



```
import java.awt.BorderLayout;
import java.awt.Color;
import java.awt.Dimension;
import java.awt.Rectangle;
import java.awt.event.ActionEvent;
import java.awt.event.ActionListener;
```

```
import javax.swing.BorderFactory;
import javax.swing.JButton;
import javax.swing.JFrame;
import javax.swing.JLabel;
import javax.swing.JList;
import javax.swing.JPanel;
import javax.swing.JTextField;
```

```
public class frDesenV2 extends JFrame {
    private BorderLayout borderLayout1 = new BorderLayout();
    private JPanel jPanel1 = new JPanel();
    private BorderLayout borderLayout2 = new BorderLayout();
    private JPanel jPanel2 = new JPanel();
    private JPanel jPanel3 = new JPanel();
    private JPanel jPanel4 = new JPanel();
    private JPanel jPanel5 = new JPanel();
    private Desenare jPanel6 = new Desenare();
    private BorderLayout borderLayout3 = new BorderLayout();
    private BorderLayout borderLayout4 = new BorderLayout();
    private BorderLayout borderLayout5 = new BorderLayout();
    private JButton jButton1 = new JButton();
    private JButton jButton2 = new JButton();
    private JLabel jLabel1 = new JLabel();
    private JLabel jLabel2 = new JLabel();
    private JLabel jLabel3 = new JLabel();
    private JLabel jLabel4 = new JLabel();
    private JLabel jLabel5 = new JLabel();
```

```
private JLabel jLabel6 = new JLabel();
private JLabel jLabel7 = new JLabel();
private JTextField jTextField1 = new JTextField();
private JTextField jTextField2 = new JTextField();
private JTextField jTextField3 = new JTextField();
```

```
private Functie fdes;
```

```
private Punct p[];
```

```
double t, pas, tmin = -4, tmax = 4;
```

```
int n = 300;
```

```
public frDesenV2() {
    try {
        jbInit();
    } catch (Exception e) {
        e.printStackTrace();
    }
}
```

```
private void jbInit() throws Exception {
    this.getContentPane().setLayout(borderLayout1);
    this.setSize(new Dimension(637, 487));
    this.setTitle("Grafic cu desen.");
    jPanel1.setLayout(borderLayout2);
    borderLayout2.setHgap(5);
    borderLayout2.setVgap(5);
    jPanel2.setLayout(borderLayout3);
    jPanel2.setPreferredSize(new Dimension(70, 30));
    jPanel2.setBorder(BorderFactory.createLineBorder(Color.black, 1));
    jPanel3.setPreferredSize(new Dimension(100, 30));
    jPanel3.setLayout(null);
    jPanel3.setBorder(BorderFactory.createLineBorder(Color.black, 1));
    jPanel4.setLayout(borderLayout4);
    jPanel4.setPreferredSize(new Dimension(30, 30));
```

```

jPanel5.setLayout(borderLayout5);
jPanel5.setPreferredSize(new Dimension(30, 30));
jPanel5.setBorder(BorderFactory.createLineBorder(Color.black, 1));
jPanel6.setBorder(BorderFactory.createLineBorder(Color.black, 1));
jButton1.setText("jButton1");
jButton1.addActionListener(new ActionListener() {
    public void actionPerformed(ActionEvent e) {
        jButton1_actionPerformed(e);
    }
});
jButton2.setText("jButton2");
jButton2.addActionListener(new ActionListener() {
    public void actionPerformed(ActionEvent e) {
        jButton2_actionPerformed(e);
    }
});
jLabel1.setText("jLabel1");
jLabel2.setText("jLabel2");
jLabel3.setText("jLabel3");
jLabel4.setText("jLabel4");
jLabel5.setText("jLabel5");
jLabel5.setBounds(new Rectangle(0, 40, 50, 20));
jLabel6.setText("jLabel6");
jLabel6.setBounds(new Rectangle(0, 70, 50, 20));
jLabel7.setText("jLabel7");
jLabel7.setBounds(new Rectangle(0, 100, 45, 25));
jTextField1.setBounds(new Rectangle(40, 45, 55, 15));
jTextField2.setBounds(new Rectangle(40, 75, 55, 15));
jTextField3.setBounds(new Rectangle(40, 105, 55, 15));
jPanel2.add(jLabel3, BorderLayout.NORTH);
jPanel2.add(jLabel4, BorderLayout.SOUTH);
jPanel1.add(jPanel2, BorderLayout.WEST);
jPanel3.add(jTextField3, null);
jPanel3.add(jTextField2, null);
jPanel3.add(jTextField1, null);

```

```

jPanel3.add(jLabel7, null);
jPanel3.add(jLabel6, null);
jPanel3.add(jLabel5, null);
jPanel1.add(jPanel3, BorderLayout.EAST);
jPanel4.add(jButton1, BorderLayout.WEST);
jPanel4.add(jButton2, BorderLayout.EAST);
jPanel1.add(jPanel4, BorderLayout.SOUTH);
jPanel5.add(jLabel1, BorderLayout.WEST);
jPanel5.add(jLabel2, BorderLayout.EAST);
jPanel1.add(jPanel5, BorderLayout.NORTH);
jPanel1.add(jPanel6, BorderLayout.CENTER);
this.getContentPane().add(jPanel1, BorderLayout.CENTER);

```

```

//actualizare valori pe panel EST
jTextField1.setText(String.valueOf(tmin));
jTextField2.setText(String.valueOf(tmax));
jTextField3.setText(String.valueOf(n));
}

```

```

public static void main(String[] args) {
    frDesenV2 fd = new frDesenV2();
    fd.setVisible(true);
}

```

```

void calcul() {
    pas = (tmax - tmin) / n;

    //functia care se deseneaza
    fdes = new Functie();
    p = new Punct[n];

    for (int i = 0; i < p.length; ++i) {
        t = tmin + i * pas;
        p[i] = new Punct(fdes.x(t), fdes.y(t));
    }
}

```

```
jPanel6.setPuncte(p);
```

```
//actualizare valori minime si maxime
```

```
jLabel1.setText(String.valueOf(jPanel6.xmin));  
jLabel2.setText(String.valueOf(jPanel6.xmax));  
jLabel3.setText(String.valueOf(jPanel6.ymax));  
jLabel4.setText(String.valueOf(jPanel6.ymin));
```

```
//cauta solutii cu injumatatirea intervalului
```

```
for (int i = 0; i < p.length - 1; ++i) {  
    if (Math.signum(p[i].getY()) * Math.signum(p[i + 1].getY()) < 0) {  
        Bisect b = new Bisect(p[i].getX(), p[i + 1].getX(), fdes);  
        b.solve();  
        //System.out.println("Iteration number: " + b.k);  
        System.out.println("Root obtained: " + b.x);  
        //System.out.println("Estimated error: " + b.dx);  
        jPanel6.addsol(b.x);  
    }  
}  
repaint();  
}
```

```
private void jButton1_actionPerformed(ActionEvent e) {  
    tmin = Double.parseDouble(jTextField1.getText());  
    tmax = Double.parseDouble(jTextField2.getText());  
    n = Integer.parseInt(jTextField3.getText());
```

```
jPanel6.resetsolcount();  
calcul();  
}
```

```
private void jButton2_actionPerformed(ActionEvent e) {  
    System.exit(0);  
}  
}
```



