Java2D Graphics

3/13/2008
Let's look at solutions to the interclass problem.
Do you have any questions about the assignment?
Do you have any questions about the reading?
Midterm Results

- Here's the distribution:
  - A – 6
  - B – 4
  - C – 3
  - D – 2
  - F – 1

- Question #7 was very frustrating to grade. It was a restatement of one of the quiz questions. Everyone should have aced it, but many lost lots of points.
You can do lots of things with the standard GUI elements in Swing. We've been able to set up quite a bit of a GUI using that. However, no GUI can predict everything that you will want to do and we want to be able to add custom drawing to our application.

For this we will reply on the Java2D library. Java2D was added about the same time Swing was and it is fundamentally based on the Graphics2D class. There is also a Graphics class that provides more basic custom graphics capabilities. Graphics2D inherits from Graphics so it can do all the same things and more.
Making Custom Drawn Components

- There are three steps to making a component class that we can do custom drawing to.
  - Make a new class and have it inherit from JComponent or a subtype of it. We'll use JPanel.
  - Override the paintComponent method in your class.
  - Draw with the Graphics object that was passed into the paintComponent method.
- Let's look a bit at the Graphics2D class to see what some of the possibilities might be for what we can draw.
- Now we can do these steps in our program to make a central panel we can draw to.
There are several things that we can set on the Graphics2D object that are used when we draw things. Here are some:

- **Paint** – could be a color, but there are also gradients and textures
- **Stroke** – determines how lines are drawn
- **Font** – how you want text to appear
- **Transform** – AffineTransform allows translate, rotate, scale, or shear
- **Composite** – how colors combine when you draw over old stuff
- **Clip** – where your drawings will appear
- **Render hints** – other things like antialiasing
- Of course, Graphics2D objects aren't limited to just drawing on components.
- The Image class (and it's subtype BufferedImage) will let you get Graphics objects that you can draw to and what you draw will be on the image.
- We'll typically do this even if we are drawing to a component to implement buffering which reduces flicker.
Let's play with our panel some to experiment with the drawing options.
What are you going to be doing for Spring Break?

Try not to forget too much over the break. Remember that this is a creative venture and you need to exercise your abilities to grow them and also so they don't atrophy.

You will have one lecture on the Tuesday after Spring Break by Dr. Massingill.

Interclass Problem – This will be for the Tuesday in the second week after Spring Break. Write a simple drawing program similar to Paint. Use buttons for selecting at least rectangles, ellipses, and lines. Use the mouse to draw things. Have color options with JColorChooser.