Putting It All Together

CSE 100

The basic constituents of algorithm design and programming have been introduced -- variables, assignment, conditionals, repetition and procedures. It is time to put them together to solve problems.

CSE 100 Review Of Constituents

- Variable -- named "container" to hold a value of a given type, e.g. **`hiMo`**, **`midPt`**
- Assignment -- to place a value into a variable using (in VB6.0) an "=", e.g. **`midPt = loDate + 1`**
- Conditionals -- testing a value to determine which statement executes next, e.g **`If-Then-Else-End If`** and **`Select Case-End Select`**
- Iteration -- performing operations repeatedly using a loop, e.g. **`For-Next`** and **`Do While`**

All programming languages have these facilities, though the form is often slightly different

CSE 100 Review Procedures

- There are two “sides” to procedures:
  - The “declaration” is where one defines the procedure’s behavior

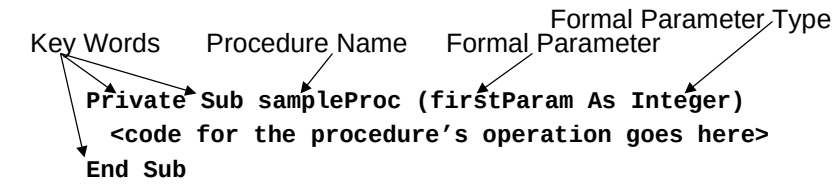
```
Private Sub sampleProc (firstParam As Integer)
  <code for the procedure’s operation goes here>
End Sub
```

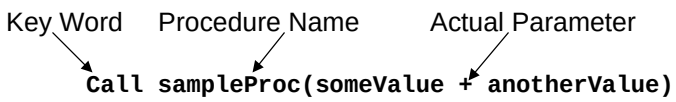
  - The “call” is where one directs that the procedure be performed

```
      ...
Call sampleProc(someValue + anotherValue)
      ...
```

- Procedures save work … define a procedure’s operation once, and use it wherever it is needed

CSE 100 Terms And Conditions ...

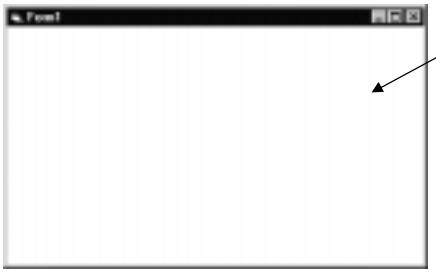




- Procedures are used everywhere in VB6.0
  - Event procedures are “called” when the event happens, but you define what they do
  - Support procedures are procedures you define and call

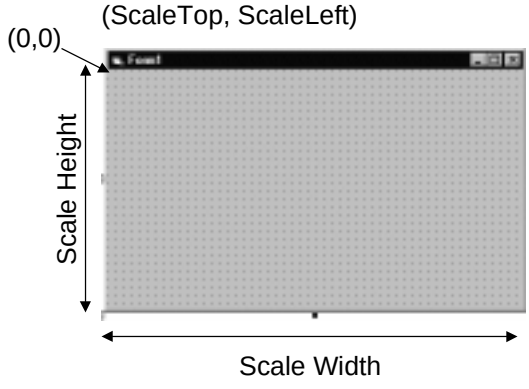
CSE 100 Illustrate Programming Ideas ...

- As a task to illustrate the ideas introduced in the recent lectures, consider drawing stuff on the form




```
FillStyle = 0 'solid
```


CSE 100 Form Coordinates



QBColor(x)
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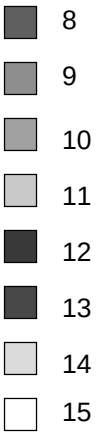
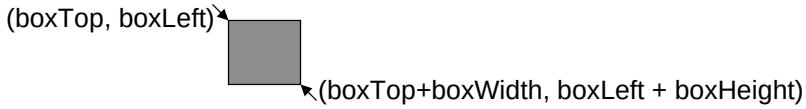


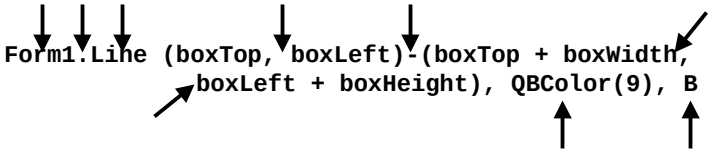
ScaleMode = Twip

For reference, the dots on the working form are separated by 135 twips

CSE 100 Drawing A Box

- The method for drawing a box is an extension of drawing a line …





CSE 100 Some VB6.0 Drawing …

- Start things out by make the screen white …

```
Private Sub Form_Load()
    FillStyle = 0           ' Draw in solid color
    BackColor = QBColor(15) ' Set background to white
End Sub
```

- … And defining a procedure to draw a box

```
Private Sub boxDraw(boxTop As Integer, boxLeft As Integer,
                                        color As Integer)
 Form1.Line (boxTop, boxLeft)-(boxTop + 200,
                  boxLeft + 200), QBColor(color), B
End Sub
```

CSE 100 And Call The Procedure

- Calling the procedure to draw a 200 x 200 box (that's what drawBox is defined to do) positioned so its upper left hand corner is at (1000,1000) in Form1, and so that its color is blue

```
Private Procedure Form_Click()
Dim indx As Integer
FillColor = QBColor(9)
FillStyle = 0
  Call drawBox(1000, 1000, 9)           ' Box is blue
End Sub
```

- Now, draw it 10 times, moving right ...

```
Private Procedure Form_Click()
Dim indx As Integer
FillColor = QBColor(9)
FillStyle = 0 For indx = 1 to 10
  Call drawBox(1000+(300*I), 1000, 9)   ' Box is blue
Next indx
End Sub
```


CSE 100 Remembering Colors Is Tough ...

- Define a function to convert from names to QBColors

```
Private Function myColor(color As String)As Double
    FillStyle = 0
    Select Case color
    Case "black"
      myColor = QBColor(8)       'Set color to black
    Case "blue"
      myColor = QBColor(9)       'Set color to blue
    Case "green"
      myColor= QBColor(10)      'Set color to green
    Case "cyan"
      myColor= QBColor(11)      'Set color to cyan
    Case "red"
      myColor= QBColor(12)      'Set color to red
    Case "magenta"
      myColor = QBColor(13)      'Set color to magenta
    Case "yellow"
      myColor = QBColor(14)      'Set color to yellow
    Case "green"
      myColor = QBColor(15)      'Set color to white
    Case Else
      MsgBox "What color is " & color & "?"  'What?
    End Select
    FillColor = myColor
End Function
```

CSE 100 Drawing More Boxes

```
For indx = 1 To 50
       Call boxDraw(indx * 100, 100, "blue")
       Call boxDraw(indx * 100, 300, "magenta")
       Call boxDraw(indx * 100, 500, "red")
       Call boxDraw(indx * 100, 700, "yellow")
       Call boxDraw(indx * 100, 900, "green")
Next indx
```

CSE 100 And More Boxes With 2 Loops

```
Private Sub Form_Click()
Dim outer As Integer, inner As Integer
    For outer = 1 To 10 Step 2
      For inner = 1 To 10 Step 2
        Call boxDraw(outer * 200, inner * 200, "blue")
      Next inner
    Next outer
    For outer = 2 To 10 Step 2
      For inner = 2 To 10 Step 2
        Call boxDraw(outer * 200, inner * 200, "red")
      Next inner
    Next outer

End Sub
```