

SHREE H. N. SHUKLA COLLEGE OF I.T & MGMT

(Affiliated to Saurashtra University)



Lt. Shree Chimanbhai Shukla

PGDCA – SEM-2 - C#.NET

Shree H.N.Shukla College,
Street No. 2, Vaishali Nagar,
Nr. Amrapali Railway Crossing,
Raiya Road, Rajkot.



Shree H.N.Shukla College,
Street No. 3, Vaishali Nagar,
Nr. Amrapali Railway Crossing,
Raiya Road, Rajkot.

Website: hnsgroupofcolleges.org
Email : hnsinfo@hnshukla.com

Subject: C#- PO

SHREE H. N. SHUKLA COLLEGE OF I.T & MGMT

(Affiliated to Saurashtra University)

CS – 09: PROGRAMMING WITH C#		
Unit No.	Topics	Details
1	Introduction	Introduction to visual studio 2008 Visual studio editions Visual studio IDE
	C# Basics	<ul style="list-style-type: none">▪ Variables, Constants, Strings▪ Data types▪ Arrays▪ Decision statements▪ Loop statements▪ Exception using try-catch-finally▪ NameSpace▪ Class▪ Object▪ Struct
2	Inheritance	<ul style="list-style-type: none">▪ Inheriting a class▪ Sealed class▪ Overloading an operator▪ Overloading a method▪ Overloading an Indexer▪ Creating an Interface▪ Implementing an Interface▪ Inheriting an Interface
	Pointers and Delegates	<ul style="list-style-type: none">▪ Pointers▪ Pointers to Arrays▪ Pointers to Structures▪ Delegate▪ Declaring and Instantiating Delegate▪ Multicast delegate▪ Creating events▪ Chaining events▪ Firing an event

SHREE H. N. SHUKLA COLLEGE OF I.T & MGMT

(Affiliated to Saurashtra University)

3	Threading in C#	<ul style="list-style-type: none">▪ Introduction▪ Difference between process and thread▪ The thread class▪ Multithreading▪ Thread Priorities▪ Thread Synchronization
	Collection and Generics	Understanding Collections: ArrayList, BitArray, HashTable, Queue, SortedList, Stack, Generics, Generic List, Generic Stack, Generic Queue, GenericHashSet
4	Reflection in C#	Reflection, Why we need Reflection?, Using Reflection, Dynamic loading and reflection
	Windows Forms and Control Programming	Windows Forms: MsgBox, DialogBox, Handling Mouse, Events, Handling Key Events Basic Control Programming For Following: Controls, Button, Label, TextBox, RichTextBox, RadioButton, CheckBox ListBox, CheckedListBox, ComboBox, ListView, TreeView, ImageList, PictureBox Panel, GroupBox, TabControl, ScrollBar ToolTip, NotifyIcon, Timer, ProgressBar
5	ADO.NET Programming	Architecture of ADO. NET Data providers in ADO.NET: Connection Command DataReader DataAdapter DataSet: DataTable DataView DataColumn DataRow DataRelation DataReader DataGridView Control Introduction to LINQ Using LINQ to Dataset Example

SHREE H. N. SHUKLA COLLEGE OF I.T & MGMT

(Affiliated to Saurashtra University)

Chapter-4 :- Reflection and Windows Forms

Topics	
Reflection in C#	Reflection, Why we need Reflection?, Using Reflection, Dynamic loading and reflection
Windows Forms and Control Programming	Windows Forms: MsgBox, DialogBox, Handling Mouse, Events, Handling Key Events Basic Control Programming For Following: Controls, Button, Label, TextBox, RichTextBox, RadioButton, CheckBox ListBox, CheckedListBox, ComboBox, ListView, TreeView, ImageList, PictureBox Panel, GroupBox, TabControl, ScrollBar ToolTip, NotifyIcon, Timer, ProgressBar

SHREE H. N. SHUKLA COLLEGE OF I.T & MGMT

(Affiliated to Saurashtra University)

Topic: What is Windows Application?

Ans:

- The application which has coding and designing both sections is known as windows application.

Topic: Write a short note on different controls of windows application.

Ans:

- As windows application contains designing part along with coding section, following are the type of different controls:

1) **Label:**

Description:

- Labels are generally used to provide descriptive text to the user.

Properties:

Property	Description
Text	Can set the text of label
Font	Change the font of the text of label
Forecolor	Change forcolor of label
BackColor	Chang the background color of label
TextAlign	Can give alignment on text of label

SHREE H. N. SHUKLA COLLEGE OF I.T & MGMT

(Affiliated to Saurashtra University)

2) TextBox:

Description:

🔥 Textbox control is used to get input from the user or to display the text.

Properties:

Property	Description
Text	Can set the text of textbox
Multiline	Gets or sets whethet this is a multiline textbox
ReadOnly	Gets or sets whether the text is readonly
BackColor	Change the background color of textbox
TextAlign	Can give alignment on text of label
ForeColor	Change the forecolor of the textbox
SelectedText	Gets or sets the currently selected text in the control.
WordWrap	Gets or sets whether a multiline control automatically wraps to the next line as required.

Events:


Event	Description
TextChanged	Raised or fired when you double click on textbox
GotFocus	Raised when cursor is on textbox
LostFocus	Raised when cursor is taken away from textbox
KeyPress	Raised when textbox has focus and user presses any key
KeyDown	Raised when key is pressed
KeyUp	Raised when key is released.

SHREE H. N. SHUKLA COLLEGE OF I.T & MGMT

(Affiliated to Saurashtra University)

3) Button:

Description:

 This control allows the user to click and perform an action.

Properties:



Property	Description
Text	Can set the text of button
BackColor	Change the background color of textbox
TextAlign	Can give alignment on text of label
ForeColor	Change the forecolor of the textbox

Events:

Event	Description
Click	Raised when you double click on button
TextChanged	Raised when text of button changes

4) RadioButton:

Description:

-  Radiobutton are generally used as a group. It is also known as option button and allows the user to choose one of several options.
-  Radiobuttons are mutually exclusive that is user can select only one radiobutton at a time.

SHREE H. N. SHUKLA COLLEGE OF I.T & MGMT

(Affiliated to Saurashtra University)

Properties:

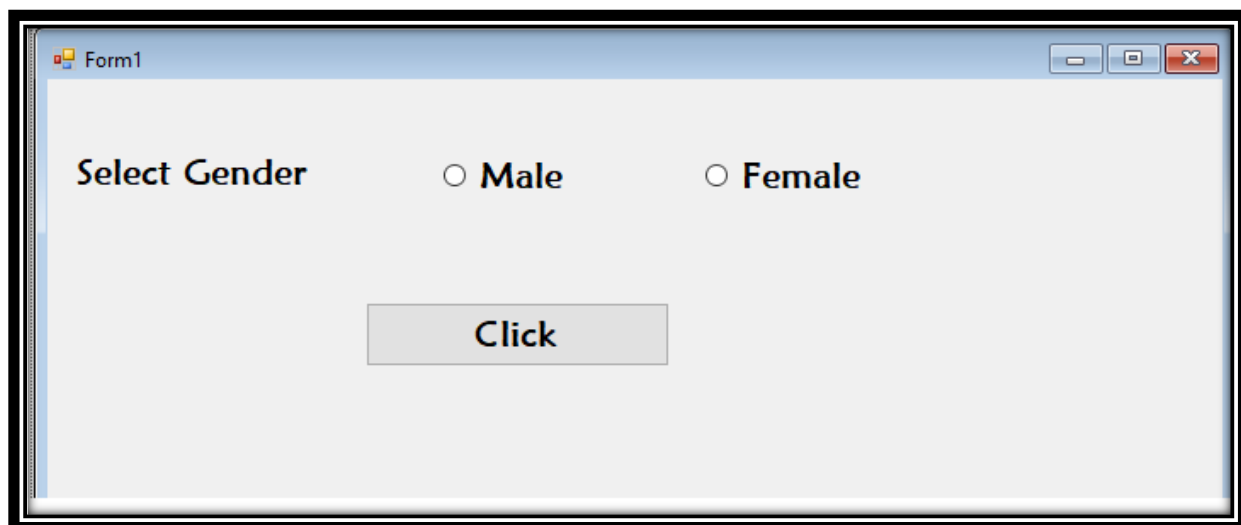
Property	Description
Text	Can set the text of radiobutton
BackColor	Change the background color of radiobutton
TextAlign	Can give alignment on text of radiobutton
ForeColor	Change the forecolor of the radiobutton
Checked	Indicates whether the radiobutton is checked or not.

Events:

Event	Description
CheckedChanged	Raised when you double click on radiobutton

Example:

Design View:



SHREE H. N. SHUKLA COLLEGE OF I.T & MGMT

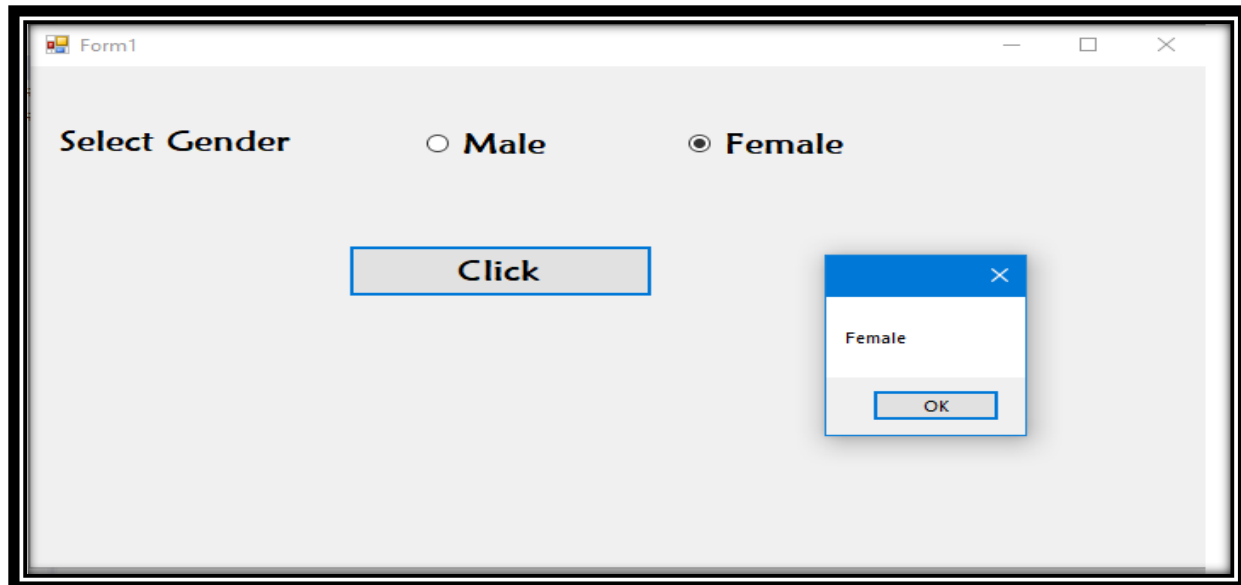
(Affiliated to Saurashtra University)

Coding:

```
button1_Click
```

```
if (radioButton1.Checked == true)
    MessageBox.Show("Male");
else
    MessageBox.Show("Female");
```

Output:



SHREE H. N. SHUKLA COLLEGE OF I.T & MGMT

(Affiliated to Saurashtra University)

5) CheckBox:

Description:

- ✚ This control indicates whether a particular condition is on or off.
- ✚ This control is mostly used to display multiple choices from which the user can select one or more.
- ✚ The difference between radiobutton and checkbox is that in radiobutton, only one option can be selected while in checkbox, multiple options can be selected.

Properties:

Property	Description
Text	Can set the text of checkbox
BackColor	Change the background color of checkbox
TextAlign	Can give alignment on text of checkbox
ForeColor	Change the forecolor of the checkbox
Checked	Indicates whether the checkbox is checked or not.

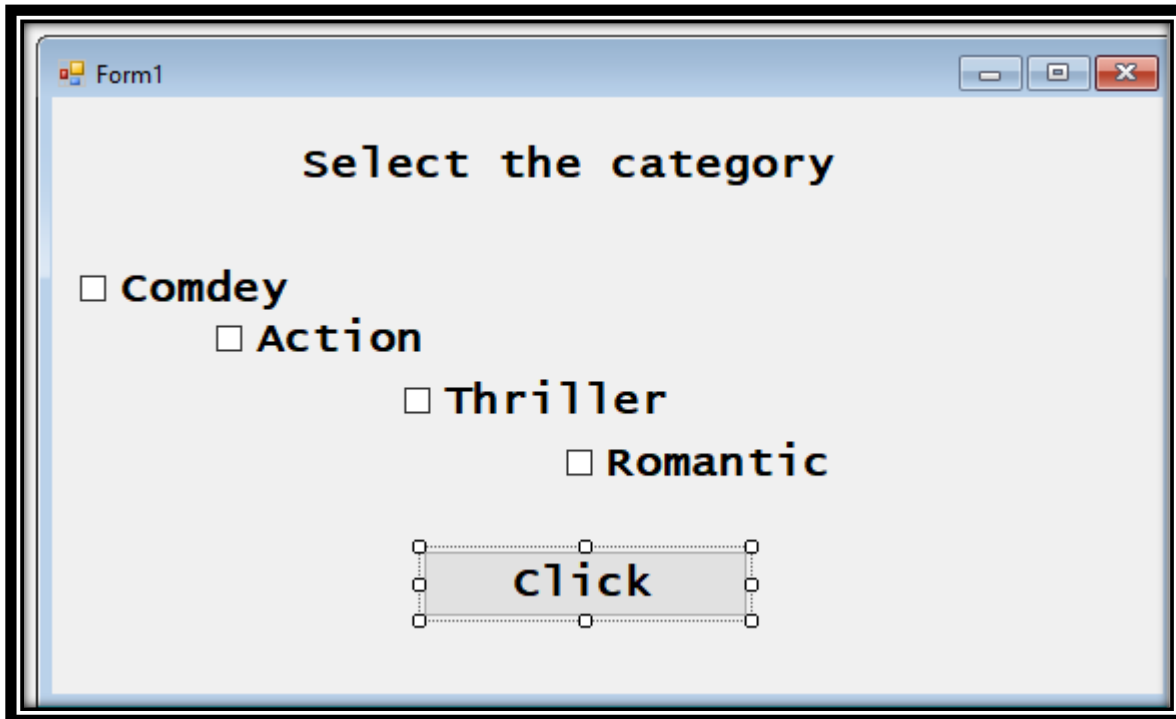
Events:

Event	Description
CheckedChanged	Raised when you double click on checkbox

Example:

SHREE H. N. SHUKLA COLLEGE OF I.T & MGMT

(Affiliated to Saurashtra University)



The screenshot shows a Windows application window titled "Form1". Inside the window, the text "select the category" is centered. Below it, there are four checkboxes arranged in a tree-like structure: "Comdey" (checked), "Action" (unchecked), "Thriller" (unchecked), and "Romantic" (unchecked). At the bottom of the form, there is a button labeled "click" with a dashed border, indicating it is selected or being edited.

Coding:

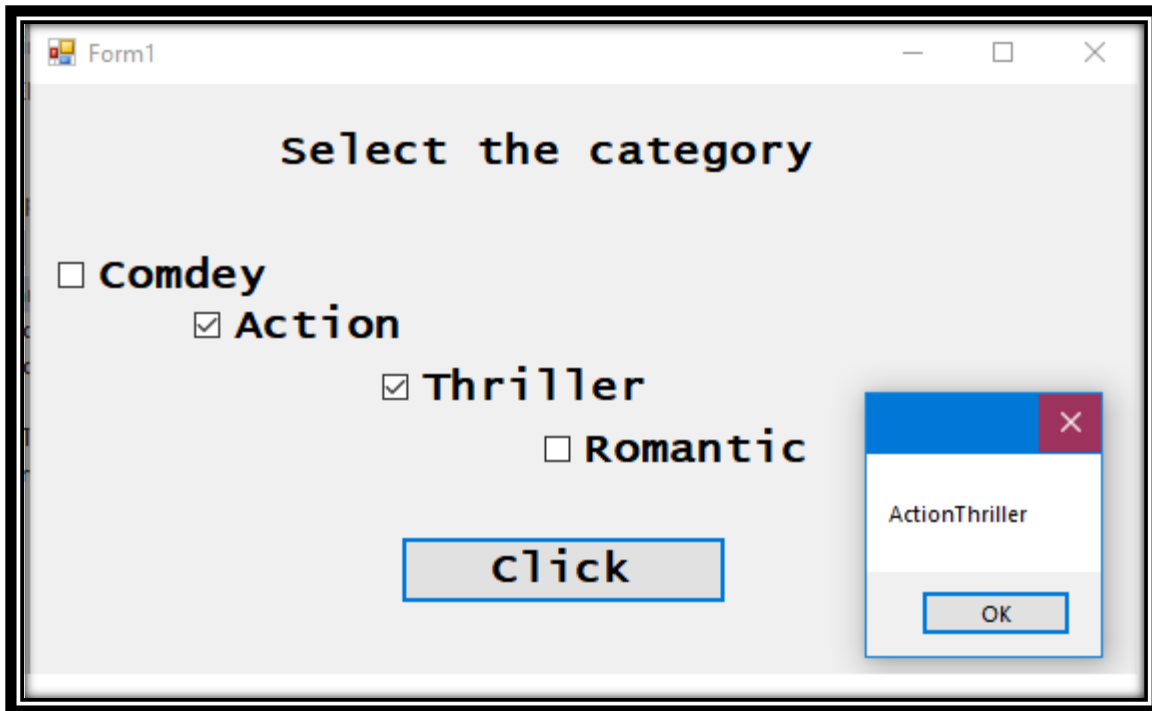
button1 Click

```
string msg = "";  
if (checkBox1.Checked == true)  
    msg = msg + checkBox1.Text;  
if (checkBox2.Checked == true)  
    msg = msg + checkBox2.Text;  
if (checkBox3.Checked == true)  
    msg = msg + checkBox3.Text;  
if (checkBox4.Checked == true)  
    msg = msg + checkBox4.Text;  
    MessageBox.Show(msg);
```

SHREE H. N. SHUKLA COLLEGE OF I.T & MGMT

(Affiliated to Saurashtra University)

Output:



6) ComboBox:

Description:

- This control is used when you want to select single item or data from the list of items

SHREE H. N. SHUKLA COLLEGE OF I.T & MGMT

(Affiliated to Saurashtra University)

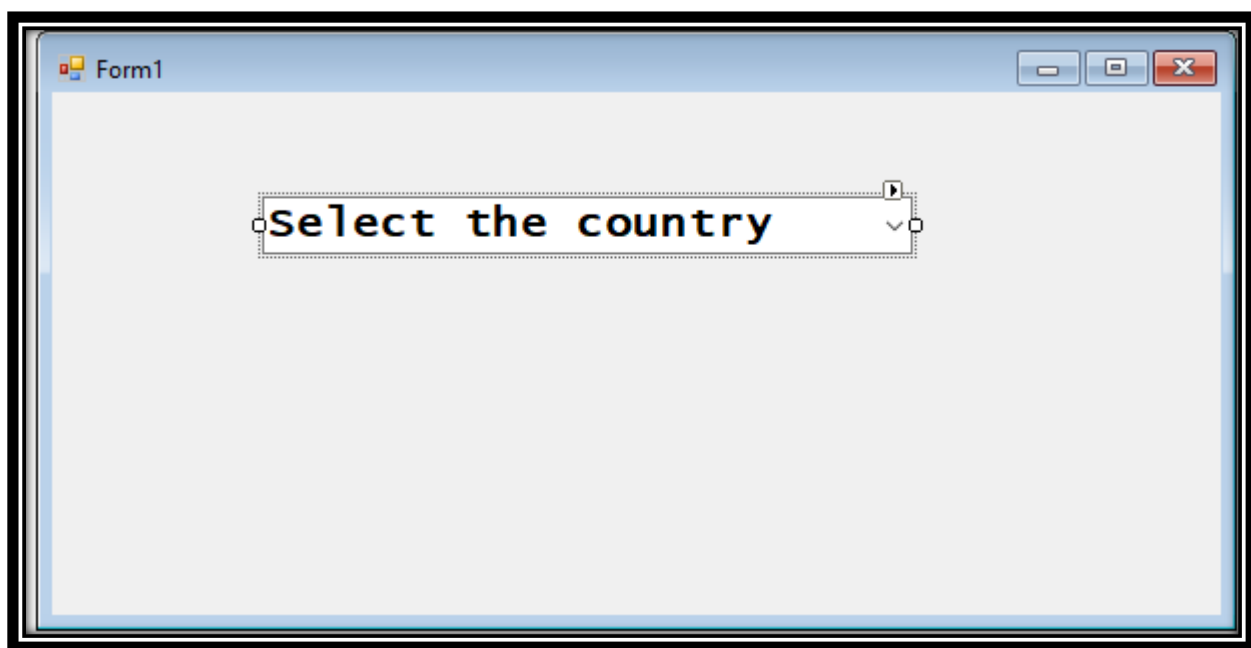
Properties:

Property	Description
Items	To add the items in the combobox
BackColor	Change the background color of combobox
TextAlign	Can give alignment on text of combobox
ForeColor	Change the forecolor of the combobox
Text	To give the text or heading to the combobox

Events:

Event	Description
SelectedIndexChanged	Raised when you double click on combobox

Example:



SHREE H. N. SHUKLA COLLEGE OF I.T & MGMT

(Affiliated to Saurashtra University)

Coding:

```
comboBox1_SelectedIndexChanged  
  
if (comboBox1.SelectedItem == "India")  
    MessageBox.Show("India Country");  
if (comboBox1.SelectedItem == "America")  
    MessageBox.Show("America Country");  
if (comboBox1.SelectedItem == "England")  
    MessageBox.Show("England Country");
```

Output:



SHREE H. N. SHUKLA COLLEGE OF I.T & MGMT

(Affiliated to Saurashtra University)

7) ListBox:

Description:

- This control is used if there is a need to have multiple selections of if the user needs to be able to see several items in the list at any time.

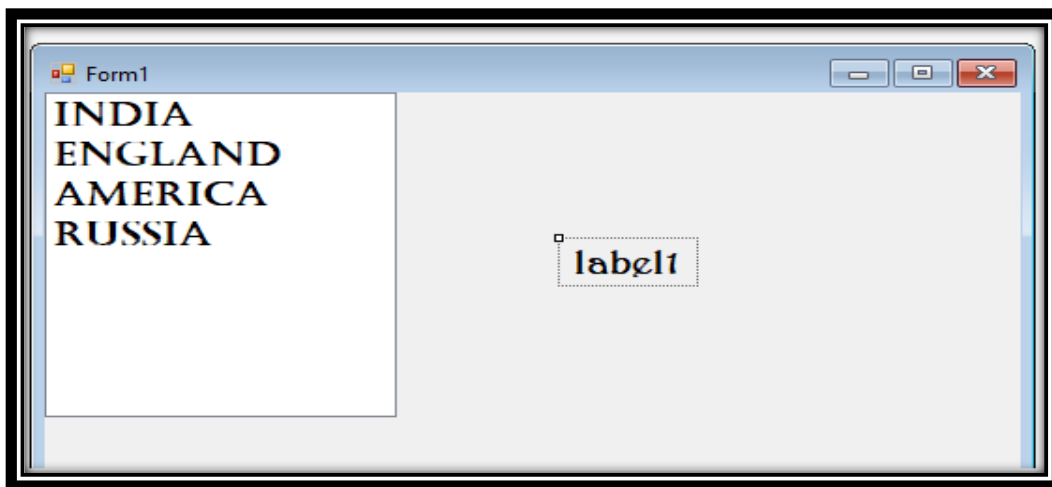
Properties:

Property	Description
Items	To add the items in the listbox
BackColor	Change the background color of listbox
ForeColor	Change the forecolor of the listbox
SelectionMode	Indicates whether you want to select single, none or multiple items from the listbox.

Events:

Event	Description
SelectedIndexChanged	Raised when you double click on listbox

Example:



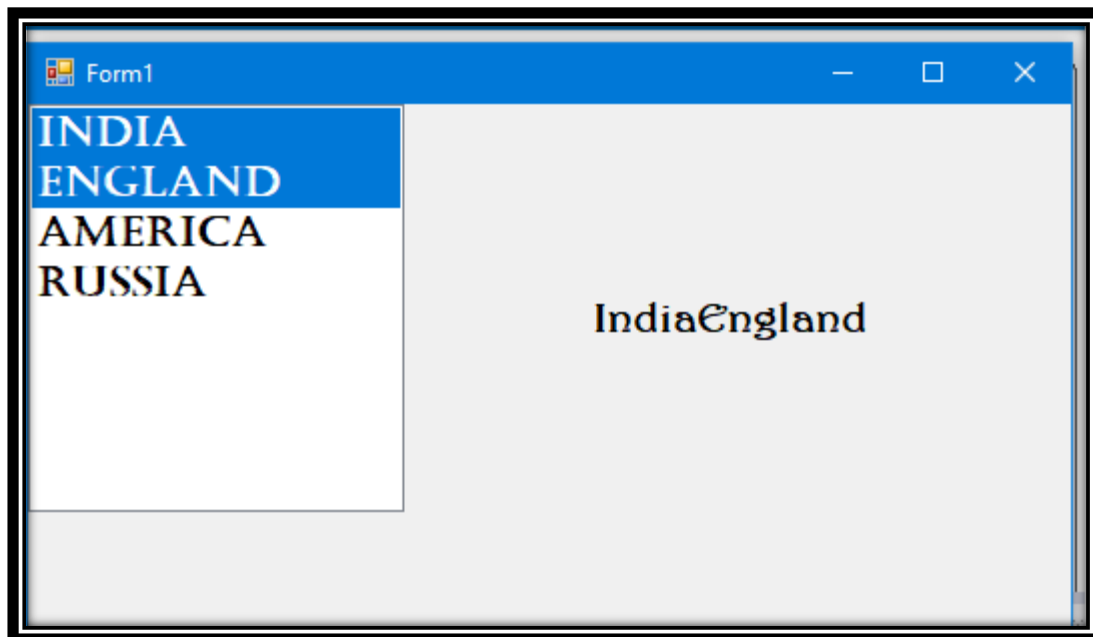
SHREE H. N. SHUKLA COLLEGE OF I.T & MGMT

(Affiliated to Saurashtra University)

Coding:

```
Listbox1_selectedIndexChanged:  
  
label1.Text = "";  
foreach (int i in listBox1.SelectedIndices)  
{  
    label1.Text =label1.Text + listBox1.Items[i].ToString();  
}
```

Output:



SHREE H. N. SHUKLA COLLEGE OF I.T & MGMT

(Affiliated to Saurashtra University)

Difference between combo box and list box:

Combo Box	List Box
1) Only 1 item can be selected from multiple items	1) Multiple items can be selected from multiple items
2) You can not see the items in the combo box till you click on the arrow of combobox	2) You can see multiple items in the list box.
3) Combo Box have text property	3) List box does not have text property

8) PictureBox:

Description:

- This control is used to display graphics in jpeg,gif,bitmap format
- Scrollbars are not supported when the image is larger than client area.

Properties:

Property	Description
Image	Gets or sets the image to display in the picture box
BackColor	Change the background color of listbox
ForeColor	Change the forecolor of the listbox
SizeMode	Gets or sets the pictureboxSizeMode value indicating how the image is displayed. The default is Normal.

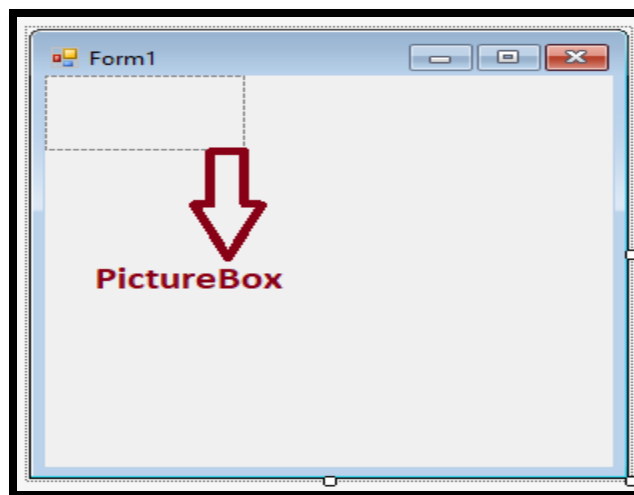
SHREE H. N. SHUKLA COLLEGE OF I.T & MGMT

(Affiliated to Saurashtra University)

Events:

Event	Description
SizeModeChanged	Raised when the value

Example:



Coding:

Form1_Load

```
pictureBox1.Image = Image.FromFile("D:\\1.jpg");  
pictureBox1.SizeMode = PictureBoxSizeMode.AutoSize;
```

SHREE H. N. SHUKLA COLLEGE OF I.T & MGMT

(Affiliated to Saurashtra University)

Output:



9) Scrollbar:

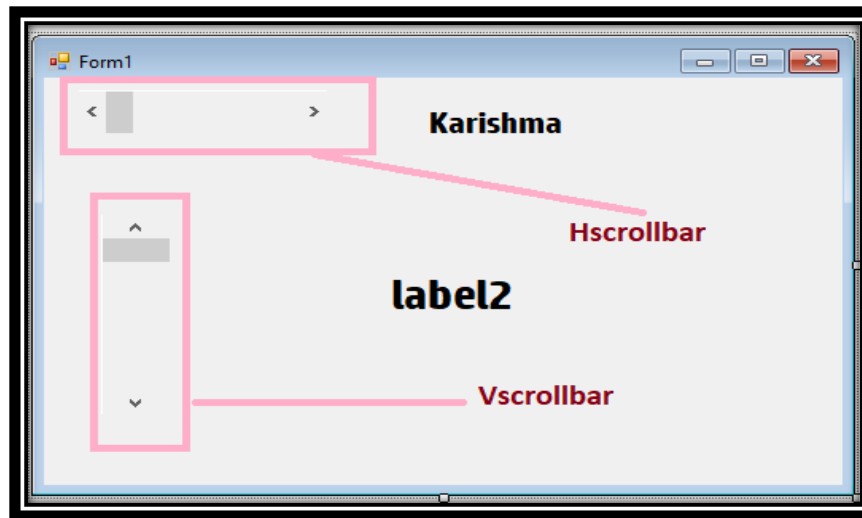
Description:

- Scrollbar controls are used to provide easy navigation through a long list of items or a large amount of information by scrolling either horizontally or vertically within an application or control.
- Scrollbars are common element of windows interface.
- HScrollBar and VScrollbar controls operate independently from other controls and have their own set of events, properties and methods.
- Scrollbar controls are not the same as built-in scroll bars that are attached to textbox, listbox, combo box or MDI forms

SHREE H. N. SHUKLA COLLEGE OF I.T & MGMT

(Affiliated to Saurashtra University)

Example:



Coding:

Hscrollbar1_Scroll

```
Random r = new Random();  
    label1.BackColor = Color.FromArgb(r.Next(0, 255), r.Next(0, 255),  
r.Next(0, 255));
```

Vscrollbar1_Scroll

```
label2.Text = vScrollBar1.Value.ToString();
```

SHREE H. N. SHUKLA COLLEGE OF I.T & MGMT

(Affiliated to Saurashtra University)

Output:



10) Treeview:

- Treeview control is used to display a hierarchy of nodes to users, like the way files and folders are displayed in the left pane of the windows explorer.
- Each node in the tree view might contain other nodes, called child nodes.
- Parent nodes, child nodes can be displayed as expanded or collapsed.
- Treeview can also be displayed with check boxes next to the nodes.

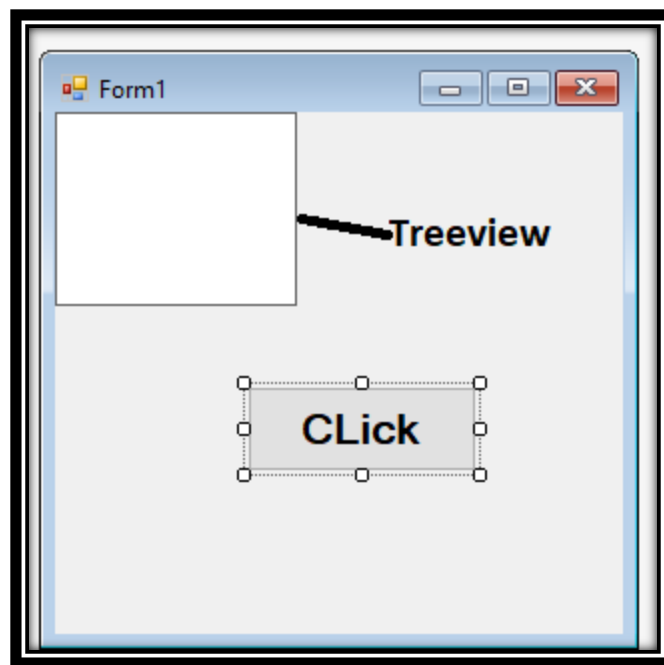
Properties:

SHREE H. N. SHUKLA COLLEGE OF I.T & MGMT

(Affiliated to Saurashtra University)

Property	Description
Nodes	Allows the treeview control to add nodes and subnodes.
BackColor	Change the background color of treeview control
ForeColor	Change the forecolor of the treeview control
selectedNode	Gets or sets the selected tree node.

Example:



SHREE H. N. SHUKLA COLLEGE OF I.T & MGMT

(Affiliated to Saurashtra University)

Coding:

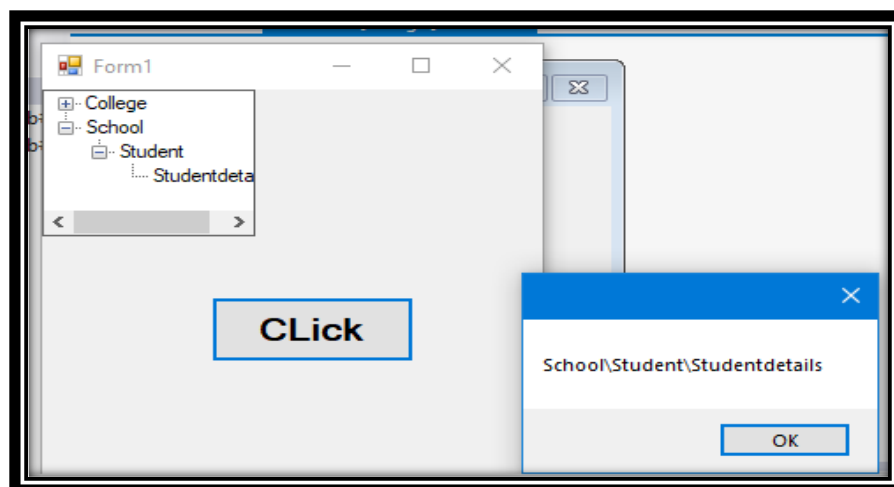
Form1_Load

```
TreeNode t;  
t = treeView1.Nodes.Add("College");  
t = treeView1.Nodes.Add("School");  
treeView1.Nodes[0].Nodes.Add("Academics");  
treeView1.Nodes[0].Nodes.Add("Material");  
  
treeView1.Nodes[1].Nodes.Add("Student");  
treeView1.Nodes[1].Nodes[0].Nodes.Add("Studentdetails");
```

Button1_click

```
MessageBox.Show(treeView1.SelectedNode.FullPath.ToString());
```

Output:



SHREE H. N. SHUKLA COLLEGE OF I.T & MGMT

(Affiliated to Saurashtra University)

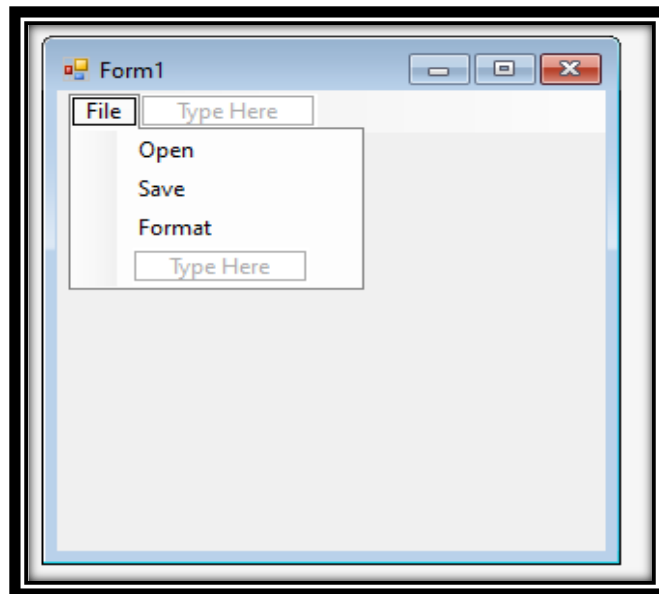
11) Menustrip:

- To create the menu in c#, Menustrip control is used
- Menu strip control represents the container for menu structure of a form.
- You can add ToolStripMenuItem objects to the Menustrip that represents the individual menu commands in the menu structure

Properties:

Property	Description
Items	Allows you to add items in the menu strip control
BackColor	Change the background color of Menu Control
ForeColor	Change the forecolor of the Menu control
Dropdown Items	It specifies toolStripItem to display when the item is clicked

Example:



SHREE H. N. SHUKLA COLLEGE OF I.T & MGMT

(Affiliated to Saurashtra University)

Coding:

openToolStripMenuItem_Click

```
MessageBox.Show("Open");
```

saveToolStripMenuItem_Click

```
MessageBox.Show("Save");
```

formatToolStripMenuItem_Click

```
MessageBox.Show("Format");
```

12) Timer and progressbar:

Description:

Timer:

- C# timer is used to implement timer in c#
- The timer class represents the timer control that executes a block of code at specified interval of time repeatedly.

ProgressBar

- A progress bar is a control that an application can use to indicate the progress of a lengthy operation such as calculating a complex result, downloading a large file from the Web etc.
- ProgressBar controls are used whenever an operation takes more than a short period of time.

SHREE H. N. SHUKLA COLLEGE OF I.T & MGMT

(Affiliated to Saurashtra University)

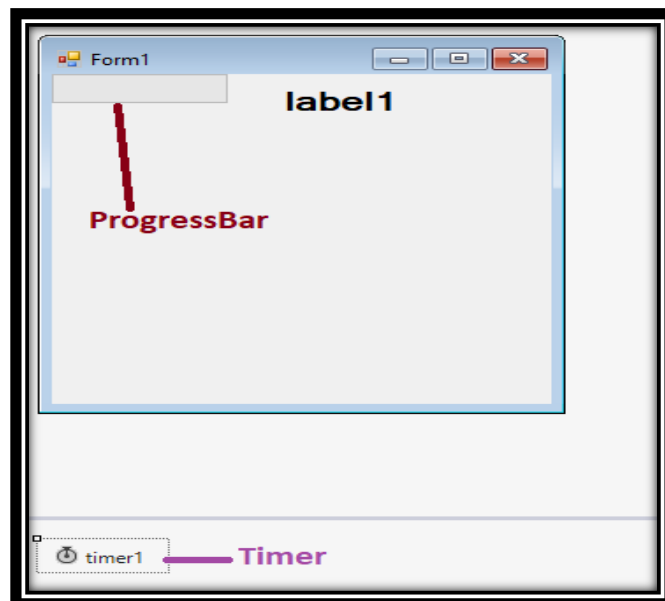
Properties of Timer:

Property	Description
Enabled	This property must be set in order to enable the timer
Interval	This property indicates time in milliseconds for the events to occur

Properties of ProgressBar:

Property	Description
BackColor	Change the background color of progressbar
ForeColor	Change the forecolor of the progressbar
Style	Allows the user to set the style of the progressbar
Text	Change the text of progressbar

Example:



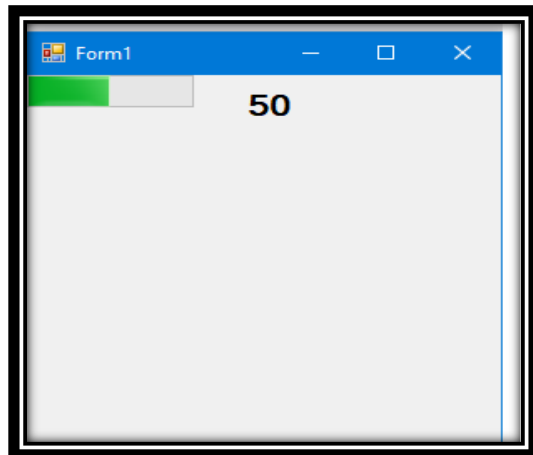
SHREE H. N. SHUKLA COLLEGE OF I.T & MGMT

(Affiliated to Saurashtra University)

Coding:

```
private void timer1_Tick(object sender, EventArgs e)
{
    progressBar1.Value = progressBar1.Value + 10;
    label1.Text = progressBar1.Value.ToString();
}
```

Output:



SHREE H. N. SHUKLA COLLEGE OF I.T & MGMT

(Affiliated to Saurashtra University)

13) Panel and GroupBox:

Description:

- Panel and groupbox are used when you want to group the controls of the form.
- Following are the differences between panel and groupbox

Panel	GroupBox
1) Panel is scrollable	1) Groupbox does not support scrollbar.
2) Panel does not have caption	2) Groupbox does not have caption
3) Panel can not have title	3) Groupbox can have title
4) Any number of controls can be placed in the panel	4) Only limited number of controls can be placed in the groupbox
5) Panel is heavy weight component	6) Groupbox is lightweight component.

14) NotifyIcon:

Description:

- Icons in the notification area are shortcuts to processes that are running in the background of the computer, such as My Computer or Recycle Bin. These processes do not come with their own user interfaces.
- The extension of notify icon is .ico

SHREE H. N. SHUKLA COLLEGE OF I.T & MGMT

(Affiliated to Saurashtra University)

15) RichTextBox:

- It is a text editing control that can handle special formatting features.
- This control is used for displaying, entering and manipulating text with formatting
- It is similar to textbox but additionally it can display fonts, colors, and links.
- Rich textbox uses RTF (Rich Text Format) to handle special formatting.

16) Tab Control

- Tab controls are used to compact a large amount of data into a single form by segmenting the data into different screens, or tab pages.
- The tab control displays multiple tabs like dividers in a diary.
- The tabs can contain pictures and other controls.
- Tab control can be used to produce the kind of multiple-page dialog box that appears many places in Windows Operating system such as control panel display properties

17) ToolTip:

- Tool tip provide short and quick explanations of the purpose of a control or other object.
- ToolTip class is a component that provides a small pop up window for a control. This window normally contains a short phrase describing the purpose of the control, and appears whenever the mouse hovers over the control for particular amount of time.

SHREE H. N. SHUKLA COLLEGE OF I.T & MGMT

(Affiliated to Saurashtra University)

<u>MCQ</u>	
1) The application which has both design and coding section is known as	Windows Application
2) To do designing in windows application,can be used	Standard Controls
3) To display text or any static message, control is used	Label
4) To take the input from the user which control is used?	TextBox
5) Which property of textbox needs to be set in order to enter data in multiple lines in textbox	Multiline
6)control is known as mutually exclusive	Radiobutton
7) Which control allows you do select multiple options at same time	CheckBox
8) To add data in combobox or listbox which property is used?	Items
9) Which control is used to display image in windows application?	Picture Box
10) To create menu in c#, which control is used?	MenuStrip Control
11) To start the timer, which property should be set?	Enabled Property
12) The time interval specified in timer is always in	Milliseconds
13) To show the progress or status of work, which control should be used?	Progressbar
14)control does not have caption or text among panel and groupbox?	Panel
15) Which control is the extension to textbox with formatting features?	Rich TextBox

SHREE H. N. SHUKLA COLLEGE OF I.T & MGMT

(Affiliated to Saurashtra University)

Topic: Explain Reflection?

Ans:

What is Reflection?

- Reflection is the feature that enables you to obtain the information about type (data type)
- Reflection is a mirror image of type (data type)
- To use reflection, System. Reflection namespace should be used.
- Reflection provides objects that describes assemblies, modules, class and type.
- Type class is used to obtain detailed information about a type at runtime.

Why Reflection?

- Reflection is the feature to examine the metadata of a program and gather information about its types.
- All information of program can be obtained from reflection.
- Reflection is the powerful feature because once you have obtained information about a type, you can access the information of variables, methods, constructors etc.

Topic: Explain Dynamic Loading and Reflection

Ans:

- Generally, reflection is used for dynamic loading of classes, assembly etc. It is also known as late binding
- When the process occurs at run time rather than at compile time it is called late binding

SHREE H. N. SHUKLA COLLEGE OF I.T & MGMT

(Affiliated to Saurashtra University)

- Using late binding, you can load an assembly at run time, obtain information about types in that assembly, specify the type that you want, and then invoke methods or access fields or properties on that type.
- This technique is useful if you do not know an object's type at compile time, such as when the object type is dependent on user input.

<u>MCQ</u>	
1) Reflection provides the information about	Data Type
2) Which class is used to obtain information about type?	Type
3) When the process occurs at runtime rather than compile time, it is called	Late Binding