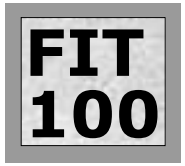
Putting It All Together



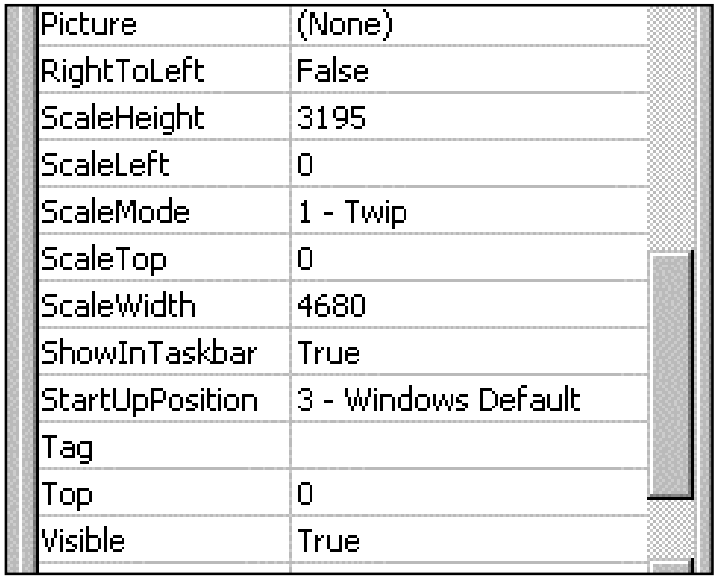
Having introduced the main programming ideas for FIT100, it is time to put it all together. The task will be to draw something interesting on the form and in the process get experience writing procedures

FIT 100

Drawing On The Form

- The form is logically divided into a grid, and a position is designated by how many grid points it is from the Left and the Top
  - The upper left corner is position (0,0)
  - The position (x, y) is x units from Left, and y units from Top
  - Increasing the x value moves to the right
  - Unlike graphing, though, increasing the y value moves down
  - The lower right corner is position (ScaleWidth, ScaleHeight)
  - To resize the form, change ScaleWidth and ScaleHeight

The Unit is a twip



Picture	(None)
RightToLeft	False
ScaleHeight	3195
ScaleLeft	0
ScaleMode	1 - Twip
ScaleTop	0
ScaleWidth	4680
ShowInTaskbar	True
StartUpPosition	3 - Windows Default
Tag	
Top	0
Visible	True

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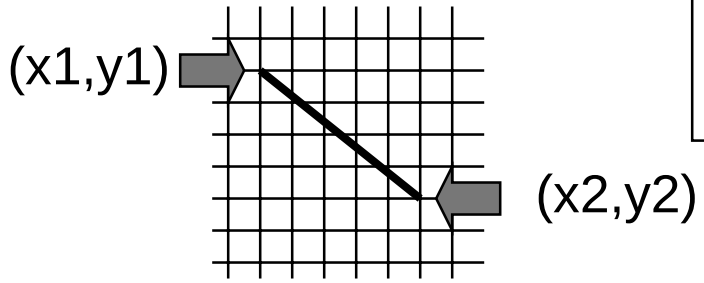
Drawing A Line

- To draw a line on Form1, call the procedure

  Form1.Line (x1, y1) - (x2, y2)



Notice the “minus” between the two coordinates

- If there is only one form, the form name can be *elided*
- To get a color, follow the positioning information with the specification of the color

  Form1.Line (x1, y1) - (x2, y2), RGB(255,255,255)

Draw a white line beginning x1 units from the Left and y1 units from Top, and extending to a point x2 units from Left and y2 units down from Top

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Red, Green and Blue

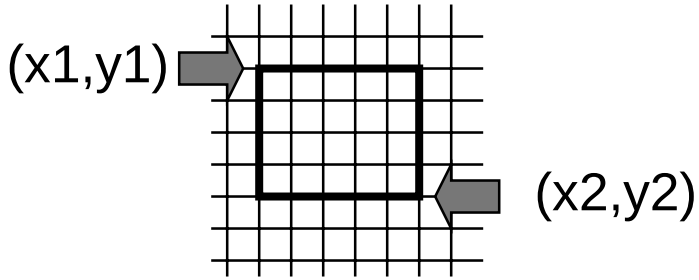
- Recall that colors are created on the screen with a combination of three colors of light -- red, green, blue
- When drawing, one can specify the exact color by calling a procedure, RGB(, ,) whose three parameters are the contribution of the three colors in the range 0 -- 255
  - RGB(0, 0, 0)
  - RGB(255, 0, 0)
  - RGB(0, 255, 0)
  - RGB(0, 0, 255)
  - RGB(255,255,255)

FIT 100

Drawing A Box

- Drawing a rectangle is like drawing a line except that there is a final parameter “B”

  Line (x1, y1) - (x2, y2), RGB(r, g, b), B



- A specific fill color can be achieved by having two properties set
  - FillColor = RGB(, ,)
  - FillStyle = 0 ⇐ Indicates opaque

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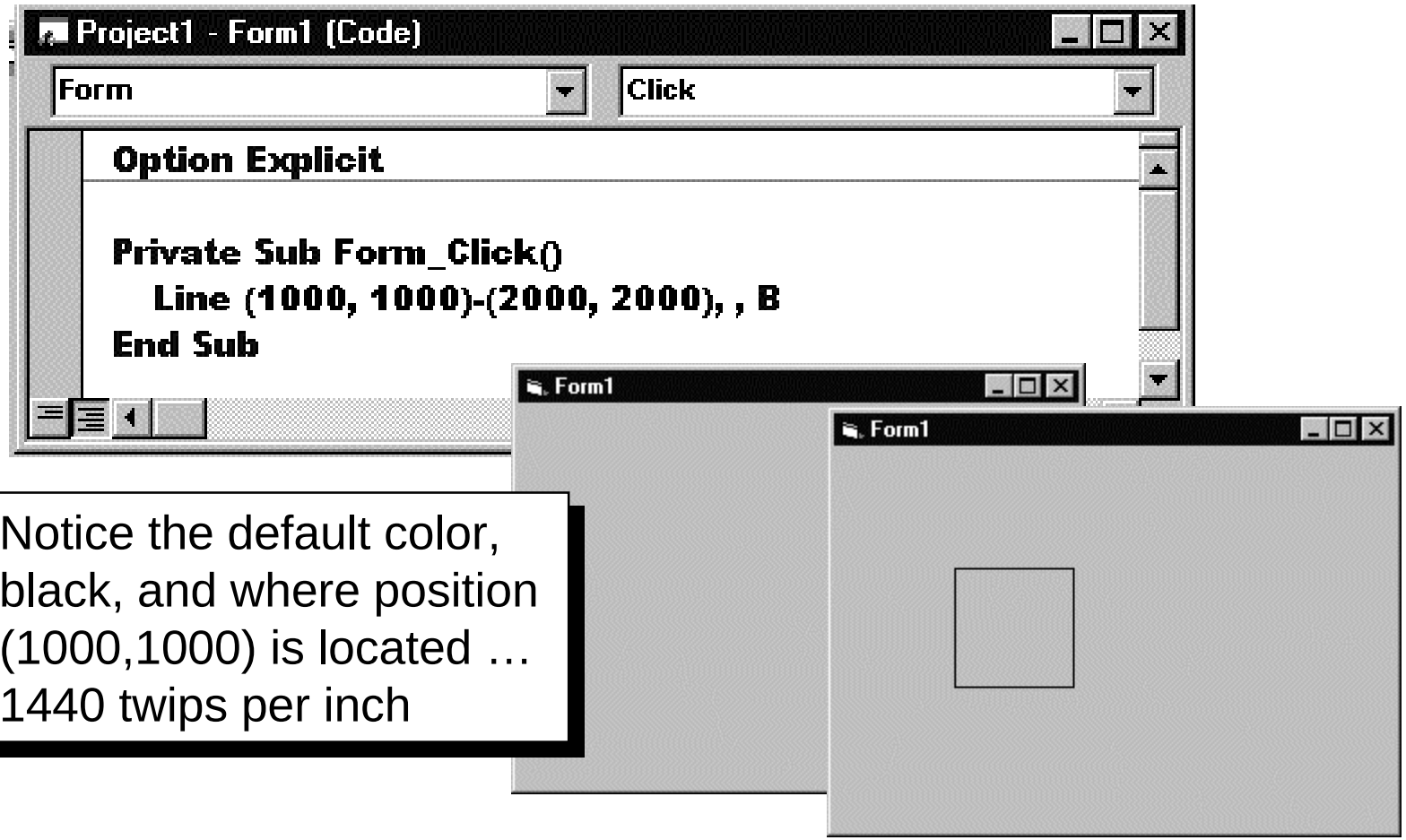
Programming A Rectangle

- To begin, draw a box in the Form_Click event handler



Notice the default color, black, and where position (1000,1000) is located … 1440 twips per inch

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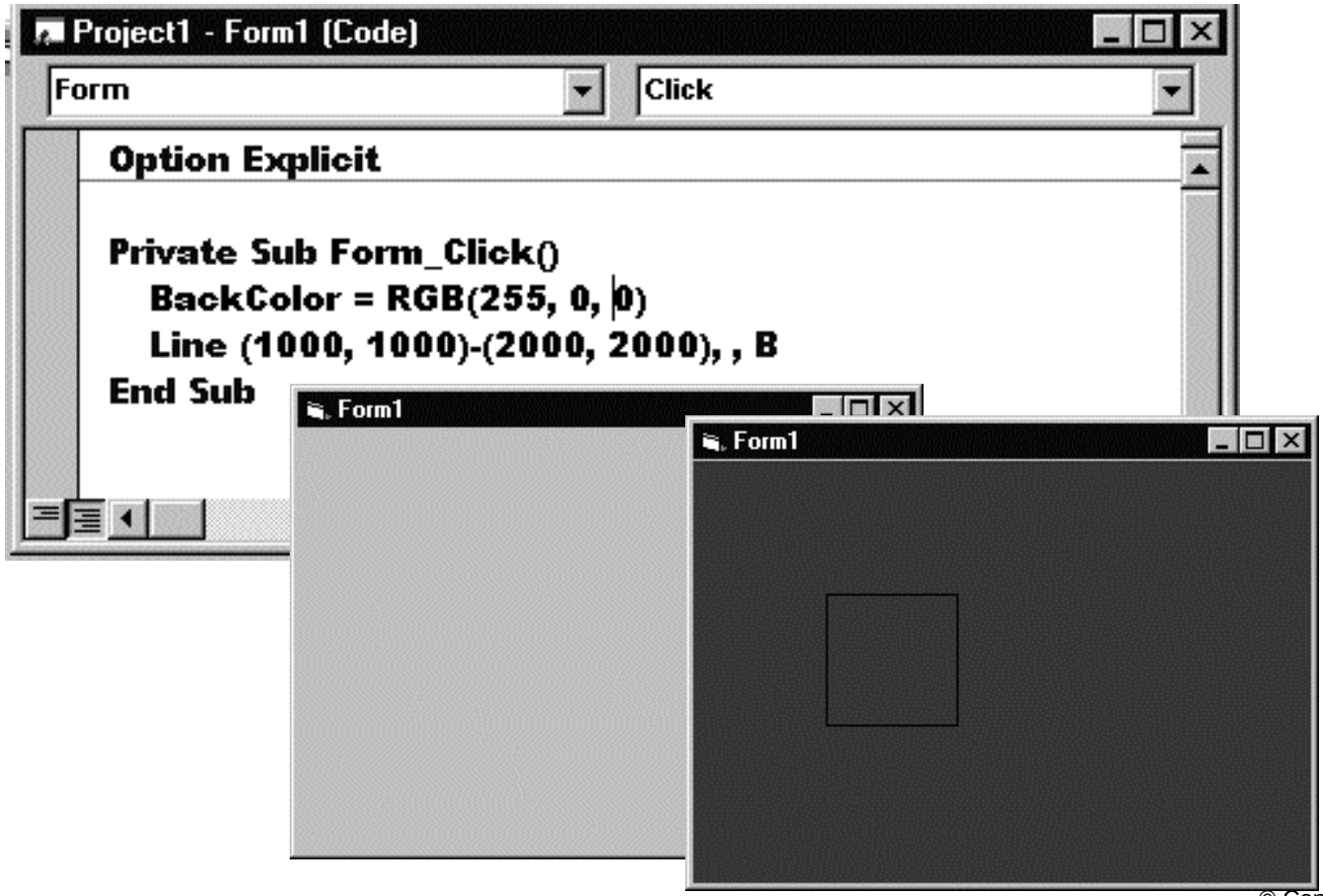
Color

- A black rectangle on a gray form is a little dorky …
- Set the background color of the form



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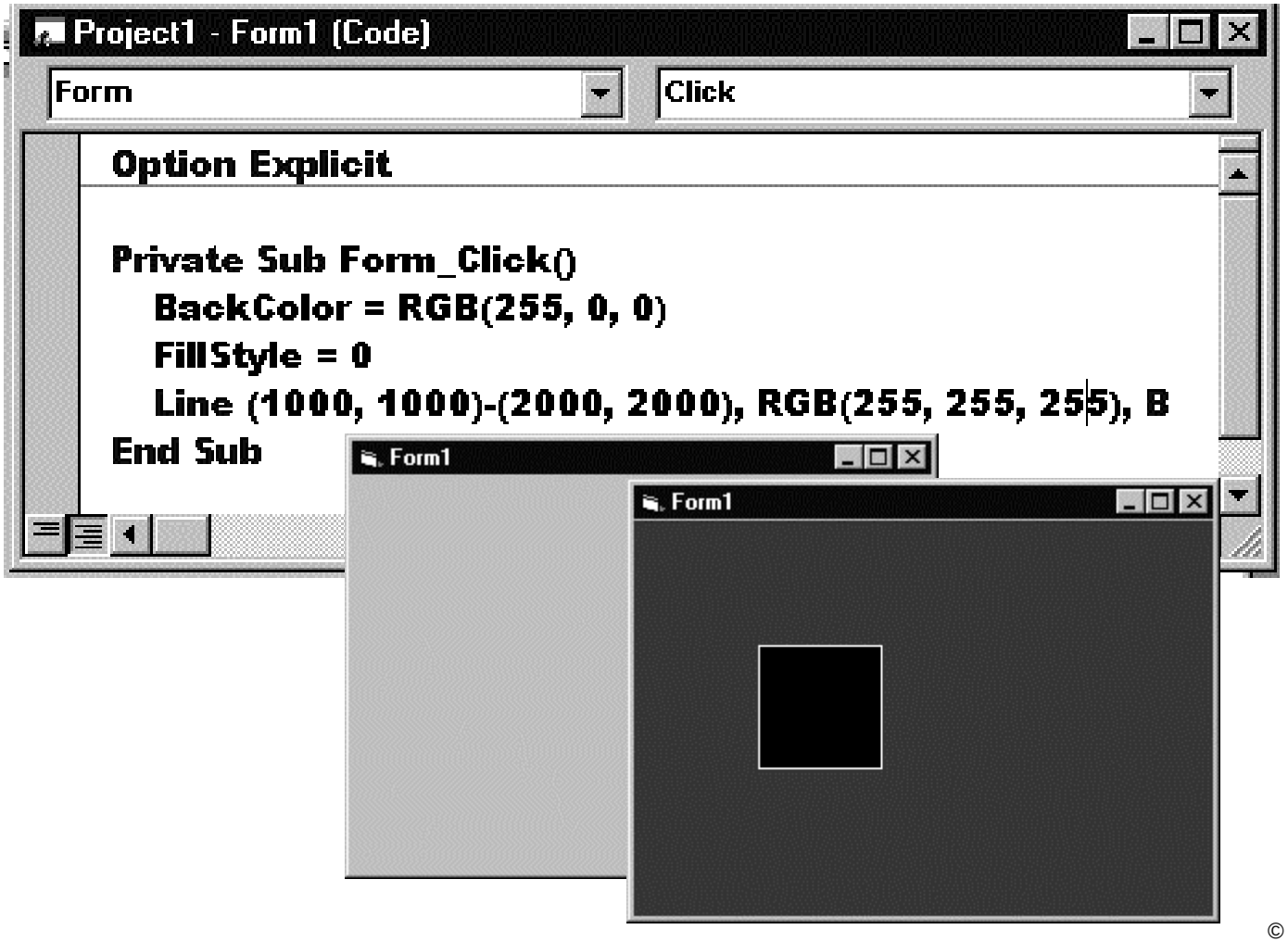
Primp Up The Form

- Make box fill opaque and change line to white line



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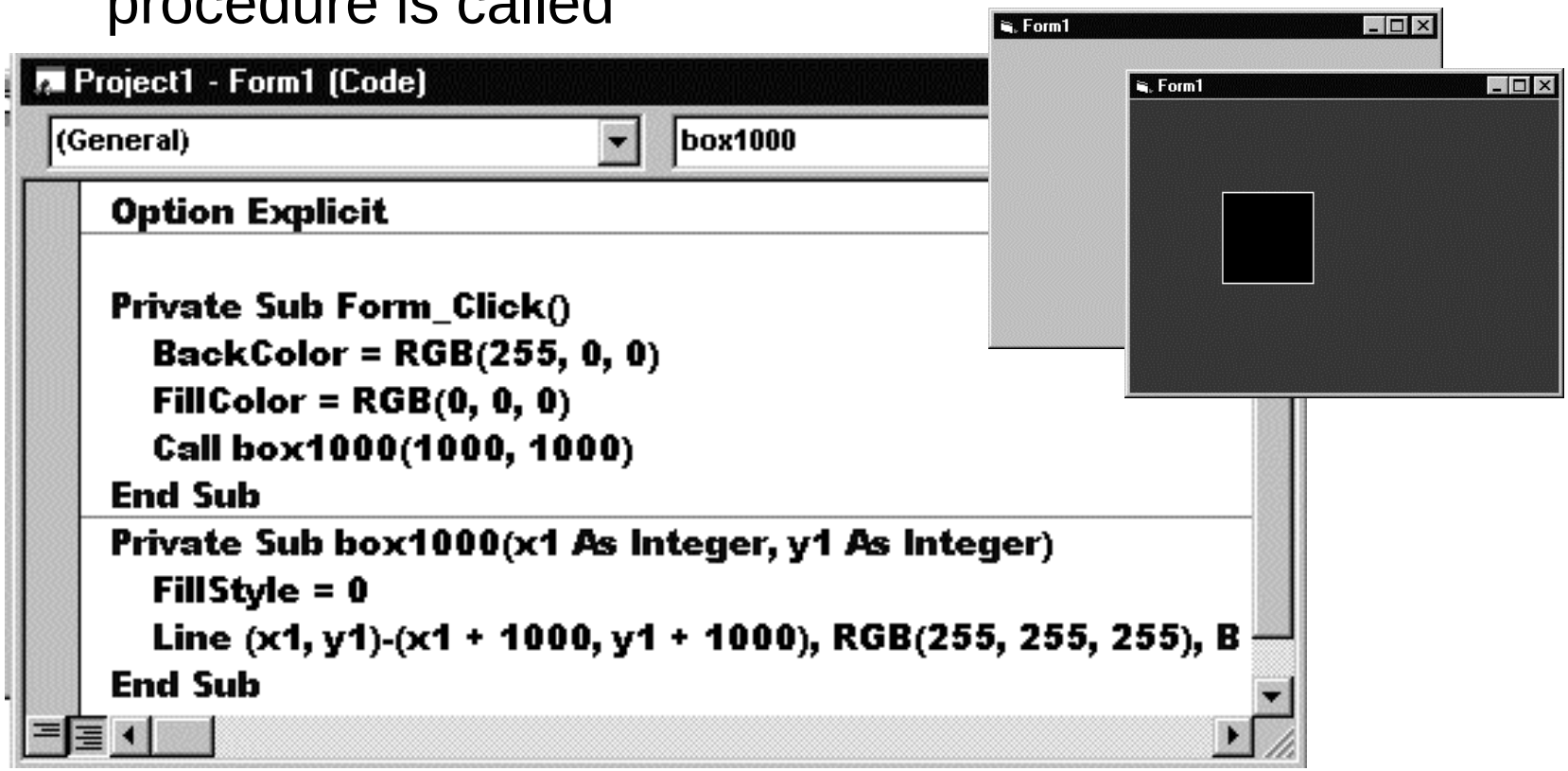
Make A Procedure For Box Drawing

- Draw a 1K×1K box with opaque fill and a white line
- The fill color will be whatever color is set when the procedure is called



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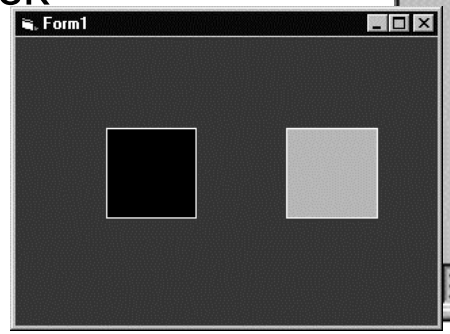
More Action, Please

- Click once, create one box
- Click again, show another
- Steps for multiclicks ...
  - Declare clickCount variable
  - In Form_Load initialize it to 0
  - In Form_Click, increment it
  - Then test its value with If
  - For each value do what you want on that click
- 1st: black box
- 2nd: green box




```
Project1 - Form1 (Code)
Form | Click

Option Explicit
Dim clickCount As Integer

Private Sub Form_Load()
   clickCount = 0
End Sub

Private Sub Form_Click()
clickCount = clickCount + 1
If clickCount = 1 Then
   BackColor = RGB(255, 0, 0)
   FillColor = RGB(0, 0, 0)
   Call box1000(1000, 1000)
ElseIf clickCount = 2 Then
   FillColor = RGB(0, 255, 0)
   Call box1000(3000, 1000)
End If
End Sub
```

FIT 100 Add Another Option

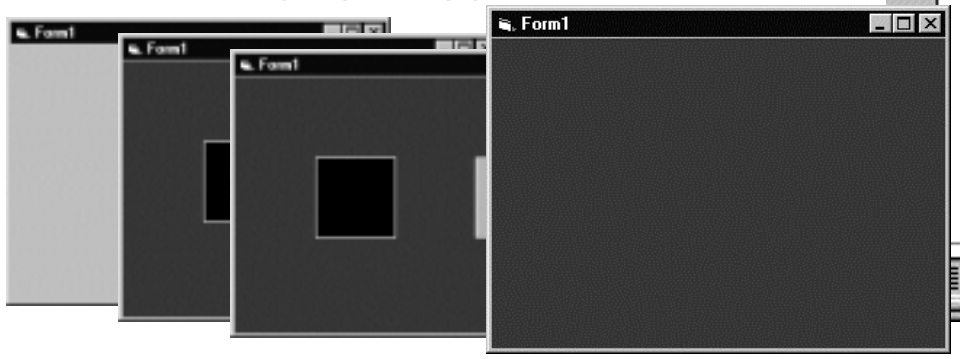
- Increase the form size to cover whole screen
- Add another “click” case
  - WindowState has 3 values
  - Setting 2 maximizes form
  - Drawing box from (0,0) to (ScaleWidth,ScaleHeight) covers the entire form … make it red!

Project1 - Form1 (Code)

Form | Click

```
Private Sub Form_Load()
   clickCount = 0
End Sub

Private Sub Form_Click()
clickCount = clickCount + 1
If clickCount = 1 Then
   BackColor = RGB(255, 0, 0)
   FillColor = RGB(0, 0, 0)
   Call box1000(1000, 1000)
ElseIf clickCount = 2 Then
   FillColor = RGB(0, 255, 0)
   Call box1000(3000, 1000)
ElseIf clickCount = 3 Then
   WindowState = 2
   FillColor = RGB(255, 0, 0)
   Line (0, 0)-(ScaleWidth, ScaleHeight),R
End If
End Sub
```



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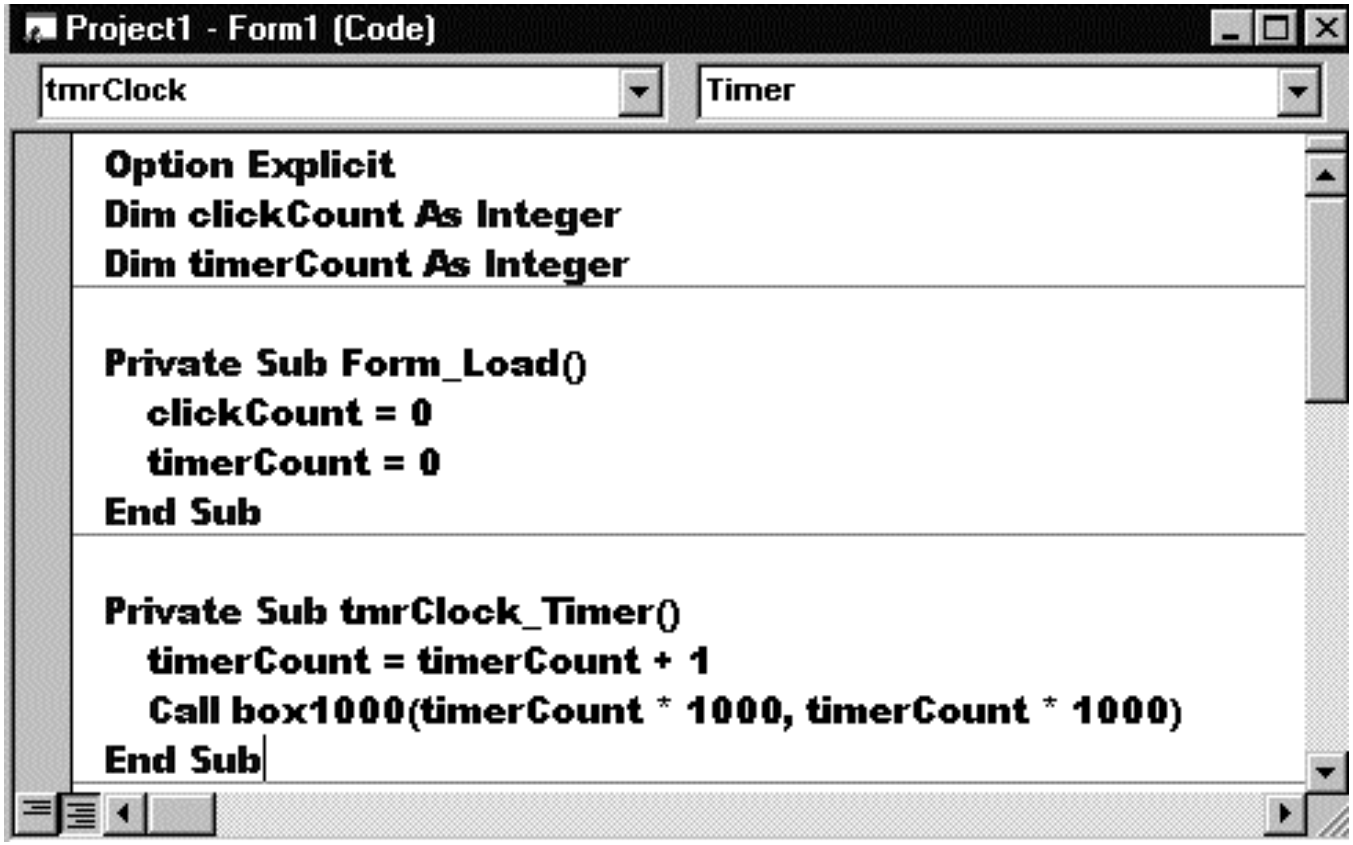
To Give Motion, Draw On Timer Tick

- Adding a timer allows changes to be made a regular intervals … place timer anywhere on form



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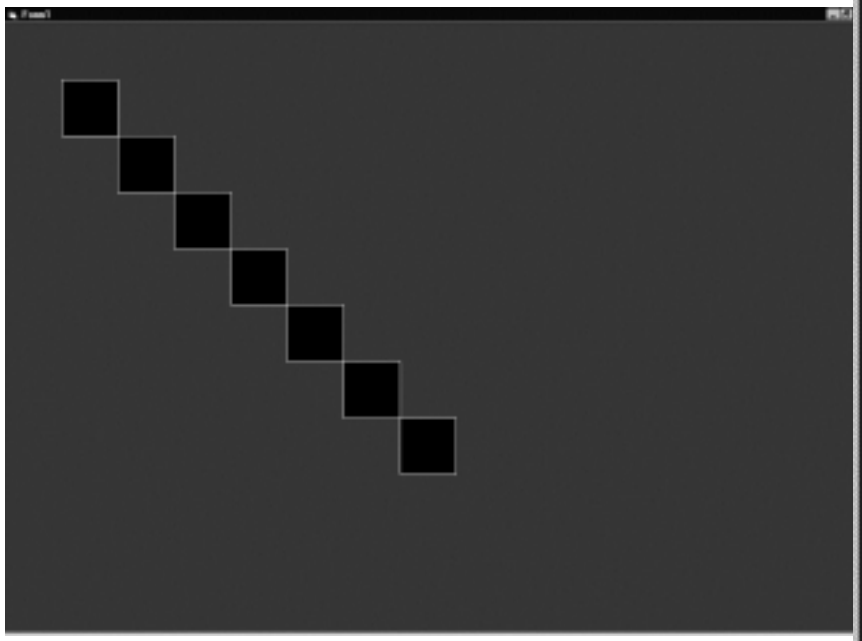
Turn Timer On/Off With Click

- The 4th click starts box draw and the 5th click stops it



Project1 - Form1 (Code)

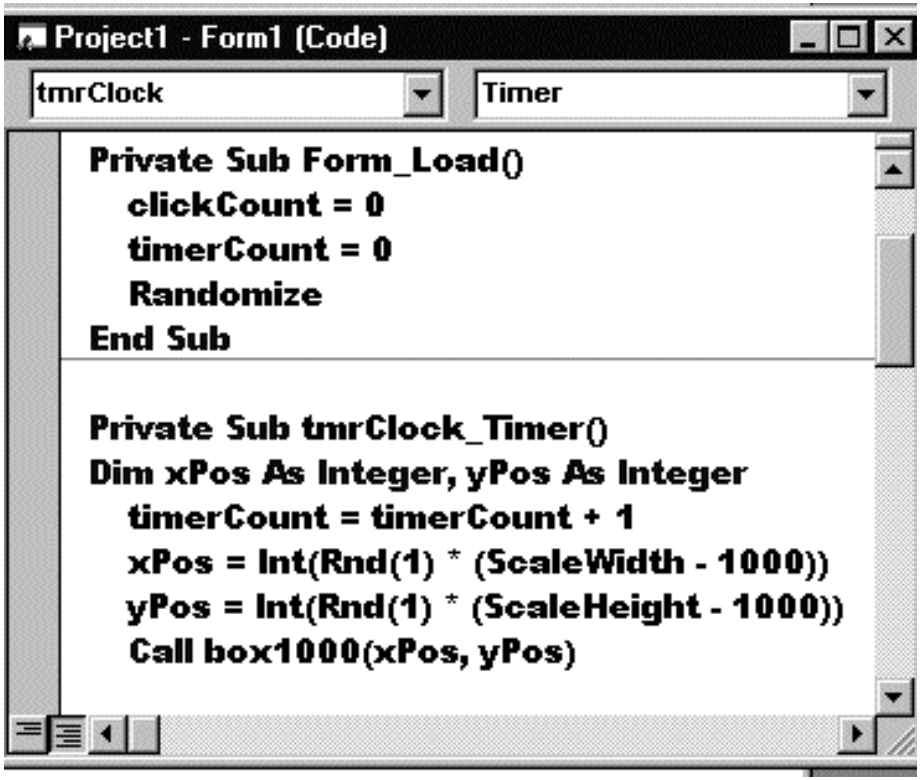
Form | Click

```
Private Sub Form_Click()
clickCount = clickCount + 1
If clickCount = 1 Then
   BackColor = RGB(255, 0, 0)
   FillColor = RGB(0, 0, 0)
   Call box1000(1000, 1000)
ElseIf clickCount = 2 Then
   FillColor = RGB(0, 255, 0)
   Call box1000(3000, 1000)
ElseIf clickCount = 3 Then
   WindowState = 2
   FillColor = RGB(255, 0, 0)
   Line (0, 0)-(ScaleWidth, ScaleI
   FillColor = RGB(0, 0, 0)
ElseIf clickCount = 4 Then
   tmrClock.Interval = 200
Else
   tmrClock.Interval = 0
End If
```

FIT 100

Randomize!

- Diagonal boxes are boring … randomize
- To place boxes randomly,
  - Set Randomize in Form_Load
  - Declare xPos, yPos in tmrClock
  - Pick a random number in (0,1) range with a Rnd(1) procedure call
  - Multiply by the largest size to scale & make Int



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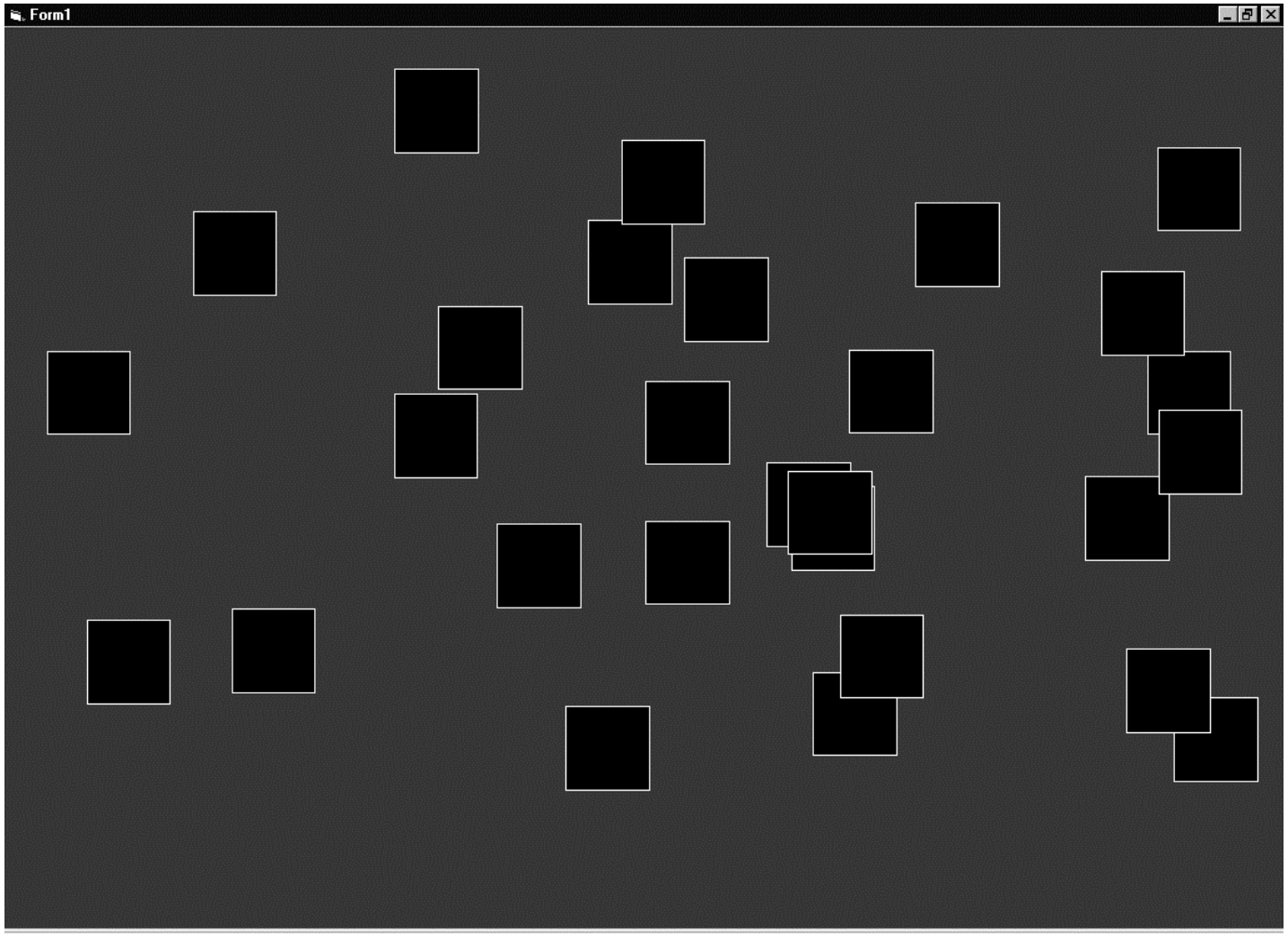
One result ...



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Summary

- Project 2 is to design your own “artistic” image … or electronic greeting card to impress your family and friends … and TA
- There is no limit to how intricate your design can be
- There are points for creativity and ...
- You must use procedures as called for in the assignment