

Practice Quiz 5 Answers

1.

```
@Override
public void paintComponent(Graphics g) {
    super.paintComponent(g);
    Graphics2D g2 = (Graphics2D) g;
    g2.drawString("Outer rectangle has 5 pixel gutter", 10, 20);
    Shape outer = new Rectangle2D.Double(5, 5, getWidth() - 10, getHeight() - 10);
    Shape outerWheel = new Ellipse2D.Double(30, 30, 50, 50);
    Shape innerWheel = new Ellipse2D.Double(40, 40, 30, 30);
    g2.draw(outer);
    g2.draw(outerWheel);
    g2.draw(innerWheel);
}
```

2. Write Background as if it were in its own file

```
public interface Background {
    public void drawBackground(JFrame F);
}
```

3. Write BackgroundFrame as if it were in its own file.

```
public class BackgroundFrame extends JFrame {
    private Background my_background = null;

    public BackgroundFrame( ) {
        setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        setSize( 200, 200 );
        setVisible(true);
    }

    public void setBackgroundShape( Background background ) {
        my_background = background;
        my_background.drawBackground(this);
    }
}
```

4. Write OvalBackground around the method given as if it were in its own file. The single

```
class OvalBackground implements Background {
    private Color my_color;
    private double my_width;
    private double my_height;

    public OvalBackground( double width, double height ) {
        my_width = width;
```

```

my_height = height;
my_color = Color.red;
}

public void drawBackground( JFrame f ) {
    // see question
    g2.setColor(my_color);
    for(double r = 5.0; r < f.getHeight() - 40.0; r += 5.0)
        g2.draw( new Ellipse2D.Double( r, r, my_width, my_height ) );
}

} // end class OvalBackground

```

5. Completely write RectangleBackground as if it were in its own .java file

```

class SquareBackground implements Background {
    private Color my_color;
    private double my_size;

    public SquareBackground(double size) {
        my_size = size;
        my_color = Color.blue;
    }

    public void drawBackground( JFrame f ) {
        Graphics g = f.getContentPane().getGraphics();
        Graphics2D g2 = (Graphics2D)g;
        // Clear old background
        g2.setPaint( f.getBackground() );
        g2.fill(new Rectangle(f.getHeight(), f.getHeight() ) );
        g2.setColor(my_color);
        for(double r = 5.0; r < f.getHeight() - 40; r += 5.0 )
            g2.draw( new Rectangle2D.Double( r, r, my_size, my_size ) );
    }
} // end class SquareBackground

```

6. Describe what you would have to do to add a third background strategy to your system. Do NOT

Write a class that implements Background so you are forced to implement the drawBackground method. You also need to implement a constructor that takes appropriate arguments to initialize whatever instance variables you need to drawBackground. The drawing is done to the JFrame passed as an argument to drawBackground