

5.2 If Blocks

- If Block

- Elself Clause

If Block

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The program will take a course of action based on whether a condition is true.

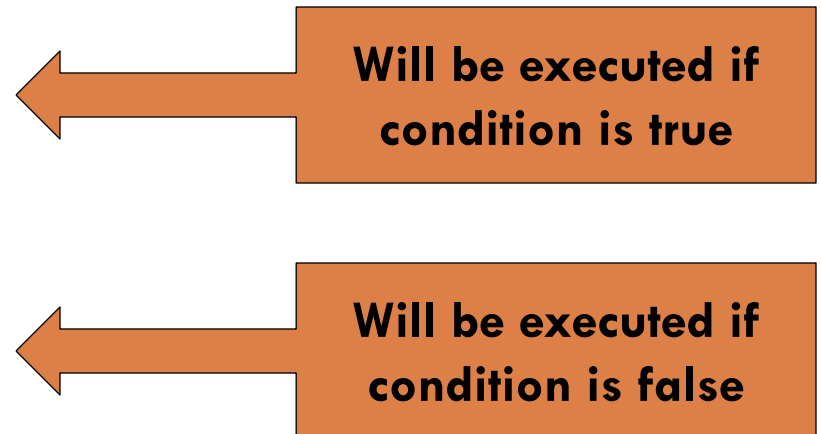
If *condition* **Then**

action1

Else

action2

End If



Another example If block

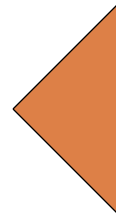
3

```
If condition Then  
    action1
```

```
End If
```

```
Statement2
```

```
Statement3
```

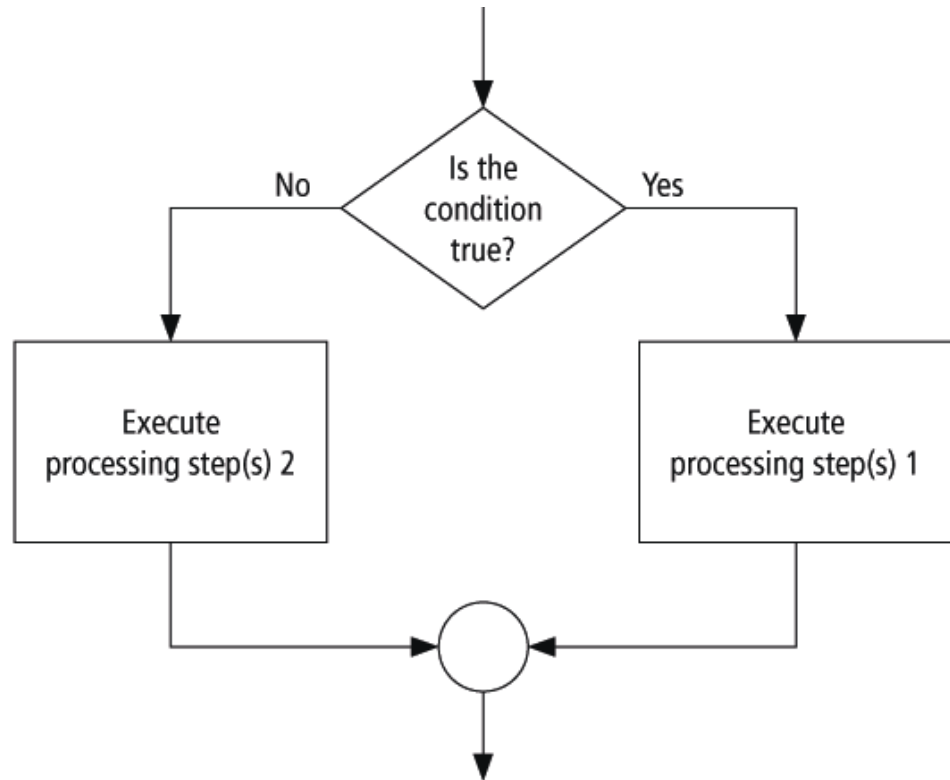


Regardless of whether
the condition in the
If statement is True or
False, these statements
will be executed

Pseudocode and Flowchart for an If Block

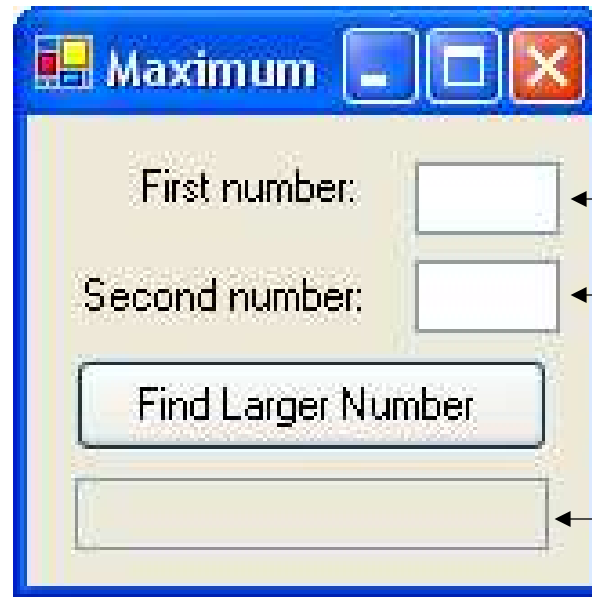
4

```
If condition is true Then
    Processing step(s) 1
Else
    Processing step(s) 2
End If
```



Example 1: Form

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Maximum

First number:

Second number:

Find Larger Number

txtFirstNum

txtSecondNum

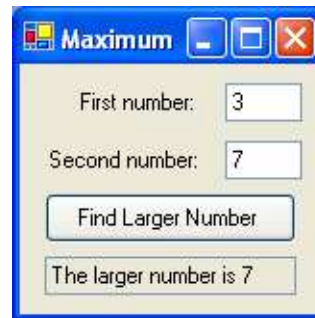
txtResult

Example 1: Code

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```
Private Sub btnFindLarger_Click(...) _  
    Handles btnFindLarger.Click  
    Dim num1, num2, largerNum As Double  
    num1 = Cdbl(txtFirstNum.Text)  
    num2 = Cdbl(txtSecondNum.Text)  
    If num1 > num2 Then  
        largerNum = num1  
    Else  
        largerNum = num2  
    End If  
    txtResult.Text = "The larger number is " & largerNum  
End Sub
```

Example 1: Output



Example 2: Form

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The image shows a small, simple graphical user interface window titled "Profit/Loss". The window has a blue title bar with standard Windows-style window controls (minimize, maximize, close). The main content area is light beige and contains the following elements:

- A label "Costs:" followed by a white rectangular input field.
- A label "Revenue:" followed by a white rectangular input field.
- A button labeled "Show Financial Status" with a light blue gradient and a thin border.
- An empty white rectangular box at the bottom, likely intended for displaying the calculated result.

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[illegible]

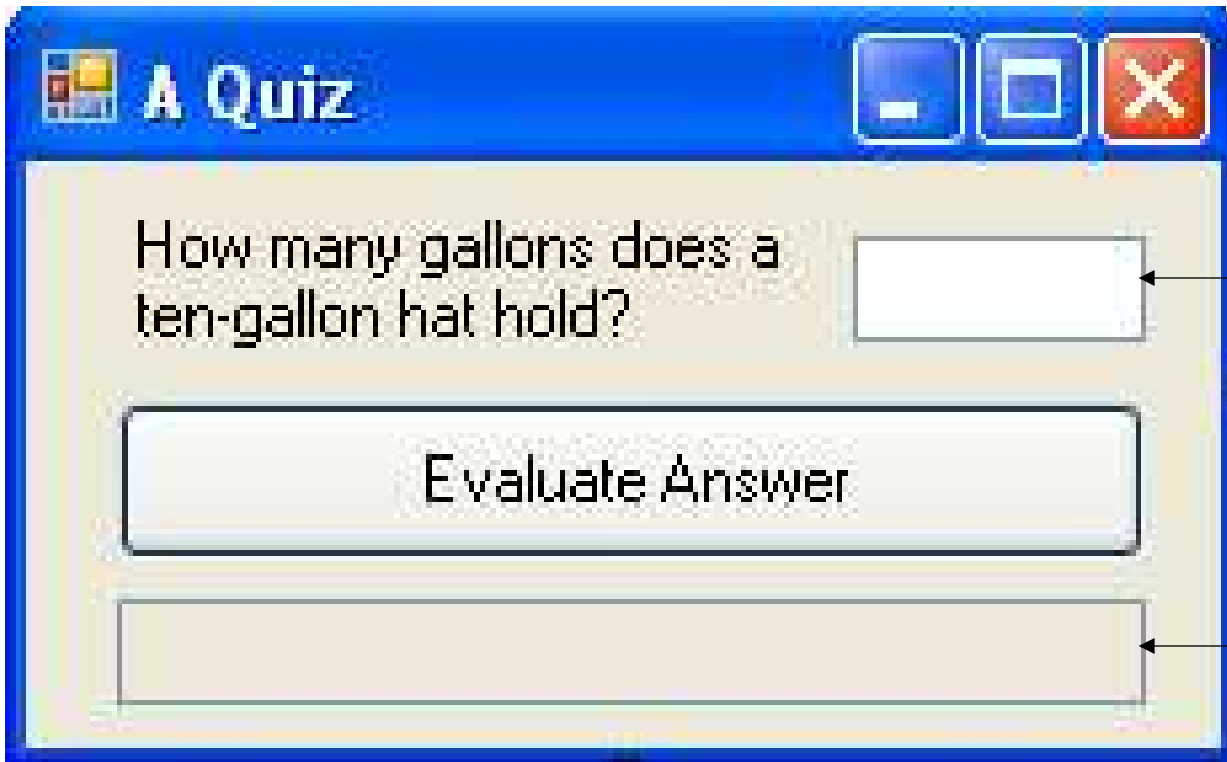
Example 2: Output



A screenshot of a graphical user interface window titled "Profit/Loss". The window has a blue title bar with standard minimize, maximize, and close buttons. The main area has a light beige background. It contains two input fields: "Costs:" with the value "9500" and "Revenue:" with the value "8000". Below these is a button labeled "Show Financial Status". At the bottom, a text box displays the result: "Loss is \$1,500.00".

Field	Value
Costs:	9500
Revenue:	8000
Financial Status	Loss is \$1,500.00

Example 3: Form



A Quiz

How many gallons does a ten-gallon hat hold?

txtAnswer

Evaluate Answer

txtSolution

The image shows a Java Swing window titled "A Quiz". The window has a blue title bar with standard Windows-style controls (minimize, maximize, close). The main content area is light gray. It contains a text label asking "How many gallons does a ten-gallon hat hold?". To the right of the question is a text input field. Below the input field is a button labeled "Evaluate Answer". At the bottom of the window is another text input field. Arrows point from the labels "txtAnswer" and "txtSolution" to their respective input fields.

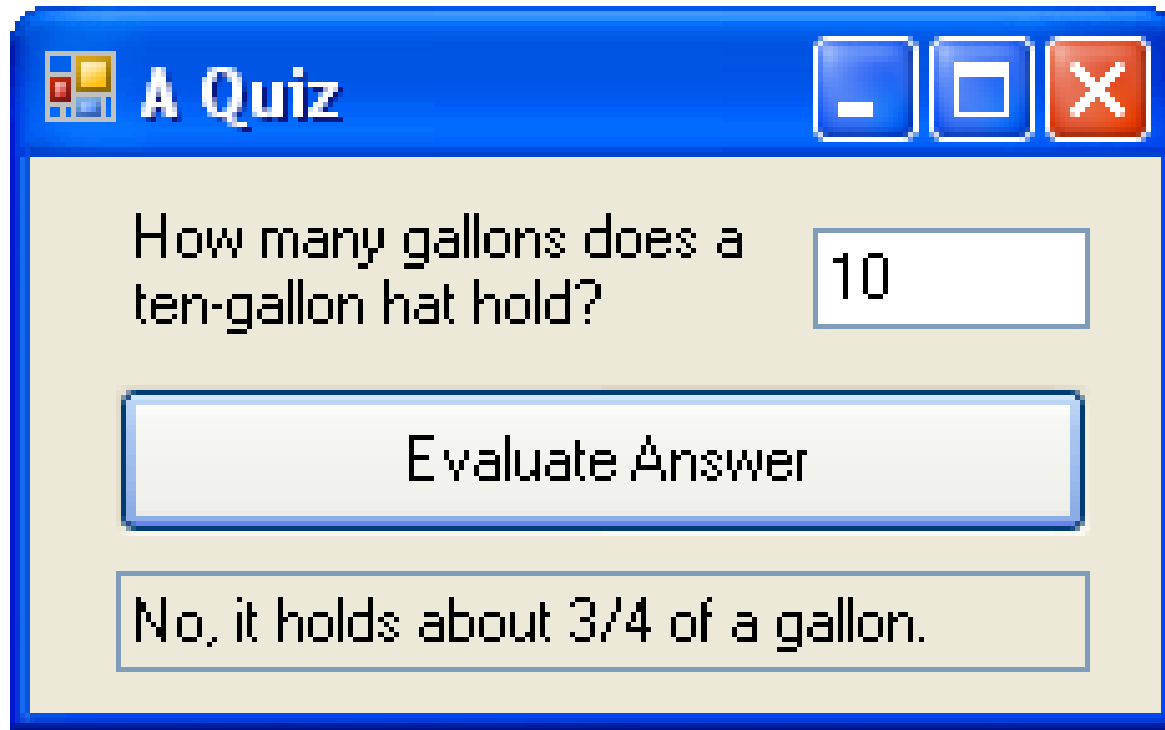
Example 3: Code

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```
Private Sub btnEvaluate_Click(...) _  
    Handles btnEvaluate.Click  
    Dim answer As Double  
    answer = Cdbl(txtAnswer.Text)  
    If (answer >= 0.5) And (answer <= 1) Then  
        txtSolution.Text = "Good, "  
    Else  
        txtSolution.Text = "No, "  
    End If  
    txtSolution.Text &= "it holds about 3/4 of" _  
        & " a gallon."  
End Sub
```

Example 3: Output

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A Quiz

How many gallons does a ten-gallon hat hold?

10

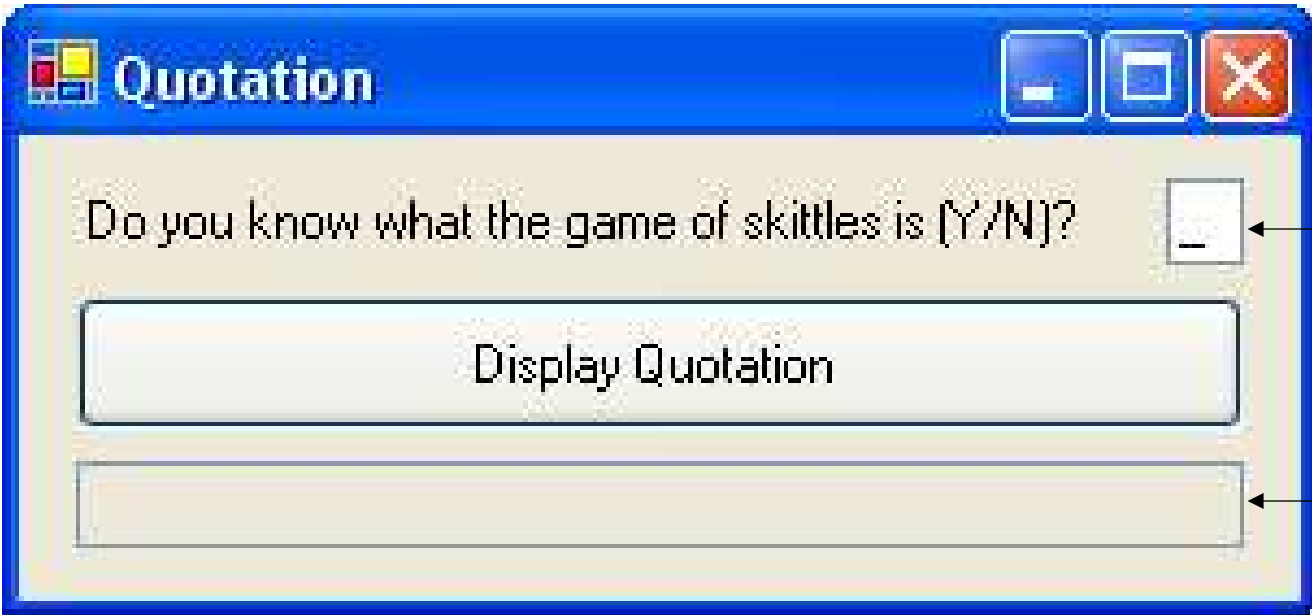
Evaluate Answer

No, it holds about 3/4 of a gallon.

The image shows a classic Windows-style dialog box titled "A Quiz". It has a blue title bar with standard minimize, maximize, and close buttons. The main area has a light beige background. It contains a text prompt, a text input field with the value "10", a button labeled "Evaluate Answer", and a text box displaying the feedback message "No, it holds about 3/4 of a gallon."

Example 4: Form

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The image shows a Java Swing window titled "Quotation". The window has a blue title bar with standard minimize, maximize, and close buttons. The main content area is light gray and contains the following elements:

- A text label: "Do you know what the game of skittles is (Y/N)?"
- A text input field (labeled `mtxtAnswer`) containing a single underscore character "_".
- A button labeled "Display Quotation".
- A text area (labeled `txtQuote`) which is currently empty.

Arrows point from the labels `mtxtAnswer` and `txtQuote` to their respective components in the window.

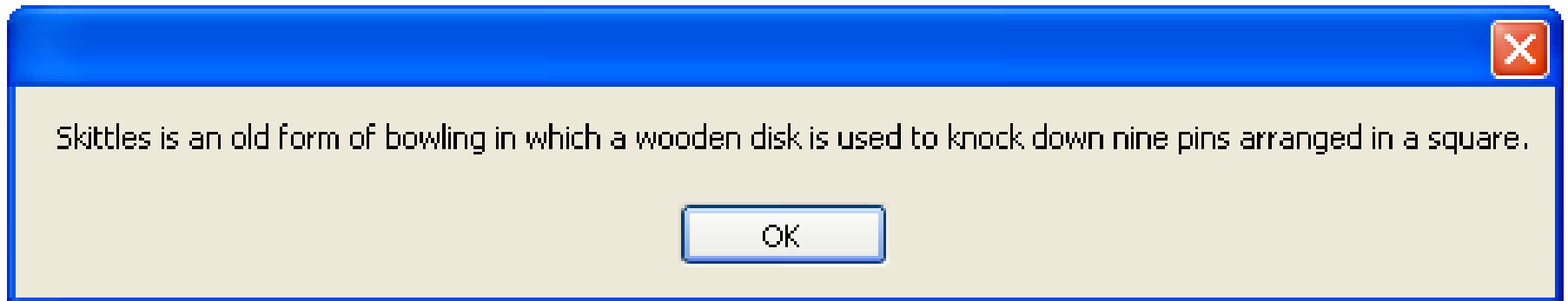
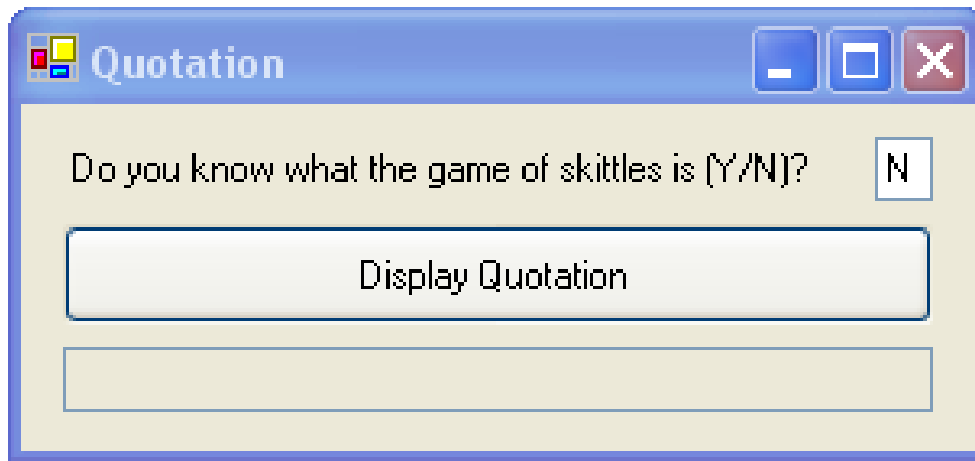
Example 4

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```
Private Sub btnDisplay_Click(...) _  
                                Handles btnDisplay.Click  
    Dim message As String  
    message = "Skittles is an old form of bowling in "  
    & "which a wooden disk is used to knock down nine"  
    & " pins arranged in a square."  
    If txtAnswer.Text.ToUpper = "N" Then  
        MsgBox(message, 0, "")  
    End If  
    txtQuote.Text = "Life ain't all beer and skittles."  
    txtQuote.Text &= " - Du Maurier (1894)."  
End Sub
```

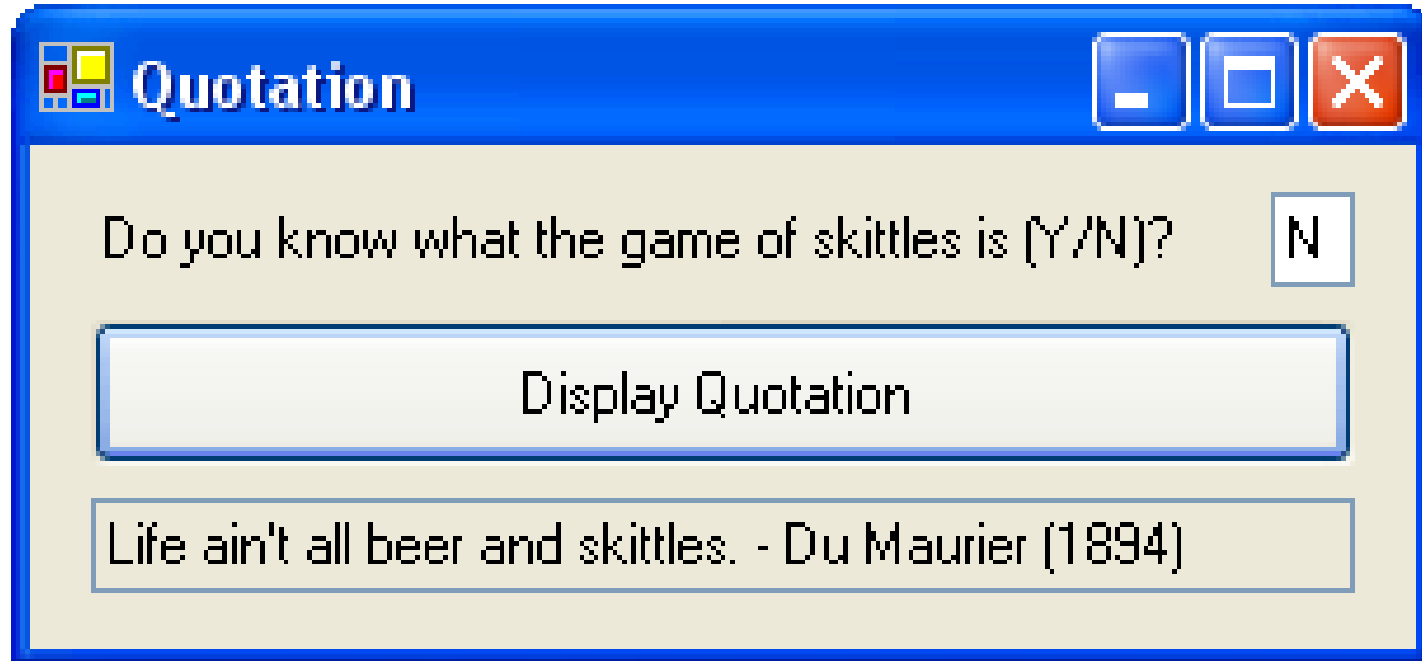
Example 4: Output

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[Click OK]

Example 4: Output continued



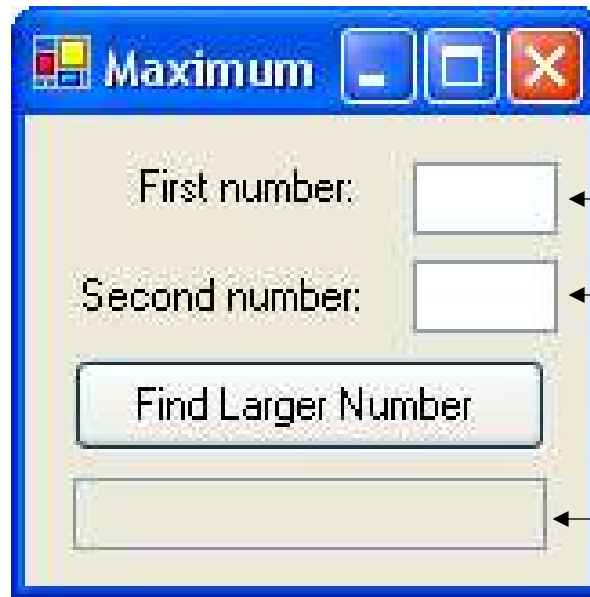
Elseif clause

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```
If condition1 Then
    action1
ElseIf condition2 Then
    action2
ElseIf condition3 Then
    action3
Else
    action4
End If
```

Example 5: Form

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The image shows a Windows-style dialog box titled "Maximum". It has a blue title bar with standard minimize, maximize, and close buttons. The main area is light yellow. It contains two labels, "First number:" and "Second number:", each followed by a white text input field. Below these is a button labeled "Find Larger Number". At the bottom is a larger white text area for the result.

txtFirstNum

txtSecondNum

txtResult

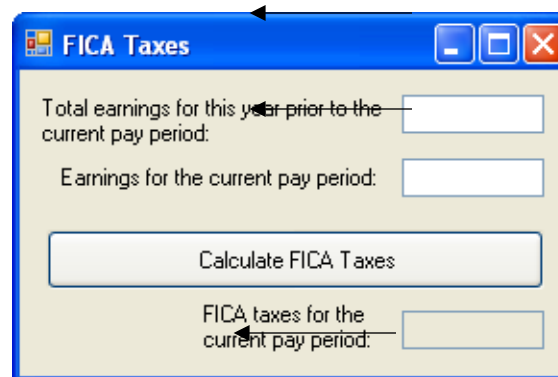
Example 5: Code

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```
Private Sub btnFindLarger_Click(...) _  
    Handles btnFindLarger.Click  
    Dim num1, num2 As Double  
    num1 = CDb1(txtFirstNum.Text)  
    num2 = CDb1(txtSecondNum.Text)  
    If (num1 > num2) Then  
        txtResult.Text = "Larger number is " & num1  
    ElseIf (num2 > num1) Then  
        txtResult.Text = "Larger number is " & num2  
    Else  
        txtResult.Text = "The two are equal."  
    End If  
End Sub
```

Example 6: Form

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A screenshot of a Windows-style dialog box titled "FICA Taxes". The dialog box has a blue title bar with standard minimize, maximize, and close buttons. The main content area is light beige and contains the following elements:

- A text label "Total earnings for this year prior to the current pay period:" followed by a white rectangular input field. A black arrow points to the word "year" in this label.
- A text label "Earnings for the current pay period:" followed by a white rectangular input field.
- A wide, light gray button with the text "Calculate FICA Taxes" centered on it.
- A text label "FICA taxes for the current pay period:" followed by a light gray rectangular output field. A black arrow points to the word "current" in this label.

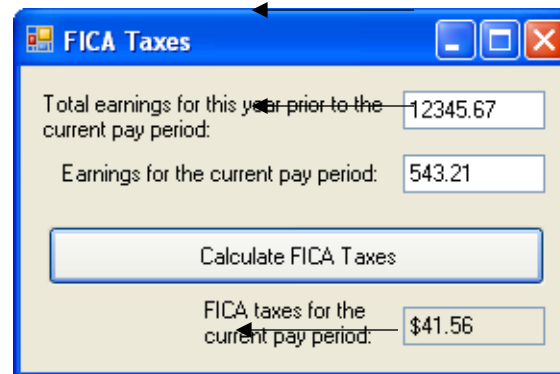
Example 6: Partial Code

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```
Function CalculateFICA(ByVal ytdEarnings As Double, _  
                      ByVal curEarnings As Double) As Double  
    Dim socialSecurityBenTax, medicareTax As Double  
    If (ytdEarnings + curEarnings) <= 90000 Then  
        socialSecurityBenTax = 0.062 * curEarnings  
    ElseIf ytdEarnings < 90000 Then  
        socialSecurityBenTax = 0.062 * (90000 - ytdEarnings)  
    End If  
    medicareTax = 0.0145 * curEarnings  
    Return socialSecurityBenTax + medicareTax  
End Function
```

Example 6: Output

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A screenshot of a Windows-style dialog box titled "FICA Taxes". The dialog box has a blue title bar with standard minimize, maximize, and close buttons. The main area has a light beige background. It contains two input fields with text labels, a central button, and one output field with a text label. The first input field is labeled "Total earnings for this year prior to the current pay period:" and contains the value "12345.67". The second input field is labeled "Earnings for the current pay period:" and contains the value "543.21". A button labeled "Calculate FICA Taxes" is positioned below these fields. Below the button, there is an output field labeled "FICA taxes for the current pay period:" which displays the value "\$41.56". A small black arrow points to the top of the dialog box.

Field	Value
Total earnings for this year prior to the current pay period:	12345.67
Earnings for the current pay period:	543.21
FICA taxes for the current pay period:	\$41.56

Comments

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- When one If block is contained inside another If block, the structure is referred to as **nested If blocks**.
- Care should be taken to make If blocks easy to understand.

Simplified Nested If Statement

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```
If cond1 Then  
  If cond2 Then  
    action  
  End If  
End If
```

```
If cond1 And cond2 Then  
  action  
End If
```

