vi)
```

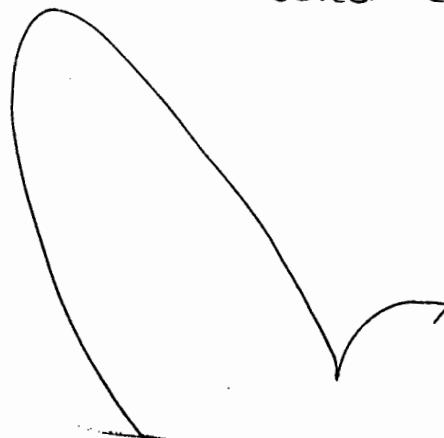
{

```
con.WL(id);
```

}

```
con.RL();
```

}



w.a.p to display Employee No of a dictionary which are
greater than 5 by using linq query.

Example to communicate the database by using Ling.

Step1:- Open a window application rename it as 'Ling to sql Example'

Step2:- Creating database

1. View → Server Explorer → Select Data Connections → Right click → Create new sql server database...
2. It will open Create new sqlserver Database window here we have to write 'Server name' → select Use sql server authentication Username sa password abc

Enter new Database name as 'SatyaDatabase' and click ok button.

Creating Table:-

Select SatyaDatabase → Expand Select Tables → Right click →

Select Add new table → It will open a table window fill like below :

ColumnName	DataType	Allow Nulls
EmpNo	int	<input type="checkbox"/>
EmpName	varchar(50)	<input checked="" type="checkbox"/>
Sal	money	<input checked="" type="checkbox"/>

Click on save icon. here we can give table name as 'emp' click ok button. Right click on empno column select 'set as primary key' click save.

Step3:- Adding OR tool to the Solution Explorer.

Open Solution Explorer → Select Ling to sql Example project → Add → new item → It will open add new item window here select a template called Ling to SQL classes Rename it as 'Lingtysql.dbml' and click add button.

With this process 'OR' tool will add to the Solution Explorer window.

dbml:- dbml stands for Database Markup language extension of the OR tool file is .dbml.

OR TOOL will be representing with two files:

1. .Abml.layout :- it is representing the designer window of OR TOOL.
2. designer.cs :- It is representing the OR TOOL class file.

Structure of .designer.cs file :-

```
class LinqtosqlDataContext : System.Data.Linq.DataContext
{
    ↑           ↓
    Usenamedclass   base class library
    }           predefined class
```

Adding the emp table to ORTOOL designer window:

1. Enable ORTOOL designer window, open Server Explorer select emp table drag and drop on OR TOOL designer window.

This process will create a Emp table image to designer window.

Note:- After adding the table to ORTOOL that table related class code will generate with in the Linqtosql.designer.cs file like below:

```
public class Emp
{
    int empno
    {
        get
        {
            ...
        }
        set
        {
            ...
        }
    }

    string empname
```

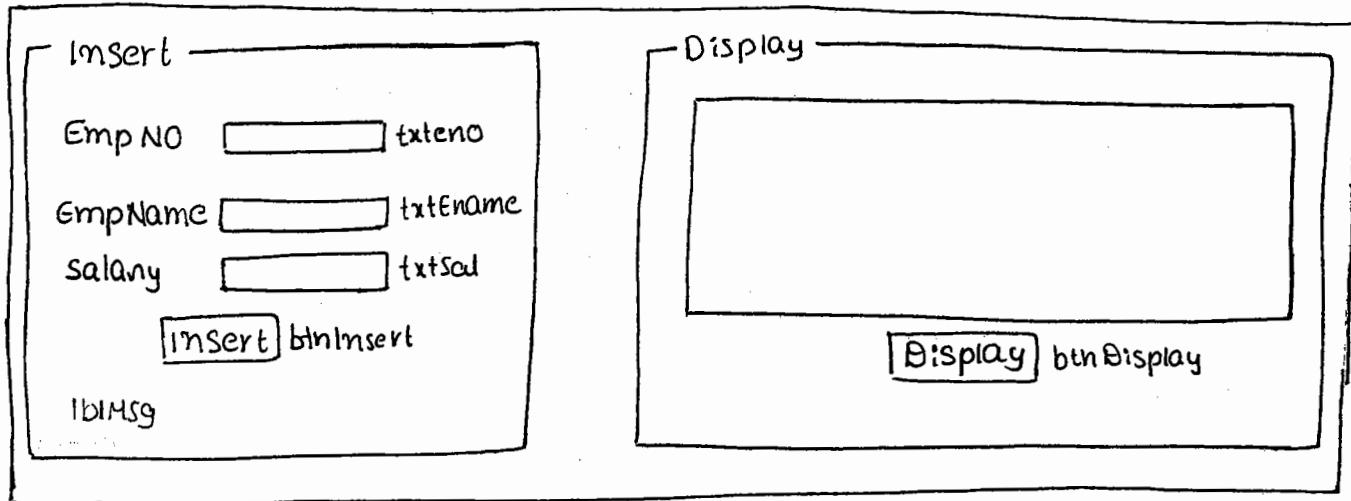
```
    {
        get { ... }
        set { ... }
    }
}
```

```

double sal
{
    get
    {
        ...
    }
    set
    {
        ...
    }
}

```

Design of Form1.cs (Design)



Form1.cs

```

public partial class Form1 : Form
{
    LingToSqlContext objling = new LingToSqlContext();
    Emp objemp = new emp();

    private btnInsert_Click()
    {
        objemp.eno = Convert.ToInt32(txteno.Text);
        objemp.ename = txtename.Text;
        objemp.sal = decimal.Parse(txtsal.Text);
        objling.emp.emps.InsertOnSubmit(objemp);
        objling.SubmitChanges();
        txteno.Clear();
        txtename.Clear();
        txtsal.Clear();
    }
}

```

↓
It is a property to representing emp table.

```

lblMsg.Text = "Emp Record is inserted";
}

private void btnDisplay_Click()
{
    var vi = from empdata in objLinq.Emps select empdata;
    GridView1.DataSource = vi; ↓ It representing emp table
    GridView1.DataBind();
}

All ado.net examples using linq.
Implement Mobileshoppe project & Satya project by using linq concept.
— End —

```

Inside CLR:-

1. When we will run a .Net appn CLR will load into RAM.
- 2- If it is a Java appn JVM will load into RAM.
3. As part of memory allocation CLR will be divided into following parts:
 1. Stack
 2. Heap
 3. Method Area
 4. Execution Engine ---

Stack:-

1. Stack will contain the 'local variables' and reference variables i.e.,

Heap:-

heap will contains the object ^{↑ contains instance variables} and reference i.e., ^{Non static} instance variable will be allocating in heap

Method Area:-

In Method Area will contain have mainly 3 parts like below:

Static Variables	Methods	Constructors
------------------	---------	--------------

By this we can say Methods & Constructors are not getting any memory only static variables are getting memory

with in the method area.

4. Execution Engine:-

1. This part will contain the block / method / constructor which is executing with in the appn.
2. For example: when we run the console appn CLR will start the execution with main method(). According to that the main method will be moving from method area to execution engine.
3. Then execution engine will execute the one by one instruction of the main method.
4. As part of main method execution if suppose control is invoking display method() then display method will be moving from method area to execution engine.
5. Now execution engine will execute the one by one instruction of the display(). Once display() execution is completed then execution engine will move to main method, it will execute the next statement of main method & so on..
6. By lets implement above concept by using simple console program.

```
namespace MyconsoleApplication
```

program.cs
↳ rename as
calculate

```
class calculate
```

```
{
```

```
    int a, b; // instance variable
```

```
    public int add( int x, int y)
```

```
{
```

```
    // x & y are local variables
```

```
    a = x;
```

```
    b = y;
```

```
    return (a+b);
```

```
}
```

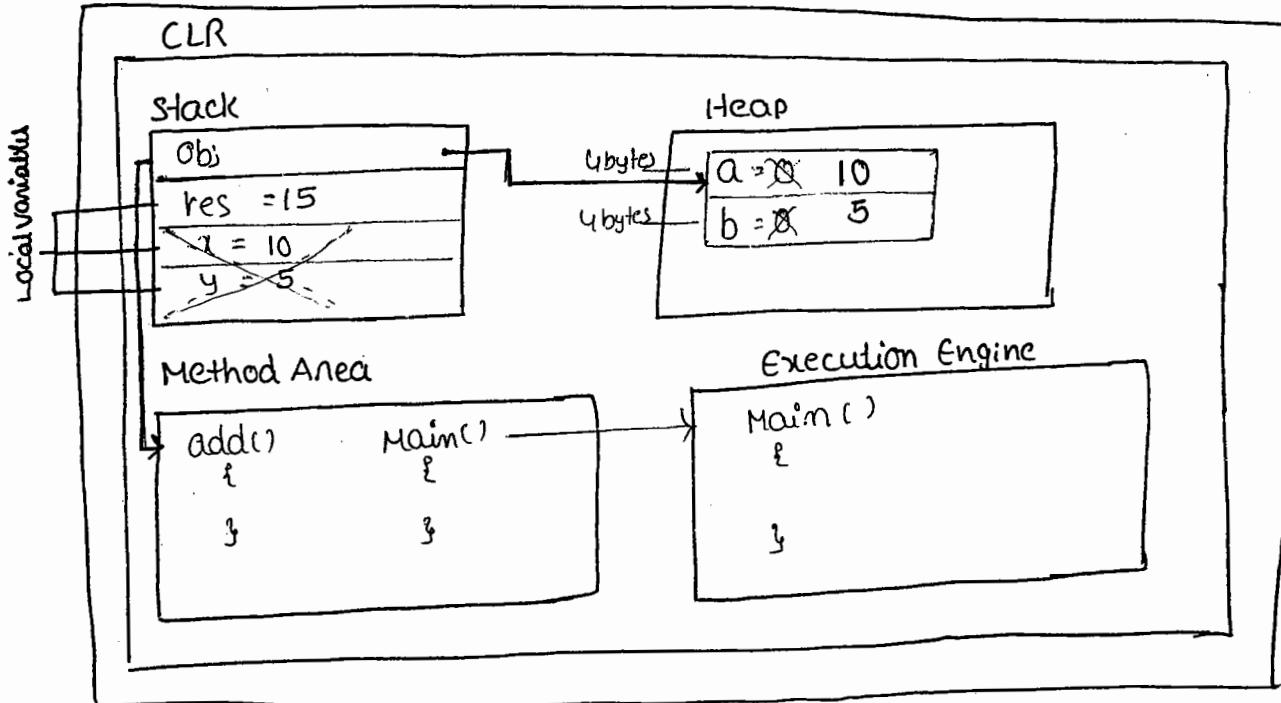
```

static void main()
{
    calculate obj = new calculate();
    int res = obj.Add(10, 5);
    Console.WriteLine("result is:" + res);
    Console.ReadLine();
}

```

Diagram of the CLR to allocate the memory for above class members.

RAM



Note:- Method area and execution engine will not allocate any memory for methods and constructors.

i.e., If we will declare any static variables which will be allocating with in the method area only for that static variables memory will be allocating. By this we can say that for class and methods and constructors there will be no memory is allocating.

Memory is allocating for instance variables, static variables, local variables.

jQuery

→ Using HTML we can develop a static webpage.

Ex:- <body>

Today date is : mon 26 Aug 2013

</body>

→ if you run the above webpage always it will display the same date. Because it is a static webpage.

→ If you want to make this static web page as a dynamic webpage we have to use javascript with in the HTML page.

→ Javascript is a client side scripting language, whenever we want to convert our static webpage as a dynamic webpage we have to use Javascript.

Example :-

Convert the static webpage as dynamic webpage.

<body>

<script language = "javascript">

var Day = new Date();

document.write ("Today date is :" + Day);

</script>

- > When we run the above webpage date will be display dynamically . Because it is a dynamic webpage.
- > whenever we want to implement client side validation with in ASP .Net webpage we have to go for Javascript or VB Script.
- > whenever we are implementing javascript with in a web page we have to write the multiple lines of code.
- > By using jquery we can reduce the javascript code with in a web page.
- > jquery is an advanced technology of javascript, that means jquery is next generation of javascript.
- > jquery is a predefined javascript library.
- > jquery is a group of javascript predefined functions.
- > jquery is a light weight and more powerful API adding dynamic behavior for web pages.
- > jquery is a multi browser, javascript library designed to simplify the client side scripting.
- > jquery was released in january 2006 by John Resig.
- > jquery Syntax is designed to make it easier to

create animation, to handle events.

→ jQuery has building support for Ajax.

How to download jQuery :-

→ To download jQuery library we have to visit www.jquery.com/download.

→ Here we will have 2 sections

1. jQuery 1.X

2. jQuery 2.X

→ Under jQuery 2.X section click on below link.

→ Download the uncompressed development jQuery 2.X

→ It will open jQuery file with this line.

`http://code.jquery.com/jquery-2.0.3.js`

→ Select "Save Page As" in some location of your system with this process "jQuery" library file will be saved with below name.

- jQuery - 2.0.3.js

→ It is jQuery library file

Votes

jQuery library name can be optional but extension
should be ".js".

jQuery

1. How to Add jQuery Library to HTML webpage

Step 1:- Save .html file in some folder

Step 2:- Save the .js file with in the above folder.

Step 3:- Add jQuery library to HTML file like below.

```
<html>
  <head>
    <script src="jquery-2.0.3.js"> </script>
    <script language="javascript"> </script>
  </head>

  <body>
```

Here we will write appearance code.

```
</body>
</html>
```

How to use jQuery Library with in ASP.NET 4.0:-

Step 1:- open ASP.NET web application.

Step 2:- Add jQuery library file to Script folder with in Solution Explorer.

Step 3:- Drag and drop jQuery library file from Solution explorer window to targetted web page .aspx Source

```
<% @page ---->
<html>
<head>
<script type="text/javascript" src="scripts/jquery-2.0.3.js">
</script>
<script language="javascript"></script>
```

Here we have to invoke jquery functions.

```
</head>
<body>
<form>
<div>
    — — —
</div>
</form>
</body>
</html>
```

Syntaxes of jquery :-

With jquery syntax we can select HTML elements and perform actions on them.

A jquery statement should follow below basic syntax.

`$ (selector).action();`

> This syntax is having 3 items.

1 \$ is to access jquery.

- (2) Selector can be object (or) html tagname (or) id of tag.
- (3) Action can be a predefined method of jQuery.

jQuery Selectors :-

- jQuery Selectors are one of the most important parts of the jQuery library.
- jQuery Selectors allow you to Select and manipulate HTML elements.
- jQuery Selectors are used to find HTML elements based on their id, classes, tag names, attributes, values of attribute and much more.

Hide () :-

- Hide is a jQuery Predefined method.
- This method will hide the targeted html elements.

Examples for Selectors :-

`$ (this).hide ()`

- This Statement hides the current element

`$ ("p").hide ()`

- This Statement hides all Paragraphs:

```
$( "P-test" ) . hide ()
```

> This statement hides all paragraphs with class "test".

```
$( "#test" ) . hide ()
```

→ Hides the element with id = "test".

document . ready () :-

Here "document" is an object which will represent the full html webpage.

ready () is a predefined method or event , it will invoke after the html document is fully loaded on a browser.

All jquery methods we should call inside document-ready() function like below.

```
<script language = "javascript" >  
$(document) . ready (function () {  
    // invoke jquery methods.  
});  
</script>
```

document → event (or) method.
{} → nameless function.

Anonymous functions or Nameless functions :-

→ In javascript we can define a function without name, which can be called as Anonymous functions or nameless functions like below.

```
function ()
```

```
{
```

```
---
```

Note :- According to the above script structure after html page is fully loading, a jquery event called ready() is invoking, after that it is invoking a anonymous function, that nameless function is invoking the jquery methods.

→ The above syntax we are following because to prevent a jquery code from running before the document is finished loading.

→ Here we are mention some examples of actions, that can fail if functions are run before the document is fully loaded.

→ Trying to hide the element that doesn't exist.

→ Trying to get the size of an image that is not loaded.

Example to display 2 paragraphs in HTML

```
<html>
<head> </head>
<body>
<p> First Paragraph </p>
<p> Second Paragraph </p>
</body>
</html>
```

Example to hide all paragraphs in HTML

```
<html>
<head>
<script src="jquery-2.0.3.js"> </script>
<script language="javascript">
$(document).ready(function () {
    $("p").hide();
})
</script>
</head>
<body>
<p> First Paragraph </p>
<p> Second Paragraph </p>
</body>
```

) → Example to hide all paragraphs when the page is loading
but before hiding display alert pop up box as "paragraphs are
going to hide".

```
<html>
  <head>
    <script src="jQuery-2.0.3.js"></script>
    <script language="javascript">
      $(document).ready(function () {
        alert ("Paragraphs are going to hide");
        $("p").hide ();
      });
    </script>
  </head>
  <body>
    <p> First Paragraph </p>
    <p> Second Paragraph </p>
  </body>
</html>
```

ANSWER

Example to hide a paragraph when user will click

```
<html>
```

```
<head>
```

```
  <script src="jquery-2.0.3.js"> </script>
```

```
  <script language="javascript">
```

```
    $(document).ready(function ()
```

```
    {
```

```
      $("p").click(function ()
```

```
      {
```

```
        $(this).hide();
```

```
      };
```

```
    };
```

```
  </script>
```

```
</head>
```

```
<body>
```

```
  <p> First Paragraph </p>
```

```
  <p> Second Paragraph 2</p>
```

```
</body>
```

```
</html>
```

→ Example, to hide all paragraphs when user will click button

<html>

<head>

<script src="jquery-2.0.3.js"></script>

<script language="javascript">

\$(document).ready(function()

{

\$("button").click(function()

{

\$("p").hide();

});

});

</script>

</head>

<body>

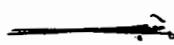
<p> First paragraph </p>

<p> Second paragraph </p>

<button> Hide </button>

</body>

</html>



Example to hide only second paragraph when user click on button.

```
<html>
  <head>
    <script src="jquery-2.0.3.js"> </script>
    <script language="javascript">
      $(document).ready(function () {
        $("button").click(function () {
          $("#P2").hide();
        });
      });
    </script>
  </head>
  <body>
    <p id="P1"> First Paragraph </p>
    <p id="P2"> Second Paragraph </p>
    <button> Hide </button>
  </body>
</html>
```

→ Example to hide paragraphs one by one.

```
<html>
  <head>
    <script src="jquery-2.0.3.js"></script>
    <script language="javascript">
      $(document).ready(function () {
        $("button").click(function () {
          $("#P2").hide();
          alert("Second Paragraph is going to hide");
          $("#P2").hide();
        });
      });
    </script>
  </head>
  <body> id="P1"
    <p> First Paragraph </p>
    <p> Second Paragraph </p>
    id="P2" <button> Hide </button>
  </body>
</html>
```

Example to hide all paragraphs when user click on any one para

```
<html>
<head>
<script src="jquery-2.0.3.js"></script>
<script language="javascript">
$(document).ready(function()
{
    $("p").click(function()
    {
        $("p").hide();
    });
});
</script>
</head>
<body>
<p> First Paragraph </p>
<p> Second Paragraph </p>
</body>
</html>
```

→ Example to hide all elements when user click on button.

```
<html>
  <head>
    <script src = "jquery-2.0.3.js"></script>
    <script language = "javascript">
      $(document).ready(function()
      {
        $("button").click(function()
        {
          $("p, h1, h2").hide();
        });
      });
    </script>
  </head>
  <body>
    <h1> Heading 1 </h1>
    <h2> Heading 2 </h2>
    <p> First Paragraph </p>
    <p> Second Paragraph </p>
    <button> Hide </button>
  </body>
</html>
```

jQuery Events :-

An event is similar like a method, but it will invoke or fire for some action.

examples for Events :-

- > Moving a mouse over an element
- > Selecting a radio button.
- > Clicking on an element.

Events :-

1. ready
2. click

1) dblclick () :-

This event will fire when user will double click on the HTML element.

Example for dblclick ()

```
<html>
```

```
<head>
```

```
<script src = "jquery - 2.0.3.js" > </script>
```

```
<script language = "javascript" >
```

```
$(document) . ready (function ()
```

```
{
```

```
    $("P") . dblclick (function ()
```

```
{
```

```
)    $(this).hide();  
)  
)  
});  
</script>  
</head>  
<body>  
    <p> First Paragraph </p>  
    <p> Second Paragraph </p>  
</body>  
</html>
```

Mouseenter () :-

→ This event will fire when mouse pointer enters the HTML element.

→ Example for mouseenter

```
<html>  
<head>  
    <script src="jquery-2.0.3.js"></script>  
    <script language="javascript">  
        $(document).ready(function ()  
        {  
            $("p").mouseenter(function ()
```

```
{  
    alert ("you entered into first Paragraph");  
}  
});  
});  
</script>  
</head>  
<body>  
    <p> First Paragraph </p>  
    <p> Second paragraph </p>  
</body>  
</html>
```

Mouse leave () :-

- This event will fire when the mouse pointer leaves the html element.
- Example formouseleave.

```
<html>  
    <head>  
        <script src="jQuery - 2.0.3.js"></script>  
        <script language="javascript">  
            $(document).ready(function () {  
                {
```

```
$(" #P1") . mouseLeave (function ()  
{  
    alert (" Bye from First Paragraph ");  
});  
});  
</script>  
</head>  
<body>  
    <p id=" P1 " > First Paragraph </p >  
</body>  
</html>
```

Mouse Down () :-

- This event will fire when the left mouse button is pressed down while the mouse is over the html element.
- Example for mousedown.

```
<html>  
    <head>  
        <script src = "jQuery - 2.0.3.js " > </script >  
        <script language = " javascript " >  
            $ (document) . ready (function ()  
            {  
                //
```

```
$("#p1").mousedown (function ()  
{  
    alert ("Mouse is down over p1");  
});  
});  
</script>  
<head>  
<body>  
    <p id="p1"> first paragraph </p>  
    <p id="p2"> Second Paragraph</p>  
</body>  
</html>
```

Hover () :-

- for hover method we can initialize two nameless functions.
- The first function will be executed when the mouse enters the html element , the second function will be executed when the mouse leaves the html element.
- Example for Hover.

```
<html>  
<head>
```

```
<script language = "javascript">  
$(document).ready(function ()  
{  
    $("p").hover(function ()  
    {  
        alert ("Mouse entered into p1");  
    },  
    function ()  
    {  
        alert ("Mouse leaved from p1");  
    }  
});
```

```
</script>  
</head>  
  
<body>  
    <p> First Paragraph </p>  
    <p> Second Paragraph </p>  
</body>  
</html>
```

focus () :-

This event will fire when the focus will enter into the field of the html form.

blur () :-

> This event will fire when the focus is leaving from the field of the html form.

> Example for Focus & Blur

<html>

<head>

```
<script src="jQuery-2.0.3.js"></script>
```

```
<script language="javascript">
```

```
$(document).ready (function()
```

```
{
```

```
  $("#t1").blur (function ()
```

```
{
```

```
    alert ("Focus is leaving the text Box");
```

```
});
```

```
  $("#t2").focus (function ()
```

```
{
```

```
    alert ("Focus is Entering into second text Box");
```

```
});
```

```
});
```

```
</script>
```

```
<body>
  <input id="t1" type="Text"> </input>
  <input id="t2" type="Text"> </input>
</body>
</html>
```

change () :-

- This event will fire when user will changed the text of the text Box.
- Example for change.

```
<html>
  <head>
    <script src="jQuery -2.0.3.js"> </script>
    <script language="javascript">
      $(document).ready(function () {
        $("#t1").change(function () {
          alert("The text is changed in the TextBox");
        });
      });
    </script>
  </head>
```

```
<body>
  <input type="text" id="t1" value="Naga" />
</body>
</html>
```

Toggle () :-

This method will hide the shown elements and it will show the hidden elements.

→ Example for toggle.

```
<html>
  <head>
    <script src="jquery-2.0.3.js"></script>
    <script language="javascript">
      $(document).ready(function()
      {
        $("button").click(function()
        {
          $("p").toggle();
        });
      });
    </script>
  </head>
```

```
<body>
```

```
  <p> First Paragraph </p>
```

```
  <p> Second Paragraph </p>
```

```
  <button> Toggle </button>
```

```
</body>
```

```
</html>
```

jQuery fading Methods:-

→ With jQuery we can fade an element in and out of the visibility.

→ jQuery has the following fade methods.

1. FadeIn()
2. FadeOut()
3. FadeToggle()

FadeIn() :-

→ fadeIn method used to fade in a hidden element.

Syntax :-

```
$(Selector).fadeIn(speed, callback);
```

→ The above function Parameters are optional.

→ Speed Parameter specifies the duration of the effect.

→ callback parameter is a function to be executed after the fading completes.

→ Example for fadeIn.

```
<html>
```

```
<head>
```

```
<script src = "jquery - 2.0.3.js" > </script>
```

```
<script language = "javascript" >
```

```
$(document) . ready (function ()
```

```
{
```

```
    $("button") . click (function ()
```

```
{
```

```
    $("#div1") . fadeIn ();
```

```
    $("#div2") . fadeIn ("slow");
```

```
    $("#div3") . fadeIn (3000);
```

```
});
```

```
} ;
```

```
</script>
```

```
</head>
```

```
<body>
```

```
<button> Click to apply fading </button>
```

```
<div id = "div1" style = "display : none; Height : 80px; width : 80px;
```

```
background - color : red ; > </div> <br>
```

```
) <div id="div2" style="display:none; height:80px; width:80px;  
)  
 background-color:green;"> </div> <br>  
) <div id="div3" style="display:none; height:80px; width:80px;  
)  
 background-color:blue;"> </div>  
)  
</body>  
</html>
```

FadeOut():-

→ This method is used to fadeout a visible element.

Syntax :-

```
$(selector).fadeOut(speed, callback);
```

→ Example for fadeout.

```
<head>
```

```
 <script src="jquery-2.0.3.js"> </script>
```

```
 <script language="javascript">
```

```
 $(document).ready(function ()
```

```
{
```

```
 $("button").click(function ()
```

```
{
```

```
 $("#div1").fadeOut();
```

```
 $("#div2").fadeOut();
```

```
});
```

slow

```
>});  
>});  
</script>  
</head>  
<body>  
<button> Click to apply fadeout </button>  
<div id="div1" style="height:80px; width:80px;  
background-color: red;"> </div>  
<div id="div2" style="height:80px; width:80px;  
background-color: green;"> </div>  
<div id="div3" style="height:80px; width:80px;  
background-color: blue;"> </div>  
</body>  
</html>
```

Fade Toggle () :-

- > This method is a combination of fadeIn and fadeOut methods.
 - > This method will fadeIn if the element is hidden, this method will implement if fade out if the element is displayed.

→ Example for FadeToggle .

```
<html>
  <head>
    <script src="jquery-2.0.3.js"> </script>
    <script language="javascript">
      $(document).ready(function () {
        $("button").click(function () {
          $("#div1").fadeToggle();
          $("#div2").fadeToggle("slow");
          $("#div3").fadeToggle("3000");
        });
      });
    </script>
  </head>
  <body>
    <button> Click to apply FadeToggle </button>
    // Here write 3 divs code like above program.
  </body>
</html>
```

jQuery Sliding Methods :-

using jQuery we can implement sliding effects on HTML elements.

jQuery will support following sliding methods

1. SlideDown ()
2. SlideUP ()
3. SlideToggle ()

Slide Down () :-

This method will slide down an html element.

yntax:-

```
$(selector).slideDown (speed, callback);
```

Example for SlideDown -

<html>

<head>

```
<script src="jquery-2.0.3.js"></script>
```

```
<script language="JavaScript">
```

```
$(document).ready(function ()
```

```
{
```

```
$("#flip").click(function ()
```

```
{
```

```
$("#panel").slideDown ("slow");
```

```
});
```

```
</script>

<style type="text/css">
  #Panel, #flip
  {
    padding : 5px;
    text-align : center;
    background-color : red;
    border : solid 1px #c3c3c3;
  }

```

```
#Panel
{
  padding : 50px;
  display : none;
}
```

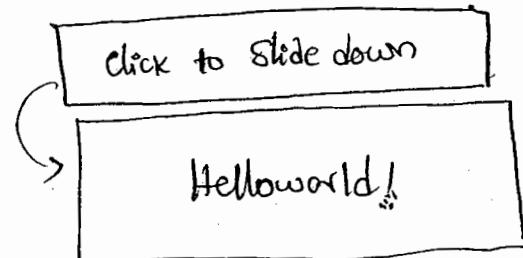
```
</style> <head>
<body>
```

```
  <div id="flip"> click to SlideDown Panel </div>
```

```
  <div id="panel"> Hello world! </div>
```

```
</body>
```

```
</html>
```



slideUP () :-

> This method will slide up the given element.

yntax

`$(selector) · slideUp (speed, callback);`

> Example for slideUP.

`<html>`

`<head>`

`<script src="jquery-2.0.3.js"></script>`

`<script language="javascript">`

`$(document) · ready (function ()`

`{`

`$("#flip") · click (function()`

`{`

`$("#panel") · slideUp ()slow;`

`});`

`});`

`</script>`

`<style type="text/css">`

`#panel, #flip`

`{`

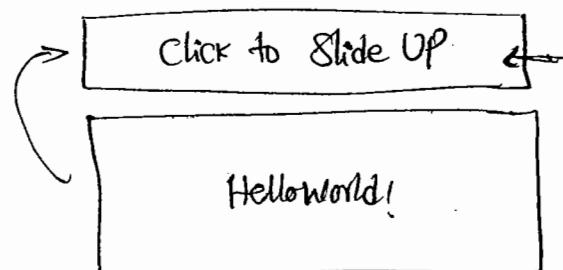
`// Same as above.`

`}`

`#panel`

`{`

`padding: 0px;`



```
> </style>
> </head>
> <body>
>   <div id="flip"> Click to Slide Up panel </div>
>   <div id="panel"> Hello world </div>
> </body>
> </html>
```

SlideToggle()

- This method is a combination of Slide Up and Slide Down.
- If the element is Slide Down, then SlideToggle method will slide up the HTML element.
- If the element is Slide Up, then SlideToggle method will slide down the HTML element.
- Example for SlideToggle

```
<html>
  <head>
    <script src="jquery-2.0.3.js"></script>
    <script language="javascript">
      $(document).ready(function() {
        {
```

```
$( "#flip" ).click(function ()  
{  
    $("#panel").slideToggle("slow");  
});  
});  
</script>  
  
<style type="text/css">  
#panel, #flip  
{  
    Some as above.  
}  
#panel  
{  
    padding: 50px;  
}  
</style>  
</head>  
<body>  
    <div id="flip"> Click to Slide Toggle </div>  
    <div id="panel"> Hello world! </div>  
</body>  
</html>
```

jQuery Animations :-

To implement animations by using jQuery we can use animate method.

Animate () :-

`$(Selector).animate({params}, speed, callback);`

→ for this method we have first parameter as "params" which is representing the CSS style properties which we want to use to apply animation.

→ Example for Animate () - Move div element to the left till it will reach the 250px

```
<html>
```

```
<head>
```

```
<script src = "jquery-2.0.3.js"></script>
```

```
<script language = "javascript">
```

```
$(document).ready(function ()
```

```
{
```

```
    $("button").click(function ()
```

```
{
```

```
        $("div").animate({left : '250px'});
```

```
    };
```

```
});
```

```
</script>
```

```
<body>  
  <button> Start Animation </button>  
  <div style="background-color:red; height:100px; width:100px;  
            position: absolute"> </div>  
</body>  
</html>
```

jQuery Callback Functions :-

- Transcendent statements are executed line by line
- When we are implementing effects there is a chance that second line code may execute before finished the first line effect , this may create errors .
- To prevent these errors in jQuery we can use callback functions -

A callback function is executed after the current effect is finished .

yntax :-

`$(Selector).method(Speed,Callback);`

example to implement callback function -

```
<html>  
  <head>  
    <script src="jQuery -2.0.3.js"> </script>  
    <script language="javascript">
```

```
$(document).ready(function ()  
{  
    $("button").click(function ()  
    {  
        $("p").hide("slow", function ()  
        {  
            alert ("Paragraph is hiding");  
        });  
    });  
});  
</script>
```

```
</head>
```

```
<body>
```

```
    <button> Hide </button>
```

```
    <p> First Paragraph </p>
```

```
</body>
```

```
</html>
```

→ In the above program when user click the hide button,
first it is hiding the paragraph, then it will display
alert pop up box because in this program we have implemented
callback function.

example without callBack function.

```
<html>
<head>
<script src="jquery -2.0.3.js"></script>
<script language="javascript">
$(document).ready(function()
{
    $("button").click(function()
    {
        $("p").hide(1000);
        alert("Paragraph is now hiding");
    });
});
</script>
</head>
<body>
    <button> Hide </button>
    <p> First Paragraph </p>
</body>
</html>
```

In the above example when user will click the hide button without completing the hiding it is displaying the alert popup box after that it is hiding the paragraph, because in this example we are not implemented callback function.

1. What is jQuery.
2. Why do we use jQuery.
 - Due to the following advantages.
 - * Cross Browser Support.
 - * Easy to implement because it is a collection of javascript Predefined functions.
 - * Easy to use for DOM manipulation and traversal.
 - * Using jQuery we can implement animations.
 - * jQuery is by default integrated with Ajax.
 - * Event detection and handling is very easy.
3. How jQuery and javascript are different.
 - javascript is a scripting language.
 - jQuery is a library which contains collection of javascript functions.
4. Is jQuery replacement of javascript?
 - No. jQuery is not a replacement of javascript.
 - jQuery is a library which is ~~not~~ written on top of javascript.
 - jQuery is a lightweight javascript library which provides interface between HTML and javascript.

jQuery is client side script library or server side script
Client Side Scripting library.

Is jQuery a w3c standard.

No. jQuery is not a w3c standard.

What we require to implement jQuery.

We require jQuery library which we can download from jquery.com.

Which is the starting point of code execution in jQuery.

`$(document).ready()` function is the starting point of code execution in jQuery.

where we have to write the jQuery code.

With in ready () function.

Why we have to write jQuery code with in ready ()

Because after completion of page loading only we have to execute events.

What does \$ sign means in jQuery.

Dollar sign is nothing but it is an alias name for jQuery.

`$(document).ready(function ()`

{

..

`});`

```
)  
)  
)  
jQuery(document).ready(function ()  
)  
)  
{  
)  
});
```

12. Can we have multiple document-ready() functions on the same page?

→ Yes, we can have any no. of document-ready() functions on the same page.

13. What are the Selectors available in jQuery and how many types they are?

→

14. How to Select all elements

→ Selector is "*" .

15. What does \$("div") will select?

→ This will select all the div elements on the page ..

16. What are the fastest Selectors in jQuery.

→ ID and elements are the fastest Selectors in jQuery.

17. What are the slow Selectors in jQuery.

→ classes are the slow Selectors Compare to ID and elements in jQuery.

:- How jquery selectors are executed.

your last selector is always executed first

example for animate() method by using multiple properties.

later We can implement animation by using multiple CSS properties

<html>

</head>

<script src="jquery - 2.0.3.js"></script>

<script language="javascript">

\$(document).ready(function()

{

\$("#button").click(function()

{

\$("#div").animate({left:'500px', opacity:'0.5', height:'150px', width:'150px'});

});

});

</script>

</head>

<body>

..<button> Start Animation </button>

<div style="background-color:red; height:80px; width:80px;">

→ Example to implement animation by using relative values.

```
<html>
  <head>
    <script src="jquery-2.0.3.js"></script>
    <script language="javascript">
      $(document).ready(function () {
        $("button").click(function () {
          $("div").animate({
            left: '250px',
            height: '+=150px',
            width: '+=150px'
          });
        });
      });
    </script>
  </head>
  <body>
    // Same as above.
  </body>
</html>
```

Query - Chaining :-

- With jQuery we can chain together actions or methods.
- > Chaining allows us to run multiple jQuery methods with in a single statement or element..

Query Method Chaining :-

Example 1:-

```
<html>
<head>
<script src="jquery-2.0.3.js"></script>
<script language="javascript">
$(document).ready(function () {
    $("button").click(function () {
        $("#p1").css("color", "red").slideUp(2000).slideDown(2000);
    });
})
</script>
</head>
<body>
    <p id="p1"> Welcome to jQuery </p>
    <button> Click Me </button>
</body>
</html>
```

jQuery GetContent and Attributes :-

→ jQuery Contains powerfull methods for changing and manipulating HTML elements and attributes.

jQuery DOM manipulation :-

→ jQuery methods for DOM manipulations are

text () :-

→ Sets or returns the text Content of Selected elements.

html () :-

→ Sets or returns the Content of Selected elements (including HTML markup tags).

val () :-

→ sets or returns the value of form field.

→ Example to demonstrate how to get Content with jQuery text() and HTML() methods.

```
<html>
```

```
  <head>
```

```
    <script src = "jQuery - 2.0.3.js"></script>
```

```
    <script language = "javascript">
```

```
        $(document) . ready (function()
```

```
        {
```

```
            // $(" #datepicker") . datepicker ();
```

```
1 });
</script>
</head>
(" #btn1 ") . click (function () {
{
t ( $( "#test" ) . text () );
}
});
```

\$ (" #btn2 ") . click (function () {
{
alert (\$("#test") . HTML ());
}
});

<body>

<p id="test"> This is some bold text in paragraph </p>

<button id="btn1"> Show Text </button>

<button id="btn2"> Show HTML </button>

</body>

</html>



\$(document).ready (function ()

{

\$("#btn1") . click (function ()

{

alert

});

\$("#btn2") . click (function ()

{

alert

});

Set Content text(), html(), val():

→ Using the above 3 methods we can get the values as well as we can set the values of elements.

→ Example to set Content.

```
<html>
```

```
<head>
```

```
<script src = "jquery - 2.0.3.js"></script>
```

```
<script language = "javascript">
```

```
$(document).ready(function ()
```

```
{
```

```
    $("#btn1").click(function ()
```

```
{
```

```
        $("#test1").text("Hello world");
```

```
    };
```

```
    $("#btn2").click(function ()
```

```
{
```

```
        $("#test2").html("<b>Hello world</b>");
```

```
    };
```

```
});
```

```
    $("#btn3").click(function ()
```

```
        $("#test3").val("Venkat");});});
```

```
<body> id="test1">
```

```
<p> This is First Paragraph </p>
```

```
<p> Second paragraph </p>
```

```
id="test2">
```

```
<p> Input Field : <input type="text" id="test3" value="Hai"></p>
```

```
<button id="btn1" > Set Text </button>
```

```
<button id="btn2" > Set Html </button>
```

Query Add Elements :-

Using jQuery we can add new elements / Content.

jQuery is providing some methods to add new content like below

append () :-

It inserts the Content at the end of the selected elements.

prepend () :-

It inserts the Content at the beginning of the Selected elements.

after () :-

It insert the Content after the Selected element.

before () :-

It insert the Content before the Selected element.

example :-

```
<html>
```

```
  <head>
```

```
    <script src="jquery-2.0.3.js"></script>
```

```
    <script language="javascript">
```

```
        $(document).ready(function ()
```

```
    {
```

```
        $("#btn1").click(function ()
```

```
)    }  
)  
)    $("P"). append("<b> This is appended Text </b>");  
)  
)    $("P"). Prepend("<b> This is prepend Text </b>");  
)  
)    $("img"). after(" After the image it display");  
)  
)    $("img"). before(" Before the image it display");  
)  
);  
});  
    </script> </head>  
  
<body>  
    <p> This is First Paragraph </p>  
    <p> This is Second Paragraph </p>  
  
      
    <button id="btn1"> Add </button>  
  
</body>  
</html>
```

jQuery Remove Elements :-

→ With jQuery it is easy to remove existing Html elements.

Remove () , Empty () .

→ It removes the Selected element (its Child elements also)

→ It removes the child elements from the selected element.

Example for remove(), empty().

<html>

<head>

<script src="jquery-2.0.3.js"></script>

<script language="javascript">

\$(document).ready(function ()

{

\$("#btn1").click(function ()

{

\$("#div1").remove();

});

\$("#btn2").click(function ()

{

\$("#div2").empty();

});

});

</script>

</head>

<body>

<div id="div1" style="height:100px; width:100px; border:1px solid black">

This is some text in div1.

<p> This is div1 first paragraph </p>

<p> This is div2 second paragraph </p>

</div>

```
<div id="div2" style="height: 100px; width: 100px; border: 1px;  
background-color: red;">  
    This is some text in div 2  
<p> This is div2 first Paragraph </p>  
<p> This is div2 second Paragraph </p>  
</div>  
<button id="btn1"> Remove </button>  
<button id="btn2"> Empty </button>  
</body>  
</html>
```

jQuery Get and Set CSS classes :-

→ Using jQuery we can manipulate the CSS with the help of below methods.

addClass() :-

→ Adds one or more classes to the selected elements.

removeClass() :-

→ Removes one or more classes from the selected elements.

toggleClass() :-

→ Toggles between adding / removing the classes from the selected elements.

Example :-

```
<html>
  <head>
    <script src="jquery-2.0.3.js"></script>
    <script language="javascript">
      $(document).ready(function() {
        $("button").click(function() {
          $("h1, h2, p").addClass("blue");
          $("div").addClass("important");
        });
      });
    </script>
    <head> <style type="text/css">
    <head>   .important
    <{>
      font-weight: bold;
      font-size: xx-large;
    <}>
```

```
    .blue  
    {  
        color: blue;  
    }
```

}

```
</style>
```

```
</head>
```

```
<body>
```

```
    <h1> This is Heading 1 </h1>
```

```
    <h2> This is Heading 2 </h2>
```

```
    <p> This is First Paragraph </p>
```

```
    <p> This is Second Paragraph </p>
```

```
    <div> This is Some important text </div>
```

```
    <button> Add classes to elements </button>
```

```
</body>
```

```
</html>
```


jQuery Dimensions :-

→ With jQuery it is easy to work with the dimensions of elements and browser window.

jQuery Dimension Methods :-

→ width

→ Inner Height

→ Height

→ Outer Width

Width () & Height () :-

```
<html>
  <head>
    <script src="jquery-2.0.3.js"></script>
    <script language="javascript">
      $(document).ready(function ()
      {
        $("button").click(function ()
        {
          var txt = " ";
          txt += "Width of div1 is :" + $("#div1").width();
          txt += "Height of div1 is :" + $("#div1").height();
          $("#div1").html(txt);
        });
      });
    </script>
  </head>
  <body>
    <div id="div1" style="border: 1px solid black; width: 200px; height: 100px;"></div>
    <button> Display </button>
  </body>
</html>
```

jQuery Traversing :-

→ Using jQuery methods we can reach the elements from child to parent, parent to grand parent, grand parent to root element and vice versa.

jQuery Traversing - Ancestors :-

→ An Ancestor is a parent, grand parent, great grand parent, and so on.

→ With jQuery you can traverse up the DOM tree to find the ancestors of an element.

→ To get the ancestors we have 3 methods

1. Parent ()
2. Parents ()
3. ParentsUntil () .

ParentsUntil () :-

→ This method returns all ancestors between given two elements.

Example to return all ancestor elements between & <div>

```
<html>
```

```
<head>
```

```
<script src="jquery-2.0.3.js"></script>
```

```
<script language="javascript">
```

```
$( "span" ).parentsUntil( "div" );
```

Query Traversing - Descendants :-

- A descendant is a child, grand child, great grand child and so on.

Two useful jQuery methods for Traversing down the DOM tree :-

1. Children ()
2. find ()

children () :-

This method returns all initial children of the selected element.

Example :-

```
$("div").children();
```

find () :-

This method returns descendant elements of the selected element all the way down to the last descendant.

Example :-

```
$("div").find("span");
```

Query Traversing - Siblings :-

- Siblings share the same parent.

Query Methods for traversing sideways in the DOM tree :-

- siblings ()
- next ()

- nextAll()
- nextUntil()
- Prev()
- PrevAll()
- PrevUntil().

jQuery Traversing - Filtering :-

first():-

→ This method will returns the first element of the selected element.

Example for filtering:-

```

<html>
  <head>
    <script src="jquery-2.0.3.js"></script>
    <script language="javascript">
      $(document).ready(function () {
        $("div p").first().css("background-color", "yellow");
      });
    </script>
  </head>

```

```
<body>  
  <h1> Welcome to my homepage </h1>  
  <div>  
    <p> This is first Paragraph </p>  
  </div>  
  <div>  
    <p> This is second paragraph </p>  
  </div>  
  <p> This is third Paragraph </p>  
</body>  
</html>
```

last (C):

This method returns the last element of the selected element.

filter (C):

- For this method we have to specify the criteria.
- Elements that do not match the criteria are removed from the selection and the remaining elements which are matched are returned.

Example for filter method.

```
<html>
```

```
  <head>
```

<title> My First Dynamic Website </title>

```
<script language="javascript">  
$(document).ready(function()  
{  
    $("P").filter(".intro").css("background-color", "yellow");  
});  
</script>  
</head>  
<body>  
    <h1> Welcome to my home page </h1>  
    <p> My Name is Venkat </p>  
    <p class="intro"> I live in Hyd </p>  
    <p class="intro"> I love Hacking </p>  
    <p> My Best friend is Nag </p>  
</body>  
</html>
```

jQuery - Ajax Introduction :-

Ajax is the art of exchanging data with a server and updating the parts of webpage without reloading the whole page.

JSON stands for Asynchronous javascript and XML.

In short AJAX is about loading data in the background and display it on the webpage, without reloading the whole page.

Examples of applications using AJAX.

Gmail, Google Maps, YouTube, Facebook - - - - .

What about jQuery and Ajax :-

jQuery provides several methods for AJAX functionality.

When we are implementing jQuery Ajax we have to download and we have to use one more jQuery UI library from below link.

`http://code.jquery.com/ui/1.10.3/jquery-ui.js`

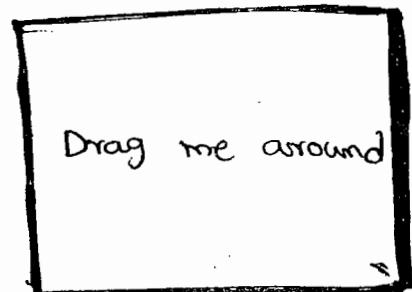
Ajax Methods :-

Draggable () :-

This method will allow the user to drag the element with in the webpage.

Example for Draggable

```
<html>
  <head>
    <script src = "jquery-2.0.3.js"></script>
    <script src = "jquery-ui.js"></script>
    <script language = "javascript">
      $(document).ready(function()
      {
        $("#draggable").draggable();
      });
    </script>
    <style type = "text/css">
      #draggable
      {
        width: 150px ;
        height: 150px ;
        padding: 0.5em ;
        border: 5px solid black;
      }
    </style>
  </head>
  <body>
    <div id = "draggable" class = "ui-widget-content">
      <p> Drag me around </p>
    </div>
```



Note:- Some of the jQuery Ajax methods are depending on below CSS class library.

We have to download and we have to use below CSS library from the following link:-

<http://code.jquery.com/ui/1.10.3/themes/smoothness/jquery-ui.css>

Example for Date Picker :-

Date Picker C) :-

Using this method we can attach a calendar to the targeted text box when user will move the mouse focus.

<html>

<head>

<script src="jquery-2.0.3.js"></script>

<script src="jquery-ui.js"></script> CSS library.

<link rel="stylesheet" href="jquery-ui.css"/>

<script language="javascript">

\$(function ()

{

\$("#datepicker").datepicker();

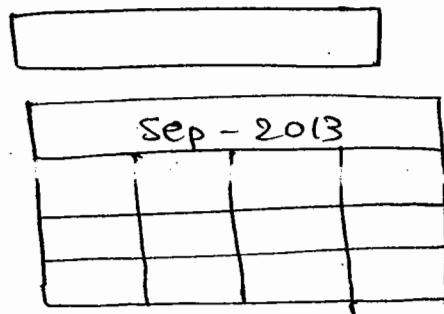
});

</script>

```
<body>  
  <p> Enter Date of Birth : <input type="text" id="datepicker"/>  
</p>  
</body>  
</html>
```

Output :-

Enter your Date of Birth



Dialog () :-

→ Using this method we can display a dialog window.

```
<html>
```

```
  <head>
```

```
    <link rel="stylesheet" href="jquery-ui.css"/>
```

```
    <script src="jquery-2.0.3.js"></script>
```

```
    <script src="jquery-ui.js"></script>
```

```
    <script language="javascript">
```

```
        $(document).ready(function ()
```

```
    {
```

```
        $("#dialog").dialog();
```

3);

</script>

</head>

<body>

<div id="dialog" title="Basic Dialog">

<p> Satya Technology is a Computer Training Institute </p>

</div>

</body>

</html>

:oltip ():

using this method we can display tool tip to the targeted control like textbox

Example for tool tip

<html>

<head>

<link rel="stylesheet" href="jquery-ui.css"/>

<script src="jquery-2.0.3.js"></script>

<script src="jquery-ui.js"></script>

<script language="javascript">

\$(document).ready(function() {

```
)      $("#age").tooltip();  
});  
</script>  
</head>  
<body>  
Age <input type="text" id="age" title="Enter your age"/>  
</body>  
</html>
```

Output :-



Slider () :-

→ Using this method we can attach Slider to the targetted element.

Example for Slider

```
<html>  
<head>  
<link rel="stylesheet" href="jquery-ui.css"/>  
<script src="jquery-2.0.3.js"></script>  
<script src="jquery-ui.js"></script>
```

```
$(document).ready(function () {
```

```
{
```

```
    $("#Slider").Slider();
```

```
});
```

```
</script>
```

```
</head>
```

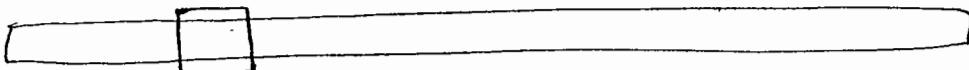
```
<body>
```

```
<div id="Slider"></div>
```

```
</body>
```

```
</html>
```

Output :-



Example to increase or decrease the image size with the help

```
of Slider.
```



Progressbar () :-

```
<html>
```

```
<head>
```

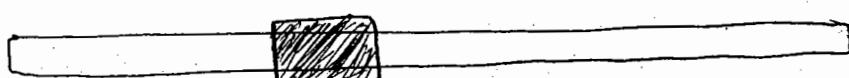
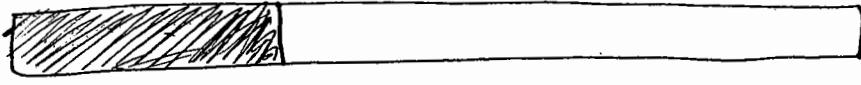
```
    <link rel="
```

> Using this method we can attach progress bar to the targetted

Example for ProgressBar

```
<html>
  <head>
    <link rel="stylesheet" href="jquery-ui.css" />
    <script src="jquery-2.0.3.js"> </script>
    <script src="jquery-ui.js"> </script>
    <script language="javascript">
      $(document).ready(function() {
        $('#progressbar').progressbar({value: 37});
      });
    </script>
  </head>
  <body>
    <div id="progressbar"></div>
  </body>
</html>
```

(*) Example for Progress bar and Slider.



Accordion()

This method will display the targetted elements as collapsible panels.

Example :-

```
<html>
  <head>
    <link rel="stylesheet" href=
    <script src=
    <script src=
      <script language="javascript">
        $(document).ready(function()
        {
          $("#accordion").Accordion();
        });
      </script>
    </head>
    <body>
      <div id="accordion">
        <h3> Section 1 </h3>
        <div>
          <p> This is first message </p>
          <p> This is first message </p>
        </div>
      </div>
```

<h3> Section 2 </h3>

<div>

<p> This is second message </p>

<p> This is second message </p>

</div>

<h3> Section 3 </h3>

<div>

<p> This is third message </p>

<p> This is third message </p>

</div>

<h3> Section 4 </h3>

<div>

<p> This is fourth message </p>

<p> This is fourth message </p>

 This is first list

 This is second list

</div>

</div>

</body>

</html>

abs():

using this method we can display the targetted element as tabs.

example for Tabs

```
<html>
```

```
  <head>
```

```
    <link rel="stylesheet" href="jQuery-ui.css"> </link>
```

```
    <script src="jQuery-2.0.3.js"> </script>
```

```
    <script src="jQuery-ui.js"> </script>
```

```
    <script language="javascript">
```

```
        $(document).ready(function ()
```

```
    {
```

```
        $("#tabs").tabs();
```

```
    };
```

```
  </script>
```

```
  </head>
```

```
<body>
```

```
  <div id="tabs">
```

```
    <ul>
```

```
      <li> <a href="#tab1"> </a> </li>
```

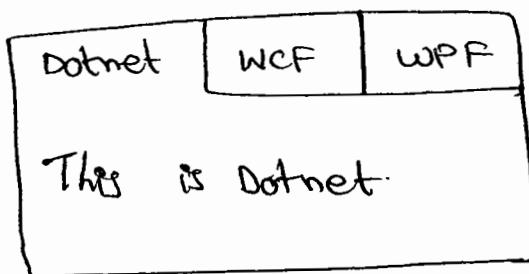
```
      <li> <a href="#tab2"> WCF </a> </li>
```

```
      <li> <a href="#tab3"> WPF </a> </li>
```

→ Dotnet

```
<div id="tab1">  
    <p> This is Dotnet </p>  
</div>  
  
<div id="tab2">  
    <p> This is WCF </p>  
</div>  
  
<div id="tab3">  
    <p> This is WPF </p>  
</div>  
  
</div>  
  
</body>  
  
</html>
```

Output :-



Auto Complete () :-

→ This method will attach a pop up window to the targetted text box and it will display the items in that pop up window which are starting with the entered letter from the list which

Example for Auto Complete ()

<html>

<head>

<link rel = "stylesheet" href = "jquery-ui.css" />

<script src = "

<script src = "

<script language = "

\$(document).ready(function ()

{

var courses = ["ASP.net", "C", "C++", "Java", "ADO.NET"];

\$("#tags").autocomplete({source: courses});

});

↳ variable name contains list of items

</script>

</head>

<body>

<div class = "ui-widget">

<label for = "tags"> Enter Course Name : </label>

<input type = "text" id = "tags" />

</div>

</body>

</html>

Resizable() :-

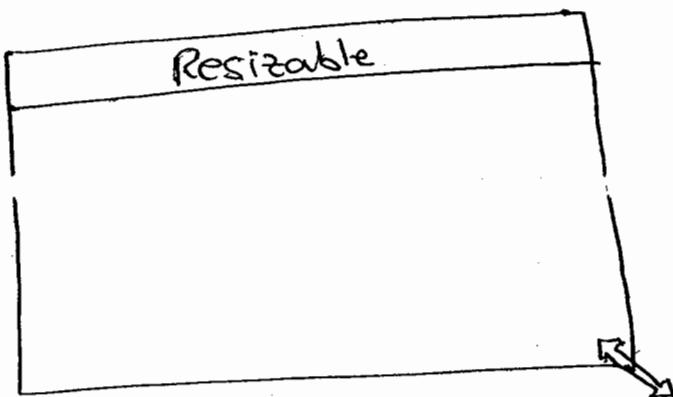
→ This method will provide resizable facility for targeted element.

Example :-

```
<html>
  <head>
    <script src = " "
    <script src = " "
    <link rel = "stylesheet" href = "jquery-ui.css"/>
    <script language = "javascript">
      $(document).ready(function()
      {
        $("#resizable").resizable();
      });
    </script>
    <style type = "text/css">
      #resizable
      {
        width: 150px;
        height: 150px;
        padding: 0.5em;
      }
      #resizable h3
      {
        text-align: center;
        margin: 0
        border: 1px solid black;
      }
    </style>
```

```
<body>
<div id="resizable" class="ui-widget-content">
<h3 class="ui-widget-header"> Resizable </h3>
</div>
</body>
</html>
```

Output:-



sortable () :-

This method will display the given elements in sorted order.

Example :-

```
<html>
<head>
    <link rel="stylesheet" type="text/css" href="style.css"/>
    <script src="script1.js"/>
    <script src="script2.js"/>
    <script language="JavaScript">
        $(document).ready(function () {
            ...
        })
    

```

```
$("#sortable").sortable();
$("#sortable").disableSelection();
});

<script>
<style type="text/css">
#Sortable {
list-style-type: none;
margin: 0;
padding: 0;
width: 60%;
}
#Sortable li {
margin: 0 3px 3px 3px;
padding: 0 1em;
padding-left: 1.5em;
padding-right: 1.4em;
height: 18px;
}
#Sortable li span {
position: absolute;
margin-left: -1.3em;
}
</style>
<head>
<body>
<ul id="Sortable">
<li class="ui-state-default"><span class="ui-icon - arrowthick-2-n-s"></span> Item 1 </li>
```

```
<li class="ui-state-default"><span class="ui-icon ui-icon-arrowthick-2-n-s"></span> Item 2 </li>
```

// Write up to 7 items same as above.

```
</ul>
```

```
</body>
```

```
</html>
```



Note :- Identify the importance of disableSelection() method.

selectable () :-

This method will apply CSS for selected item of the targeted element:

Example:-

```
<html>
```

```
<head>
```

```
<link rel="
```

```
<script src="
```

```
<script src="
```

```
<script language="javascript">
```

```
<style type="text/css">
```

```
#feedback {font-size: 1.4em; }
```

```
#selectable .ui-selecting {background: orange; }
```

Selectable

ff Seledable li

Σ

```
list-style-type: none;  
margin: 0;  
padding: 0;  
width: 60%;
```

3

margin : 3px;

Padding : 0.4em;

font-size: 1.4em;

height: 18px;

3

<1Style>

<script language = "c

Σ (document) • ready (function)

5

```
$( "#Selectable" ).Selectable () ;
```

3)

<script>

< [head]>

<body>

```
<ol id="selectable">
```

```
<li class="ui-widget-content"> Item 2 </li>
```

— — — — — — — — — —

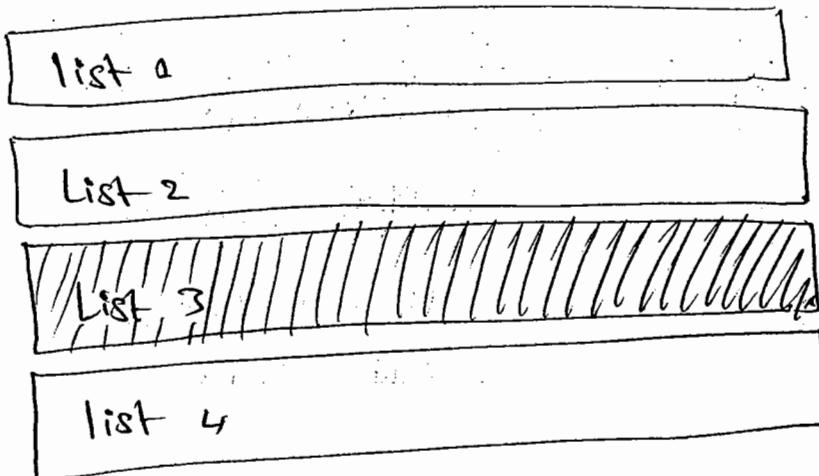
```
<li class="ui-widget-content">Item 7</li>
```

<ld>

<| body >

<html>

Output :-



droppable () :-

This method will allow the user to drag and drop the targeted element.

Example :-

```
<html>
  <head>
    <link rel="stylesheet" type="text/css" href="style.css"/>
    <script src="script.js">
      <script language="javascript">
        $(document).ready(function() {
          $('#draggable').draggable();
          $('#droppable').droppable({
            drop: function(event, ui) {
              ...
            }
          });
        });
      </script>
    </script>
  </head>
  <body>
    <div id="draggable" style="border: 1px solid black; width: 100px; height: 50px; margin: 10px; float: left;">
```

```
$(this) . addClass("ui-state-highlight")
        . find("p")
        . html("Dropped!");
    }
}

</script>

<style type="text/css">
#draggable { width: 100px; height: 100px; padding: 0.5em; float: left; margin: 10px 10px 10px 0; border: 2px solid black; }
#droppable { width: 150px; height: 150px; padding: 0.5em; float: left; margin: 10px; border: 2px solid black; }
</style>

<head>
<body>
<div id="draggable" class="ui-widget-content">
    <p> Drag me to my target </p>
</div>
<div id="droppable" class="ui-widget-header">
    <p> Drop here </p>
</div>
```

example for Toggle

```
<html>
  <head>
    <link rel="stylesheet" href="style.css"/>
    <script src="script.js"/>
  </head>
  <body>
    <div id="toggler" style="width: 200px; height: 200px;">
      <button id="effect" style="position: relative; width: 240px; height: 135px; padding: 0.4em;">
        #effect
      
    
```

```
#button {
  padding: 5em 1em;
  text-decoration: none;
}
```

```
#effect h3 {
  margin: 0;
  padding: 0.4em;
  text-align: center;
}
```

```
        }
        var SelectedEffect = $( "#effect" ).val();
        var options = { };
        if (SelectedEffect === "scale") {
            options = { percent: 0 };
        } else if (SelectedEffect === "size") {
            options = { to: { width: 200, height: 60 } };
        }
        $( "#effect" ).toggle(SelectedEffect, options, 500);
    });

    $( "#button" ).click(function () {
        runEffect();
        return false;
    });
}

</script>
</head>
```

```
<body>  
  <div class="toggler">  
    <div id="effect" class="ui-widget-content ui-corner-all">  
      <h3 class="ui-widget-header ui-corner-all">Toggle</h3>  
      <p>Satya Technologies</p>  
    </div>  
  </div>  
<select name="effects" id="effectTypes">  
  <option value="blind"> Blind </option>  
  <option value="bounce"> Bounce </option>  
  <option value="clip"> Clip </option>  
  <option value="Drop"> Drop </option>  
  <option value="Explode"> Explode </option>  
  <option value="Fold"> Fold </option>  
  <option value="Highlight"> Highlight </option>  
  <option value="Puff"> Puff </option>  
  <option value="Pulsate"> Pulsate </option>  
  <option value="Scale"> Scale </option>  
  <option value="Shake"> Shake </option>  
  <option value="Size"> Size </option>  
  <option value="Slide"> Slide </option>  
</select>
```

```
<a href="#" id="button" class="ui-state-default  
ui-corner-all"> Run Effect </a>
```

```
</body>
```

```
</html>
```

jQuery in Asp.net:-

Note:- Whenever we are implementing jQuery in Asp.net 4.0 we have to add the required jQuery libraries to the script folder of solution Explorer window ~

→ As well as we have to add the style library to the styles file of Solution explorer window .

→ After adding the jQuery and CSS libraries, we have to drag and drop jQuery CSS libraries to aspx code window head section like below:

```
<html>
```

```
<head>
```

```
<script src="Scripts/jquery-2.0.3.js" type="text/javascript"/>
```

```
<script src="Scripts/jquery-ui.js" type="text/javascript"/>
```

```
<link rel="stylesheet" href="styles/jquery-ui.css"/>
```

```
<script language="javascript">
```

```
$(document).ready(function ()
```

```
{
```

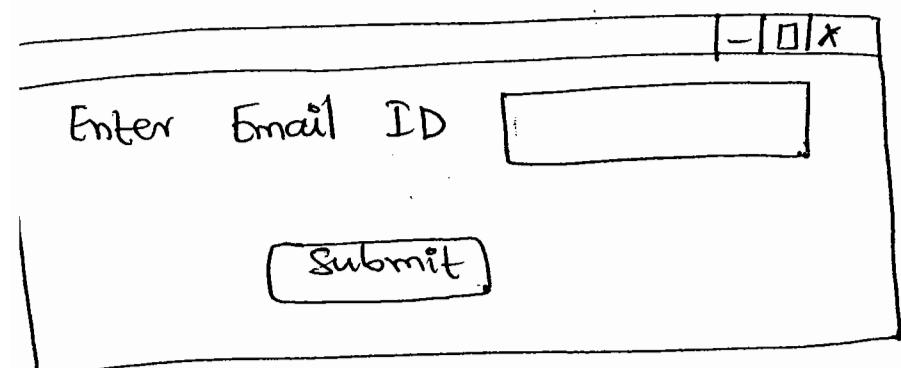
// jQuery functions here

? :

```
</script>  
</head>  
  
<body>  
    <div>        <div>  
  
</body>  
  
</html>
```

Implementing Validations by using jquery in ASP.NET :-

Example to check empty check text box in ASP.NET.



WebForm1.aspx code :-

```
<html>  
    <head>  
        <script src = " " />  
        <script src = " " />  
        <link rel = " " />  
        <script language = "javascript" >  
            $(document).ready(function() {  
                // Your validation logic here  
            })  
        </script>  
    </head>  
    <body>  
        <form>  
            <label>Enter Email ID :</label>  
            <input type = "text" />  
            <br/>  
            <input type = "button" value = "Submit" />  
        </form>  
    </body>  
</html>
```

`$("#btnValidate").click(function() {`

`{`

`var EmailID = $("#txtEmail").val();`

`if ($.trim(EmailID).length == 0)`

`{`

`alert ("Please Enter Email ID");`

`}`

`});`

`});`

`</script>`

`</head>`

`<body>`

`<div>`

`Enter Email ID <asp:TextBox ID="txtEmail" runat="Server"`
`width="177px" />`

`<asp:button ID="btnValidate" runat="Server" Text="Submit" />`

`</div>`

`</body>`

`</html>`

Example to validate the email ID by using jquery.

WebForm1.aspx codes

```
<html>
<head>
<script src=""
<script src=""
<link rel =
<script language="javascript">
$(document).ready(function () {
    $('#btnValidate').click(function () {
        var EmailID = $('#txtEmail').val();
        var expr = /\^[\w-zA-Z0-9._]+[\w-zA-Z0-9][\w-zA-Z0-9]{2,4}\$/;
        if (expr.test(EmailID))
            {
                alert ("Valid ID");
            }
        else
            {
                alert ("Invalid ID");
            }
    });
})
</script>
</head>
<body>
<div>
```

```
) Enter Email ID <asp: TextBox ID="txtEmail" runat="server" />
)
) <asp: button ID="btnValidate" runat="server" /> Text="Submit"
)
) </div>
)
) </body>
)
) </html>
```


(*) Example to validate the numeric textBox.

 WebForm1.aspx Code :-

```
<html>
  <head>
    <script src=
    <script src=
    <link rel =
    <script type="text/javascript">
      $(document).ready(function()
      {
        $('#btnValidate').click(function()
        {
          var age = $('#txtage').val();
          if ($('#txtage').length == 0)
            {
              alert("Please Enter your age");
            }
        })
      })
    
```

```
else
{
    if($::IsNumeric($age))
    {
        alert("Well done! You entered number");
    }
    else
    {
        alert("Please Enter numbers only");
    }
}

</script>
<head>
<body>
<div>

Enter Any Number <asp:TextBox ID="txtNum" runat="Server"/>
<asp:Button ID="btnValidate" runat="Server" value="Submit" />

</div>
</body>
</html>
```

- *) Example to get Selected row value based on checkbox selection
- Values in grid view using jquery in ASP.NET.
- Create a table like below with in SQL Server.

First Name	Last Name	Location	→ userinfo
------------	-----------	----------	------------

WebForm1.aspx Code :-

```

<html>
  <head>
    <script src=""
    <script src=""
    <link rel=""
    <script type="text/javascript">
      $(document).ready(function()
      {
        $("#btnGet").click(function()
        {
          var hdnTxt = '';
          $("input[name$=chk1]:checked").each(function()
          {
            hdnTxt += "," + $(this).next("input[name$=hdnID]").val();
          });
        });
      });
    
```

```
$(`#lbltxt').text(Chntxt.substring(1, Chntxt.length))  
});  
});  
</script>  
</head>  
<body>  
<div>  
<asp:GridView ID="GVUser" runat="server" AutogenerateColumns="false">  
<HeaderStyle BackColor="Gray" Font-Bold="true" ForeColor="White" />  
<columns>  
<asp:TemplateField HeaderText="">  
<ItemTemplate>  
<asp:CheckBox ID="chk1" runat="server" />  
</ItemTemplate>  
<asp:HiddenField ID="hdnID" runat="server" value=  
`<%# Eval("username") %>`>  
</ItemTemplate>  
<asp:TemplateField>  
</asp:TemplateField>
```

```
<input type="button" id="btnGet" value="Get Selected Value"/>  
selected usernames : <label id="lblGet" />  
</body>  
</html>
```

WebForm1.aspx.cs :-

```
class webform1  
{ public void GetUserInfo () {  
    string cs = "Server=.; database=Company; uid=sa; pwd=abc";  
    SqlConnection con = new SqlConnection(cs);  
    con.Open();  
    SqlCommand cmd = new SqlCommand ("select * from empuserinfo"  
        + " con);  
    SqlDataAdapter da = new SqlDataAdapter (cmd);  
    DataSet ds = new DataSet ();  
    da.Fill (ds, "userinfo1");  
    GridUser.DataSource = ds;  
    GridUser.DataBind();  
    con.Close();  
}  
}
```

```
public void page_load(-,-)
```

{

```
if (!IsPostBack)
```

{

```
GetUserInfo();
```

}

}

Output :-

	FirstName	lastName	location
<input type="checkbox"/>	venkat	BV	HYD
<input checked="" type="checkbox"/>	Nandu	BV	HYD
<input checked="" type="checkbox"/>	Naga	Babu	HYD

binding as server

Side code

```
Get Selected Values
```

Selected Values are : Nandu , Naga

→ Implemented with
client side code.

- (*) When we will use jquery in ASP.NET web application.
 - When we are developing a application if that functionality is depending on webserver or database server we will write the server side code.
 - Whenever particular functionality is not depending on webserver or database server which we can implement by using jquery. For example validating the inputs like textbox should not be empty, textbox should allow only numbers, validating the email id's and so on.
 - As well as even though when we are implementing ASP.NET Programs, a part of functionalities we can implement with the help of jquery.
 - For example in the above grid view requirement we have two tasks. Task 1 is binding the table to gridview, task 2 displaying selected usernames with in the label.
 - In those two tasks , task 2 is not depending on webserver or database server, due to that reason which we are implementing with the help of jquery.

How to use jQuery in ASP.NET 4.5 :-

In ASP.NET 4.5 Microsoft is providing plugins to add the jQuery libraries.

We can add jQuery libraries with the help of plugins like below, but our machine required Internet Connectivity.

Step 1:- Open ASP.NET web application.

Step 2:- Add one web page to the Solution Explorer and set it as start up page.

Step 3:- Go to the Menu, Select "Tools" and select "Library Package Manager" and select "Manage NuGet Packages for Solution". It will open one window. Here select jQuery Plug-in and click "Install", then click "Ok".

- Then select jQuery Validation plugIn then click "Install" then click "Ok".
- Then select jQuery UI plugIn then click "Install" then click "Ok".
- Then select Modernizer plugIn then click "Install" then click "Ok".
- With this process jQuery libraries will be installing into our application solution Explorer window.

→ At the time of writing the program, drag and drop required libraries to the .aspx head section

