

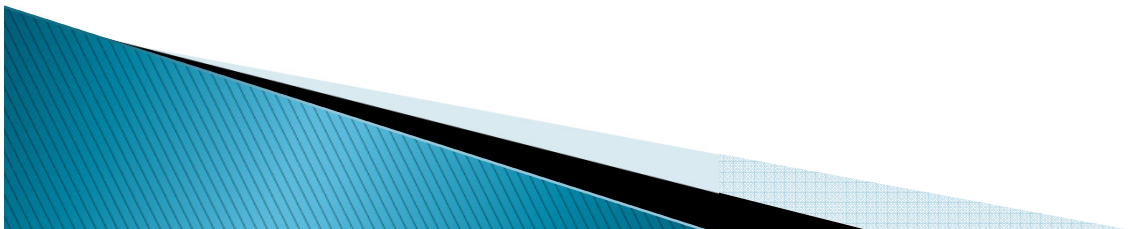
CSSE 220 Day 4

Practice Implementing Classes in Java
and an Intro. to Java Graphics

Open WordGames project and
specification from Homework 3

Outline

- ▶ WordGames: example and work time
- ▶ Live coding: a Java graphics program



Another WordGames Example

```
1 /**
2  * A NameDropper puts "foo says " before its given string, where foo is the name
3  * that the particular NameDropper drops.
4  *
5  * @author David Mutchler. Created December 4, 2009.
6  */
7 public class NameDropper implements StringTransformable {
8
9     private String nameToDrop;
10
11     /**
12      * Sets "Madonna" as this NameDropper's name to drop.
13      */
14     public NameDropper() {
15         this.nameToDrop = "Madonna";
16     }
17
18     /**
19      * Sets the given String as this NameDropper's name to drop.
20      *
21      * @param nameToDrop
22      */
23     public NameDropper(String nameToDrop) {
24         this.nameToDrop = nameToDrop;
25     }
26
27     /**
28      * Returns the String that results from putting "foo says " before its given
29      * string, where foo is the name that this particular NameDropper drops.
30      *
31      * @param stringToTransform
32      * @return the String that results from putting "foo says " before its given
33      *         string, where foo is the name that this particular NameDropper
34      *         drops.
35      */
36     @Override
37     public String transform(String stringToTransform) {
38         return this.nameToDrop + " says " + stringToTransform;
39     }
40 }
```

Q1-11

Word Games Work Time



- ▶ Java if statements are like C:

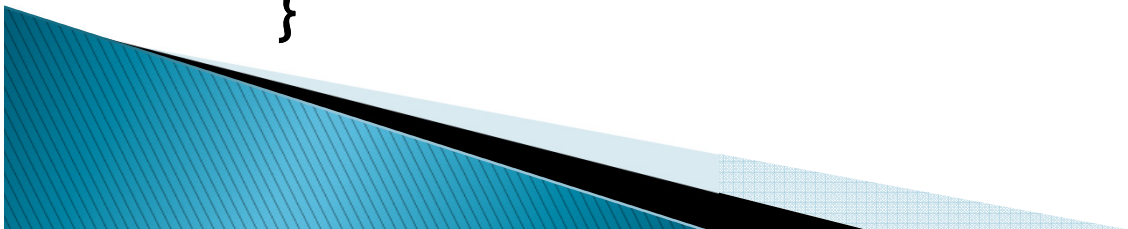
```
if (x < 12) {  
    System.out.println("x is small");  
}
```

- ▶ Use % for modulus, like C:

```
if (x % 2 == 0) {  
    System.out.println("x is even");  
}
```

- ▶ Java for loops are like C:

```
for (int i = 0; i < 10; i += 2) {  
    System.out.println("next even is " + i);  
}
```



On to Java Graphics

Check out [IntroToJavaGraphics](#) project from SVN

Simplest Java Graphics Program

```
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

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

Schedule page has link to detailed instructions if you'd rather work ahead or on your own later.

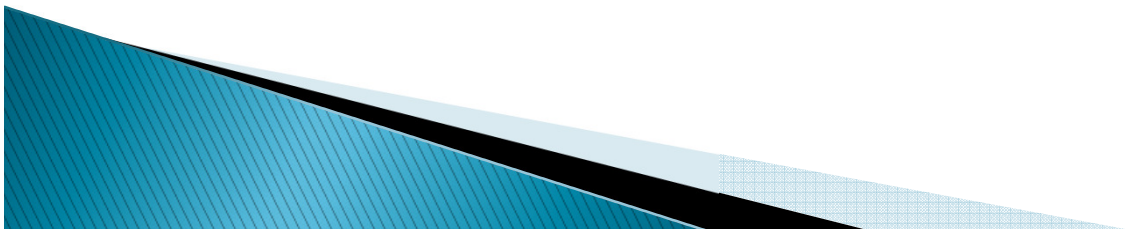
Other Shapes

- ▶ **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)**
- ▶ **new Arc2D.Double(double x, double y, double w, double h, double start, double extent, int type)**
- ▶ Try these!
 - Add an ellipse and both kinds of lines to **MyComponent**



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);**



Making Faces

- ▶ Due session 6
 - Look over project as part of HW4
 - Complete project as part of HW5
 - ▶ Implement a class that draws a face of a given size at a given location. You should also be able to mutate (translate and rotate) it.
1. Specification (in HW)
 2. Design together next session (UML)
 3. Code (incrementally)

