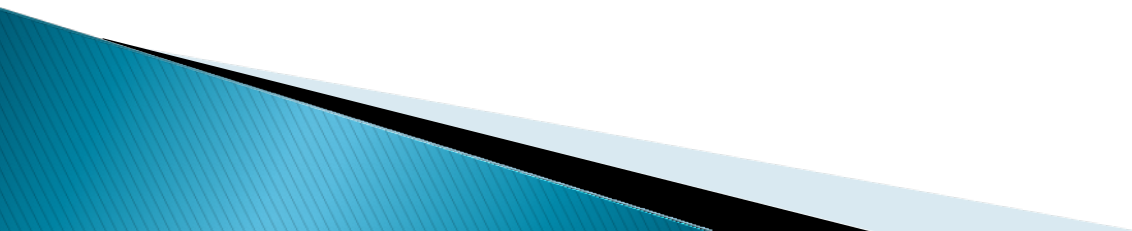


# CSSE 220 Day 4

Defining a Simple Class  
Introduction to Java Graphics

# Questions?

- ▶ Reading (Chapters 3 and 4)?
  - ▶ Homework?
  - ▶ Javadoc?
  - ▶ Unit Testing?
  - ▶ Objects and References?
    - Box and pointer diagrams
  - ▶ Using a JFrame object?
- 

# 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!

# What Is a program?

- ▶ A program is a human-readable essay on how to solve a problem that also happens to be executable by a computer.
  - William Punch and Richard Enbody  
*The Science and Practice of Computing Using Python*  
(Forthcoming)

# Today

- ▶ Define a simple class
  - Continue the Fraction class example from last time.
- ▶ More on Java GUIs and graphics
- ▶ Mostly live coding
  - Follow along in your own Eclipse
    - You'll need the examples for homework
  - Stop me if I'm going too fast
    - This isn't a typing speed contest

# Class Creation Example

- » Continue the Fraction class that we began last time

Open your Fraction.java program in Eclipse

# More on GUIs and Graphics



# Recap from Session 3:

```
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



# Live Coding

Continue with FirstGraphics example from last session.

# 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 `MyComponent`

# 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, so I suggest working on it first.