CSSE 220 Day 4

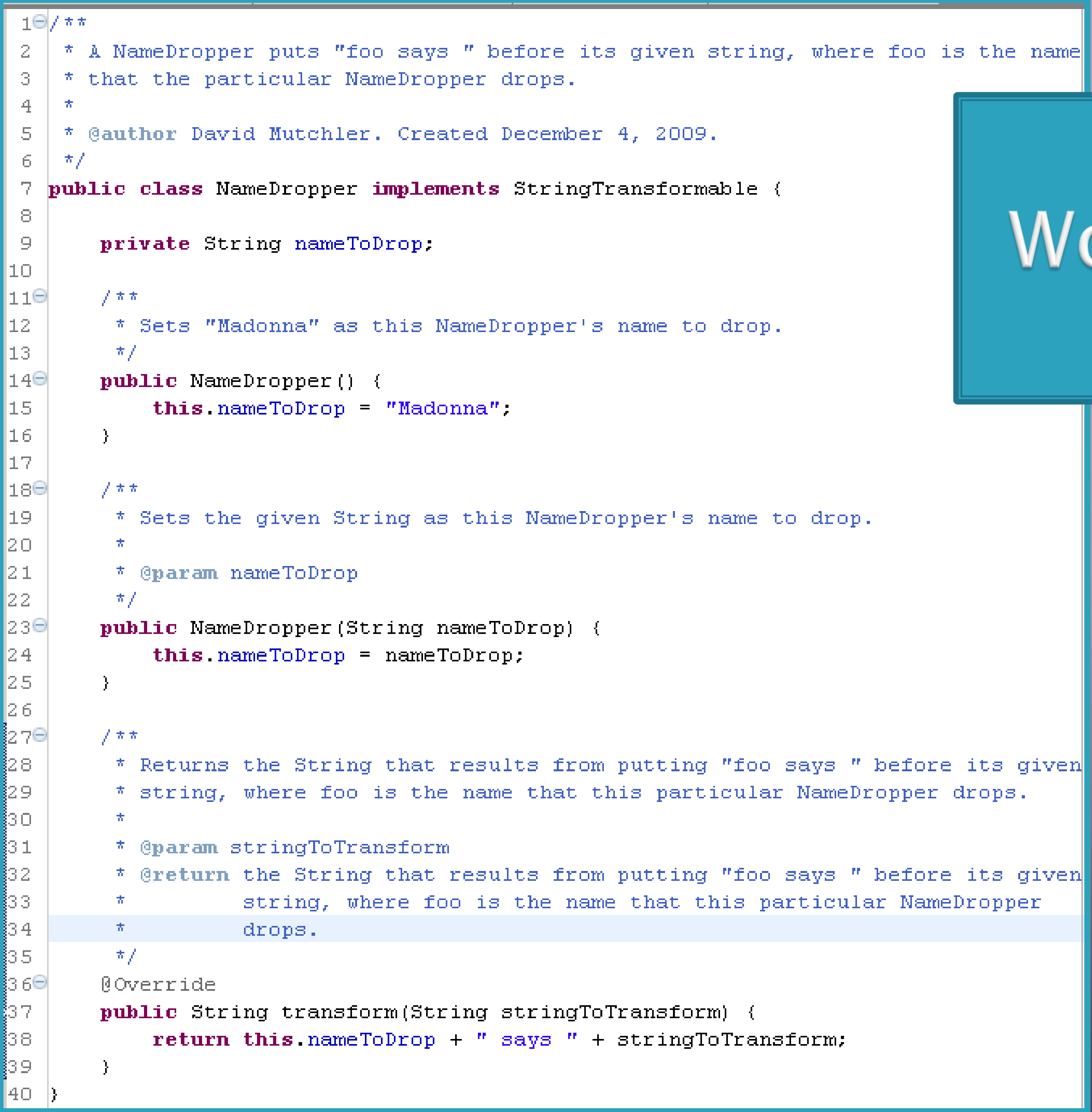
Practice Implementing Classes in Java and an Intro. to Java Graphics

Open WordGames project and specification from Homework 3

Outline

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

Another WordGames Example



```java
/**
 * A NameDropper puts "foo says " before its given string, where foo is the name
 * that the particular NameDropper drops.
 *
 * @author David Mutchler. Created December 4, 2009.
 */
public class NameDropper implements StringTransformable {

    private String nameToDrop;

    /**
     * Sets "Madonna" as this NameDropper's name to drop.
     */
    public NameDropper() {
        this.nameToDrop = "Madonna";
    }

    /**
     * Sets the given String as this NameDropper's name to drop.
     *
     * @param nameToDrop
     */
    public NameDropper(String nameToDrop) {
        this.nameToDrop = nameToDrop;
    }

    /**
     * Returns the String that results from putting "foo says " before its given
     * string, where foo is the name that this particular NameDropper drops.
     *
     * @param stringToTransform
     * @return the String that results from putting "foo says " before its given
     *         string, where foo is the name that this particular NameDropper
     *         drops.
     */
    @Override
    public String transform(String stringToTransform) {
        return this.nameToDrop + " says " + stringToTransform;
    }
}
```

Q1–11

Word Games Work Time

Get help if you’re stuck

- 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”);
}
```

- 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

Tells Java to exit program when user closes the frame

Display 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

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)