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Visual Basic - Basic

Module 3 - Control Fundamentals

Working with controls in Visual Basic (VB) involves adding, configuring, and handling events for various user interface (UI) elements.

Controls are the building blocks of your UI, and VB within Visual Studio provides a rich set of tools to work with them.

Adding Controls to a Form

1. **Open Visual Studio:** Launch Visual Studio and open your VB project.
2. **Form Designer:** Open the form (e.g., Form1.vb) where you want to add controls.
3. **Toolbox:**
  - The Toolbox is located on the left side of Visual Studio.
  - It contains a variety of controls like buttons, text boxes, labels, etc.
  - If the Toolbox is not visible, you can show it by going to View > Toolbox.
4. **Drag and Drop:**
  - Drag the desired control from the Toolbox and drop it onto the form.
  - Position the control where you want it on the form.

Common Controls and Their Properties

Here are some commonly used controls and their key properties:

1. **Button**

- **Text:** Sets the text displayed on the button.
- **Click Event:** Triggered when the button is clicked.

2. **TextBox:** TextBox is for accepting input from the user as well as to display the output. It can handle string and numeric data but not images or pictures. String in a text box can be converted to a numeric data by using the function Val(text).

3. **Label:** Label is used for multiple purposes like providing instructions and guides to the users, displaying outputs and more. It is different from the TextBox because it is read only, which means the user cannot edit its content at runtime. Using the syntax Label.Text, it can display string as well as numeric data.

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4. **CheckBox:** The CheckBox control allows the user to set true/false or yes/no type options. The user can select or deselect it. When a check box is selected it has the value True, and when it is cleared, it holds the value False.

- **Checked:** Indicates whether the checkbox is checked or not.
- **Text:** The text displayed next to the checkbox.

5. **RadioButton:** sometimes called Option Buttons, are used when you want to restrict a user's choice to one, Male/Female, for example. A Checkbox would be no good here, because a user could tick both boxes. You want to force your users to pick only one from your list of options.

- **Checked:** Indicates whether the radio button is selected.
- **Text:** The text displayed next to the radio button.

6. **ComboBox:** The ComboBox control is used to display a drop-down list of various items. It is a combination of a text box in which the user enters an item and a drop-down list from which the user selects an item.

- **Items:** The collection of items in the combo box.
- **SelectedItem:** The currently selected item.

7. **ListBox**

- **Items:** The collection of items in the list box.
- **SelectedItem:** The currently selected item.

**Solved Example: Program using Controls to Add Two Numbers and Show the result in message box**

**Add Controls:**

- **Label:** Drag a Label from the Toolbox and place it on the form. Set its Text property to "Number 1:".
- **TextBox:** Drag a TextBox and place it next to the "Number 1" label. Name it TextBox1.
- **Label:** Drag another Label and place it below the first label. Set its Text property to "Number 2:".



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- **TextBox:** Drag another TextBox and place it next to the "Number 2" label. Name it TextBox2.
- **Button:** Drag a Button and place it below the text boxes. Set its Text property to "Add" and name it Button1.

Next, click on the button and enter the following code:

```
Private Sub Button1_Click(sender As Object, e As EventArgs)
    Handles Button1.Click
    MsgBox("The sum is "& Val(TextBox1.Text) +
    Val(TextBox2.Text))
End Sub
```

This program will add the value in TextBox1 and the value in TextBox2 and displays the sum in a message box.

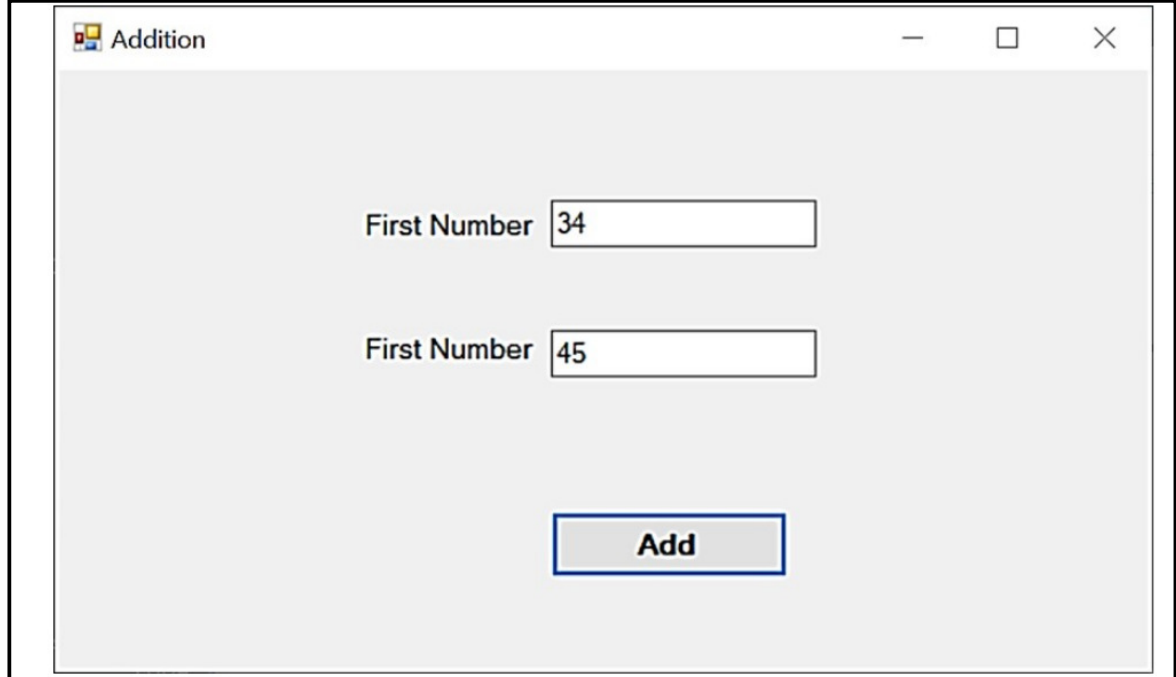


Figure 5.1

After clicking the Add button, you will get the answer in a message box, as shown in Figure 5.2.

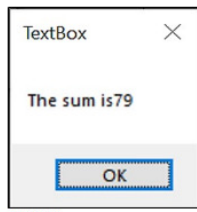


Figure 5.2

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**Assignment**

1. Program using Controls to Multiply Two Numbers and display the result in the message box.
2. Program using Controls to Divide Two Numbers and display the result in the message box.
3. Program using Controls to Calculate the Square of a Number and display the result in the message box.
4. Program using Controls to Calculate the Area of a Rectangle and display the result in the message box.
5. Program to Add Three Numbers and display the result in the textbox.
6. Program to Calculate the Average of Three Numbers and display the result in the message box.
7. Program to Calculate the Average of Four Numbers and display the result in the message box.

**Solved Example: Program using Controls to Add Two Numbers and Show the result in a textbox**

**Add Controls:**

- **Label:** Drag a Label from the Toolbox and place it on the form. Set its Text property to "Number 1:".
- **TextBox:** Drag a TextBox and place it next to the "Number 1" label. Name it TextBox1.
- **Label:** Drag another Label and place it below the first label. Set its Text property to "Number 2:".
- **TextBox:** Drag another TextBox and place it next to the "Number 2" label. Name it TextBox2.
- **Button:** Drag a Button and place it below the text boxes. Set its Text property to "Add" and name it Button1.
- **Label:** Drag a final Label and place it below the button. Set its Text property to "Result:".
- **Label:** Drag another Label and place it next to the "Result" label. Name it ResultLabel.

**The Code**

```
Private Sub Button1_Click(sender As Object, e As EventArgs)
    Handles Button1.Click
        LblSum.Text = Val(TextBox1.Text) + Val(TextBox2.Text)
End Sub
```

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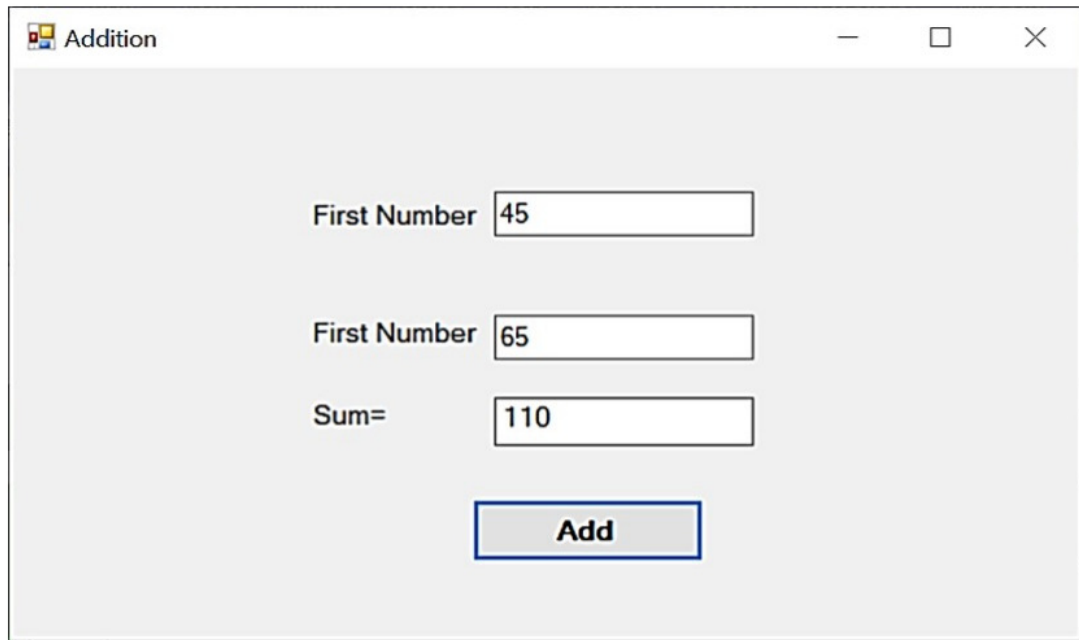
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Addition

First Number 45

First Number 65

Sum= 110

Add

### Assignment

1. Program to Subtract Two Numbers and Show the Result in a TextBox

Design a form with two TextBox controls for input, a Button to perform the subtraction, and a TextBox to display the result.

2. Program to Multiply Two Numbers and Show the Result in a TextBox

Create a form with two TextBox controls for input, a Button to perform the multiplication, and a TextBox to display the result.

3. Program to Divide Two Numbers and Show the Result in a TextBox

Develop a form with two TextBox controls for input, a Button to perform the division, and a TextBox to display the result. Ensure to handle division by zero.

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4. Program to Add Three Numbers and Show the Result in a TextBox

Design a form with three TextBox controls for input, a Button to perform the addition, and a TextBox to display the result.

5. Program to Calculate the Average of Three Numbers and Show the Result in a TextBox

Create a form with three TextBox controls for input, a Button to calculate the average, and a TextBox to display the result.

6. Program to Calculate the Square of a Number and Show the Result in a TextBox

Develop a form with one TextBox control for input, a Button to calculate the square, and a TextBox to display the result.

7. Program to Calculate the Square Root of a Number and Show the Result in a TextBox

Design a form with one TextBox control for input, a Button to calculate the square root, and a TextBox to display the result.

8. Program to Calculate the Sum of Multiple Numbers and Show the Result in a TextBox

Create a form with a TextBox control for inputting numbers, a Button to add the number to a list, and another Button to calculate the sum of all entered numbers. Use a ListBox control to display the entered numbers and a TextBox to show the total sum.

9. Program to Convert Fahrenheit to Celsius and Show the Result in a TextBox

Develop a form with a TextBox control for entering a temperature in Fahrenheit, a Button to perform the conversion, and a TextBox to display the temperature in Celsius.

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**Radio Progress and Status Bar Control**

Visual Basic Progress Bar control provides the coolest way to show the progress of any background activity. It is a good idea to show the progress to the end user when an application is performing complex or time consuming background tasks.

Follow the steps given below to begin with:

1. Drag and drop a progress bar control ProgressBar1 and button Button1 on the Form Design.
2. Dock theProgressBar1on the bottom side.
3. Go to ProgressBar1 properties and modify Step property value to 15
4. Open code for Button1\_Click event handling sub and paste the following code in it.
5. Run the application using F5.

**Properties for Visual Basic Progress Bar Control**

**Style**

Style provides three display options for visual appearance:

1. **Blocks:** The progress bar is shown in block increments. This option is not usable in modern windows.
2. **Continuous:** The progress bar is shown as a continuous bar. This is the most common value of Style property.

**Common Properties of Visual Basic Controls**

<i>Property</i>	<i>Description</i>
Left	The position of the left side of a control with respect to its container
Top	The position of the top of a control with respect to its container
Height	A control's height
Width	A control's width
Name	The string value used to refer to a control
Enabled	The Boolean (True/False) value that determines whether users can manipulate the control
Visible	The Boolean (True/False) value that determines whether users can see the control



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**Methods in Visual Basic**

<b>Common Methods of Visual Basic Controls</b>	
<i>Method</i>	<i>Use</i>
Move	Changes an object's position in response to a code request
Drag	Handles the execution of a drag-and-drop operation by the user
SetFocus	Gives focus to the object specified in the method call
ZOrder	Determines the order in which multiple objects appear onscreen

**Events in Visual Basic**

<b>Common Events of Visual Basic Controls</b>	
<i>Event</i>	<i>Occurrence</i>
Change	The user modifies text in a combo box or text box.
Click	The user clicks the primary mouse button on an object.
DbClick	The user double-clicks the primary mouse button on an object.
DragDrop	The user drags an object to another location.
DragOver	The user drags an object over another control.
GotFocus	An object receives focus.
KeyDown	The user presses a keyboard key while an object has focus.
KeyPress	The user presses and releases a keyboard key while an object has focus.
KeyUp	The user releases a keyboard key while an object has focus.
Event	Occurrence
LostFocus	An object loses focus.
MouseDown	The user presses any mouse button while the mouse pointer is over an object.
MouseMove	The user moves the mouse pointer over an object.
MouseUp	The user releases any mouse button while the mouse pointer is over an object.

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Naming Forms and Controls

To change the name of a Form to something more meaningful, simply click in any area of the Form in Visual Studio and change the (Name) value in the Properties panel.

Use the following rules when you name procedures, constants, variables, and arguments in a Visual Basic module:

- You must use a letter as the first character.
- You can't use a space, period (.), exclamation mark (!), or the characters @, &, \$, # in the name.
- Name can't exceed 255 characters in length.



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