CSSE 220 Day 4

Introduction to Java Graphics

Check out *IntroToJavaGraphics* from SVN

Questions?

Viewing Grader Comments in Eclipse

- Open your HW1 project
- Right-click and choose Team → Update
- Configure Eclipse to show new task tags for:
  - CONSIDER
  - POINTS
- Here's how:
  - Window → Preferences
  - Java → Compiler → Task Tags
  - Use New… button to add each of the new task tags
  - Exit preferences, may need to rebuild project
- Now Task View shows graders comments!

Today

- Basics of Java graphics
- Mostly live coding
  - Follow along in your own Eclipse
    - You'll need the examples for homework
  - Stop me if I'm going to fast
    - This isn't a typing speed contest

Simplest Java Graphics Program

```java
import javax.swing.JFrame;
/**
 * From Ch 2, Big Java.
 * @author Cay Horstmann
 */
public class EmptyFrameViewer {
  /**
   * Draws a frame.
   * @param args ignored
   */
  public static void main(String[] args) {
    JFrame frame = new JFrame();
    frame.setSize(300,400);
    frame.setTitle("An Empty Frame");
    frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
    frame.setVisible(true);
  }
}
```

This code is already in your project for today

Creates a graphics frame object

Configures it

Display the frame

Tells Java to exit program when user closes the frame

Q1

Live Coding

» **MyViewer and MyComponent**
(Based on RectangleViewer and RectangleComponent from Big Java)

Other Shapes

- `new Ellipse2D.Double(double x, double y, double w, double h)`
- `new Line2D.Double(double x1, double y1, double x2, double y2)`
- `new Point2D.Double(double x, double y)`
- `new Line2D.Double(Point2D p1, Point2D p2)`

- Try these!
  - Add an ellipse and both kinds of lines to MyComponents

Interlude

- Ivan Sutherland's Sketchpad
  - 1962
  - The first GUI?
  - The first object-oriented system

- Alan Kay narrating video of Sketchpad:
  - http://www.youtube.com/watch?v=495nCzxM9PI

Adding Text

▸ To add some text to a component:
- ◦ graphics2.drawString("some text", x, y);

▸ You can change the font *before* drawing the text:
- ◦ Font f = new Font("Times New Roman", Font.PLAIN, 72);
  graphics2.setFont(f);

Style. Other alternatives are: Font.BOLD, Font.ITALIC, and Font.BOLD | Font.ITALIC

Font size in points

Colors

- To change the Graphics2D object's "pen" color:
  - `Color c = …; // see below`
    `graphics2.setColor(c);`
- Lots of colors:
  - `new Color(red, green, blue)`, all from 0 to 255
  - `Color.RED`, `Color.WHITE`, etc. (see Javadocs)
  - `new Color(red, green, blue, alpha)`, all from 0 to 255. `alpha` is transparency
- To fill interior of shape:
  - `graphics2.fill(box);`

Work Time

>> Get started on homework for next time.

I expect CircleOfCircles to be more challenging