Actividad 3

Programación Orientada a Objetos

Grupo 4

Estudiante

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Ejercicio 18 del capítulo 3 con GUI

Clase empleado

```
package clases;

public class Empleado {

    private String codigo_empleado;
    public String nombre;
    private double horas_trabajadas=0, valor_hora;
    public double porcentaje_rtfte;

    public Empleado(String nombre, double porcentaje_rtfte) {
        this.nombre = nombre;
        this.porcentaje_rtfte = porcentaje_rtfte;
    }

    public Empleado(String codigo, String nombre, double horas_trabajadas, double
valor_hora, double porcentaje_rtfte) {
        this.codigo_empleado = codigo_empleado;
        this.nombre = nombre;
        this.horas_trabajadas = horas_trabajadas;
        if (valor_hora >= 4833) {
            this.valor_hora = valor_hora;
        }
        else {
            this.valor_hora = 4833;
        }
        this.porcentaje_rtfte = porcentaje_rtfte;
    }

    public String getCodigoEmpleado() {
        return this.codigo_empleado;
    }

    public void setCodigoEmpleado(String codigo) {
        // Se podrían agregar condiciones para establecer un código
        // por eso hice esta variable privada
        this.codigo_empleado = codigo;
    }

    public double getHorasTrabajadas() {
        return this.horas_trabajadas;
    }

    public void addHorasTrabajadas(double horas) {
```

```
        this.horas_trabajadas += Math.abs(horas);
    }

    public void resetHorasTrabajadas() {
        this.horas_trabajadas = 0;
    }

    public double getValorHora() {
        return this.valor_hora;
    }

    public void setValorHora(double valor) {
        if (valor >= 4833) {
            this.valor_hora = valor;
        }
        else {
            this.valor_hora = 4833;
            System.out.println("El valor mínimo de la hora trabajada en Colombia es 4833");
        }
    }

    public double salarioBruto() {
        return (this.valor_hora*this.horas_trabajadas);
    }

    public double rtfte() {
        return (this.salarioBruto()*(this.porcentaje_rtfte/100));
    }

    public double salarioNeto() {
        return (this.salarioBruto() - this.rtfte());
    }

}
```

Clase principal

```
import interfaz.*;

public class Ejercicio18cap3gui {

    public static void main(String[] args) {

        VentanaPrincipal ventana = new VentanaPrincipal();
        ventana.setVisible(true);

    }
}
```

Clase de interfaz gráfica

```
/*
 * Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt to change
this license
 * Click nbfs://nbhost/SystemFileSystem/Templates/GUIForms/JFrame.java to edit this
template
 */
package interfaz;

import clases.*;

/**
 *
 * @author jmcada
 */
public class VentanaPrincipal extends javax.swing.JFrame {

    /**
     * Creates new form VentanaPrincipal
     */
    public VentanaPrincipal() {
        initComponents();
    }

    /**
     * This method is called from within the constructor to initialize the form.
     * WARNING: Do NOT modify this code. The content of this method is always
     * regenerated by the Form Editor.
     */
    @SuppressWarnings("unchecked")
```

```
    // <editor-fold defaultstate="collapsed" desc="Generated
Code">//GEN-BEGIN:initComponents
    private void initComponents() {

        jLabel4 = new javax.swing.JLabel();
        txt_salario_neto = new javax.swing.JTextField();
        jLabel5 = new javax.swing.JLabel();
        txt_salario_bruto = new javax.swing.JTextField();
        jLabel6 = new javax.swing.JLabel();
        btn_calcular_salario = new javax.swing.JButton();
        txt_codigo_empleado = new javax.swing.JTextField();
        btn_limpiar_formulario = new javax.swing.JButton();
        txt_nombre = new javax.swing.JTextField();
        btn_salir = new javax.swing.JButton();
        txt_horas_trabajadas = new javax.swing.JTextField();
        txt_valor_hora = new javax.swing.JTextField();
        txt_porcentaje_rtfte = new javax.swing.JTextField();
        jLabel1 = new javax.swing.JLabel();
        jLabel7 = new javax.swing.JLabel();
        jLabel2 = new javax.swing.JLabel();
        jLabel8 = new javax.swing.JLabel();
        jLabel3 = new javax.swing.JLabel();
        jLabel9 = new javax.swing.JLabel();

        setDefaultCloseOperation(javax.swing.WindowConstants.EXIT_ON_CLOSE);

        jLabel4.setText("INFORMACIÓN DEL EMPLEADO");

        jLabel5.setText("Valor de la hora trabajada");

        jLabel6.setText("Porcentaje de retención en la fuente");

        btn_calcular_salario.setText("Calcular salario");
        btn_calcular_salario.addActionListener(new java.awt.event.ActionListener() {
            public void actionPerformed(java.awt.event.ActionEvent evt) {
                btn_calcular_salarioActionPerformed(evt);
            }
        });

        txt_codigo_empleado.addActionListener(new java.awt.event.ActionListener() {
            public void actionPerformed(java.awt.event.ActionEvent evt) {
                txt_codigo_empleadoActionPerformed(evt);
            }
        });

        btn_limpiar_formulario.setText("Limpiar formulario");
        btn_limpiar_formulario.addActionListener(new java.awt.event.ActionListener() {
            public void actionPerformed(java.awt.event.ActionEvent evt) {
```

```
        btn_limpiar_formularioActionPerformed(evt);
    }
});

txt_nombre.addActionListener(new java.awt.event.ActionListener() {
    public void actionPerformed(java.awt.event.ActionEvent evt) {
        txt_nombreActionPerformed(evt);
    }
});

btn_salir.setText("Salir");
btn_salir.addActionListener(new java.awt.event.ActionListener() {
    public void actionPerformed(java.awt.event.ActionEvent evt) {
        btn_salirActionPerformed(evt);
    }
});

txt_horas_trabajadas.addActionListener(new java.awt.event.ActionListener() {
    public void actionPerformed(java.awt.event.ActionEvent evt) {
        txt_horas_trabajadasActionPerformed(evt);
    }
});

txt_valor_hora.addActionListener(new java.awt.event.ActionListener() {
    public void actionPerformed(java.awt.event.ActionEvent evt) {
        txt_valor_horaActionPerformed(evt);
    }
});

txt_porcentaje_rtfte.addActionListener(new java.awt.event.ActionListener() {
    public void actionPerformed(java.awt.event.ActionEvent evt) {
        txt_porcentaje_rtfteActionPerformed(evt);
    }
});

jLabel1.setText("Código");

jLabel7.setText("SALARIO");

jLabel2.setText("Nombres");

jLabel8.setText("Bruto");

jLabel3.setText("Número de horas trabajadas al mes");

jLabel9.setText("Neto");

javax.swing.GroupLayout layout = new javax.swing.GroupLayout(getContentPane());
```

```
        getContentPane().setLayout(layout);
        layout.setHorizontalGroup(
            layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
            .addGroup(layout.createSequentialGroup()

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
                    .addGroup(layout.createSequentialGroup()
                        .addGap(196, 196, 196)
                        .addComponent(jLabel4))
                    .addGroup(layout.createSequentialGroup()
                        .addGap(269, 269, 269)
                        .addComponent(jLabel7))
                    .addGroup(layout.createSequentialGroup()
                        .addGap(48, 48, 48)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING, false)
                            .addGroup(layout.createSequentialGroup()
                                .addComponent(jLabel3)
                                .addGap(18, 18, 18)
                                .addComponent(txt_horas_trabajadas))
                            .addGroup(layout.createSequentialGroup()
                                .addComponent(jLabel2)
                                .addGap(18, 18, 18)
                                .addComponent(txt_nombre))
                            .addGroup(layout.createSequentialGroup()
                                .addComponent(jLabel1)
                                .addGap(18, 18, 18)
                                .addComponent(txt_codigo_empleado,
javax.swing.GroupLayout.PREFERRED_SIZE, 438,
javax.swing.GroupLayout.PREFERRED_SIZE))
                            .addGroup(layout.createSequentialGroup()
                                .addComponent(jLabel5)
                                .addGap(18, 18, 18)
                                .addComponent(txt_valor_hora))
                            .addGroup(layout.createSequentialGroup()
                                .addComponent(jLabel6)
                                .addGap(18, 18, 18)
                                .addComponent(txt_porcentaje_rtfte))
                            .addGroup(javax.swing.GroupLayout.Alignment.TRAILING,
layout.createSequentialGroup()

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.TRAILING)
                                    .addGroup(javax.swing.GroupLayout.Alignment.LEADING,
layout.createSequentialGroup()
                                        .addComponent(btn_calcular_salario)
                                        .addGap(66, 66, 66)
                                        .addComponent(btn_limpiar_formulario)
                                        .addGap(0, 0, Short.MAX_VALUE))
```

```
                                .addGroup(layout.createSequentialGroup()
                                    .addComponent(jLabel8)
                                    .addGap(18, 18, 18)
                                    .addComponent(txt_salario_bruto,
javax.swing.GroupLayout.PREFERRED_SIZE, 128,
javax.swing.GroupLayout.PREFERRED_SIZE)

.addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED,
javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
                                    .addComponent(jLabel9)))
                            .addGap(18, 18, 18)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
                                .addComponent(txt_salario_neto,
javax.swing.GroupLayout.Alignment.TRAILING,
javax.swing.GroupLayout.PREFERRED_SIZE, 128,
javax.swing.GroupLayout.PREFERRED_SIZE)
                                .addComponent(btn_salir,
javax.swing.GroupLayout.Alignment.TRAILING))))))
                .addContainerGap(67, Short.MAX_VALUE))
        );
        layout.setVerticalGroup(
            layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
            .addGroup(layout.createSequentialGroup()
                .addGap(32, 32, 32)
                .addComponent(jLabel4)
                .addGap(35, 35, 35)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
                    .addComponent(jLabel1)
                    .addComponent(txt_codigo_empleado,
javax.swing.GroupLayout.PREFERRED_SIZE, javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.PREFERRED_SIZE))
                .addGap(18, 18, 18)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
                    .addComponent(jLabel2)
                    .addComponent(txt_nombre, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))
                .addGap(18, 18, 18)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
                    .addComponent(jLabel3)
                    .addComponent(txt_horas_trabajadas,
javax.swing.GroupLayout.PREFERRED_SIZE, javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.PREFERRED_SIZE))
                .addGap(18, 18, 18)
```

```
.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
                .addComponent(jLabel5)
                .addComponent(txt_valor_hora, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))
            .addGap(18, 18, 18)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
                .addComponent(jLabel6)
                .addComponent(txt_porcentaje_rtfte,
javax.swing.GroupLayout.PREFERRED_SIZE, javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.PREFERRED_SIZE))
            .addGap(37, 37, 37)
            .addComponent(jLabel7)
            .addGap(18, 18, 18)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
                .addComponent(jLabel8)
                .addComponent(jLabel9)
                .addComponent(txt_salario_neto,
javax.swing.GroupLayout.PREFERRED_SIZE, javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.PREFERRED_SIZE)
                .addComponent(txt_salario_bruto,
javax.swing.GroupLayout.PREFERRED_SIZE, javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.PREFERRED_SIZE))
            .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED, 53,
Short.MAX_VALUE)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
                .addComponent(btn_calcular_salario)
                .addComponent(btn_limpiar_formulario)
                .addComponent(btn_salir))
            .addGap(40, 40, 40))
        );

        pack();
    }// </editor-fold>//GEN-END:initComponents

    private void btn_calcular_salarioActionPerformed(java.awt.event.ActionEvent evt)
{//GEN-FIRST:event_btn_calcular_salarioActionPerformed
        Empleado empleado = new
Empleado(txt_codigo_empleado.getText(),txt_nombre.getText(),Double.parseDouble(txt_hor
as_trabajadas.getText()),Double.parseDouble(txt_valor_hora.getText()),Double.parseDouble
(txt_porcentaje_rtfte.getText()));
        txt_salario_bruto.setText(String.valueOf(empleado.salarioBruto()));
        txt_salario_neto.setText(String.valueOf(empleado.salarioNeto()));
    }//GEN-LAST:event_btn_calcular_salarioActionPerformed
```

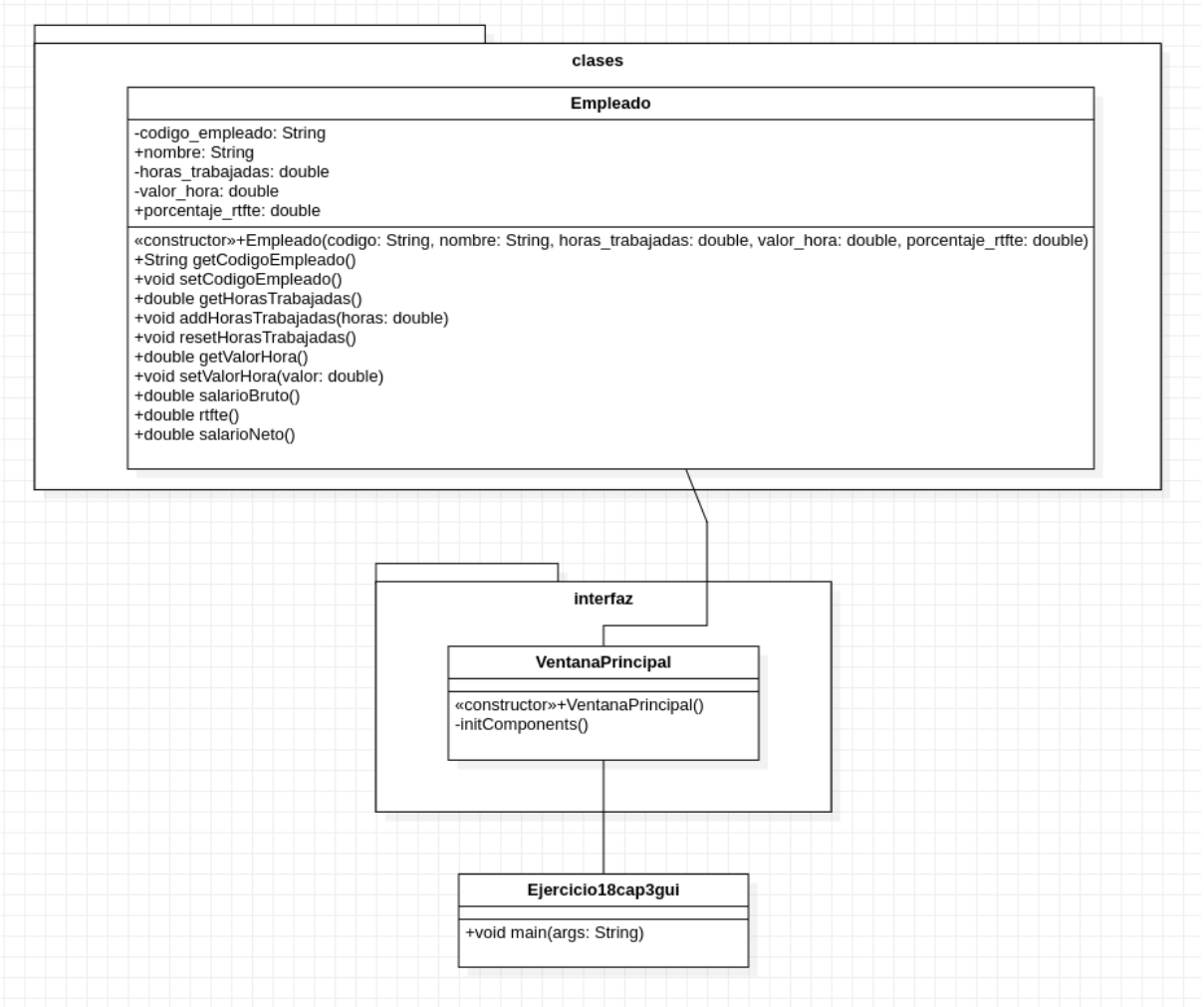
```
    private void txt_codigo_empleadoActionPerformed(java.awt.event.ActionEvent evt)
{//GEN-FIRST:event_txt_codigo_empleadoActionPerformed
        // TODO add your handling code here:
    }//GEN-LAST:event_txt_codigo_empleadoActionPerformed

    private void btn_limpiar_formularioActionPerformed(java.awt.event.ActionEvent evt)
{//GEN-FIRST:event_btn_limpiar_formularioActionPerformed
        txt_codigo_empleado.setText("");
        txt_nombre.setText("");
        txt_horas_trabajadas.setText("");
        txt_valor_hora.setText("");
        txt_porcentaje_rtfte.setText("");
        txt_salario_bruto.setText("");
        txt_salario_neto.setText("");
    }//GEN-LAST:event_btn_limpiar_formularioActionPerformed

    private void txt_nombreActionPerformed(java.awt.event.ActionEvent evt)
{//GEN-FIRST:event_txt_nombreActionPerformed
        // TODO add your handling code here:
    }//GEN-LAST:event_txt_nombreActionPerformed

    private void btn_salirActionPerformed(java.awt.event.ActionEvent evt)
{//GEN-FIRST:event_btn_salirActionPerformed
        dispose();
    }//GEN-LAST:event_btn_salirActionPerformed

    private void txt_horas_trabajadasActionPerformed(java.awt.event.ActionEvent evt)
{//GEN-FIRST:event_txt_horas_trabajadasActionPerformed
        // TODO add your handling code here:
    }//GEN-LAST:event_txt_horas_trabajadasActionPerformed

    private void txt_valor_horaActionPerformed(java.awt.event.ActionEvent evt)
{//GEN-FIRST:event_txt_valor_horaActionPerformed
        // TODO add your handling code here:
    }//GEN-LAST:event_txt_valor_horaActionPerformed

    private void txt_porcentaje_rtfteActionPerformed(java.awt.event.ActionEvent evt)
{//GEN-FIRST:event_txt_porcentaje_rtfteActionPerformed
        // TODO add your handling code here:
    }//GEN-LAST:event_txt_porcentaje_rtfteActionPerformed

    /**
     * @param args the command line arguments
     */
    public static void main(String args[]) {
        /* Set the Nimbus look and feel */
        //<editor-fold defaultstate="collapsed" desc=" Look and feel setting code (optional) ">
```

```
        /* If Nimbus (introduced in Java SE 6) is not available, stay with the default look and
feel.
         * For details see
http://download.oracle.com/javase/tutorial/uiswing/lookandfeel/plaf.html
         */
        try {
            for (javax.swing.UIManager.LookAndFeelInfo info :
javax.swing.UIManager.getInstalledLookAndFeels()) {
                if ("Nimbus".equals(info.getName())) {
                    javax.swing.UIManager.setLookAndFeel(info.getClassName());
                    break;
                }
            }
        } catch (ClassNotFoundException ex) {

java.util.logging.Logger.getLogger(VentanaPrincipal.class.getName()).log(java.util.logging.Le
vel.SEVERE, null, ex);
        } catch (InstantiationException ex) {

java.util.logging.Logger.getLogger(VentanaPrincipal.class.getName()).log(java.util.logging.Le
vel.SEVERE, null, ex);
        } catch (IllegalAccessException ex) {

java.util.logging.Logger.getLogger(VentanaPrincipal.class.getName()).log(java.util.logging.Le
vel.SEVERE, null, ex);
        } catch (javax.swing.UnsupportedLookAndFeelException ex) {

java.util.logging.Logger.getLogger(VentanaPrincipal.class.getName()).log(java.util.logging.Le
vel.SEVERE, null, ex);
        }
        //</editor-fold>

        /* Create and display the form */
        java.awt.EventQueue.invokeLater(new Runnable() {
            public void run() {
                new VentanaPrincipal().setVisible(true);
            }
        });
    }

    // Variables declaration - do not modify//GEN-BEGIN:variables
    private javax.swing.JButton btn_calcular_salario;
    private javax.swing.JButton btn_limpiar_formulario;
    private javax.swing.JButton btn_salir;
    private javax.swing.JLabel jLabel1;
    private javax.swing.JLabel jLabel2;
    private javax.swing.JLabel jLabel3;
    private javax.swing.JLabel jLabel4;
```

```
    private javax.swing.JLabel jLabel5;
    private javax.swing.JLabel jLabel6;
    private javax.swing.JLabel jLabel7;
    private javax.swing.JLabel jLabel8;
    private javax.swing.JLabel jLabel9;
    private javax.swing.JTextField txt_codigo_empleado;
    private javax.swing.JTextField txt_horas_trabajadas;
    private javax.swing.JTextField txt_nombre;
    private javax.swing.JTextField txt_porcentaje_rtfte;
    private javax.swing.JTextField txt_salario_bruto;
    private javax.swing.JTextField txt_salario_neto;
    private javax.swing.JTextField txt_valor_hora;
    // End of variables declaration//GEN-END:variables
}
```

Interfaz de usuario

Diagrama de clases



Código en github:

https://github.com/jmcada2503/ejercicios_poo/tree/master/actividad3/ejercicio18cap3gui

Ejercicio 19 del capítulo 3

Código clase TrianguloEquilatero

```
package clases;

import java.util.Scanner;

public class TrianguloEquilatero {

    public double lado;

    public TrianguloEquilatero(double lado) {
        this.lado = lado;
    }

    public TrianguloEquilatero() {
    }

    public double perimetro() {
        return (lado*3);
    }

    public double altura() {
        return Math.sqrt(Math.pow(lado, 2)*Math.pow((lado/2), 2));
    }

    public double area() {
        return (this.lado * this.altura())/2;
    }

}
```

Código clase principal

```
import interfaz.*;

public class Main {

    public static void main(String[] args) {

        MainWindow window = new MainWindow();
        window.setVisible(true);

    }
}
```

Código clase de interfaz gráfica

```
/*
 * Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt to change
this license
 * Click nbfs://nbhost/SystemFileSystem/Templates/GUIForms/JFrame.java to edit this
template
 */
package interfaz;

/**
 *
 * @author jmcada
 */

import clases.*;

public class MainWindow extends javax.swing.JFrame {

    /**
     * Creates new form MainWindow
     */

    public TrianguloEquilatero triangulo;

    public MainWindow() {
        initComponents();

        triangulo = new TrianguloEquilatero();
    }

    /**
     * This method is called from within the constructor to initialize the form.
     * WARNING: Do NOT modify this code. The content of this method is always
     * regenerated by the Form Editor.
     */
    @SuppressWarnings("unchecked")
    // <editor-fold defaultstate="collapsed" desc="Generated
Code">//GEN-BEGIN:initComponents
    private void initComponents() {

        jLabel1 = new javax.swing.JLabel();
        jLabel2 = new javax.swing.JLabel();
        txt_lado = new javax.swing.JTextField();
        jLabel3 = new javax.swing.JLabel();
        jLabel4 = new javax.swing.JLabel();
```

```
        txt_perimetro = new javax.swing.JTextField();
        jLabel5 = new javax.swing.JLabel();
        txt_altura = new javax.swing.JTextField();
        jLabel6 = new javax.swing.JLabel();
        txt_area = new javax.swing.JTextField();
        btn_calcular = new javax.swing.JButton();
        btn_salir = new javax.swing.JButton();

        setDefaultCloseOperation(javax.swing.WindowConstants.EXIT_ON_CLOSE);

        jLabel1.setText("TRIANGULO EQUILATERO");

        jLabel2.setText("Lado:");

        txt_lado.addActionListener(new java.awt.event.ActionListener() {
            public void actionPerformed(java.awt.event.ActionEvent evt) {
                txt_ladoActionPerformed(evt);
            }
        });

        jLabel3.setText("INFORMACIÓN DEL TRIÁNGULO");

        jLabel4.setText("Perímetro:");

        jLabel5.setText("Altura:");

        jLabel6.setText("Area:");

        btn_calcular.setText("Calcular");
        btn_calcular.addActionListener(new java.awt.event.ActionListener() {
            public void actionPerformed(java.awt.event.ActionEvent evt) {
                btn_calcularActionPerformed(evt);
            }
        });

        btn_salir.setText("Salir");
        btn_salir.addActionListener(new java.awt.event.ActionListener() {
            public void actionPerformed(java.awt.event.ActionEvent evt) {
                btn_salirActionPerformed(evt);
            }
        });

        javax.swing.GroupLayout layout = new javax.swing.GroupLayout(getContentPane());
        getContentPane().setLayout(layout);
        layout.setHorizontalGroup(
            layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
            .addGroup(javax.swing.GroupLayout.Alignment.TRAILING,
layout.createSequentialGroup()
```

```
            .addContainerGap(57, Short.MAX_VALUE)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
                .addGroup(javax.swing.GroupLayout.Alignment.TRAILING,
layout.createSequentialGroup()
                    .addComponent(jLabel1)
                    .addGap(51, 51, 51))
                .addGroup(javax.swing.GroupLayout.Alignment.TRAILING,
layout.createSequentialGroup()
                    .addComponent(jLabel3)
                    .addGap(37, 37, 37))))
          .addGroup(layout.createSequentialGroup()
            .addGap(31, 31, 31)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
                .addGroup(layout.createSequentialGroup()
                    .addComponent(btn_calcular)
                    .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED,
javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
                    .addComponent(btn_salir))
                .addGroup(layout.createSequentialGroup()
                    .addComponent(jLabel6)
                    .addGap(18, 18, 18)
                    .addComponent(txt_area))
                .addGroup(javax.swing.GroupLayout.Alignment.TRAILING,
layout.createSequentialGroup()
                    .addComponent(jLabel5)
                    .addGap(18, 18, 18)
                    .addComponent(txt_altura))
                .addGroup(layout.createSequentialGroup()
                    .addComponent(jLabel4)
                    .addGap(18, 18, 18)
                    .addComponent(txt_perimetro))
                .addGroup(layout.createSequentialGroup()
                    .addComponent(jLabel2)
                    .addGap(18, 18, 18)
                    .addComponent(txt_lado)))
            .addGap(37, 37, 37))
        );
        layout.setVerticalGroup(
            layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
            .addGroup(layout.createSequentialGroup()
                .addGap(17, 17, 17)
                .addComponent(jLabel1)
                .addGap(18, 18, 18)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
                .addComponent(jLabel2)
```

```
                .addComponent(txt_lado, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))
            .addGap(37, 37, 37)
            .addComponent(jLabel3)
            .addGap(18, 18, 18)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
                .addComponent(jLabel4)
                .addComponent(txt_perimetro, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))
            .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.UNRELATED)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
                .addComponent(jLabel5)
                .addComponent(txt_altura, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))
            .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.UNRELATED)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
                .addComponent(jLabel6)
                .addComponent(txt_area, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))
            .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED, 31,
Short.MAX_VALUE)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
                .addComponent(btn_calcular)
                .addComponent(btn_salir))
            .addContainerGap())
        );

        pack();
    }// </editor-fold>//GEN-END:initComponents

    private void txt_ladoActionPerformed(java.awt.event.ActionEvent evt)
{//GEN-FIRST:event_txt_ladoActionPerformed
        this.triangulo.lado = Double.parseDouble(txt_lado.getText());
        txt_perimetro.setText(String.valueOf(this.triangulo.perimetro()));
        txt_altura.setText(String.valueOf(this.triangulo.altura()));
        txt_area.setText(String.valueOf(this.triangulo.area()));
    }//GEN-LAST:event_txt_ladoActionPerformed

    private void btn_calcularActionPerformed(java.awt.event.ActionEvent evt)
{//GEN-FIRST:event_btn_calcularActionPerformed
        this.triangulo.lado = Double.parseDouble(txt_lado.getText());
        txt_perimetro.setText(String.valueOf(this.triangulo.perimetro()));
        txt_altura.setText(String.valueOf(this.triangulo.altura()));
        txt_area.setText(String.valueOf(this.triangulo.area()));
```

```
    }//GEN-LAST:event_btn_calcularActionPerformed

    private void btn_salirActionPerformed(java.awt.event.ActionEvent evt)
{//GEN-FIRST:event_btn_salirActionPerformed
        dispose();
    }//GEN-LAST:event_btn_salirActionPerformed

    /**
     * @param args the command line arguments
     */
    public static void main(String args[]) {
        /* Set the Nimbus look and feel */
        //<editor-fold defaultstate="collapsed" desc=" Look and feel setting code (optional) ">
        /* If Nimbus (introduced in Java SE 6) is not available, stay with the default look and
feel.
         * For details see
http://download.oracle.com/javase/tutorial/uiswing/lookandfeel/plaf.html
         */
        try {
            for (javax.swing.UIManager.LookAndFeelInfo info :
javax.swing.UIManager.getInstalledLookAndFeels()) {
                if ("Nimbus".equals(info.getName())) {
                    javax.swing.UIManager.setLookAndFeel(info.getClassName());
                    break;
                }
            }
        } catch (ClassNotFoundException ex) {

java.util.logging.Logger.getLogger(MainWindow.class.getName()).log(java.util.logging.Level.
SEVERE, null, ex);
        } catch (InstantiationException ex) {

java.util.logging.Logger.getLogger(MainWindow.class.getName()).log(java.util.logging.Level.
SEVERE, null, ex);
        } catch (IllegalAccessException ex) {

java.util.logging.Logger.getLogger(MainWindow.class.getName()).log(java.util.logging.Level.
SEVERE, null, ex);
        } catch (javax.swing.UnsupportedLookAndFeelException ex) {

java.util.logging.Logger.getLogger(MainWindow.class.getName()).log(java.util.logging.Level.
SEVERE, null, ex);
        }
        //</editor-fold>

        /* Create and display the form */
        java.awt.EventQueue.invokeLater(new Runnable() {
            public void run() {
```

```
                new MainWindow().setVisible(true);
            }
        });
    }

    // Variables declaration - do not modify//GEN-BEGIN:variables
    private javax.swing.JButton btn_calcular;
    private javax.swing.JButton btn_salir;
    private javax.swing.JLabel jLabel1;
    private javax.swing.JLabel jLabel2;
    private javax.swing.JLabel jLabel3;
    private javax.swing.JLabel jLabel4;
    private javax.swing.JLabel jLabel5;
    private javax.swing.JLabel jLabel6;
    private javax.swing.JTextField txt_altura;
    private javax.swing.JTextField txt_area;
    private javax.swing.JTextField txt_lado;
    private javax.swing.JTextField txt_perimetro;
    // End of variables declaration//GEN-END:variables
}
```

Interfaz gráfica

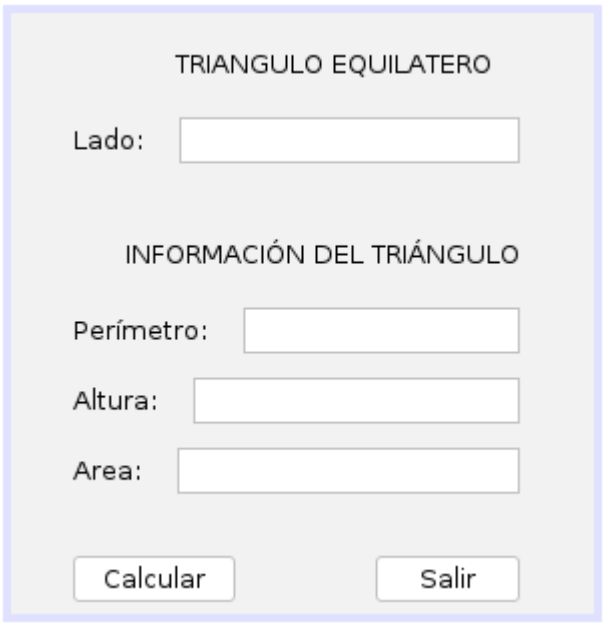
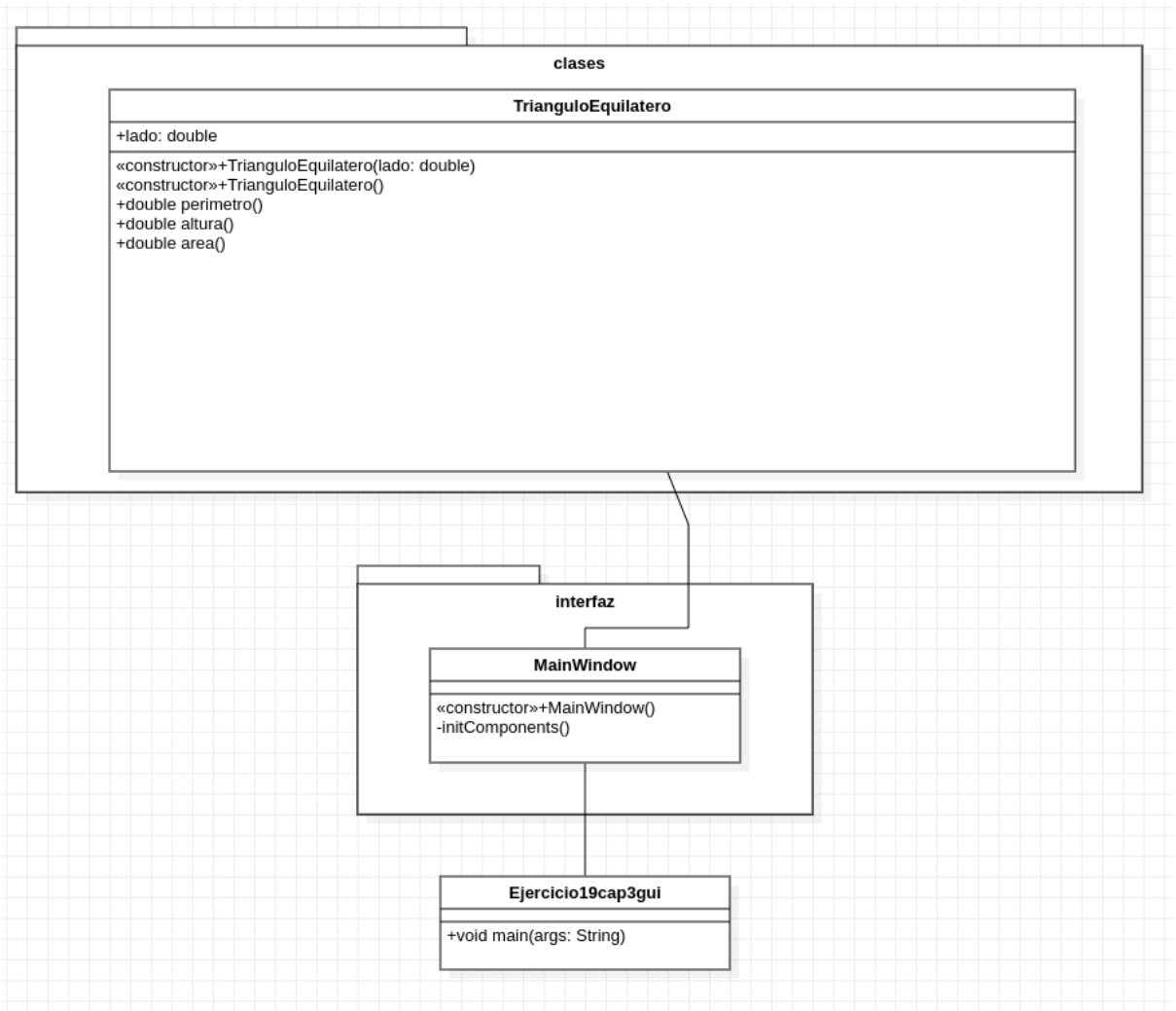


Diagrama de clases



Código en github:

https://github.com/jmcada2503/ejercicios_poo/tree/master/actividad3/ejercicio19cap3gui

Ejercicio 7 del capítulo 4

Clase principal

```
import interfaz.*;

public class Main {

    public static void main(String[] args) {

        MainWindow window = new MainWindow();
        window.setVisible(true);

    }
}
```

Clase de la interfaz gráfica

```
/*
 * Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt to change
this license
 * Click nbfs://nbhost/SystemFileSystem/Templates/GUIForms/JFrame.java to edit this
template
 */
package interfaz;

/**
 *
 * @author jmcada
 */
public class MainWindow extends javax.swing.JFrame {

    /**
     * Creates new form MainWindow
     */
    public MainWindow() {
        initComponents();
    }

    /**
     * This method is called from within the constructor to initialize the form.
     * WARNING: Do NOT modify this code. The content of this method is always
     * regenerated by the Form Editor.
     */
    @SuppressWarnings("unchecked")
```

```
    // <editor-fold defaultstate="collapsed" desc="Generated
Code">//GEN-BEGIN:initComponents
    private void initComponents() {

        jLabel1 = new javax.swing.JLabel();
        jLabel2 = new javax.swing.JLabel();
        jTextField1 = new javax.swing.JTextField();
        jLabel3 = new javax.swing.JLabel();
        jTextField2 = new javax.swing.JTextField();
        indicator = new javax.swing.JLabel();
        jButton1 = new javax.swing.JButton();
        jButton2 = new javax.swing.JButton();

        setDefaultCloseOperation(javax.swing.WindowConstants.EXIT_ON_CLOSE);

        jLabel1.setText("MAYOR DE DOS NÚMEROS");

        jLabel2.setText("A");

        jTextField1.addActionListener(new java.awt.event.ActionListener() {
            public void actionPerformed(java.awt.event.ActionEvent evt) {
                jTextField1ActionPerformed(evt);
            }
        });

        jLabel3.setText("B");

        jTextField2.addActionListener(new java.awt.event.ActionListener() {
            public void actionPerformed(java.awt.event.ActionEvent evt) {
                jTextField2ActionPerformed(evt);
            }
        });

        indicator.setText("</>");

        jButton1.setText("Calcular");
        jButton1.addActionListener(new java.awt.event.ActionListener() {
            public void actionPerformed(java.awt.event.ActionEvent evt) {
                jButton1ActionPerformed(evt);
            }
        });

        jButton2.setText("Salir");
        jButton2.addActionListener(new java.awt.event.ActionListener() {
            public void actionPerformed(java.awt.event.ActionEvent evt) {
                jButton2ActionPerformed(evt);
            }
        });
```

```
        javax.swing.GroupLayout layout = new javax.swing.GroupLayout(getContentPane());
        getContentPane().setLayout(layout);
        layout.setHorizontalGroup(
            layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
            .addGroup(layout.createSequentialGroup()

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
                    .addGroup(layout.createSequentialGroup()
                        .addGap(67, 67, 67)
                        .addComponent(jLabel1))
                    .addGroup(layout.createSequentialGroup()
                        .addGap(32, 32, 32)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING, false)
                            .addGroup(layout.createSequentialGroup()
                                .addComponent(jButton1,
javax.swing.GroupLayout.PREFERRED_SIZE, 107,
javax.swing.GroupLayout.PREFERRED_SIZE)
                                .addGap(27, 27, 27)
                                .addComponent(jButton2, javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE))
                            .addGroup(layout.createSequentialGroup()
                                .addComponent(jLabel2)

.addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
                                .addComponent(jTextField1,
javax.swing.GroupLayout.PREFERRED_SIZE, 66,
javax.swing.GroupLayout.PREFERRED_SIZE)
                                .addGap(28, 28, 28)
                                .addComponent(indicator)
                                .addGap(18, 18, 18)
                                .addComponent(jTextField2,
javax.swing.GroupLayout.PREFERRED_SIZE, 66,
javax.swing.GroupLayout.PREFERRED_SIZE)

.addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
                                .addComponent(jLabel3)))))
                .addContainerGap(44, Short.MAX_VALUE))
        );
        layout.setVerticalGroup(
            layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
            .addGroup(layout.createSequentialGroup()
                .addGap(18, 18, 18)
                .addComponent(jLabel1)
                .addGap(30, 30, 30)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
```

```
                .addComponent(jLabel2)
                .addComponent(jTextField1, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)
                .addComponent(jLabel3)
                .addComponent(jTextField2, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)
                .addComponent(indicator))
            .addGap(34, 34, 34)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
                .addComponent(jButton1)
                .addComponent(jButton2))
            .addContainerGap(30, Short.MAX_VALUE))
        );

        pack();
    }// </editor-fold>//GEN-END:initComponents

    private void jTextField1ActionPerformed(java.awt.event.ActionEvent evt)
{//GEN-FIRST:event_jTextField1ActionPerformed
        // TODO add your handling code here:
    }//GEN-LAST:event_jTextField1ActionPerformed

    private void jTextField2ActionPerformed(java.awt.event.ActionEvent evt)
{//GEN-FIRST:event_jTextField2ActionPerformed
        // TODO add your handling code here:
    }//GEN-LAST:event_jTextField2ActionPerformed

    private void jButton1ActionPerformed(java.awt.event.ActionEvent evt)
{//GEN-FIRST:event_jButton1ActionPerformed
        double a, b;
        try {
            a = Double.parseDouble(txt_a.getText());
            b = Double.parseDouble(txt_b.getText());
            if (a > b) {
                indicator.setText(">");
            }
            else if (a == b) {
                indicator.setText("=");
            }
            else {
                indicator.setText("<");
            }
        }
        catch (Exception e) {
            indicator.setText("</>");
        }
    }//GEN-LAST:event_jButton1ActionPerformed
```

```
    private void jButton2ActionPerformed(java.awt.event.ActionEvent evt)
{//GEN-FIRST:event_jButton2ActionPerformed
        dispose();
    }//GEN-LAST:event_jButton2ActionPerformed

    /**
     * @param args the command line arguments
     */
    public static void main(String args[]) {
        /* Set the Nimbus look and feel */
        //<editor-fold defaultstate="collapsed" desc=" Look and feel setting code (optional) ">
        /* If Nimbus (introduced in Java SE 6) is not available, stay with the default look and
feel.
         * For details see
http://download.oracle.com/javase/tutorial/uiswing/lookandfeel/plaf.html
         */
        try {
            for (javax.swing.UIManager.LookAndFeelInfo info :
javax.swing.UIManager.getInstalledLookAndFeels()) {
                if ("Nimbus".equals(info.getName())) {
                    javax.swing.UIManager.setLookAndFeel(info.getClassName());
                    break;
                }
            }
        } catch (ClassNotFoundException ex) {

java.util.logging.Logger.getLogger(MainWindow.class.getName()).log(java.util.logging.Level.
SEVERE, null, ex);
        } catch (InstantiationException ex) {

java.util.logging.Logger.getLogger(MainWindow.class.getName()).log(java.util.logging.Level.
SEVERE, null, ex);
        } catch (IllegalAccessException ex) {

java.util.logging.Logger.getLogger(MainWindow.class.getName()).log(java.util.logging.Level.
SEVERE, null, ex);
        } catch (javax.swing.UnsupportedLookAndFeelException ex) {

java.util.logging.Logger.getLogger(MainWindow.class.getName()).log(java.util.logging.Level.
SEVERE, null, ex);
        }
        //</editor-fold>

        /* Create and display the form */
        java.awt.EventQueue.invokeLater(new Runnable() {
            public void run() {
                new MainWindow().setVisible(true);
```

```
            }
        });
    }

    // Variables declaration - do not modify//GEN-BEGIN:variables
    private javax.swing.JLabel indicator;
    private javax.swing.JButton jButton1;
    private javax.swing.JButton jButton2;
    private javax.swing.JLabel jLabel1;
    private javax.swing.JLabel jLabel2;
    private javax.swing.JLabel jLabel3;
    private javax.swing.JTextField jTextField1;
    private javax.swing.JTextField jTextField2;
    // End of variables declaration//GEN-END:variables
}
```

Interfaz gráfica

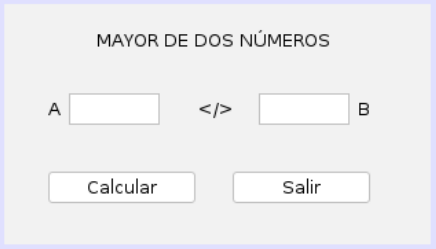
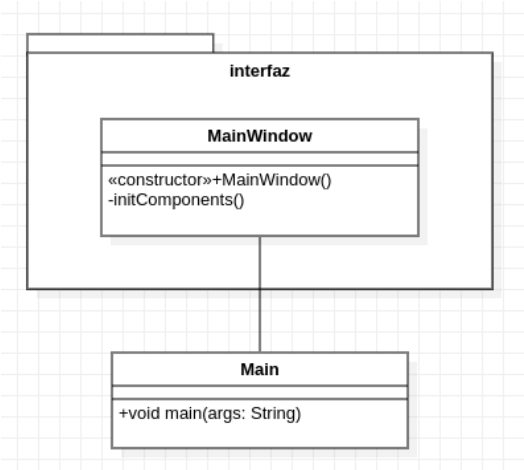


Diagrama de clases



Código en github:

https://github.com/jmcada2503/ejercicios_poo/tree/master/actividad3/ejercicio7cap4gui

Ejercicio 10 del capítulo 4

Clase principal

```
import interfaz.*;

public class Main {

    public static void main(String[] args) {

        MainWindow window = new MainWindow();
        window.setVisible(true);

    }
}
```

Clase Estudiante

```
package clases;

public class Estudiante {

        public String num_inscripcion, nombre;
        public double patrimonio;
        public int estrato;

        public Estudiante(String num_inscripcion, String nombre, double patrimonio, int estrato)
{
            this.num_inscripcion = num_inscripcion;
            this.nombre = nombre;
            this.patrimonio = patrimonio;
            this.estrato = estrato;
        }

        public double matricula() {
            double pagmat = 50000;
            if ((patrimonio > 2000000) && (estrato > 3)) {
                pagmat = pagmat + (0.03*patrimonio);
            }
            return pagmat;
        }

}
```

Clase de la interfaz gráfica

```
/*
 * Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt to change
this license
 * Click nbfs://nbhost/SystemFileSystem/Templates/GUIForms/JFrame.java to edit this
template
 */
package interfaz;

/**
 *
 * @author jmcada
 */

import clases.*;

public class MainWindow extends javax.swing.JFrame {

    /**
     * Creates new form MainWindow
     */
    public MainWindow() {
        initComponents();
    }

    /**
     * This method is called from within the constructor to initialize the form.
     * WARNING: Do NOT modify this code. The content of this method is always
     * regenerated by the Form Editor.
     */
    @SuppressWarnings("unchecked")
    // <editor-fold defaultstate="collapsed" desc="Generated
Code">//GEN-BEGIN:initComponents
    private void initComponents() {

        jLabel1 = new javax.swing.JLabel();
        jLabel2 = new javax.swing.JLabel();
        txt_num_inscripcion = new javax.swing.JTextField();
        jLabel3 = new javax.swing.JLabel();
        txt_nombre = new javax.swing.JTextField();
        jLabel4 = new javax.swing.JLabel();
        txt_patrimonio = new javax.swing.JTextField();
        jLabel5 = new javax.swing.JLabel();
        txt_estrato = new javax.swing.JTextField();
        jLabel6 = new javax.swing.JLabel();
        txt_matricula = new javax.swing.JTextField();
```

```
        btn_calcular = new javax.swing.JButton();
        btn_salir = new javax.swing.JButton();

        setDefaultCloseOperation(javax.swing.WindowConstants.EXIT_ON_CLOSE);

        jLabel1.setText("DATOS DEL ESTUDIANTE");

        jLabel2.setText("Número de inscripción:");

        jLabel3.setText("Nombre:");

        jLabel4.setText("Patrimonio:");

        jLabel5.setText("Estrato social:");

        jLabel6.setText("Matrícula:");

        btn_calcular.setText("Calcular matrícula");
        btn_calcular.addActionListener(new java.awt.event.ActionListener() {
            public void actionPerformed(java.awt.event.ActionEvent evt) {
                btn_calcularActionPerformed(evt);
            }
        });

        btn_salir.setText("Salir");
        btn_salir.addActionListener(new java.awt.event.ActionListener() {
            public void actionPerformed(java.awt.event.ActionEvent evt) {
                btn_salirActionPerformed(evt);
            }
        });

        javax.swing.GroupLayout layout = new javax.swing.GroupLayout(getContentPane());
        getContentPane().setLayout(layout);
        layout.setHorizontalGroup(
            layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
            .addGroup(layout.createSequentialGroup()

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
                    .addGroup(layout.createSequentialGroup()
                        .addGap(196, 196, 196)
                        .addComponent(jLabel1))
                    .addGroup(layout.createSequentialGroup()
                        .addGap(46, 46, 46)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING, false)
                            .addGroup(layout.createSequentialGroup()
                                .addComponent(btn_calcular)
```

```
.addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED,
javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
                        .addComponent(btn_salir))
                    .addGroup(layout.createSequentialGroup()
                        .addComponent(jLabel3)
                        .addGap(18, 18, 18)
                        .addComponent(txt_nombre))
                    .addGroup(layout.createSequentialGroup()
                        .addComponent(jLabel2)
                        .addGap(18, 18, 18)
                        .addComponent(txt_num_inscripcion,
javax.swing.GroupLayout.PREFERRED_SIZE, 321,
javax.swing.GroupLayout.PREFERRED_SIZE))
                    .addGroup(layout.createSequentialGroup()
                        .addComponent(jLabel4)
                        .addGap(18, 18, 18)
                        .addComponent(txt_patrimonio))
                    .addGroup(layout.createSequentialGroup()
                        .addComponent(jLabel5)
                        .addGap(18, 18, 18)
                        .addComponent(txt_estrato))
                    .addGroup(javax.swing.GroupLayout.Alignment.TRAILING,
layout.createSequentialGroup()
                        .addComponent(jLabel6)
                        .addGap(18, 18, 18)
                        .addComponent(txt_matricula)))))
            .addContainerGap(43, Short.MAX_VALUE))
        );
        layout.setVerticalGroup(
            layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
            .addGroup(layout.createSequentialGroup()
                .addGap(17, 17, 17)
                .addComponent(jLabel1)
                .addGap(18, 18, 18)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
                    .addComponent(jLabel2)
                    .addComponent(txt_num_inscripcion,
javax.swing.GroupLayout.PREFERRED_SIZE, javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.PREFERRED_SIZE))
                .addGap(18, 18, 18)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
                    .addComponent(jLabel3)
                    .addComponent(txt_nombre, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))
                .addGap(18, 18, 18)
```

```
.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
                .addComponent(jLabel4)
                .addComponent(txt_patrimonio, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))
            .addGap(18, 18, 18)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
                .addComponent(jLabel5)
                .addComponent(txt_estrato, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))
            .addGap(18, 18, 18)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
                .addComponent(jLabel6)
                .addComponent(txt_matricula, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))
            .addGap(47, 47, 47)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
                .addComponent(btn_calcular)
                .addComponent(btn_salir))
            .addContainerGap(46, Short.MAX_VALUE))
        );

        pack();
    }// </editor-fold>//GEN-END:initComponents

    private void btn_salirActionPerformed(java.awt.event.ActionEvent evt)
{//GEN-FIRST:event_btn_salirActionPerformed
        dispose();
    }//GEN-LAST:event_btn_salirActionPerformed

    private void btn_calcularActionPerformed(java.awt.event.ActionEvent evt)
{//GEN-FIRST:event_btn_calcularActionPerformed
        Estudiante myEstudiante = new Estudiante(txt_num_inscripcion.getText(),
txt_nombre.getText(), Double.parseDouble(txt_patrimonio.getText()),
Integer.parseInt(txt_estrato.getText()));
        txt_matricula.setText(String.valueOf(myEstudiante.matricula()));
    }//GEN-LAST:event_btn_calcularActionPerformed

    /**
     * @param args the command line arguments
     */
    public static void main(String args[]) {
        /* Set the Nimbus look and feel */
        //<editor-fold defaultstate="collapsed" desc=" Look and feel setting code (optional) ">
```

```
        /* If Nimbus (introduced in Java SE 6) is not available, stay with the default look and
feel.
         * For details see
http://download.oracle.com/javase/tutorial/uiswing/lookandfeel/plaf.html
         */
        try {
            for (javax.swing.UIManager.LookAndFeelInfo info :
javax.swing.UIManager.getInstalledLookAndFeels()) {
                if ("Nimbus".equals(info.getName())) {
                    javax.swing.UIManager.setLookAndFeel(info.getClassName());
                    break;
                }
            }
        } catch (ClassNotFoundException ex) {

java.util.logging.Logger.getLogger(MainWindow.class.getName()).log(java.util.logging.Level.
SEVERE, null, ex);
        } catch (InstantiationException ex) {

java.util.logging.Logger.getLogger(MainWindow.class.getName()).log(java.util.logging.Level.
SEVERE, null, ex);
        } catch (IllegalAccessException ex) {

java.util.logging.Logger.getLogger(MainWindow.class.getName()).log(java.util.logging.Level.
SEVERE, null, ex);
        } catch (javax.swing.UnsupportedLookAndFeelException ex) {

java.util.logging.Logger.getLogger(MainWindow.class.getName()).log(java.util.logging.Level.
SEVERE, null, ex);
        }
        //</editor-fold>

        /* Create and display the form */
        java.awt.EventQueue.invokeLater(new Runnable() {
            public void run() {
                new MainWindow().setVisible(true);
            }
        });
    }

    // Variables declaration - do not modify//GEN-BEGIN:variables
    private javax.swing.JButton btn_calcular;
    private javax.swing.JButton btn_salir;
    private javax.swing.JLabel jLabel1;
    private javax.swing.JLabel jLabel2;
    private javax.swing.JLabel jLabel3;
    private javax.swing.JLabel jLabel4;
    private javax.swing.JLabel jLabel5;
```

```
    private javax.swing.JLabel jLabel6;
    private javax.swing.JTextField txt_estrato;
    private javax.swing.JTextField txt_matricula;
    private javax.swing.JTextField txt_nombre;
    private javax.swing.JTextField txt_num_inscripcion;
    private javax.swing.JTextField txt_patrimonio;
    // End of variables declaration//GEN-END:variables
}
```

Interfaz gráfica

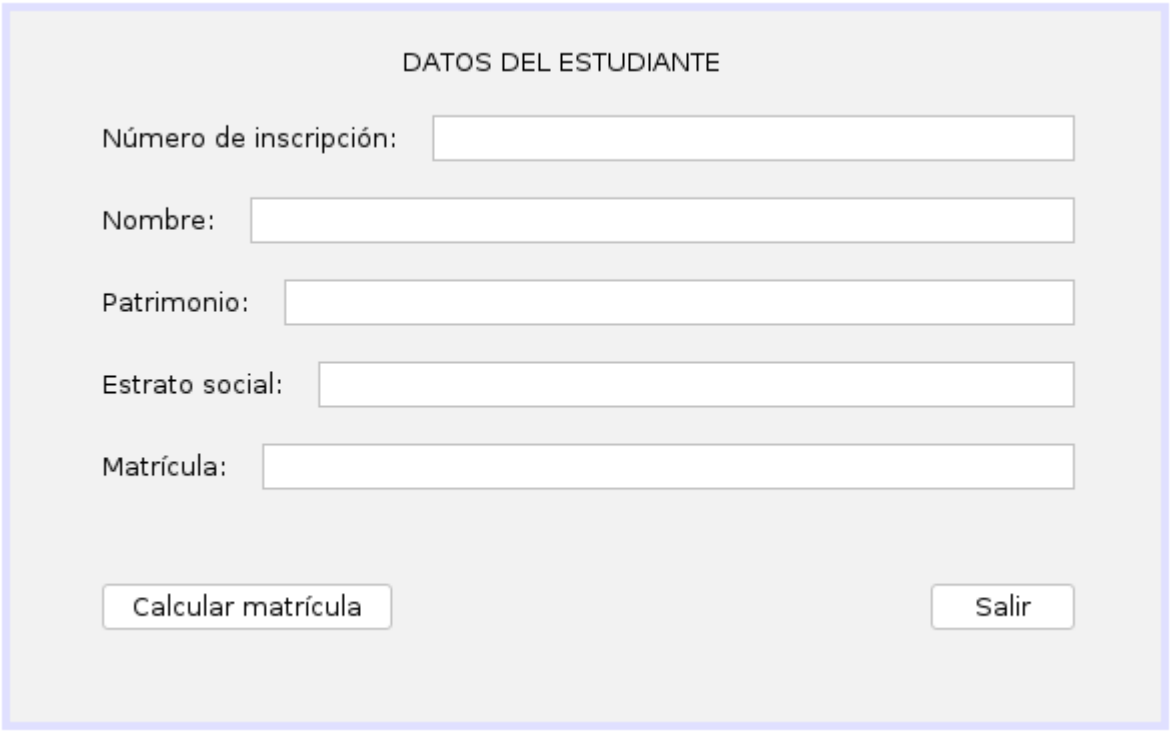
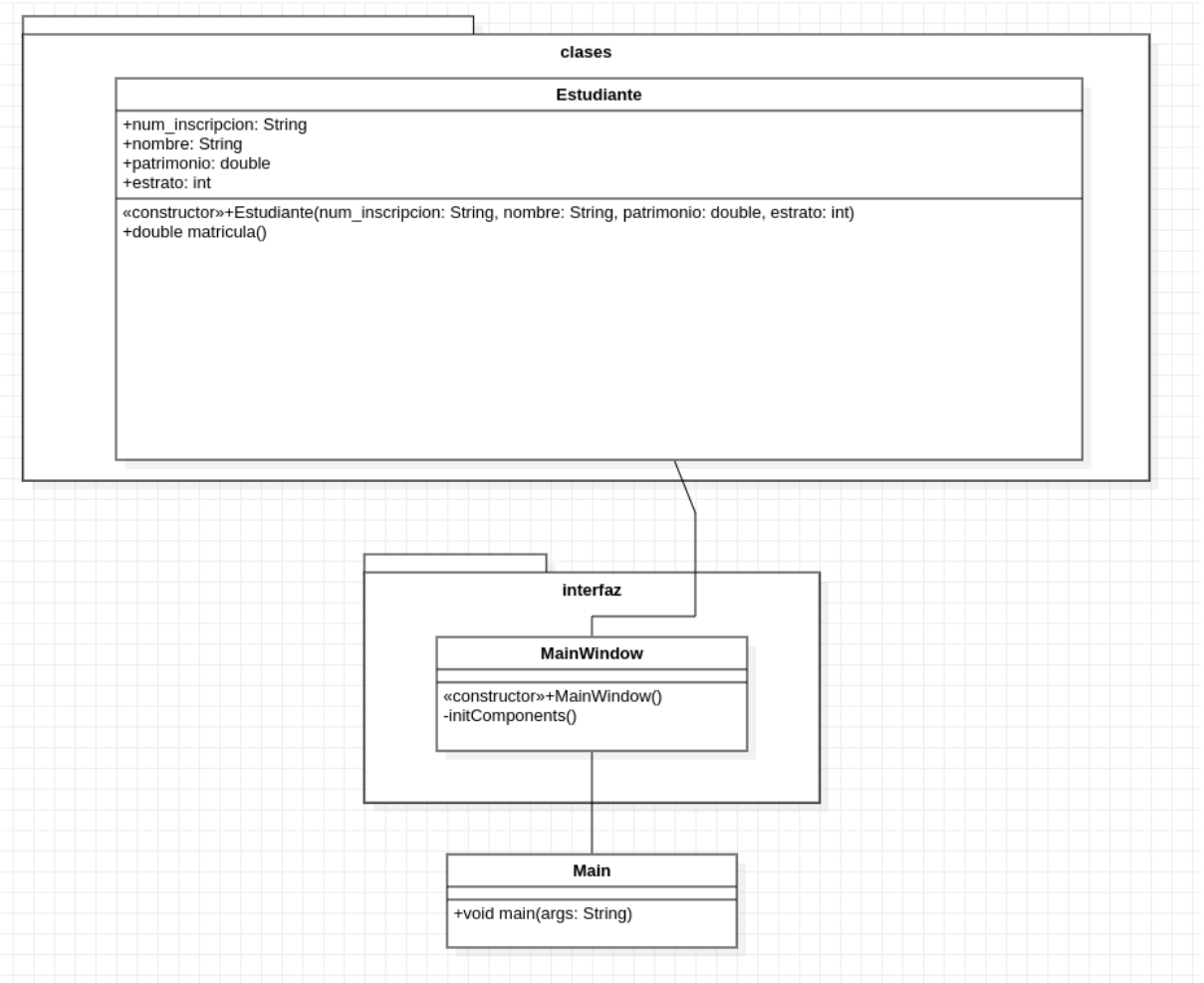


Diagrama de clases



Código en github:

https://github.com/jmcada2503/ejercicios_poo/tree/master/actividad3/ejercicio10cap4gui

Ejercicio 22 del capítulo 4

Clase principal

```
import interfaz.*;

public class Main {

    public static void main(String[] args) {

        MainWindow window = new MainWindow();
        window.setVisible(true);

    }
}
```

Clase Empleado

```
package clases;

public class Empleado {

    public String name;
    public double hour_value, num_hours;

    public Empleado(String name, double hour_value, double num_hours) {
        this.name = name;
        this.hour_value = hour_value;
        this.num_hours = num_hours;
    }

    public double salary() {
        return hour_value * num_hours;
    }

}
```

Clase de la interfaz gráfica

```
/*
 * Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt to change
this license
 * Click nbfs://nbhost/SystemFileSystem/Templates/GUIForms/JFrame.java to edit this
template
 */
package interfaz;

/**
 *
 * @author jmcada
 */

import clases.*;

public class MainWindow extends javax.swing.JFrame {

    /**
     * Creates new form MainWindow
     */
    public MainWindow() {
        initComponents();
    }

    /**
     * This method is called from within the constructor to initialize the form.
     * WARNING: Do NOT modify this code. The content of this method is always
     * regenerated by the Form Editor.
     */
    @SuppressWarnings("unchecked")
    // <editor-fold defaultstate="collapsed" desc="Generated
Code">//GEN-BEGIN:initComponents
    private void initComponents() {

        jLabel1 = new javax.swing.JLabel();
        jLabel2 = new javax.swing.JLabel();
        txt_nombre = new javax.swing.JTextField();
        jLabel3 = new javax.swing.JLabel();
        txt_valor_hora = new javax.swing.JTextField();
        jLabel4 = new javax.swing.JLabel();
        txt_horas = new javax.swing.JTextField();
        jLabel5 = new javax.swing.JLabel();
        txt_salario = new javax.swing.JTextField();
        btn_calcular = new javax.swing.JButton();
        btn_salir = new javax.swing.JButton();
```

```
        setDefaultCloseOperation(javax.swing.WindowConstants.EXIT_ON_CLOSE);

        jLabel1.setText("DATOS DEL EMPLEADO");

        jLabel2.setText("Nombre:");

        jLabel3.setText("Salario por hora:");

        jLabel4.setText("Número de horas:");

        jLabel5.setText("Salario:");

        btn_calcular.setText("Calcular Salario");
        btn_calcular.addActionListener(new java.awt.event.ActionListener() {
            public void actionPerformed(java.awt.event.ActionEvent evt) {
                btn_calcularActionPerformed(evt);
            }
        });

        btn_salir.setText("Salir");
        btn_salir.addActionListener(new java.awt.event.ActionListener() {
            public void actionPerformed(java.awt.event.ActionEvent evt) {
                btn_salirActionPerformed(evt);
            }
        });

        javax.swing.GroupLayout layout = new javax.swing.GroupLayout(getContentPane());
        getContentPane().setLayout(layout);
        layout.setHorizontalGroup(
            layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
            .addGroup(layout.createSequentialGroup()

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
                    .addGroup(layout.createSequentialGroup()
                        .addGap(124, 124, 124)
                        .addComponent(jLabel1))
                    .addGroup(layout.createSequentialGroup()
                        .addGap(37, 37, 37)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING, false)
                            .addGroup(layout.createSequentialGroup()
                                .addComponent(btn_calcular)

.addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED,
javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
                                .addComponent(btn_salir))
                            .addGroup(layout.createSequentialGroup()
```

```
                        .addComponent(jLabel3)
                        .addGap(18, 18, 18)
                        .addComponent(txt_valor_hora))
                    .addGroup(layout.createSequentialGroup()
                        .addComponent(jLabel2)
                        .addGap(18, 18, 18)
                        .addComponent(txt_nombre,
javax.swing.GroupLayout.PREFERRED_SIZE, 257,
javax.swing.GroupLayout.PREFERRED_SIZE))
                    .addGroup(layout.createSequentialGroup()
                        .addComponent(jLabel4)
                        .addGap(18, 18, 18)
                        .addComponent(txt_horas))
                    .addGroup(javax.swing.GroupLayout.Alignment.TRAILING,
layout.createSequentialGroup()
                        .addComponent(jLabel5)
                        .addGap(18, 18, 18)
                        .addComponent(txt_salario)))))
            .addContainerGap(33, Short.MAX_VALUE))
        );
        layout.setVerticalGroup(
            layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
            .addGroup(layout.createSequentialGroup()
                .addGap(25, 25, 25)
                .addComponent(jLabel1)
                .addGap(24, 24, 24)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
                    .addComponent(jLabel2)
                    .addComponent(txt_nombre, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))
                .addGap(18, 18, 18)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
                    .addComponent(jLabel3)
                    .addComponent(txt_valor_hora, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))
                .addGap(18, 18, 18)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
                    .addComponent(jLabel4)
                    .addComponent(txt_horas, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))
                .addGap(18, 18, 18)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
                    .addComponent(jLabel5)
```

```
                .addComponent(txt_salario, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))
            .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED, 42,
Short.MAX_VALUE)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
                .addComponent(btn_calcular)
                .addComponent(btn_salir))
            .addGap(23, 23, 23))
        );

        pack();
    }// </editor-fold>//GEN-END:initComponents

    private void btn_calcularActionPerformed(java.awt.event.ActionEvent evt)
{//GEN-FIRST:event_btn_calcularActionPerformed
        Empleado myEmployee = new Empleado(txt_nombre.getText(),
Double.parseDouble(txt_valor_hora.getText()), Double.parseDouble(txt_horas.getText()));
        if (myEmployee.salary() > 450000) {
            txt_salario.setText(String.valueOf(myEmployee.salary()));
        }
        else {
            javax.swing.JOptionPane.showMessageDialog(null, "El salario del empleado es
menor o igual a 450000");
        }
    }//GEN-LAST:event_btn_calcularActionPerformed

    private void btn_salirActionPerformed(java.awt.event.ActionEvent evt)
{//GEN-FIRST:event_btn_salirActionPerformed
        dispose();
    }//GEN-LAST:event_btn_salirActionPerformed

    /**
     * @param args the command line arguments
     */
    public static void main(String args[]) {
        /* Set the Nimbus look and feel */
        //<editor-fold defaultstate="collapsed" desc=" Look and feel setting code (optional) ">
        /* If Nimbus (introduced in Java SE 6) is not available, stay with the default look and
feel.
         * For details see
http://download.oracle.com/javase/tutorial/uiswing/lookandfeel/plaf.html
         */
        try {
            for (javax.swing.UIManager.LookAndFeelInfo info :
javax.swing.UIManager.getInstalledLookAndFeels()) {
                if ("Nimbus".equals(info.getName())) {
                    javax.swing.UIManager.setLookAndFeel(info.getClassName());
```

```
                break;
            }
        }
    } catch (ClassNotFoundException ex) {

java.util.logging.Logger.getLogger(MainWindow.class.getName()).log(java.util.logging.Level.
SEVERE, null, ex);
    } catch (InstantiationException ex) {

java.util.logging.Logger.getLogger(MainWindow.class.getName()).log(java.util.logging.Level.
SEVERE, null, ex);
    } catch (IllegalAccessException ex) {

java.util.logging.Logger.getLogger(MainWindow.class.getName()).log(java.util.logging.Level.
SEVERE, null, ex);
    } catch (javax.swing.UnsupportedLookAndFeelException ex) {

java.util.logging.Logger.getLogger(MainWindow.class.getName()).log(java.util.logging.Level.
SEVERE, null, ex);
    }
    //</editor-fold>

    /* Create and display the form */
    java.awt.EventQueue.invokeLater(new Runnable() {
        public void run() {
            new MainWindow().setVisible(true);
        }
    });
}

// Variables declaration - do not modify//GEN-BEGIN:variables
private javax.swing.JButton btn_calcular;
private javax.swing.JButton btn_salir;
private javax.swing.JLabel jLabel1;
private javax.swing.JLabel jLabel2;
private javax.swing.JLabel jLabel3;
private javax.swing.JLabel jLabel4;
private javax.swing.JLabel jLabel5;
private javax.swing.JTextField txt_horas;
private javax.swing.JTextField txt_nombre;
private javax.swing.JTextField txt_salario;
private javax.swing.JTextField txt_valor_hora;
// End of variables declaration//GEN-END:variables
}
```

Interfaz gráfica

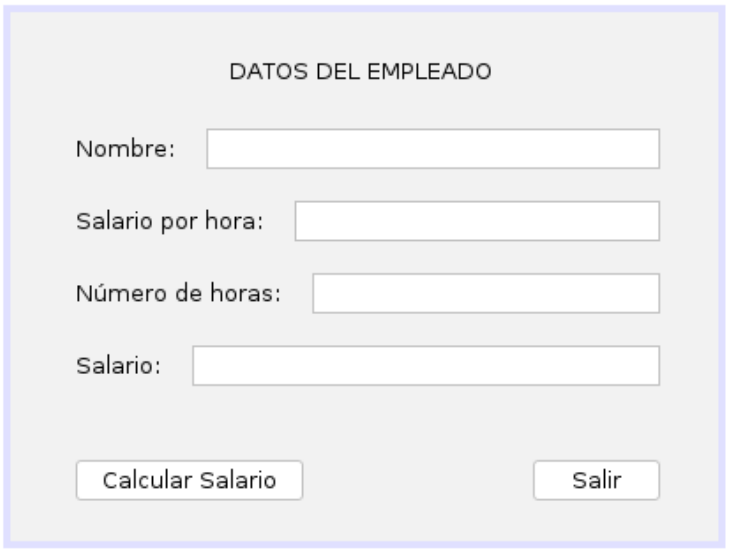
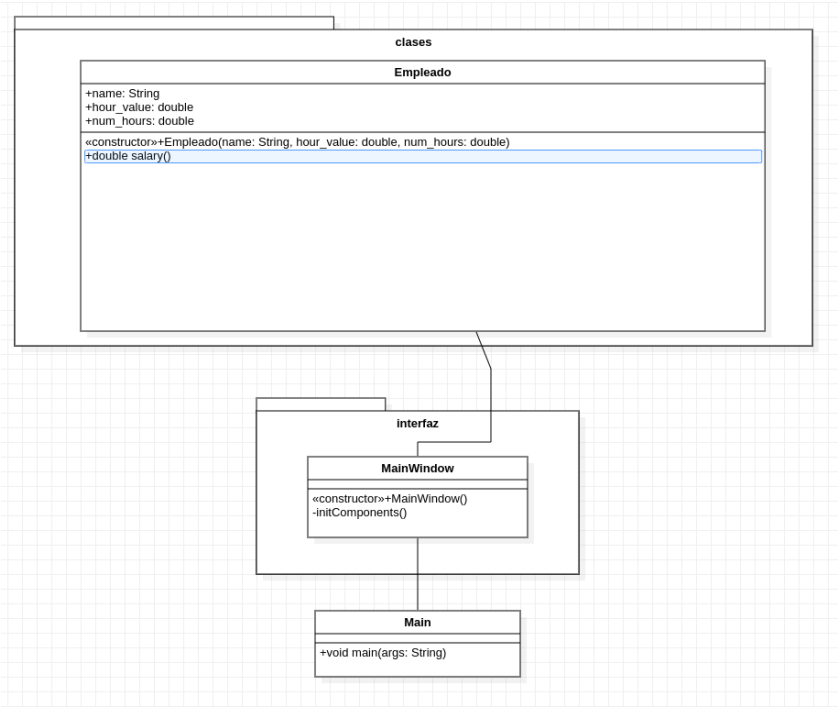


Diagrama de clases



Código en github:

https://github.com/jmcada2503/ejercicios_poo/tree/master/actividad3/ejercicio22cap4gui

Ejercicio 23 del capítulo 4

Clase principal

```
import interfaz.*;

public class Main {

    public static void main(String[] args) {

        MainWindow window = new MainWindow();
        window.setVisible(true);

    }
}
```

Clase Ecuacion

```
package clases;

import javax.swing.JOptionPane;

public class Ecuacion {

    public double a, b, c;

    public Ecuacion(double a, double b, double c) {
        this.a = a;
        this.b = b;
        this.c = c;
    }

    public double[] result() {
        double discriminant = Math.pow(b, 2)-(4*a*c);
        if (discriminant < 0) {
            JOptionPane.showMessageDialog(null, "Esta ecuación no tiene solución en los
reales");
            double[] array = {0, 0};
            return array;
        }
        else {
            double[] array = {(-(this.b)+Math.sqrt(discriminant))/(2*this.a),
(-(this.b)-Math.sqrt(discriminant))/(2*this.a)};
            return array;
        }
```

```
    }

}
```

Clase de la interfaz gráfica

```
/*
 * Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt to change
this license
 * Click nbfs://nbhost/SystemFileSystem/Templates/GUIForms/JFrame.java to edit this
template
 */
package interfaz;

/**
 *
 * @author jmcada
 */

import clases.*;

public class MainWindow extends javax.swing.JFrame {

    /**
     * Creates new form MainWindow
     */
    public MainWindow() {
        initComponents();
    }

    /**
     * This method is called from within the constructor to initialize the form.
     * WARNING: Do NOT modify this code. The content of this method is always
     * regenerated by the Form Editor.
     */
    @SuppressWarnings("unchecked")
    // <editor-fold defaultstate="collapsed" desc="Generated
Code">//GEN-BEGIN:initComponents
    private void initComponents() {

        jLabel1 = new javax.swing.JLabel();
        jLabel2 = new javax.swing.JLabel();
        txt_a = new javax.swing.JTextField();
        txt_b = new javax.swing.JTextField();
        jLabel3 = new javax.swing.JLabel();
        txt_c = new javax.swing.JTextField();
```

```
jLabel4 = new javax.swing.JLabel();
btn_calcular = new javax.swing.JButton();
btn_salir = new javax.swing.JButton();
jLabel5 = new javax.swing.JLabel();
txt_ans_1 = new javax.swing.JTextField();
jLabel6 = new javax.swing.JLabel();
jLabel7 = new javax.swing.JLabel();
txt_ans_2 = new javax.swing.JTextField();

jLabel1.setText("ECUACIÓN DE SEGUNDO GRADO");

setDefaultCloseOperation(javax.swing.WindowConstants.EXIT_ON_CLOSE);

jLabel2.setText("x^2  +  ");

txt_a.addActionListener(new java.awt.event.ActionListener() {
    public void actionPerformed(java.awt.event.ActionEvent evt) {
        txt_aActionPerformed(evt);
    }
});

txt_b.addActionListener(new java.awt.event.ActionListener() {
    public void actionPerformed(java.awt.event.ActionEvent evt) {
        txt_bActionPerformed(evt);
    }
});

jLabel3.setText("x  +  ");

txt_c.addActionListener(new java.awt.event.ActionListener() {
    public void actionPerformed(java.awt.event.ActionEvent evt) {
        txt_cActionPerformed(evt);
    }
});

jLabel4.setText("SOLUCIONES");

btn_calcular.setText("Caclular");
btn_calcular.addActionListener(new java.awt.event.ActionListener() {
    public void actionPerformed(java.awt.event.ActionEvent evt) {
        btn_calcularActionPerformed(evt);
    }
});

btn_salir.setText("Salir");
btn_salir.addActionListener(new java.awt.event.ActionListener() {
    public void actionPerformed(java.awt.event.ActionEvent evt) {
        btn_salirActionPerformed(evt);
```

```
        }
    });

    jLabel5.setText("ECUACIÓN DE SEGUNDO GRADO");

    txt_ans_1.addActionListener(new java.awt.event.ActionListener() {
        public void actionPerformed(java.awt.event.ActionEvent evt) {
            txt_ans_1ActionPerformed(evt);
        }
    });

    jLabel6.setText("x = ");

    jLabel7.setText("o            x = ");

    txt_ans_2.addActionListener(new java.awt.event.ActionListener() {
        public void actionPerformed(java.awt.event.ActionEvent evt) {
            txt_ans_2ActionPerformed(evt);
        }
    });

    javax.swing.GroupLayout layout = new javax.swing.GroupLayout(getContentPane());
    getContentPane().setLayout(layout);
    layout.setHorizontalGroup(
        layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
        .addGroup(layout.createSequentialGroup()
            .addGap(59, 59, 59)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
                .addGroup(layout.createSequentialGroup()

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
                        .addGroup(layout.createSequentialGroup()
                            .addGap(95, 95, 95)
                            .addComponent(jLabel4))
                        .addGroup(layout.createSequentialGroup()
                            .addComponent(jLabel6)

.addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
                                .addGroup(layout.createSequentialGroup()
                                    .addComponent(txt_a,
javax.swing.GroupLayout.PREFERRED_SIZE, 36,
javax.swing.GroupLayout.PREFERRED_SIZE)

.addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
                                    .addComponent(jLabel2)
```

```
.addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
                                .addComponent(txt_b,
javax.swing.GroupLayout.PREFERRED_SIZE, 36,
javax.swing.GroupLayout.PREFERRED_SIZE)

.addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
                                .addComponent(jLabel3)

.addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
                                .addComponent(txt_c,
javax.swing.GroupLayout.PREFERRED_SIZE, 36,
javax.swing.GroupLayout.PREFERRED_SIZE))
                            .addGroup(layout.createSequentialGroup()
                                .addComponent(txt_ans_1,
javax.swing.GroupLayout.PREFERRED_SIZE, 36,
javax.swing.GroupLayout.PREFERRED_SIZE)
                                .addGap(70, 70, 70)
                                .addComponent(jLabel7)

.addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
                                .addComponent(txt_ans_2,
javax.swing.GroupLayout.PREFERRED_SIZE, 36,
javax.swing.GroupLayout.PREFERRED_SIZE)))))
                    .addContainerGap(75, Short.MAX_VALUE))
                .addGroup(layout.createSequentialGroup()
                    .addComponent(btn_calcular)
                    .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED,
javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
                    .addComponent(btn_salir)
                    .addGap(67, 67, 67))))

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
            .addGroup(javax.swing.GroupLayout.Alignment.TRAILING,
layout.createSequentialGroup()
                .addContainerGap(104, Short.MAX_VALUE)
                .addComponent(jLabel5)
                .addGap(84, 84, 84)))
        );
        layout.setVerticalGroup(
            layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
            .addGroup(layout.createSequentialGroup()
                .addGap(93, 93, 93)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
                .addComponent(jLabel2)
                .addComponent(txt_a, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)
```

```
                .addComponent(txt_b, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)
                .addComponent(jLabel3)
                .addComponent(txt_c, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))
            .addGap(42, 42, 42)
            .addComponent(jLabel4)
            .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED, 26,
Short.MAX_VALUE)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
                .addComponent(jLabel6)
                .addComponent(txt_ans_1, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)
                .addComponent(jLabel7)
                .addComponent(txt_ans_2, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))
            .addGap(48, 48, 48)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
                .addComponent(btn_calcular)
                .addComponent(btn_salir))
            .addGap(27, 27, 27))

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
            .addGroup(layout.createSequentialGroup()
                .addGap(30, 30, 30)
                .addComponent(jLabel5)
                .addContainerGap(275, Short.MAX_VALUE)))
        );

        pack();
    }// </editor-fold>//GEN-END:initComponents

    private void txt_aActionPerformed(java.awt.event.ActionEvent evt)
{//GEN-FIRST:event_txt_aActionPerformed
        // TODO add your handling code here:
    }//GEN-LAST:event_txt_aActionPerformed

    private void txt_bActionPerformed(java.awt.event.ActionEvent evt)
{//GEN-FIRST:event_txt_bActionPerformed
        // TODO add your handling code here:
    }//GEN-LAST:event_txt_bActionPerformed

    private void txt_cActionPerformed(java.awt.event.ActionEvent evt)
{//GEN-FIRST:event_txt_cActionPerformed
        // TODO add your handling code here:
    }//GEN-LAST:event_txt_cActionPerformed
```

```
    private void btn_calcularActionPerformed(java.awt.event.ActionEvent evt)
{//GEN-FIRST:event_btn_calcularActionPerformed
        Ecuacion myEcuacion = new Ecuacion(Double.parseDouble(txt_a.getText()),
Double.parseDouble(txt_b.getText()), Double.parseDouble(txt_c.getText()));
        double result[] = myEcuacion.result();
        txt_ans_1.setText(String.valueOf(result[0]));
        txt_ans_2.setText(String.valueOf(result[1]));
    }//GEN-LAST:event_btn_calcularActionPerformed

    private void txt_ans_1ActionPerformed(java.awt.event.ActionEvent evt)
{//GEN-FIRST:event_txt_ans_1ActionPerformed
        // TODO add your handling code here:
    }//GEN-LAST:event_txt_ans_1ActionPerformed

    private void txt_ans_2ActionPerformed(java.awt.event.ActionEvent evt)
{//GEN-FIRST:event_txt_ans_2ActionPerformed
        // TODO add your handling code here:
    }//GEN-LAST:event_txt_ans_2ActionPerformed

    private void btn_salirActionPerformed(java.awt.event.ActionEvent evt)
{//GEN-FIRST:event_btn_salirActionPerformed
        dispose();
    }//GEN-LAST:event_btn_salirActionPerformed

    /**
     * @param args the command line arguments
     */
    public static void main(String args[]) {
        /* Set the Nimbus look and feel */
        //<editor-fold defaultstate="collapsed" desc=" Look and feel setting code (optional) ">
        /* If Nimbus (introduced in Java SE 6) is not available, stay with the default look and
feel.
         * For details see
http://download.oracle.com/javase/tutorial/uiswing/lookandfeel/plaf.html
         */
        try {
            for (javax.swing.UIManager.LookAndFeelInfo info :
javax.swing.UIManager.getInstalledLookAndFeels()) {
                if ("Nimbus".equals(info.getName())) {
                    javax.swing.UIManager.setLookAndFeel(info.getClassName());
                    break;
                }
            }
        } catch (ClassNotFoundException ex) {

java.util.logging.Logger.getLogger(MainWindow.class.getName()).log(java.util.logging.Level.
SEVERE, null, ex);
```

```
        } catch (InstantiationException ex) {

java.util.logging.Logger.getLogger(MainWindow.class.getName()).log(java.util.logging.Level.
SEVERE, null, ex);
        } catch (IllegalAccessException ex) {

java.util.logging.Logger.getLogger(MainWindow.class.getName()).log(java.util.logging.Level.
SEVERE, null, ex);
        } catch (javax.swing.UnsupportedLookAndFeelException ex) {

java.util.logging.Logger.getLogger(MainWindow.class.getName()).log(java.util.logging.Level.
SEVERE, null, ex);
        }
        //</editor-fold>

        /* Create and display the form */
        java.awt.EventQueue.invokeLater(new Runnable() {
            public void run() {
                new MainWindow().setVisible(true);
            }
        });
    }

    // Variables declaration - do not modify//GEN-BEGIN:variables
    private javax.swing.JButton btn_calcular;
    private javax.swing.JButton btn_salir;
    private javax.swing.JLabel jLabel1;
    private javax.swing.JLabel jLabel2;
    private javax.swing.JLabel jLabel3;
    private javax.swing.JLabel jLabel4;
    private javax.swing.JLabel jLabel5;
    private javax.swing.JLabel jLabel6;
    private javax.swing.JLabel jLabel7;
    private javax.swing.JTextField txt_a;
    private javax.swing.JTextField txt_ans_1;
    private javax.swing.JTextField txt_ans_2;
    private javax.swing.JTextField txt_b;
    private javax.swing.JTextField txt_c;
    // End of variables declaration//GEN-END:variables
}
```

Interfaz gráfica

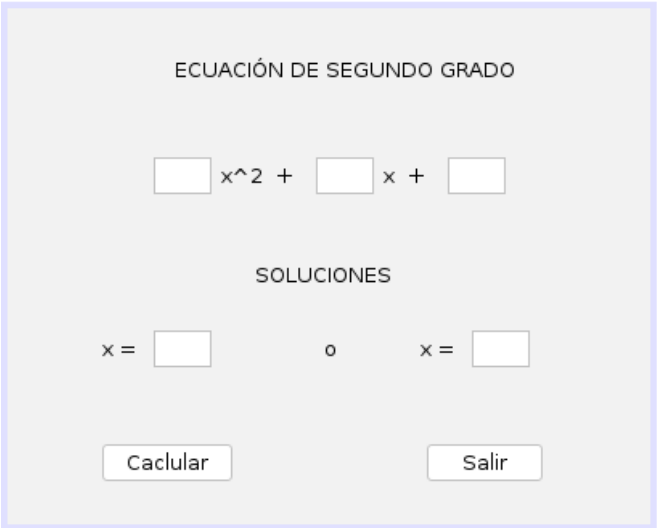
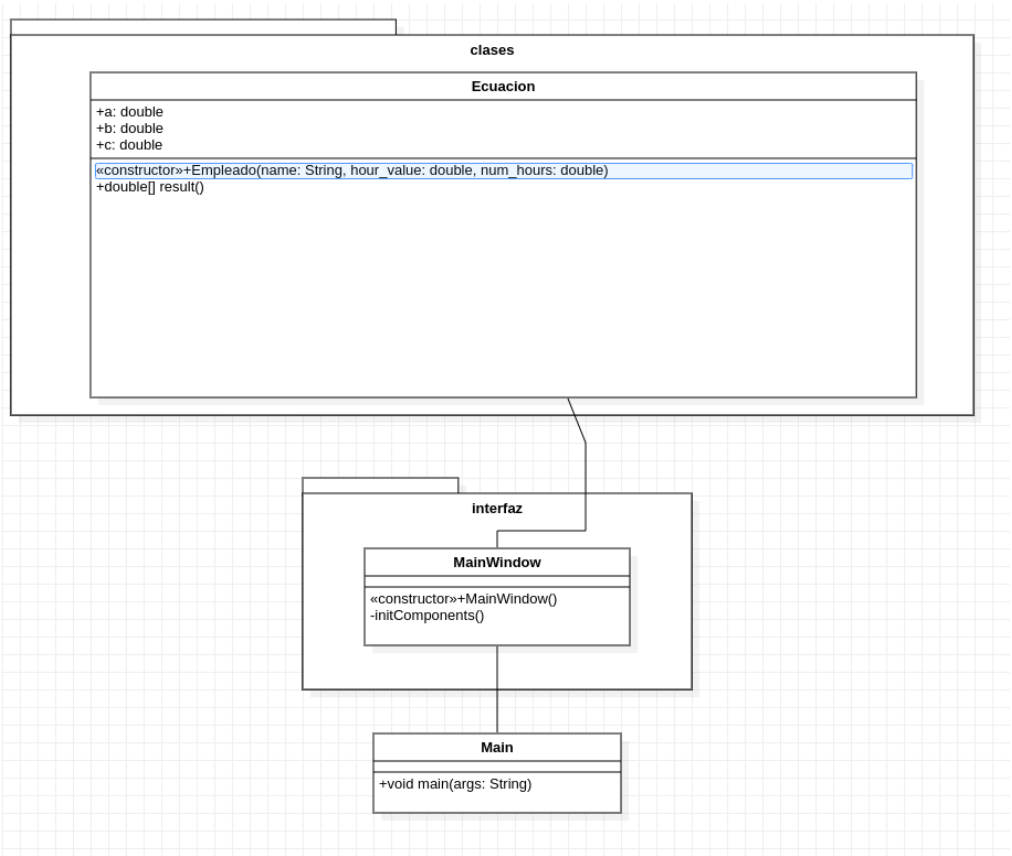


Diagrama de clases



Código en github:

https://github.com/jmcada2503/ejercicios_poo/tree/master/actividad3/ejercicio23cap4

Ejercicio 40 del capítulo 5

Clase principal

```
import interfaz.*;

public class Main {

    public static void main(String[] args) {

        MainWindow window = new MainWindow();
        window.setVisible(true);

    }
}
```

Clase Operations

```
package clases;

public class Operations {

    public double[] values;

    public static double round(double value, int places) {
        if (places < 0) throw new IllegalArgumentException();

        long factor = (long) Math.pow(10, places);
        value = value * factor;
        long tmp = Math.round(value);
        return (double) tmp / factor;
    }

    public Operations(double[] values) {
        this.values = values;
    }

    public double[] squaredRoot() {
        double[] ans = new double[this.values.length];
        for (int i=0; i<this.values.length; i++) {
            ans[i] = Math.sqrt(this.values[i]);
        }
        return ans;
    }
```

```
    public double[] square() {
        double[] ans = new double[this.values.length];
        for (int i=0; i<this.values.length; i++) {
            ans[i] = Math.pow(this.values[i], 2);
        }
        return ans;
    }

    public double[] cube() {
        double[] ans = new double[this.values.length];
        for (int i=0; i<this.values.length; i++) {
            ans[i] = Math.pow(this.values[i], 3);
        }
        return ans;
    }

    public String getOperationString() {
        double[] squared_roots = this.squaredRoot();
        double[] squares = this.square();
        double[] cubes = this.cube();

        String ans = "";
        for (int i=0; i<this.values.length; i++) {
            ans += "Para: "+String.valueOf(round(this.values[i], 2))+"\n";
            ans += String.valueOf(round(this.values[i], 2))+"**(1/2) =
"+String.valueOf(round(squared_roots[i], 2))+"\n"+String.valueOf(round(this.values[i],
2))+"**2 = "+String.valueOf(round(squares[i], 2))+"\n"+String.valueOf(round(this.values[i],
2))+"**3 = "+String.valueOf(round(cubes[i], 2))+"\n\n";
        }

        return ans;
    }

}
```

Clase de la interfaz gráfica

```
/*
 * Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt to change
this license
 * Click nbfs://nbhost/SystemFileSystem/Templates/GUIForms/JFrame.java to edit this
template
 */
package interfaz;

import clases.*;
import java.util.ArrayList;

public class MainWindow extends javax.swing.JFrame {

    /**
     * Creates new form MainWindow
     */
    public MainWindow() {
        initComponents();
        txt_output.setEditable(false);
    }

    /**
     * This method is called from within the constructor to initialize the form.
     * WARNING: Do NOT modify this code. The content of this method is always
     * regenerated by the Form Editor.
     */
    @SuppressWarnings("unchecked")
    // <editor-fold defaultstate="collapsed" desc="Generated
Code">//GEN-BEGIN:initComponents
    private void initComponents() {

        jScrollPane1 = new javax.swing.JScrollPane();
        txt_input = new javax.swing.JTextArea();
        jLabel1 = new javax.swing.JLabel();
        jLabel2 = new javax.swing.JLabel();
        jLabel3 = new javax.swing.JLabel();
        btn_calcular = new javax.swing.JButton();
        jScrollPane2 = new javax.swing.JScrollPane();
        txt_output = new javax.swing.JTextArea();
        jLabel4 = new javax.swing.JLabel();
        btn_salir = new javax.swing.JButton();

        setDefaultCloseOperation(javax.swing.WindowConstants.EXIT_ON_CLOSE);
        setSize(new java.awt.Dimension(200, 500));
```

```
        txt_input.setColumns(20);
        txt_input.setRows(5);
        jScrollPane1.setViewportView(txt_input);

        jLabel1.setText("RAIZ DE N NÚMEROS");

        jLabel2.setText("Ingrese números en este campo");

        jLabel3.setText("separados por un salto de línea");

        btn_calcular.setText("Calcular");
        btn_calcular.addActionListener(new java.awt.event.ActionListener() {
            public void actionPerformed(java.awt.event.ActionEvent evt) {
                btn_calcularActionPerformed(evt);
            }
        });

        txt_output.setColumns(20);
        txt_output.setRows(5);
        jScrollPane2.setViewportView(txt_output);

        jLabel4.setText("RESULTADO");

        btn_salir.setText("Salir");
        btn_salir.addActionListener(new java.awt.event.ActionListener() {
            public void actionPerformed(java.awt.event.ActionEvent evt) {
                btn_salirActionPerformed(evt);
            }
        });

        javax.swing.GroupLayout layout = new javax.swing.GroupLayout(getContentPane());
        getContentPane().setLayout(layout);
        layout.setHorizontalGroup(
            layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
            .addGroup(layout.createSequentialGroup()
                .addGap(60, 60, 60)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
                    .addComponent(jScrollPane2, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)
                    .addComponent(jLabel1)
                    .addComponent(jLabel4)
                    .addComponent(btn_calcular)
                    .addComponent(btn_salir)
                    .addComponent(jScrollPane1, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.TRAILING)
```

```
                    .addComponent(jLabel3, javax.swing.GroupLayout.PREFERRED_SIZE, 232,
javax.swing.GroupLayout.PREFERRED_SIZE)
                    .addComponent(jLabel2, javax.swing.GroupLayout.PREFERRED_SIZE, 232,
javax.swing.GroupLayout.PREFERRED_SIZE)))
                .addContainerGap(57, Short.MAX_VALUE))
        );
        layout.setVerticalGroup(
            layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
            .addGroup(layout.createSequentialGroup()
                .addGap(22, 22, 22)
                .addComponent(jLabel1)
                .addGap(35, 35, 35)
                .addComponent(jLabel2)
                .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
                .addComponent(jLabel3)
                .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
                .addComponent(jScrollPane1, javax.swing.GroupLayout.PREFERRED_SIZE, 138,
javax.swing.GroupLayout.PREFERRED_SIZE)
                .addGap(18, 18, 18)
                .addComponent(btn_calcular)
                .addGap(26, 26, 26)
                .addComponent(jLabel4)
                .addGap(29, 29, 29)
                .addComponent(jScrollPane2, javax.swing.GroupLayout.PREFERRED_SIZE, 138,
javax.swing.GroupLayout.PREFERRED_SIZE)
                .addGap(18, 18, 18)
                .addComponent(btn_salir)
                .addContainerGap(javax.swing.GroupLayout.DEFAULT_SIZE,
Short.MAX_VALUE))
        );

        pack();
    }// </editor-fold>//GEN-END:initComponents

    private void btn_calcularActionPerformed(java.awt.event.ActionEvent evt)
{//GEN-FIRST:event_btn_calcularActionPerformed
        String[] txt_input_values = txt_input.getText().split("\n");
        double[] values = new double[txt_input_values.length];
        for (int i=0; i<txt_input_values.length; i++) {
            values[i] = Double.parseDouble(txt_input_values[i]);
        }
        Operations myOperations = new Operations(values);
        String computed_operations = myOperations.getOperationString();

        txt_output.setText(computed_operations);
    }//GEN-LAST:event_btn_calcularActionPerformed
```

```
    private void btn_salirActionPerformed(java.awt.event.ActionEvent evt)
{//GEN-FIRST:event_btn_salirActionPerformed
        dispose();
    }//GEN-LAST:event_btn_salirActionPerformed

    /**
     * @param args the command line arguments
     */
    public static void main(String args[]) {
        /* Set the Nimbus look and feel */
        //<editor-fold defaultstate="collapsed" desc=" Look and feel setting code (optional) ">
        /* If Nimbus (introduced in Java SE 6) is not available, stay with the default look and
feel.
         * For details see
http://download.oracle.com/javase/tutorial/uiswing/lookandfeel/plaf.html
         */
        try {
            for (javax.swing.UIManager.LookAndFeelInfo info :
javax.swing.UIManager.getInstalledLookAndFeels()) {
                if ("Nimbus".equals(info.getName())) {
                    javax.swing.UIManager.setLookAndFeel(info.getClassName());
                    break;
                }
            }
        } catch (ClassNotFoundException ex) {

java.util.logging.Logger.getLogger(MainWindow.class.getName()).log(java.util.logging.Level.
SEVERE, null, ex);
        } catch (InstantiationException ex) {

java.util.logging.Logger.getLogger(MainWindow.class.getName()).log(java.util.logging.Level.
SEVERE, null, ex);
        } catch (IllegalAccessException ex) {

java.util.logging.Logger.getLogger(MainWindow.class.getName()).log(java.util.logging.Level.
SEVERE, null, ex);
        } catch (javax.swing.UnsupportedLookAndFeelException ex) {

java.util.logging.Logger.getLogger(MainWindow.class.getName()).log(java.util.logging.Level.
SEVERE, null, ex);
        }
        //</editor-fold>

        /* Create and display the form */
        java.awt.EventQueue.invokeLater(new Runnable() {
            public void run() {
                new MainWindow().setVisible(true);
            }
```

```
        });
    }

    // Variables declaration - do not modify//GEN-BEGIN:variables
    private javax.swing.JButton btn_calcular;
    private javax.swing.JButton btn_salir;
    private javax.swing.JLabel jLabel1;
    private javax.swing.JLabel jLabel2;
    private javax.swing.JLabel jLabel3;
    private javax.swing.JLabel jLabel4;
    private javax.swing.JScrollPane jScrollPane1;
    private javax.swing.JScrollPane jScrollPane2;
    private javax.swing.JTextArea txt_input;
    private javax.swing.JTextArea txt_output;
    // End of variables declaration//GEN-END:variables
}
```

Interfaz gráfica

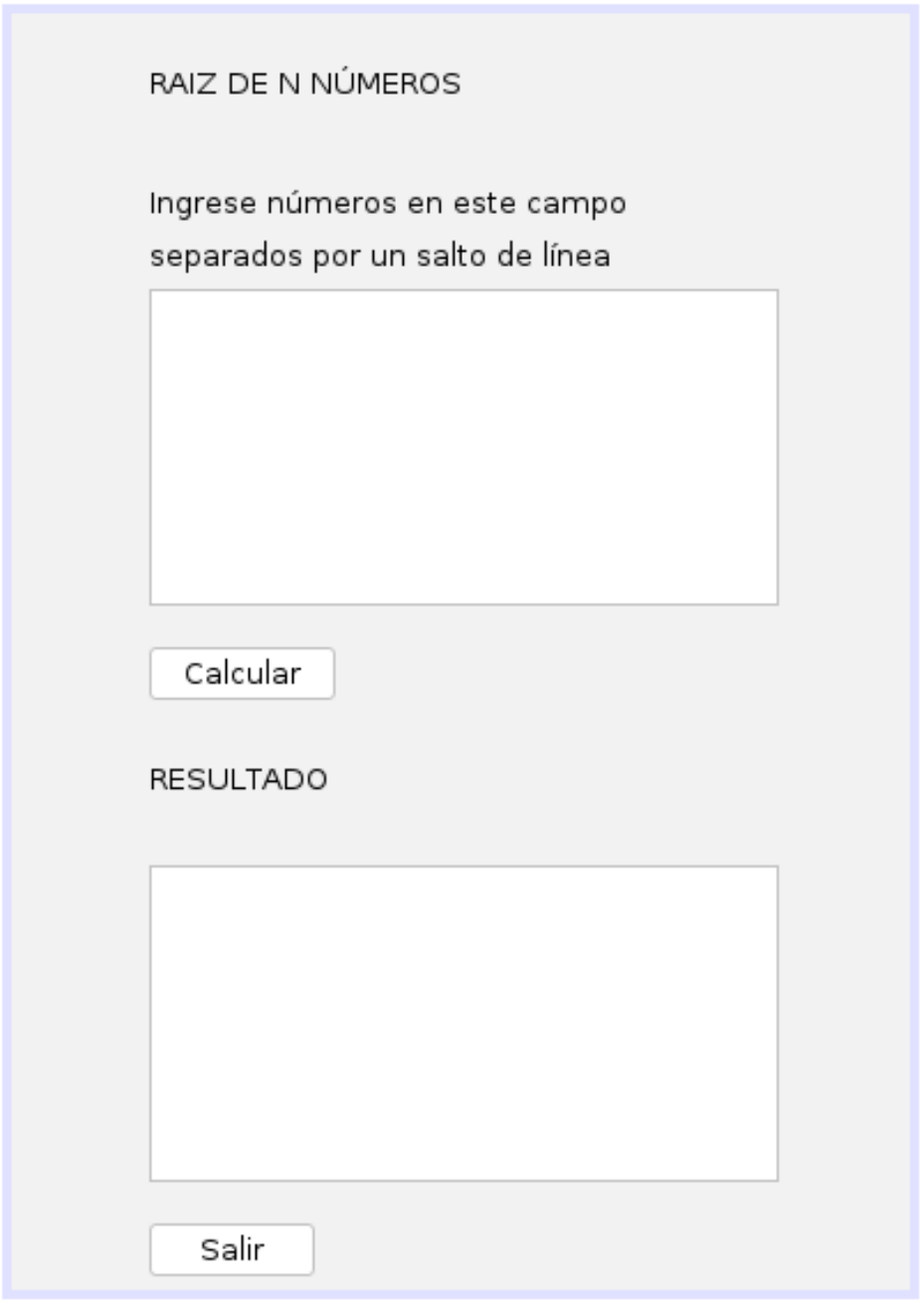
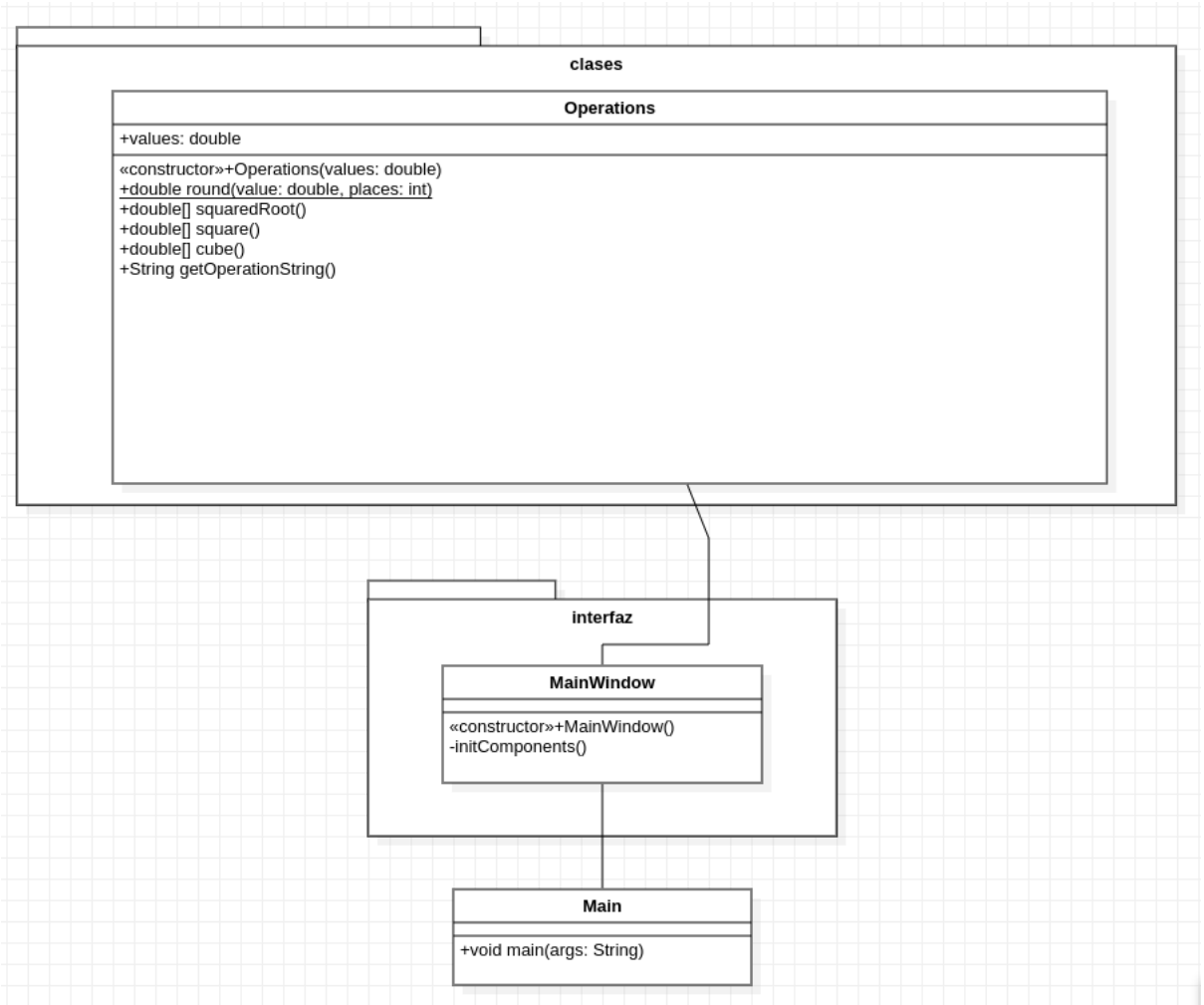


Diagrama de clases



Código en github:

https://github.com/jmcada2503/ejercicios_poo/tree/master/actividad3/ejercicio40cap5gui

Ejercicio 41 del capítulo 5

Clase principal

```
import interfaz.MainWindow;

public class Main {

    public static void main(String[] args) {

        MainWindow window = new MainWindow();
        window.setVisible(true);

    }
}
```

Clase NumberSeries

```
package clases;

import java.util.Arrays;

public class NumberSeries {

    public double[] values;

    public NumberSeries(double[] values) {
        this.values = values;
    }

    public double[] getOrderedSeries() {
        double[] ans = Arrays.copyOf(this.values, this.values.length);

        for (int i=0; i<(ans.length-1); i++) {
            for (int j=0; j<ans.length; j++) {
                if (ans[j] > ans[j+1]) {
                    double aux = ans[j];
                    ans[j] = ans[j+1];
                    ans[j+1] = aux;
                }
            }
        }

        return ans;
    }
```

```
    public void orderSeries() {
        for (int i=0; i<this.values.length; i++) {
            for (int j=0; j<(this.values.length-1); j++) {
                if (this.values[j] > this.values[j+1]) {
                    double aux = this.values[j];
                    this.values[j] = this.values[j+1];
                    this.values[j+1] = aux;
                }
            }
        }
    }

    public String getCsvString() {
        String ans = "";

        for (int i=0; i<this.values.length; i++) {
            ans += String.valueOf(this.values[i])+",";
        }
        ans = ans.substring(0, ans.length()-1);

        return ans;
    }

}
```

Clase de la interfaz gráfica

```
/*
 * Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt to change
this license
 * Click nbfs://nbhost/SystemFileSystem/Templates/GUIForms/JFrame.java to edit this
template
 */
package interfaz;

import clases.NumberSeries;

public class MainWindow extends javax.swing.JFrame {

    /**
     * Creates new form MainWindow
     */
    public MainWindow() {
        initComponents();
    }
```

```
    /**
     * This method is called from within the constructor to initialize the form.
     * WARNING: Do NOT modify this code. The content of this method is always
     * regenerated by the Form Editor.
     */
    @SuppressWarnings("unchecked")
    // <editor-fold defaultstate="collapsed" desc="Generated
Code">//GEN-BEGIN:initComponents
    private void initComponents() {

        jLabel1 = new javax.swing.JLabel();
        jLabel2 = new javax.swing.JLabel();
        txt_values = new javax.swing.JTextField();
        jLabel3 = new javax.swing.JLabel();
        txt_mayor = new javax.swing.JTextField();
        btn_ordenar = new javax.swing.JButton();
        btn_salir = new javax.swing.JButton();

        setDefaultCloseOperation(javax.swing.WindowConstants.EXIT_ON_CLOSE);

        jLabel1.setText("MAYOR ELEMENTO");

        jLabel2.setText("Ingrese una serie de números separados por comas");

        txt_values.addActionListener(new java.awt.event.ActionListener() {
            public void actionPerformed(java.awt.event.ActionEvent evt) {
                txt_valuesActionPerformed(evt);
            }
        });

        jLabel3.setText("Mayor:");

        txt_mayor.addActionListener(new java.awt.event.ActionListener() {
            public void actionPerformed(java.awt.event.ActionEvent evt) {
                txt_mayorActionPerformed(evt);
            }
        });

        btn_ordenar.setText("Ordenar");
        btn_ordenar.addActionListener(new java.awt.event.ActionListener() {
            public void actionPerformed(java.awt.event.ActionEvent evt) {
                btn_ordenarActionPerformed(evt);
            }
        });

        btn_salir.setText("Salir");
        btn_salir.addActionListener(new java.awt.event.ActionListener() {
            public void actionPerformed(java.awt.event.ActionEvent evt) {
```

```
            btn_salirActionPerformed(evt);
        }
    });

    javax.swing.GroupLayout layout = new javax.swing.GroupLayout(getContentPane());
    getContentPane().setLayout(layout);
    layout.setHorizontalGroup(
        layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
        .addGroup(layout.createSequentialGroup()
            .addGap(38, 38, 38)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING, false)
                .addComponent(jLabel2, javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
                .addComponent(jLabel1)
                .addComponent(txt_values)
                .addGroup(javax.swing.GroupLayout.Alignment.TRAILING,
layout.createSequentialGroup()
                    .addComponent(btn_ordenar)
                    .addGap(18, 18, 18)
                    .addComponent(btn_salir)
                    .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED,
javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
                    .addComponent(jLabel3)
                    .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
                    .addComponent(txt_mayor, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)))
            .addContainerGap(38, Short.MAX_VALUE))
    );
    layout.setVerticalGroup(
        layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
        .addGroup(layout.createSequentialGroup()
            .addGap(31, 31, 31)
            .addComponent(jLabel1)
            .addGap(30, 30, 30)
            .addComponent(jLabel2)
            .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.UNRELATED)
            .addComponent(txt_values, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)
            .addGap(18, 18, 18)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
                .addComponent(jLabel3)
                .addComponent(txt_mayor, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)
                .addComponent(btn_ordenar)
                .addComponent(btn_salir))
            .addContainerGap(47, Short.MAX_VALUE))
```

```
        );

        pack();
    }// </editor-fold>//GEN-END:initComponents

    private void txt_valuesActionPerformed(java.awt.event.ActionEvent evt)
{//GEN-FIRST:event_txt_valuesActionPerformed
        // TODO add your handling code here:
    }//GEN-LAST:event_txt_valuesActionPerformed

    private void txt_mayorActionPerformed(java.awt.event.ActionEvent evt)
{//GEN-FIRST:event_txt_mayorActionPerformed
        // TODO add your handling code here:
    }//GEN-LAST:event_txt_mayorActionPerformed

    private void btn_ordenarActionPerformed(java.awt.event.ActionEvent evt)
{//GEN-FIRST:event_btn_ordenarActionPerformed
        String[] input = txt_values.getText().split(",");
        double[] values = new double[input.length];
        for (int i=0; i<input.length; i++) {
            values[i] = Double.parseDouble(input[i]);
        }

        NumberSeries series = new NumberSeries(values);
        series.orderSeries();
        txt_values.setText(series.getCsvString());
        txt_mayor.setText(String.valueOf(series.values[series.values.length-1]));
    }//GEN-LAST:event_btn_ordenarActionPerformed

    private void btn_salirActionPerformed(java.awt.event.ActionEvent evt)
{//GEN-FIRST:event_btn_salirActionPerformed
        dispose();
    }//GEN-LAST:event_btn_salirActionPerformed

    /**
     * @param args the command line arguments
     */
    public static void main(String args[]) {
        /* Set the Nimbus look and feel */
        //<editor-fold defaultstate="collapsed" desc=" Look and feel setting code (optional) ">
        /* If Nimbus (introduced in Java SE 6) is not available, stay with the default look and
feel.
         * For details see
http://download.oracle.com/javase/tutorial/uiswing/lookandfeel/plaf.html
         */
        try {
            for (javax.swing.UIManager.LookAndFeelInfo info :
javax.swing.UIManager.getInstalledLookAndFeels()) {
```

```
            if ("Nimbus".equals(info.getName())) {
                javax.swing.UIManager.setLookAndFeel(info.getClassName());
                break;
            }
        }
    } catch (ClassNotFoundException ex) {

java.util.logging.Logger.getLogger(MainWindow.class.getName()).log(java.util.logging.Level.
SEVERE, null, ex);
    } catch (InstantiationException ex) {

java.util.logging.Logger.getLogger(MainWindow.class.getName()).log(java.util.logging.Level.
SEVERE, null, ex);
    } catch (IllegalAccessException ex) {

java.util.logging.Logger.getLogger(MainWindow.class.getName()).log(java.util.logging.Level.
SEVERE, null, ex);
    } catch (javax.swing.UnsupportedLookAndFeelException ex) {

java.util.logging.Logger.getLogger(MainWindow.class.getName()).log(java.util.logging.Level.
SEVERE, null, ex);
    }
    //</editor-fold>

    /* Create and display the form */
    java.awt.EventQueue.invokeLater(new Runnable() {
        public void run() {
            new MainWindow().setVisible(true);
        }
    });
}

// Variables declaration - do not modify//GEN-BEGIN:variables
private javax.swing.JButton btn_ordenar;
private javax.swing.JButton btn_salir;
private javax.swing.JLabel jLabel1;
private javax.swing.JLabel jLabel2;
private javax.swing.JLabel jLabel3;
private javax.swing.JTextField txt_mayor;
private javax.swing.JTextField txt_values;
// End of variables declaration//GEN-END:variables
}
```

Interfaz gráfica

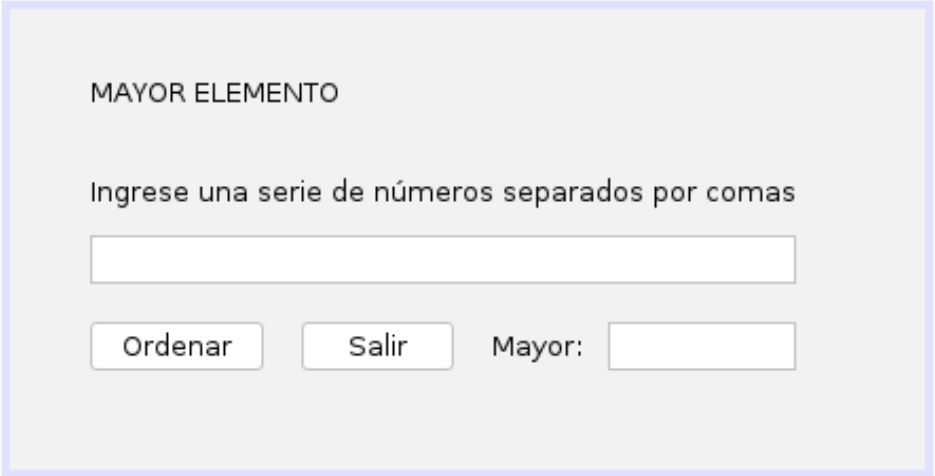
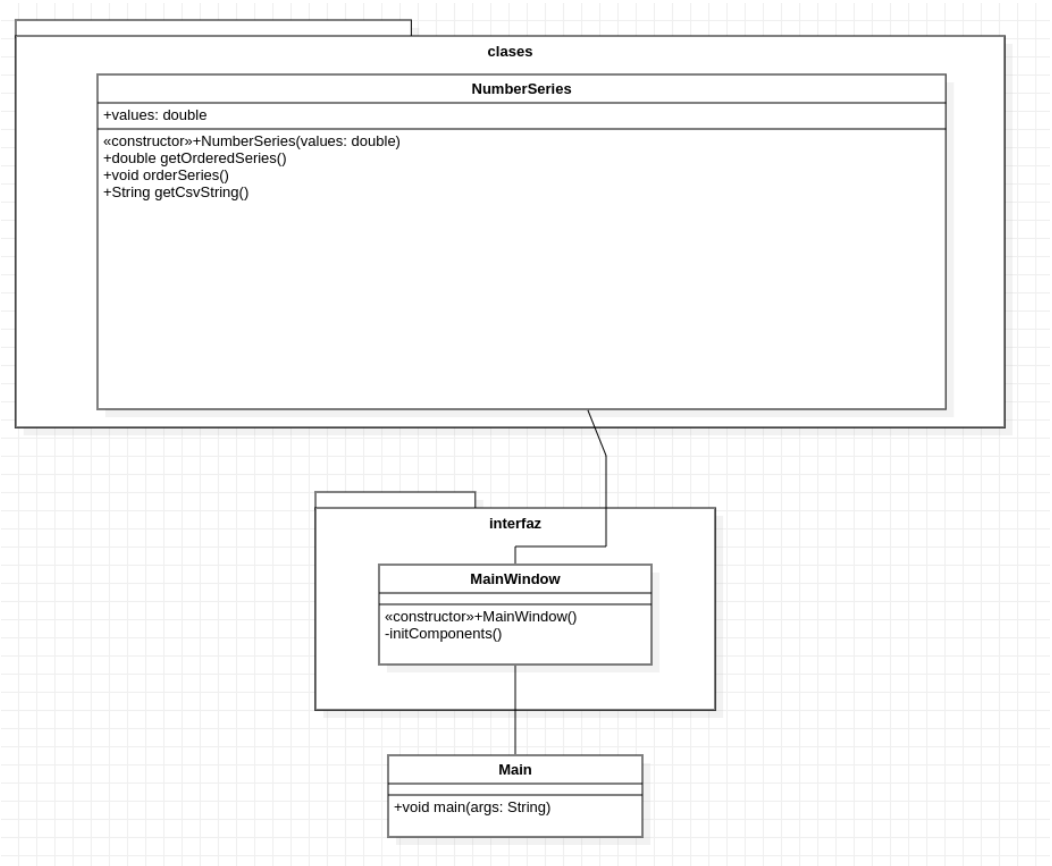


Diagrama de clases



Código en github:

https://github.com/jmcada2503/ejercicios_poo/tree/master/actividad3/ejercicio41cap5gui

Código completo de todos los ejercicios en github:
https://github.com/jmcada2503/ejercicios_poo/tree/master/actividad3

Parte 2

Ejercicio Clases Figuras Geométricas

Clase Circulo

```
package figura;

public class Circulo implements FiguraBase {

    public double radio;

    public Circulo() {
    }

    public Circulo(double radio) {
        this.radio = radio;
    }

    public double area() {
        return (Math.PI * Math.pow(this.radio, 2));
    }

    public double perimetro() {
        return (2 * Math.PI * this.radio);
    }

}
```

Clase Cuadrado

```
package figura;

public class Cuadrado implements FiguraBase {

    public double lado;

    public Cuadrado() {
    }

    public Cuadrado(double lado) {
        this.lado = lado;
    }

    public double area() {
        return Math.pow(this.lado, 2);
    }
```

```
    public double perimetro() {
        return (4 * this.lado);
    }

}
```

Clase Rectangulo

```
package figura;

public class Rectangulo implements FiguraBase {

    public double base, altura;

    public Rectangulo() {
    }

    public Rectangulo(double base, double altura) {
        this.base = base;
        this.altura = altura;
    }

    public double area() {
        return (base * altura);
    }

    public double perimetro() {
        return ((2*base) + (2*altura));
    }

}
```

Clase Triangulo

```
package figura;

public class Triangulo implements FiguraBase {

    public double base, altura;

    public Triangulo() {
    }

    public Triangulo(double base, double altura) {
        this.base = base;
        this.altura = altura;
    }

    public double area() {
        return this.base * this.altura;
```

```
    }

    public double hipotenusa() {
        return Math.sqrt(Math.pow(this.base, 2) + Math.pow(this.altura, 2));
    }

    public double perimetro() {
        return (this.base + this.altura + this.hipotenusa());
    }

    public String tipo() {
        if ((this.base == this.altura) || (this.base == 0) || (this.altura == 0)) {
            return "Isóceles";
        }
        else {
            return "Escaleno";
        }
    }

}
```

Interfaz FiguraBase

```
package figura;

public interface FiguraBase {

    public double area();
    public double perimetro();

}
```

Interfaces gráficas

Interfaz del Circulo (CircleWindow)

```
/*
 * Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt to change this license
 * Click nbfs://nbhost/SystemFileSystem/Templates/GUIForms/JFrame.java to edit this template
 */
package interfaz;

/**
 *
 * @author jmcada
 */

import figura.Circulo;
```

```
public class CircleWindow extends javax.swing.JFrame {

    /**
     * Creates new form Circle
     */

    public Circulo circle;
    public MainWindow myMainWindow;

    public void computeCircle() {
        this.txt_radio.setText(String.valueOf(this.circle.radio));
        this.txt_area.setText(String.valueOf(this.circle.area()));
        this.txt_perimetro.setText(String.valueOf(this.circle.perimetro()));
    }

    public void saveCircle() {
        this.circle.radio = Double.parseDouble(this.txt_radio.getText());
    }

    public CircleWindow(Circulo circle, MainWindow myMainWindow) {
        initComponents();

        this.circle = circle;
        this.myMainWindow = myMainWindow;

        this.computeCircle();
    }

    /**
     * This method is called from within the constructor to initialize the form.
     * WARNING: Do NOT modify this code. The content of this method is always
     * regenerated by the Form Editor.
     */
    @SuppressWarnings("unchecked")
    // <editor-fold defaultstate="collapsed" desc="Generated Code">//GEN-BEGIN:initComponents
    private void initComponents() {

        jLabel1 = new javax.swing.JLabel();
        btn_salir = new javax.swing.JButton();
        jLabel2 = new javax.swing.JLabel();
        txt_radio = new javax.swing.JTextField();
        btn_calcular = new javax.swing.JButton();
        jLabel3 = new javax.swing.JLabel();
        txt_area = new javax.swing.JTextField();
        jLabel4 = new javax.swing.JLabel();
        txt_perimetro = new javax.swing.JTextField();

        setDefaultCloseOperation(javax.swing.WindowConstants.EXIT_ON_CLOSE);

        jLabel1.setText("CIRCULO");
```

```
        btn_salir.setText("Salir");
        btn_salir.addActionListener(new java.awt.event.ActionListener() {
            public void actionPerformed(java.awt.event.ActionEvent evt) {
                btn_salirActionPerformed(evt);
            }
        });

        jLabel2.setText("Radio:");

        btn_calcular.setText("Calcular");
        btn_calcular.addActionListener(new java.awt.event.ActionListener() {
            public void actionPerformed(java.awt.event.ActionEvent evt) {
                btn_calcularActionPerformed(evt);
            }
        });

        jLabel3.setText("Area:");

        jLabel4.setText("Perimetro:");

        javax.swing.GroupLayout layout = new javax.swing.GroupLayout(getContentPane());
        getContentPane().setLayout(layout);
        layout.setHorizontalGroup(
            layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
            .addGroup(layout.createSequentialGroup()
                .addGap(49, 49, 49)
                .addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.TRAILING)
                    .addComponent(btn_salir)
                    .addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING,
false)
                        .addComponent(jLabel1)
                        .addGroup(layout.createSequentialGroup()
                            .addComponent(jLabel2)
                            .addGap(18, 18, 18)
                            .addComponent(txt_radio, javax.swing.GroupLayout.PREFERRED_SIZE, 255,
javax.swing.GroupLayout.PREFERRED_SIZE))
                        .addComponent(btn_calcular, javax.swing.GroupLayout.Alignment.TRAILING)
                        .addGroup(layout.createSequentialGroup()
                            .addComponent(jLabel3)
                            .addGap(18, 18, 18)
                            .addComponent(txt_area))
                        .addGroup(layout.createSequentialGroup()
                            .addComponent(jLabel4)
                            .addGap(18, 18, 18)
                            .addComponent(txt_perimetro))))
                .addContainerGap(39, Short.MAX_VALUE))
        );
        layout.setVerticalGroup(
            layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
            .addGroup(layout.createSequentialGroup()
                .addGap(18, 18, 18)
                .addComponent(jLabel1)
```

```
            .addGap(27, 27, 27)
            .addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
                .addComponent(jLabel2)
                .addComponent(txt_radio, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))
            .addGap(18, 18, 18)
            .addComponent(btn_calcular)
            .addGap(36, 36, 36)
            .addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
                .addComponent(jLabel3)
                .addComponent(txt_area, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))
            .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.UNRELATED)
            .addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
                .addComponent(jLabel4)
                .addComponent(txt_perimetro, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))
            .addGap(18, 18, 18)
            .addComponent(btn_salir)
            .addContainerGap(29, Short.MAX_VALUE))
        );

        pack();
    }// </editor-fold>//GEN-END:initComponents

    private void btn_salirActionPerformed(java.awt.event.ActionEvent evt)
{//GEN-FIRST:event_btn_salirActionPerformed
        // TODO add your handling code here:
        this.saveCircle();
        this.myMainWindow.updateCircle();
        dispose();
    }//GEN-LAST:event_btn_salirActionPerformed

    private void btn_calcularActionPerformed(java.awt.event.ActionEvent evt)
{//GEN-FIRST:event_btn_calcularActionPerformed
        // TODO add your handling code here:
        this.saveCircle();
        this.computeCircle();
    }//GEN-LAST:event_btn_calcularActionPerformed

    // Variables declaration - do not modify//GEN-BEGIN:variables
    private javax.swing.JButton btn_calcular;
    private javax.swing.JButton btn_salir;
    private javax.swing.JLabel jLabel1;
    private javax.swing.JLabel jLabel2;
    private javax.swing.JLabel jLabel3;
    private javax.swing.JLabel jLabel4;
    private javax.swing.JTextField txt_area;
    private javax.swing.JTextField txt_perimetro;
    private javax.swing.JTextField txt_radio;
    // End of variables declaration//GEN-END:variables
}
```

Interfaz de rectangulo (RectangleWindow)

```
/*
 * Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt to change this license
 * Click nbfs://nbhost/SystemFileSystem/Templates/GUIForms/JFrame.java to edit this template
 */
package interfaz;

/**
 *
 * @author jmcada
 */

import figura.Rectangulo;

public class RectangleWindow extends javax.swing.JFrame {

    /**
     * Creates new form RectangleWindow
     */

    public Rectangulo rectangle;
    public MainWindow myMainWindow;

    public void computeRectangle() {
        this.txt_base.setText(String.valueOf(this.rectangle.base));
        this.txt_altura.setText(String.valueOf(this.rectangle.altura));
        this.txt_area.setText(String.valueOf(this.rectangle.area()));
        this.txt_perimetro.setText(String.valueOf(this.rectangle.perimetro()));
    }

    public void saveRectangle() {
        this.rectangle.base = Double.parseDouble(this.txt_base.getText());
        this.rectangle.altura = Double.parseDouble(this.txt_altura.getText());
    }

    public RectangleWindow(Rectangulo rectangle, MainWindow myMainWindow) {
        initComponents();

        this.rectangle = rectangle;
        this.myMainWindow = myMainWindow;

        this.computeRectangle();
    }

    /**
     * This method is called from within the constructor to initialize the form.
     * WARNING: Do NOT modify this code. The content of this method is always
     * regenerated by the Form Editor.
     */
    @SuppressWarnings("unchecked")
    // <editor-fold defaultstate="collapsed" desc="Generated Code">//GEN-BEGIN:initComponents
```

```
private void initComponents() {

    txt_base = new javax.swing.JTextField();
    btn_calcular = new javax.swing.JButton();
    jLabel3 = new javax.swing.JLabel();
    txt_area = new javax.swing.JTextField();
    jLabel4 = new javax.swing.JLabel();
    txt_perimetro = new javax.swing.JTextField();
    jLabel1 = new javax.swing.JLabel();
    btn_salir = new javax.swing.JButton();
    jLabel2 = new javax.swing.JLabel();
    jLabel5 = new javax.swing.JLabel();
    txt_altura = new javax.swing.JTextField();

    setDefaultCloseOperation(javax.swing.WindowConstants.EXIT_ON_CLOSE);

    txt_base.addActionListener(new java.awt.event.ActionListener() {
        public void actionPerformed(java.awt.event.ActionEvent evt) {
            txt_baseActionPerformed(evt);
        }
    });

    btn_calcular.setText("Calcular");
    btn_calcular.addActionListener(new java.awt.event.ActionListener() {
        public void actionPerformed(java.awt.event.ActionEvent evt) {
            btn_calcularActionPerformed(evt);
        }
    });

    jLabel3.setText("Area:");

    jLabel4.setText("Perimetro:");

    jLabel1.setText("RECTANGULO");

    btn_salir.setText("Salir");
    btn_salir.addActionListener(new java.awt.event.ActionListener() {
        public void actionPerformed(java.awt.event.ActionEvent evt) {
            btn_salirActionPerformed(evt);
        }
    });

    jLabel2.setText("Base:");

    jLabel5.setText("Altura:");

    txt_altura.addActionListener(new java.awt.event.ActionListener() {
        public void actionPerformed(java.awt.event.ActionEvent evt) {
            txt_alturaActionPerformed(evt);
        }
    });
```

```
        javax.swing.GroupLayout layout = new javax.swing.GroupLayout(getContentPane());
        getContentPane().setLayout(layout);
        layout.setHorizontalGroup(
            layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
            .addGroup(javax.swing.GroupLayout.Alignment.TRAILING, layout.createSequentialGroup()
                .addContainerGap(44, Short.MAX_VALUE)
                .addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.TRAILING)
                    .addComponent(btn_salir)
                    .addGroup(layout.createSequentialGroup()
                        .addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING,
false)
                            .addGroup(layout.createSequentialGroup()
                                .addComponent(jLabel5)
                                .addGap(18, 18, 18)
                                .addComponent(txt_altura))
                            .addComponent(jLabel1)
                            .addGroup(layout.createSequentialGroup()
                                .addComponent(jLabel2)
                                .addGap(18, 18, 18)
                                .addComponent(txt_base, javax.swing.GroupLayout.PREFERRED_SIZE, 255,
javax.swing.GroupLayout.PREFERRED_SIZE))
                            .addComponent(btn_calcular, javax.swing.GroupLayout.Alignment.TRAILING)
                            .addGroup(layout.createSequentialGroup()
                                .addComponent(jLabel3)
                                .addGap(18, 18, 18)
                                .addComponent(txt_area))
                            .addGroup(layout.createSequentialGroup()
                                .addComponent(jLabel4)
                                .addGap(18, 18, 18)
                                .addComponent(txt_perimetro, javax.swing.GroupLayout.PREFERRED_SIZE,
223, javax.swing.GroupLayout.PREFERRED_SIZE)))
                        .addGap(7, 7, 7)))
                .addGap(40, 40, 40))
        );
        layout.setVerticalGroup(
            layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
            .addGroup(layout.createSequentialGroup()
                .addGap(18, 18, 18)
                .addComponent(jLabel1)
                .addGap(27, 27, 27)
                .addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
                    .addComponent(jLabel2)
                    .addComponent(txt_base, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))
                .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.UNRELATED)
                .addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
                    .addComponent(jLabel5)
                    .addComponent(txt_altura, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))
                .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED, 24,
Short.MAX_VALUE)
                .addComponent(btn_calcular)
```

```
            .addGap(36, 36, 36)
            .addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
                .addComponent(jLabel3)
                .addComponent(txt_area, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))
            .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.UNRELATED)
            .addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
                .addComponent(jLabel4)
                .addComponent(txt_perimetro, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))
            .addGap(18, 18, 18)
            .addComponent(btn_salir)
            .addGap(22, 22, 22))
        );

        pack();
    }// </editor-fold>//GEN-END:initComponents

    private void txt_baseActionPerformed(java.awt.event.ActionEvent evt)
{//GEN-FIRST:event_txt_baseActionPerformed
        // TODO add your handling code here:
    }//GEN-LAST:event_txt_baseActionPerformed

    private void btn_calcularActionPerformed(java.awt.event.ActionEvent evt)
{//GEN-FIRST:event_btn_calcularActionPerformed
        // TODO add your handling code here:
        this.saveRectangle();
        this.computeRectangle();
    }//GEN-LAST:event_btn_calcularActionPerformed

    private void btn_salirActionPerformed(java.awt.event.ActionEvent evt)
{//GEN-FIRST:event_btn_salirActionPerformed
        // TODO add your handling code here:
        this.saveRectangle();
        this.myMainWindow.updateRectangle();
        dispose();
    }//GEN-LAST:event_btn_salirActionPerformed

    private void txt_alturaActionPerformed(java.awt.event.ActionEvent evt)
{//GEN-FIRST:event_txt_alturaActionPerformed
        // TODO add your handling code here:
    }//GEN-LAST:event_txt_alturaActionPerformed


    // Variables declaration - do not modify//GEN-BEGIN:variables
    private javax.swing.JButton btn_calcular;
    private javax.swing.JButton btn_salir;
    private javax.swing.JLabel jLabel1;
    private javax.swing.JLabel jLabel2;
    private javax.swing.JLabel jLabel3;
    private javax.swing.JLabel jLabel4;
    private javax.swing.JLabel jLabel5;
```

```
    private javax.swing.JTextField txt_altura;
    private javax.swing.JTextField txt_area;
    private javax.swing.JTextField txt_base;
    private javax.swing.JTextField txt_perimetro;
    // End of variables declaration//GEN-END:variables
}
```

Interfaz del cuadrado (SquareWindow)

```
/*
 * Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt to change this license
 * Click nbfs://nbhost/SystemFileSystem/Templates/GUIForms/JFrame.java to edit this template
 */
package interfaz;

/**
 *
 * @author jmcada
 */

import figura.Cuadrado;

public class SquareWindow extends javax.swing.JFrame {

    /**
     * Creates new form SquareWindow
     */

    public Cuadrado square;
    public MainWindow myMainWindow;

    public void computeSquare() {
        this.txt_lado.setText(String.valueOf(this.square.lado));
        this.txt_area.setText(String.valueOf(this.square.area()));
        this.txt_perimetro.setText(String.valueOf(this.square.perimetro()));
    }

    public void saveSquare() {
        this.square.lado = Double.parseDouble(this.txt_lado.getText());
    }

    public SquareWindow(Cuadrado square, MainWindow myMainWindow) {
        initComponents();

        this.square = square;
        this.myMainWindow = myMainWindow;

        this.computeSquare();
    }

    /**
```

```
 * This method is called from within the constructor to initialize the form.
 * WARNING: Do NOT modify this code. The content of this method is always
 * regenerated by the Form Editor.
 */
@SuppressWarnings("unchecked")
// <editor-fold defaultstate="collapsed" desc="Generated Code">//GEN-BEGIN:initComponents
private void initComponents() {

    txt_perimetro = new javax.swing.JTextField();
    jLabel1 = new javax.swing.JLabel();
    btn_salir = new javax.swing.JButton();
    jLabel2 = new javax.swing.JLabel();
    txt_lado = new javax.swing.JTextField();
    btn_calcular = new javax.swing.JButton();
    jLabel3 = new javax.swing.JLabel();
    txt_area = new javax.swing.JTextField();
    jLabel4 = new javax.swing.JLabel();

    setDefaultCloseOperation(javax.swing.WindowConstants.EXIT_ON_CLOSE);

    jLabel1.setText("CUADRADO");

    btn_salir.setText("Salir");
    btn_salir.addActionListener(new java.awt.event.ActionListener() {
        public void actionPerformed(java.awt.event.ActionEvent evt) {
            btn_salirActionPerformed(evt);
        }
    });

    jLabel2.setText("Lado:");

    txt_lado.addActionListener(new java.awt.event.ActionListener() {
        public void actionPerformed(java.awt.event.ActionEvent evt) {
            txt_ladoActionPerformed(evt);
        }
    });

    btn_calcular.setText("Calcular");
    btn_calcular.addActionListener(new java.awt.event.ActionListener() {
        public void actionPerformed(java.awt.event.ActionEvent evt) {
            btn_calcularActionPerformed(evt);
        }
    });

    jLabel3.setText("Area:");

    jLabel4.setText("Perimetro:");

    javax.swing.GroupLayout layout = new javax.swing.GroupLayout(getContentPane());
    getContentPane().setLayout(layout);
    layout.setHorizontalGroup(
        layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
```

```
            .addGroup(layout.createSequentialGroup()
                .addGap(49, 49, 49)
                .addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.TRAILING)
                    .addComponent(btn_salir)
                    .addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING,
false)
                        .addComponent(jLabel1)
                        .addGroup(layout.createSequentialGroup()
                            .addComponent(jLabel2)
                            .addGap(18, 18, 18)
                            .addComponent(txt_lado, javax.swing.GroupLayout.PREFERRED_SIZE, 255,
javax.swing.GroupLayout.PREFERRED_SIZE))
                        .addComponent(btn_calcular, javax.swing.GroupLayout.Alignment.TRAILING)
                        .addGroup(layout.createSequentialGroup()
                            .addComponent(jLabel3)
                            .addGap(18, 18, 18)
                            .addComponent(txt_area))
                        .addGroup(layout.createSequentialGroup()
                            .addComponent(jLabel4)
                            .addGap(18, 18, 18)
                            .addComponent(txt_perimetro))))
                .addContainerGap(55, Short.MAX_VALUE))
        );
        layout.setVerticalGroup(
            layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
            .addGroup(layout.createSequentialGroup()
                .addGap(18, 18, 18)
                .addComponent(jLabel1)
                .addGap(27, 27, 27)
                .addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
                    .addComponent(jLabel2)
                    .addComponent(txt_lado, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))
                .addGap(18, 18, 18)
                .addComponent(btn_calcular)
                .addGap(36, 36, 36)
                .addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
                    .addComponent(jLabel3)
                    .addComponent(txt_area, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))
                .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.UNRELATED)
                .addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
                    .addComponent(jLabel4)
                    .addComponent(txt_perimetro, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))
                .addGap(18, 18, 18)
                .addComponent(btn_salir)
                .addContainerGap(46, Short.MAX_VALUE))
        );

        pack();
    }// </editor-fold>//GEN-END:initComponents
```

```
    private void btn_salirActionPerformed(java.awt.event.ActionEvent evt)
{//GEN-FIRST:event_btn_salirActionPerformed
        // TODO add your handling code here:
        this.saveSquare();
        this.myMainWindow.updateSquare();
        dispose();
    }//GEN-LAST:event_btn_salirActionPerformed

    private void btn_calcularActionPerformed(java.awt.event.ActionEvent evt)
{//GEN-FIRST:event_btn_calcularActionPerformed
        // TODO add your handling code here:
        this.saveSquare();
        this.computeSquare();
    }//GEN-LAST:event_btn_calcularActionPerformed

    private void txt_ladoActionPerformed(java.awt.event.ActionEvent evt)
{//GEN-FIRST:event_txt_ladoActionPerformed
        // TODO add your handling code here:
    }//GEN-LAST:event_txt_ladoActionPerformed


    // Variables declaration - do not modify//GEN-BEGIN:variables
    private javax.swing.JButton btn_calcular;
    private javax.swing.JButton btn_salir;
    private javax.swing.JLabel jLabel1;
    private javax.swing.JLabel jLabel2;
    private javax.swing.JLabel jLabel3;
    private javax.swing.JLabel jLabel4;
    private javax.swing.JTextField txt_area;
    private javax.swing.JTextField txt_lado;
    private javax.swing.JTextField txt_perimetro;
    // End of variables declaration//GEN-END:variables
}
```

Interfaz del triangulo (TriangleWindow)

```
/*
 * Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt to change this license
 * Click nbfs://nbhost/SystemFileSystem/Templates/GUIForms/JFrame.java to edit this template
 */
package interfaz;

/**
 *
 * @author jmcada
 */

import figura.Triangulo;

public class TriangleWindow extends javax.swing.JFrame {
```

```
/**
 * Creates new form TriangleWindow
 */

public Triangulo triangle;
public MainWindow myMainWindow;

public void computeTriangle() {
    this.txt_base.setText(String.valueOf(this.triangle.base));
    this.txt_altura.setText(String.valueOf(this.triangle.altura));
    this.txt_area.setText(String.valueOf(this.triangle.area()));
    this.txt_perimetro.setText(String.valueOf(this.triangle.perimetro()));
    this.txt_hipotenusa.setText(String.valueOf(this.triangle.hipotenusa()));
    this.txt_tipo.setText(this.triangle.tipo());
}

public void saveTriangle() {
    this.triangle.base = Double.parseDouble(this.txt_base.getText());
    this.triangle.altura = Double.parseDouble(this.txt_altura.getText());
}

public TriangleWindow(Triangulo triangle, MainWindow myMainWindow) {
    initComponents();

    this.triangle = triangle;
    this.myMainWindow = myMainWindow;

    this.computeTriangle();
}

/**
 * This method is called from within the constructor to initialize the form.
 * WARNING: Do NOT modify this code. The content of this method is always
 * regenerated by the Form Editor.
 */
@SuppressWarnings("unchecked")
// <editor-fold defaultstate="collapsed" desc="Generated Code">//GEN-BEGIN:initComponents
private void initComponents() {

    jLabel1 = new javax.swing.JLabel();
    btn_salir = new javax.swing.JButton();
    jLabel2 = new javax.swing.JLabel();
    jLabel5 = new javax.swing.JLabel();
    txt_altura = new javax.swing.JTextField();
    txt_base = new javax.swing.JTextField();
    btn_calcular = new javax.swing.JButton();
    jLabel3 = new javax.swing.JLabel();
    txt_area = new javax.swing.JTextField();
    jLabel4 = new javax.swing.JLabel();
    txt_perimetro = new javax.swing.JTextField();
    jLabel6 = new javax.swing.JLabel();
```

```
txt_hipotenusa = new javax.swing.JTextField();
jLabel7 = new javax.swing.JLabel();
txt_tipo = new javax.swing.JTextField();

setDefaultCloseOperation(javax.swing.WindowConstants.EXIT_ON_CLOSE);

jLabel1.setText("TRIANGULO");

btn_salir.setText("Salir");
btn_salir.addActionListener(new java.awt.event.ActionListener() {
    public void actionPerformed(java.awt.event.ActionEvent evt) {
        btn_salirActionPerformed(evt);
    }
});

jLabel2.setText("Base:");

jLabel5.setText("Altura:");

txt_altura.addActionListener(new java.awt.event.ActionListener() {
    public void actionPerformed(java.awt.event.ActionEvent evt) {
        txt_alturaActionPerformed(evt);
    }
});

txt_base.addActionListener(new java.awt.event.ActionListener() {
    public void actionPerformed(java.awt.event.ActionEvent evt) {
        txt_baseActionPerformed(evt);
    }
});

btn_calcular.setText("Calcular");
btn_calcular.addActionListener(new java.awt.event.ActionListener() {
    public void actionPerformed(java.awt.event.ActionEvent evt) {
        btn_calcularActionPerformed(evt);
    }
});

jLabel3.setText("Area:");

txt_area.addActionListener(new java.awt.event.ActionListener() {
    public void actionPerformed(java.awt.event.ActionEvent evt) {
        txt_areaActionPerformed(evt);
    }
});

jLabel4.setText("Perimetro:");

txt_perimetro.addActionListener(new java.awt.event.ActionListener() {
    public void actionPerformed(java.awt.event.ActionEvent evt) {
        txt_perimetroActionPerformed(evt);
    }
```

```
        });

        jLabel6.setText("Hipotenusa:");

        txt_hipotenusa.addActionListener(new java.awt.event.ActionListener() {
            public void actionPerformed(java.awt.event.ActionEvent evt) {
                txt_hipotenusaActionPerformed(evt);
            }
        });

        jLabel7.setText("Tipo:");

        txt_tipo.addActionListener(new java.awt.event.ActionListener() {
            public void actionPerformed(java.awt.event.ActionEvent evt) {
                txt_tipoActionPerformed(evt);
            }
        });

        javax.swing.GroupLayout layout = new javax.swing.GroupLayout(getContentPane());
        getContentPane().setLayout(layout);
        layout.setHorizontalGroup(
            layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
            .addGroup(javax.swing.GroupLayout.Alignment.TRAILING, layout.createSequentialGroup()
                .addContainerGap(52, Short.MAX_VALUE)
                .addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING,
false)
                    .addGroup(layout.createSequentialGroup()
                        .addComponent(jLabel7)
                        .addGap(18, 18, 18)
                        .addComponent(txt_tipo))
                    .addGroup(layout.createSequentialGroup()
                        .addComponent(jLabel6)
                        .addGap(18, 18, 18)
                        .addComponent(txt_hipotenusa))
                    .addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.TRAILING)
                        .addGroup(layout.createSequentialGroup()
                            .addComponent(jLabel4)
                            .addGap(18, 18, 18)
                            .addComponent(txt_perimetro, javax.swing.GroupLayout.PREFERRED_SIZE, 224,
javax.swing.GroupLayout.PREFERRED_SIZE))
                        .addGroup(layout.createSequentialGroup()
                            .addComponent(jLabel3)
                            .addGap(18, 18, 18)
                            .addComponent(txt_area, javax.swing.GroupLayout.PREFERRED_SIZE, 255,
javax.swing.GroupLayout.PREFERRED_SIZE))
                        .addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING,
false)
                            .addGroup(layout.createSequentialGroup()
                                .addComponent(jLabel5)
                                .addGap(18, 18, 18)
                                .addComponent(txt_altura))
                            .addComponent(jLabel1)
```

```
                    .addGroup(layout.createSequentialGroup()
                        .addComponent(jLabel2)
                        .addGap(18, 18, 18)
                        .addComponent(txt_base, javax.swing.GroupLayout.PREFERRED_SIZE, 255,
javax.swing.GroupLayout.PREFERRED_SIZE))
                    .addComponent(btn_calcular, javax.swing.GroupLayout.Alignment.TRAILING)
                    .addComponent(btn_salir, javax.swing.GroupLayout.Alignment.TRAILING))))
            .addGap(42, 42, 42))
        );
        layout.setVerticalGroup(
            layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
            .addGroup(layout.createSequentialGroup()
                .addGap(27, 27, 27)
                .addComponent(jLabel1)
                .addGap(27, 27, 27)
                .addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
                    .addComponent(jLabel2)
                    .addComponent(txt_base, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))
                .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.UNRELATED)
                .addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
                    .addComponent(jLabel5)
                    .addComponent(txt_altura, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))
                .addGap(18, 18, 18)
                .addComponent(btn_calcular)
                .addGap(18, 18, 18)
                .addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
                    .addComponent(jLabel3)
                    .addComponent(txt_area, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))
                .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.UNRELATED)
                .addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
                    .addComponent(jLabel4)
                    .addComponent(txt_perimetro, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))
                .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.UNRELATED)
                .addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
                    .addComponent(jLabel6)
                    .addComponent(txt_hipotenusa, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))
                .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.UNRELATED)
                .addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
                    .addComponent(jLabel7)
                    .addComponent(txt_tipo, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))
                .addGap(18, 18, 18)
                .addComponent(btn_salir)
                .addContainerGap(30, Short.MAX_VALUE))
        );

        pack();
```

```
    }// </editor-fold>//GEN-END:initComponents

    private void txt_alturaActionPerformed(java.awt.event.ActionEvent evt)
{//GEN-FIRST:event_txt_alturaActionPerformed
        // TODO add your handling code here:
    }//GEN-LAST:event_txt_alturaActionPerformed

    private void txt_baseActionPerformed(java.awt.event.ActionEvent evt)
{//GEN-FIRST:event_txt_baseActionPerformed
        // TODO add your handling code here:
    }//GEN-LAST:event_txt_baseActionPerformed

    private void btn_calcularActionPerformed(java.awt.event.ActionEvent evt)
{//GEN-FIRST:event_btn_calcularActionPerformed
        // TODO add your handling code here:
        this.saveTriangle();
        this.computeTriangle();
    }//GEN-LAST:event_btn_calcularActionPerformed

    private void btn_salirActionPerformed(java.awt.event.ActionEvent evt)
{//GEN-FIRST:event_btn_salirActionPerformed
        // TODO add your handling code here:
        this.saveTriangle();
        this.myMainWindow.updateTriangle();
        dispose();
    }//GEN-LAST:event_btn_salirActionPerformed

    private void txt_areaActionPerformed(java.awt.event.ActionEvent evt)
{//GEN-FIRST:event_txt_areaActionPerformed
        // TODO add your handling code here:
    }//GEN-LAST:event_txt_areaActionPerformed

    private void txt_perimetroActionPerformed(java.awt.event.ActionEvent evt)
{//GEN-FIRST:event_txt_perimetroActionPerformed
        // TODO add your handling code here:
    }//GEN-LAST:event_txt_perimetroActionPerformed

    private void txt_hipotenusaActionPerformed(java.awt.event.ActionEvent evt)
{//GEN-FIRST:event_txt_hipotenusaActionPerformed
        // TODO add your handling code here:
    }//GEN-LAST:event_txt_hipotenusaActionPerformed

    private void txt_tipoActionPerformed(java.awt.event.ActionEvent evt)
{//GEN-FIRST:event_txt_tipoActionPerformed
        // TODO add your handling code here:
    }//GEN-LAST:event_txt_tipoActionPerformed


    // Variables declaration - do not modify//GEN-BEGIN:variables
    private javax.swing.JButton btn_calcular;
    private javax.swing.JButton btn_salir;
    private javax.swing.JLabel jLabel1;
```

```
    private javax.swing.JLabel jLabel2;
    private javax.swing.JLabel jLabel3;
    private javax.swing.JLabel jLabel4;
    private javax.swing.JLabel jLabel5;
    private javax.swing.JLabel jLabel6;
    private javax.swing.JLabel jLabel7;
    private javax.swing.JTextField txt_altura;
    private javax.swing.JTextField txt_area;
    private javax.swing.JTextField txt_base;
    private javax.swing.JTextField txt_hipotenusa;
    private javax.swing.JTextField txt_perimetro;
    private javax.swing.JTextField txt_tipo;
    // End of variables declaration//GEN-END:variables
}
```

Interfaz principal (MainWindow)

```
/*
 * Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt to change this license
 * Click nbfs://nbhost/SystemFileSystem/Templates/GUIForms/JFrame.java to edit this template
 */
package interfaz;

/**
 *
 * @author jmcada
 */

import figura.*;

public class MainWindow extends javax.swing.JFrame {

    /**
     * Creates new form MainWindow
     */

    protected Circulo circle;
    protected Cuadrado square;
    protected Rectangulo rectangle;
    protected Triangulo triangle;

    protected CircleWindow circleWindow;
    protected SquareWindow squareWindow;
    protected RectangleWindow rectangleWindow;
    protected TriangleWindow triangleWindow;

    public void updateCircle() {
        this.txt_radio_circulo.setText(String.valueOf(this.circle.radio));
    }

    public void updateSquare() {
```

```
    this.txt_lado_cuadrado.setText(String.valueOf(this.square.lado));
}

public void updateRectangle() {
    this.txt_base_rectangulo.setText(String.valueOf(this.rectangle.base));
    this.txt_altura_rectangulo.setText(String.valueOf(this.rectangle.altura));
}

public void updateTriangle() {
    this.txt_base_triangulo.setText(String.valueOf(this.triangle.base));
    this.txt_altura_triangulo.setText(String.valueOf(this.triangle.altura));
}

public MainWindow() {
    initComponents();

    this.circle = new Circulo();
    circleWindow = new CircleWindow(this.circle, this);
    this.updateCircle();

    this.square = new Cuadrado();
    squareWindow = new SquareWindow(this.square, this);
    this.updateSquare();

    this.rectangle = new Rectangulo();
    rectangleWindow = new RectangleWindow(this.rectangle, this);
    this.updateRectangle();

    this.triangle = new Triangulo();
    triangleWindow = new TriangleWindow(this.triangle, this);
    this.updateTriangle();
}

/**
 * This method is called from within the constructor to initialize the form.
 * WARNING: Do NOT modify this code. The content of this method is always
 * regenerated by the Form Editor.
 */
@SuppressWarnings("unchecked")
// <editor-fold defaultstate="collapsed" desc="Generated Code">//GEN-BEGIN:initComponents
private void initComponents() {

    btn_circle_open = new javax.swing.JButton();
    jLabel1 = new javax.swing.JLabel();
    jLabel2 = new javax.swing.JLabel();
    jLabel3 = new javax.swing.JLabel();
    txt_radio_circulo = new javax.swing.JTextField();
    jSeparator1 = new javax.swing.JSeparator();
    jLabel4 = new javax.swing.JLabel();
    jLabel5 = new javax.swing.JLabel();
    txt_lado_cuadrado = new javax.swing.JTextField();
    btn_square_open = new javax.swing.JButton();
```

```
jSeparator2 = new javax.swing.JSeparator();
jLabel6 = new javax.swing.JLabel();
jLabel7 = new javax.swing.JLabel();
txt_base_rectangulo = new javax.swing.JTextField();
btn_rectangle_open = new javax.swing.JButton();
jLabel8 = new javax.swing.JLabel();
txt_altura_rectangulo = new javax.swing.JTextField();
jSeparator3 = new javax.swing.JSeparator();
jLabel9 = new javax.swing.JLabel();
jLabel10 = new javax.swing.JLabel();
txt_base_triangulo = new javax.swing.JTextField();
btn_triangle_open = new javax.swing.JButton();
jLabel11 = new javax.swing.JLabel();
txt_altura_triangulo = new javax.swing.JTextField();
btn_salir = new javax.swing.JButton();

setDefaultCloseOperation(javax.swing.WindowConstants.EXIT_ON_CLOSE);

btn_circle_open.setText("Ver más");
btn_circle_open.addActionListener(new java.awt.event.ActionListener() {
    public void actionPerformed(java.awt.event.ActionEvent evt) {
        btn_circle_openActionPerformed(evt);
    }
});

jLabel1.setText("FIGURAS GEOMÉTRICAS");

jLabel2.setText("CIRCULO");

jLabel3.setText("Radio:");

jLabel4.setText("CUADRADO");

jLabel5.setText("Lado:");

btn_square_open.setText("Ver más");
btn_square_open.addActionListener(new java.awt.event.ActionListener() {
    public void actionPerformed(java.awt.event.ActionEvent evt) {
        btn_square_openActionPerformed(evt);
    }
});

jLabel6.setText("RECTANGULO");

jLabel7.setText("Base:");

btn_rectangle_open.setText("Ver más");
btn_rectangle_open.addActionListener(new java.awt.event.ActionListener() {
    public void actionPerformed(java.awt.event.ActionEvent evt) {
        btn_rectangle_openActionPerformed(evt);
    }
});
```

```
        jLabel8.setText("Altura:");

        jLabel9.setText("TRIANGULO");

        jLabel10.setText("Base:");

        btn_triangle_open.setText("Ver más");
        btn_triangle_open.addActionListener(new java.awt.event.ActionListener() {
            public void actionPerformed(java.awt.event.ActionEvent evt) {
                btn_triangle_openActionPerformed(evt);
            }
        });

        jLabel11.setText("Altura:");

        btn_salir.setText("Salir");
        btn_salir.addActionListener(new java.awt.event.ActionListener() {
            public void actionPerformed(java.awt.event.ActionEvent evt) {
                btn_salirActionPerformed(evt);
            }
        });

        javax.swing.GroupLayout layout = new javax.swing.GroupLayout(getContentPane());
        getContentPane().setLayout(layout);
        layout.setHorizontalGroup(
            layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
            .addGroup(layout.createSequentialGroup()
                .addGap(36, 36, 36)
                .addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
                    .addComponent(jLabel4)
                    .addComponent(jSeparator1, javax.swing.GroupLayout.PREFERRED_SIZE, 294,
javax.swing.GroupLayout.PREFERRED_SIZE)
                    .addComponent(jLabel2)
                    .addComponent(jLabel1)
                    .addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.TRAILING,
false)
                        .addGroup(javax.swing.GroupLayout.Alignment.LEADING,
layout.createSequentialGroup()
                            .addComponent(jLabel5)
                            .addGap(18, 18, 18)
                            .addComponent(txt_lado_cuadrado)
                            .addGap(18, 18, 18)
                            .addComponent(btn_square_open))
                        .addGroup(javax.swing.GroupLayout.Alignment.LEADING,
layout.createSequentialGroup()
                            .addComponent(jLabel3)
                            .addGap(18, 18, 18)
                            .addComponent(txt_radio_circulo, javax.swing.GroupLayout.PREFERRED_SIZE,
147, javax.swing.GroupLayout.PREFERRED_SIZE)
                            .addGap(18, 18, 18)
                            .addComponent(btn_circle_open))
```

```
                .addComponent(jSeparator2, javax.swing.GroupLayout.Alignment.LEADING,
javax.swing.GroupLayout.PREFERRED_SIZE, 294, javax.swing.GroupLayout.PREFERRED_SIZE)
                .addComponent(jLabel6, javax.swing.GroupLayout.Alignment.LEADING)
                .addGroup(layout.createSequentialGroup()

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.TRAILING)
                    .addGroup(layout.createSequentialGroup()
                        .addComponent(jLabel8)
                        .addGap(18, 18, 18)
                        .addComponent(txt_altura_rectangulo))
                    .addGroup(layout.createSequentialGroup()
                        .addComponent(jLabel7)
                        .addGap(18, 18, 18)
                        .addComponent(txt_base_rectangulo)))
                .addGap(18, 18, 18)
                .addComponent(btn_rectangle_open)))
            .addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.TRAILING,
false)
                .addComponent(jSeparator3, javax.swing.GroupLayout.Alignment.LEADING,
javax.swing.GroupLayout.PREFERRED_SIZE, 294, javax.swing.GroupLayout.PREFERRED_SIZE)
                .addComponent(jLabel9, javax.swing.GroupLayout.Alignment.LEADING)
                .addGroup(layout.createSequentialGroup()

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.TRAILING)
                    .addGroup(layout.createSequentialGroup()
                        .addComponent(jLabel11)
                        .addGap(18, 18, 18)
                        .addComponent(txt_altura_triangulo))
                    .addGroup(layout.createSequentialGroup()
                        .addComponent(jLabel10)
                        .addGap(18, 18, 18)
                        .addComponent(txt_base_triangulo,
javax.swing.GroupLayout.PREFERRED_SIZE, 138, javax.swing.GroupLayout.PREFERRED_SIZE)))
                .addGap(18, 18, 18)
                .addComponent(btn_triangle_open)))
            .addComponent(btn_salir))
        .addContainerGap(32, Short.MAX_VALUE))
    );
    layout.setVerticalGroup(
        layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
        .addGroup(layout.createSequentialGroup()
            .addGap(21, 21, 21)
            .addComponent(jLabel1)
            .addGap(30, 30, 30)
            .addComponent(jLabel2)
            .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.UNRELATED)
            .addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
                .addComponent(jLabel3)
                .addComponent(txt_radio_circulo, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)
                .addComponent(btn_circle_open))
            .addGap(20, 20, 20)
```

```
            .addComponent(jSeparator1, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)
            .addGap(18, 18, 18)
            .addComponent(jLabel4)
            .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.UNRELATED)
            .addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
              .addComponent(jLabel5)
              .addComponent(txt_lado_cuadrado, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)
              .addComponent(btn_square_open))
            .addGap(18, 18, 18)
            .addComponent(jSeparator2, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)
            .addGap(18, 18, 18)
            .addComponent(jLabel6)
            .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.UNRELATED)
            .addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
              .addComponent(jLabel7)
              .addComponent(txt_base_rectangulo, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)
              .addComponent(btn_rectangle_open))
            .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
            .addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
              .addComponent(jLabel8)
              .addComponent(txt_altura_rectangulo, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))
            .addGap(18, 18, 18)
            .addComponent(jSeparator3, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)
            .addGap(18, 18, 18)
            .addComponent(jLabel9)
            .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.UNRELATED)
            .addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
              .addComponent(jLabel10)
              .addComponent(txt_base_triangulo, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)
              .addComponent(btn_triangle_open))
            .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
            .addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
              .addComponent(jLabel11)
              .addComponent(txt_altura_triangulo, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))
            .addGap(18, 18, 18)
            .addComponent(btn_salir)
            .addContainerGap(27, Short.MAX_VALUE))
        );

        pack();
    }// </editor-fold>//GEN-END:initComponents

    private void btn_circle_openActionPerformed(java.awt.event.ActionEvent evt)
{//GEN-FIRST:event_btn_circle_openActionPerformed
```

```
        // TODO add your handling code here:
        this.circle.radio = Double.parseDouble(this.txt_radio_circulo.getText());
        circleWindow.computeCircle();
        circleWindow.setVisible(true);
    }//GEN-LAST:event_btn_circle_openActionPerformed

    private void btn_square_openActionPerformed(java.awt.event.ActionEvent evt)
{//GEN-FIRST:event_btn_square_openActionPerformed
        // TODO add your handling code here:
        this.square.lado = Double.parseDouble(this.txt_lado_cuadrado.getText());
        squareWindow.computeSquare();
        squareWindow.setVisible(true);
    }//GEN-LAST:event_btn_square_openActionPerformed

    private void btn_rectangle_openActionPerformed(java.awt.event.ActionEvent evt)
{//GEN-FIRST:event_btn_rectangle_openActionPerformed
        // TODO add your handling code here:
        this.rectangle.base = Double.parseDouble(this.txt_base_rectangulo.getText());
        this.rectangle.altura = Double.parseDouble(this.txt_altura_rectangulo.getText());
        rectangleWindow.computeRectangle();
        rectangleWindow.setVisible(true);
    }//GEN-LAST:event_btn_rectangle_openActionPerformed

    private void btn_triangle_openActionPerformed(java.awt.event.ActionEvent evt)
{//GEN-FIRST:event_btn_triangle_openActionPerformed
        // TODO add your handling code here:
        this.triangle.base = Double.parseDouble(this.txt_base_triangulo.getText());
        this.triangle.altura = Double.parseDouble(this.txt_altura_triangulo.getText());
        triangleWindow.computeTriangle();
        triangleWindow.setVisible(true);
    }//GEN-LAST:event_btn_triangle_openActionPerformed

    private void btn_salirActionPerformed(java.awt.event.ActionEvent evt)
{//GEN-FIRST:event_btn_salirActionPerformed
        // TODO add your handling code here:
        dispose();
    }//GEN-LAST:event_btn_salirActionPerformed

    /**
     * @param args the command line arguments
     */
    public static void main(String args[]) {
        /* Set the Nimbus look and feel */
        //<editor-fold defaultstate="collapsed" desc=" Look and feel setting code (optional) ">
        /* If Nimbus (introduced in Java SE 6) is not available, stay with the default look and feel.
         * For details see http://download.oracle.com/javase/tutorial/uiswing/lookandfeel/plaf.html
         */
        try {
            for (javax.swing.UIManager.LookAndFeelInfo info :
javax.swing.UIManager.getInstalledLookAndFeels()) {
                if ("Nimbus".equals(info.getName())) {
                    javax.swing.UIManager.setLookAndFeel(info.getClassName());
```

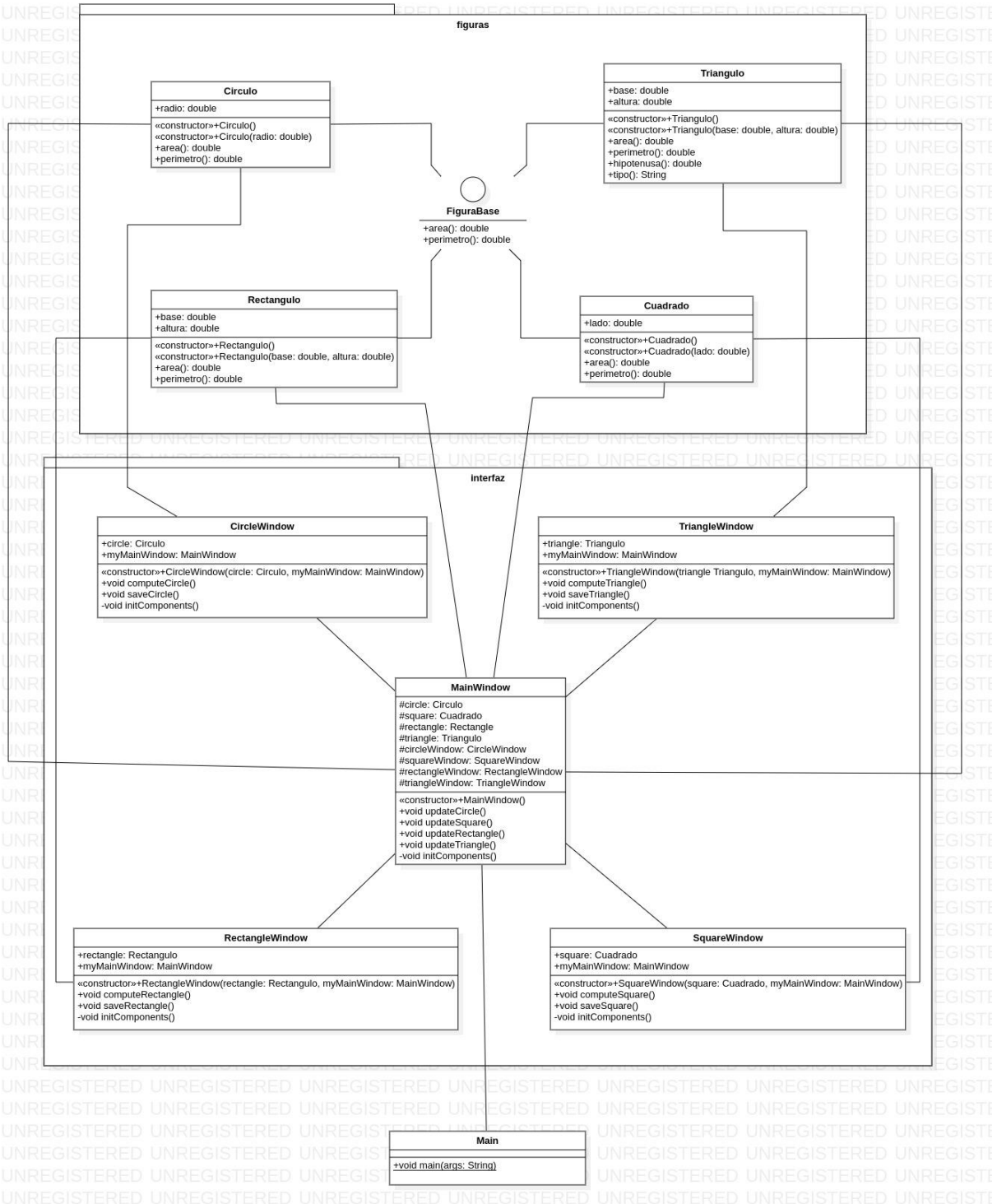
```
                break;
            }
        }
    } catch (ClassNotFoundException ex) {

java.util.logging.Logger.getLogger(MainWindow.class.getName()).log(java.util.logging.Level.SEVERE,
null, ex);
    } catch (InstantiationException ex) {

java.util.logging.Logger.getLogger(MainWindow.class.getName()).log(java.util.logging.Level.SEVERE,
null, ex);
    } catch (IllegalAccessException ex) {

java.util.logging.Logger.getLogger(MainWindow.class.getName()).log(java.util.logging.Level.SEVERE,
null, ex);
    } catch (javax.swing.UnsupportedLookAndFeelException ex) {

java.util.logging.Logger.getLogger(MainWindow.class.getName()).log(java.util.logging.Level.SEVERE,
null, ex);
    }
    //</editor-fold>

    /* Create and display the form */
    java.awt.EventQueue.invokeLater(new Runnable() {
        public void run() {
            new MainWindow().setVisible(true);
        }
    });
}

// Variables declaration - do not modify//GEN-BEGIN:variables
private javax.swing.JButton btn_circle_open;
private javax.swing.JButton btn_rectangle_open;
private javax.swing.JButton btn_salir;
private javax.swing.JButton btn_square_open;
private javax.swing.JButton btn_triangle_open;
private javax.swing.JLabel jLabel1;
private javax.swing.JLabel jLabel10;
private javax.swing.JLabel jLabel11;
private javax.swing.JLabel jLabel2;
private javax.swing.JLabel jLabel3;
private javax.swing.JLabel jLabel4;
private javax.swing.JLabel jLabel5;
private javax.swing.JLabel jLabel6;
private javax.swing.JLabel jLabel7;
private javax.swing.JLabel jLabel8;
private javax.swing.JLabel jLabel9;
private javax.swing.JSeparator jSeparator1;
private javax.swing.JSeparator jSeparator2;
private javax.swing.JSeparator jSeparator3;
private javax.swing.JTextField txt_altura_rectangulo;
private javax.swing.JTextField txt_altura_triangulo;
```

```
    private javax.swing.JTextField txt_base_rectangulo;
    private javax.swing.JTextField txt_base_triangulo;
    private javax.swing.JTextField txt_lado_cuadrado;
    private javax.swing.JTextField txt_radio_circulo;
    // End of variables declaration//GEN-END:variables
}
```

Clase Principal

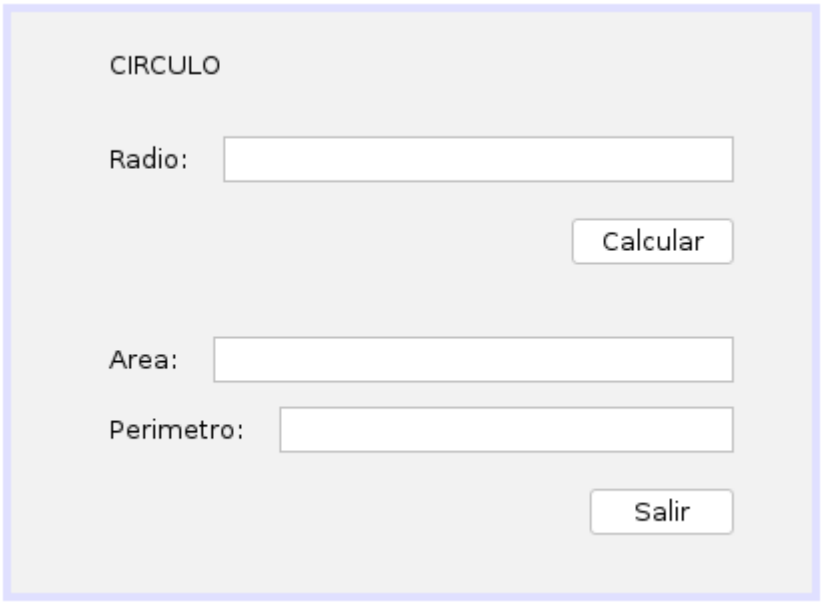
```
/*
 * Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt to change this license
 */

/**
 *
 * @author jmcada
 */

import interfaz.MainWindow;

public class Main {

    public static void main(String[] args) {

        MainWindow window = new MainWindow();
        window.setVisible(true);

    }
}
```

Diagrama de clases

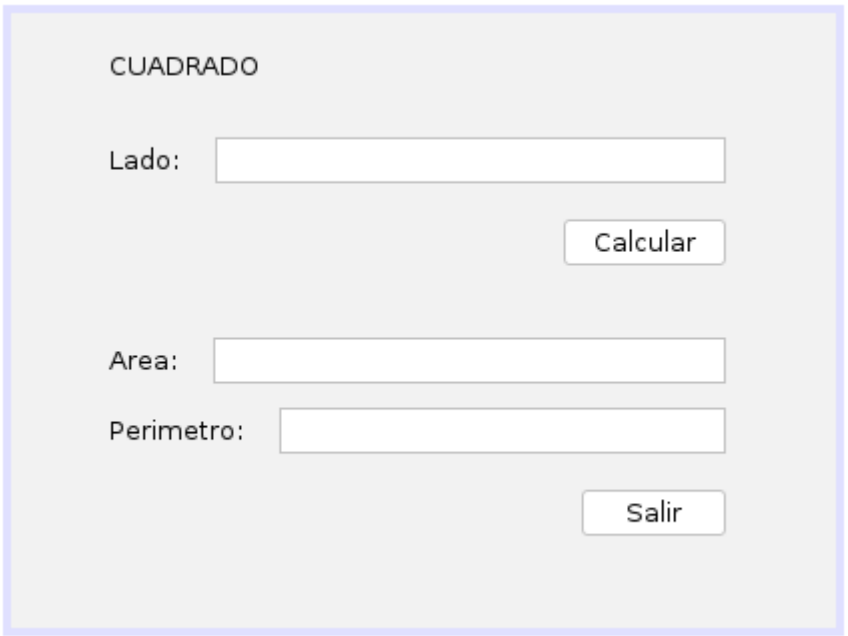


Imágenes de las interfaces gráficas

Círculo:



Cuadrado:



Rectángulo:

Triangulo:

Github:

https://github.com/jmcada2503/ejercicios_poo/tree/master/actividad3/FigurasGeometricas

Repositorio de github con toda la actividad 3

https://github.com/jmcada2503/ejercicios_poo/tree/master/actividad3