Putting It All Together

You’ve seen all the main programming ideas for FIT 100. Now it’s time to bring it all together. The task is to use the computer medium for your self expression.

The form of expression will be the act of drawing something visually interesting on a form. In the process, you’ll get experience writing procedures and controlling code flow in your program.

Project 3

- You choose the goal
  - ANYTHING (within the bounds of good taste) can be chosen

- We only have 5 requirements for what you turn in:
  - A procedure with 2 or more parameters
  - A procedure that calls another procedure of yours
  - A procedure that is called more than 5 times
  - A Do-While Loop
  - The use of a random number

Drawing On A Form

- The form in VB6 is logically divided into a grid, and a position is determined by noting how many grid points (units) 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 the position to the right
- Unlike graphing, though, increasing the y value moves it down
- The lower right corner is position (ScaleWidth, ScaleHeight)
- To resize the form, change ScaleWidth and ScaleHeight
- To make the window the size of the display, set WindowState = 2

How To Adjust X and Y Coordinates

- (Left, Top)
- (X increases, Y decreases)
- (Decrease X, Y stays the same)
- (X stays the same, Y increases)
- (X decreases, Y increases)
- (X stays the same, Y increases)
- (X decreases, Y decreases)
- (Decrease X, Y stays the same)
Drawing A Line

- To draw a line on Form1, call the procedure:
  `Form1.Line(x1, y1) – (x2, y2)`

- If there is only one form, the form name can be elided (not used):
  `Line(x1, y1) – (x2, y2)`

- To get a color, follow the position coordinate information with the RGB color to be used:
  `Form1.Line(x1, y1) – (x2, y2), RGB(255, 255, 255)`

Red, Green and Blue

- Remember that colors are created on the screen with a combination of three colors of light—red, green, blue.

- When drawing, you can indicate exactly the color wanted by calling a procedure: `RGB(r, g, b)`
  - The three parameters are the contributions of the three colors in the range 0 to 255:
    - `RGB(0, 0, 0)`
    - `RGB(255, 0, 0)`
    - `RGB(0, 255, 0)`
    - `RGB(0, 0, 255)`
    - `RGB(203, 31, 231)`
    - `RGB(255, 204, 102)`

Drawing A Box

- Drawing a rectangle is like drawing a line EXCEPT that there is a final parameter “B” which stands for “box”:
  `Line(x1, y1) – (x2, y2), RGB(r, g, b), B`

- A specific fill color can be achieved by having two properties set:
  - `FillColor = RGB(r, g, b)` (Fills any shapes with the color indicated)
  - `FillStyle = 0` (There are 7 options for FillStyle this indicates opaque)

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... There are ~1440 twips per inch.
How do you change the color of the form to red?

Make the box fill with black and change the line to white

Draw a 1000 x 1000 box with black fill and a white line
The FillColor will be whatever color is set when the procedure is called

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

To Give Motion, Draw On Interval of Timer
♦ Adding a timer allows changes to be made at regular intervals … place the timer anywhere on the form … then

Turn Timer On/Off With Click
♦ The 4th click starts box draw and the fifth click stops it

Randomize!
♦ Just drawing the same box in the same location every time is boring…let’s randomize location!
♦ To Place boxes randomly,
  □ Initialize Randomize in Form_Load
  □ Declare xPos and yPos in tmrClock
  □ Pick a random number in (0,1) range with a Rnd(1) procedure call
  □ Multiply by the largest size to fill all screen areas & truncate to Integer
What if you.....

- Randomize FillColors!
- Randomize FillStates!
- Randomize Box Size
- Allow users to enter numbers for coordinates or for colors and randomize those?
- Draw a flower or scene that has different colors every time?
- The possibilities are ENDLESS!!!

Examples

- http://courses.washington.edu/gbw/fit100/projects.htm

AARON, by Harold Cohen

http://www.kurzweilcyberart.com/aaron/