

Programowanie i projektowanie obiektowe

Grafika

Paweł Daniluk

Wydział Fizyki

Jesień 2011



Metoda paintComponent()

Klasa JComponent ma metodę paintComponent(Graphics g).

```
public void paintComponent(Graphics g) {  
    Graphics2D g2 = (Graphics2D) g;  
  
    g2.draw(new Rectangle2D.Double(10, 10, 200, 50));  
  
    g2.draw(new RoundRectangle2D.Double(220, 10, 200, 50, 40, 20));  
  
    g2.draw(new Ellipse2D.Double(10, 120, 200, 50));  
}
```

Dziedziczenie z JPanel

```
public class Sierpinski extends JPanel {
    private int level=0;

    Sierpinski(int level) {
        super();
        this.level=level;
        setBounds(0, 0, 1200, 1200);
        setBackground(Color.white);
        setOpaque(true);
    }

    @Override
    public void paintComponent(Graphics g) {
        Graphics2D g2 = (Graphics2D) g;

        g2.setBackground(Color.white);
        g2.clearRect(0, 0,1200,1200);
        g2.setPaint(Color.red);

        draw_sierpinski(g2, getLevel(),100, 1000, 1100, 1000,600,1000*(1-Math.sqrt(3)/2));
    }

    public int getLevel() {
        return level;
    }

    public void setLevel(int level) {
        this.level = level;
        repaint();
    }
}
```

Trójkąt Sierpińskiego

```
GeneralPath make_triangle(double x1, double y1, double x2, double y2, double x3, double y3) {
    GeneralPath polygon = new GeneralPath(GeneralPath.WIND_EVEN_ODD, 3);
    polygon.moveTo(x1, y1);
    polygon.lineTo(x2, y2);
    polygon.lineTo(x3, y3);
    polygon.closePath();

    return polygon;
}

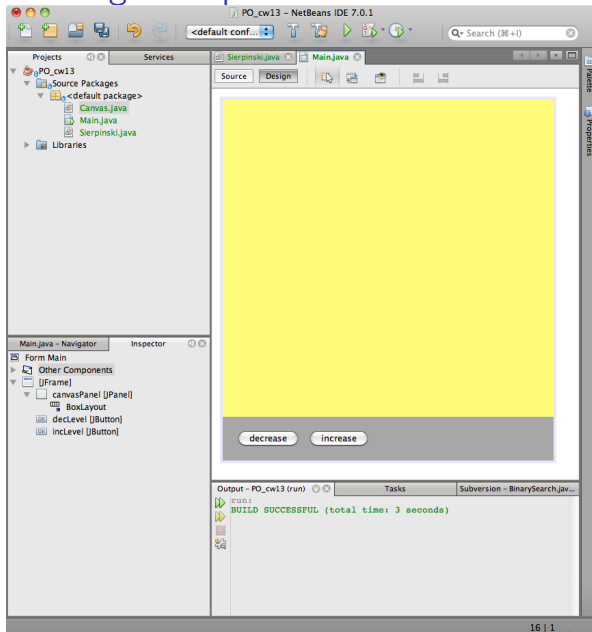
void draw_sierpinski(Graphics2D g2, int l, double x1, double y1, double x2, double y2, double x3, double y3) {
    if(l==0) {
        g2.fill(make_triangle(x1,y1,x2,y2,x3,y3));
    } else {
        double mx1=(x1+x3)/2;
        double my1=(y1+y3)/2;

        double mx2=(x2+x3)/2;
        double my2=(y2+y3)/2;

        double mx3=(x1+x2)/2;
        double my3=(y1+y2)/2;

        draw_sierpinski(g2,l-1,mx1,my1,mx2,my2,x3,y3);
        draw_sierpinski(g2,l-1,x1,y1,mx3,my3,mx1,my1);
        draw_sierpinski(g2,l-1,mx3,my3,x2,y2,mx2,my2);
    }
}
```

Osadzenie własnego komponentu w JFrame



Osadzanie własnego komponentu w JFrame c.d.

```
public class Main extends javax.swing.JFrame {
    Sierpinski sierp;

    public Main() {
        initComponents();
        sierp = new Sierpinski(0);
        canvasPanel.add(sierp);
    }

    private void decLevelActionPerformed(java.awt.event.ActionEvent evt) {
        int l = sierp.getLevel();

        if (l > 0) {
            sierp.setLevel(l - 1);
        }
    }

    private void incLevelActionPerformed(java.awt.event.ActionEvent evt) {
        int l = sierp.getLevel();

        if (l < 15) {
            sierp.setLevel(l + 1);
        }
    }

    ...
}
```