UNIVERSIDAD POLITÉCNICA SALESIANA ECUADOR	**PRÁCTICA DE LABORATORIO**

CARRERA: COMPUTACION	**ASIGNATURA**: PROGRAMACION APLICADA

NRO. PRÁCTICA:	1	**TÍTULO PRÁCTICA**: EXAMEN PRACTICO JAVA

OBJETIVO ALCANZADO:

Identificar los cambios importantes de Java

Diseñar e Implementar expresiones regulares

Entender la cada una de las características nuevas en Java

ACTIVIDADES DESARROLLADAS

1. Revisar la teoría y conceptos de Java 8, 9 ,10, 11, 12.

LINK GITHUB:

https://github.com/adolfojara10/Practicas-de-programacion-aplicada/tree/master

Para la revisión de los nuevos conceptos de java, se hicieron varias exposiciones en clase de varios estudiantes. Tomé nota de lo nuevo de cada versión en Java y busqué más ejemplos de cada novedad introducida en las distintas versiones.

De todas las nuevas cosas implementadas en Java, las que más sobresalen son con capturas de pantalla de ejemplo que se utilizaron en este proyecto:

- Clase Genérica.

```java
public class Controlador<T> {

    private List<T> listaGenerica;

    public Controlador() {
        listaGenerica = new ArrayList<>();
    }
}
```

- Lambda y var para sustituir el nombre de la clase del objeto.

```java
public Docente login(String correo, String password) {

    var listaDocentes = (List<Docente>) getListaGenerica();
    Docente docente = listaDocentes.stream().filter(docen -> docen.getCorreo().equals(correo)
            && docen.getPassword().equals(password)).findFirst().get();
```

- Reflexión Java

```java
try {
    Constructor<Docente> constructor = Docente.class.getDeclaredConstructor();
    constructor.setAccessible(true);
    Docente docente = constructor.newInstance();

    docente.setId(controladorDocente.generarID());
    docente.setNombre(nombre);
    docente.setApellido(apellido);
    docente.setCedula(cedula);
    docente.setGenero(genero);
    docente.setCorreo(correo);
    docente.setPassword(password);

    if (controladorDocente.create(docente)) {
        JOptionPane.showMessageDialog(this, "Docente creado con exito", "Mensaje", JOptionPane.INFORMATION_MESSAGE
        llenarTablaDocente();
        limpiar();
    } else {
        JOptionPane.showMessageDialog(this, "Ha existido un problema", "Error", JOptionPane.ERROR_MESSAGE);
    }

} catch (IllegalAccessException e) {
    e.printStackTrace();
} catch (NoSuchMethodException ex) {
    Logger.getLogger(VentanaRector.class.getName()).log(Level.SEVERE, null, ex);
} catch (SecurityException ex) {
    Logger.getLogger(VentanaRector.class.getName()).log(Level.SEVERE, null, ex);
} catch (InstantiationException ex) {
    Logger.getLogger(VentanaRector.class.getName()).log(Level.SEVERE, null, ex);
} catch (IllegalArgumentException ex) {
```

- Iterator.

```java
public void llenarTablaAlumnos() {

    if (!curso.getAlumnos().isEmpty()) {
        Set<Alumno> alumnos = curso.getAlumnos();

        Iterator it = alumnos.iterator();

        DefaultTableModel modelo = (DefaultTableModel) tblAlumnos.getModel();
        modelo.setRowCount(0);

        while (it.hasNext()) {
            Alumno alumno = (Alumno) it.next();
            Object[] row = {alumno.getNombre() + "||" + alumno.getApellido(), alumno.getCedula(), alumno.getGenero()};
            modelo.addRow(row);
            System.out.println(row);
        }

        tblAlumnos.setModel(modelo);
    }

}
```

- Singleton.

```java
public class Docente extends Persona implements Serializable {

    private Curso curso;
    private String correo;
    private String password;
    public static Docente instance;

    private Docente(int id, String nombre, String apellido, String cedula, String genero,
            String correo, String password) {
        super(id, nombre, apellido, cedula, genero);
        this.correo = correo;
        this.password = password;
    }

    private Docente() {

    }
```

```java
public static Docente getInstance() {
    if (Docente.instance == null) {
        Constructor<Docente> constructor;
        try {
            constructor = Docente.class.getDeclaredConstructor();
            constructor.setAccessible(true);
            Docente docente = constructor.newInstance();

            Docente.instance = docente;

            return Docente.instance;
        } catch (Exception e) {
            e.printStackTrace();
        }
        //.instance = new Administrador(1, "", "", "", "", "", "", "", "");

        return Docente.instance;
    }

    return Docente.instance;
}
```

2. Diseñar e implementar las características de Java para generar una expresión regular.

A continuación, la clase donde se utilizó la expresión:

/*

 * To change this license header, choose License Headers in Project Properties.

```java
 * To change this template file, choose Tools | Templates

 * and open the template in the editor.

 */

package ups.edu.ec.controlador;


import java.io.BufferedReader;

import java.io.IOException;

import java.io.InputStreamReader;

import java.net.MalformedURLException;

import java.net.URL;

import java.net.URLConnection;

import java.util.HashSet;

import java.util.Iterator;

import java.util.List;

import java.util.Set;

import java.util.logging.Level;

import java.util.logging.Logger;

import java.util.regex.Matcher;

import java.util.regex.Pattern;

import ups.edu.ec.modelo.Actividad;


/**

 *

 * @author User

 */

public class ControladorActividad extends Controlador {


    private Pattern patron;

    private Matcher corpus;
```

```java
   public ControladorActividad(String ruta) {

      super(ruta);

      //this.patron = Pattern.compile("^<a\\shref=\"\\/store\\/apps\\/details?id=com(\\.(\\w)+)+\"><div\\sclass=\"(\\w+\\s\\w+)\"\\stitle=\"(\\w(\\s)?)+\"$");


      //this.patron =
Pattern.compile("<a\\shref=\\\"\\/store\\/apps\\/details\\?id=com(\\.(\\w+))+\\\"(\\s)?><div\\sclass=\\\"((\\w+)\\s(\\w+))\\\"\\stitle=\\\"(\\w+)(\\s\\w)*\\\">");

      //this.patron = Pattern.compile("<a\\shref=\\\"\\/store\\/apps\\/details\\?id=com(\\.(\\w+))+\\\"(\\s)?><div\\sclass=\\\"((\\w+)\\s(\\w+))\\\"\\stitle=\\\"(\\w+)((\\s\\w+)*)?\\\">");

      //this.patron = Pattern.compile("<a\\shref=\\\"\\/store\\/apps\\/details\\?id=(\\w+)(\\.(\\w+))+\\\"(\\s)?><div\\sclass=\\\"((\\w+)\\s(\\w+))\\\"\\stitle=\\\".*\\\">");

      this.patron = Pattern.compile("<a\\shref=\\\"\\/store\\/apps\\/details\\?id=(\\w+)(\\.(\\w+))+\\\"(\\s)?><div\\sclass=\\\"((\\w+)\\s(\\w+))\\\"\\stitle=\\\"(\\w+|([.,\\/#!$%\\^&\\*;:=-_\\s])*)*\\\">");
   }


   public Actividad buscarActividad(String texto) {

      StringBuilder stringBuilder = new StringBuilder();


      try {
         URL urlObject = new URL("https://play.google.com/store/search?q=" + (texto.replaceAll("\\s", "\\20%")) + "&c=apps");
         URLConnection conection = urlObject.openConnection();


         conection.setRequestProperty("User-Agent", "Mozilla/5.0 (Windows NT 6.1; WOW64) AppleWebKit/537.11 (KHTML, like Gecko) Chrome/23.0.1271.95 Safari/537.11");


         BufferedReader buffer = new BufferedReader(new InputStreamReader(conection.getInputStream(), "UTF-8"));
```

```java
    String inputLine;

    while ((inputLine = buffer.readLine()) != null) {

        if (inputLine.contains(patron.pattern())) {

            stringBuilder.append(inputLine);
            stringBuilder.append("\n");
        } else {
            stringBuilder.append(inputLine);

        }

    }

} catch (MalformedURLException e) {
    e.printStackTrace();
} catch (IOException ex) {
    Logger.getLogger(ControladorActividad.class.getName()).log(Level.SEVERE, null, ex);
}


//System.out.println(stringBuilder.toString());
Set<String> resultado = new HashSet<>();
corpus = patron.matcher(stringBuilder.toString());

while (corpus.find()) {
    resultado.add(corpus.group(0));

}
```

```java
        Set<String> resultadoFormaeado = new HashSet<>();

        Iterator it = resultado.iterator();

        while (it.hasNext()) {

            String app = (String) it.next();

            String formatearApp = "";

            //formatearApp = app.replaceAll("<a\\shref=\\\"", "play.google.com").replaceAll("[><]",
"").replaceAll("(div\\sclass=\"(\\w+\\s\\w+)\").replaceAll("(title=)", "Nombre app: ").replaceAll("\"", ""));

            formatearApp = app.replaceAll("a href=", "play.google.com").replaceAll("[><]",
"").replaceAll("(div\\sclass=\"(\\w+\\s\\w+)\")", "").replaceAll("(title=)", "Nombre app: ").replaceAll("\"", "");


            resultadoFormaeado.add(formatearApp);


        }


        Actividad actividad = new Actividad(generarID(), texto, resultadoFormaeado);


        return actividad;


    }


    @Override
    public int generarID() {


        return getListaGenerica().size() + 1;


    }


}
```

La expresión regular es:

this.patron = Pattern.compile("<a\\shref=\\\"\\/store\\/apps\\/details\\?id=(\\w+)(\\.(\\w+))+\\\"([\\s)?><div](\\s)?><div)

\\sclass=\\\"((\\w+)\\s(\\w+))\\\"\\stitle=\\\"(\\w+|([.,\\/#!$%\\^&*;:=-_\\s])*)*\\\">");

---

3. Realizar práctica codificando los códigos de las nuevas características de Java y su uso dentro de un sistema escolar.

Para este examen se crearon los siguientes paquetes y clases:

Vamos a comenzar con el paquete modelo:

CLASE ACTIVIDAD:

/*

```java
 * To change this license header, choose License Headers in Project Properties.
 * To change this template file, choose Tools | Templates
 * and open the template in the editor.
 */
package ups.edu.ec.modelo;


import java.io.Serializable;
import java.util.Set;


/**
 *
 * @author User
 */
public class Actividad implements Serializable {

    private int id;
    private String titulo;
    private Set<String> aplicaciones;

    public Actividad(int id, String titulo, Set<String> aplicaciones) {
        this.id = id;
        this.titulo = titulo;
        this.aplicaciones = aplicaciones;
    }

    public Actividad(int id, String titulo) {
        this.id = id;
        this.titulo = titulo;
    }
```

```java
public Actividad(Integer valueOf) {

    throw new UnsupportedOperationException("Not supported yet."); //To change body of generated methods, choose Tools | Templates.

}


public int getId() {

    return id;

}


public void setId(int id) {

    this.id = id;

}


public String getTitulo() {

    return titulo;

}


public void setTitulo(String titulo) {

    this.titulo = titulo;

}


public Set<String> getAplicaciones() {

    return aplicaciones;

}


public void setAplicaciones(Set<String> aplicaciones) {

    this.aplicaciones = aplicaciones;

}
```

```java
@Override
public int hashCode() {

    int hash = 5;

    hash = 83 * hash + this.id;

    return hash;

}


@Override
public boolean equals(Object obj) {

    if (this == obj) {

        return true;

    }

    if (obj == null) {

        return false;

    }

    if (getClass() != obj.getClass()) {

        return false;

    }

    final Actividad other = (Actividad) obj;

    if (this.id != other.id) {

        return false;

    }

    return true;

}


@Override
public String toString() {
```

```
        return "Actividad: " + "id=" + id + ", titulo=" + titulo + ", aplicaciones=" +

            aplicaciones;

    }


}
```

CLASE PERSONA:

```
/*
 * To change this license header, choose License Headers in Project Properties.
 * To change this template file, choose Tools | Templates
 * and open the template in the editor.
 */
package ups.edu.ec.modelo;


import java.io.Serializable;
import java.util.Objects;


/**
 *
 * @author User
 */
public class Persona implements Serializable{

    private int id;
    private String nombre;
    private String apellido;
    private String cedula;
    private String genero;
```

```java
public Persona(int id, String nombre, String apellido, String cedula, String genero) {

    this.id = id;

    this.nombre = nombre;

    this.apellido = apellido;

    this.cedula = cedula;

    this.genero = genero;

}


public Persona() {

}


public Persona(String cedula) {

    this.cedula = cedula;

}



public int getId() {

    return id;

}


public void setId(int id) {

    this.id = id;

}


public String getNombre() {

    return nombre;

}


public void setNombre(String nombre) {
```

```java
        this.nombre = nombre;

    }


    public String getApellido() {

        return apellido;

    }


    public void setApellido(String apellido) {

        this.apellido = apellido;

    }


    public String getCedula() {

        return cedula;

    }


    public void setCedula(String cedula) {

        this.cedula = cedula;

    }


    public String getGenero() {

        return genero;

    }


    public void setGenero(String genero) {

        this.genero = genero;

    }


    @Override

    public int hashCode() {
```

```java
    int hash = 7;

    hash = 13 * hash + Objects.hashCode(this.cedula);

    return hash;

}


@Override
public boolean equals(Object obj) {

    if (this == obj) {

        return true;

    }

    if (obj == null) {

        return false;

    }

    if (getClass() != obj.getClass()) {

        return false;

    }

    final Persona other = (Persona) obj;

    if (!Objects.equals(this.cedula, other.cedula)) {

        return false;

    }

    return true;

}


@Override
public String toString() {

    return "Persona:\n" + "id=" + id + ", nombre=" + nombre + ", apellido=" +

        apellido + ", cedula=" + cedula + ", correo=" + ", genero=" + genero;

}
```

```
}





CLASE RECTOR:
/*
 * To change this license header, choose License Headers in Project Properties.
 * To change this template file, choose Tools | Templates
 * and open the template in the editor.
 */
package ups.edu.ec.modelo;


import java.io.Serializable;
import java.lang.reflect.Constructor;


/**
 *
 * @author User
 */
public class Rector extends Persona implements Serializable {

    private String correo;
    private String password;
    public static Rector instance;

    private Rector(String correo, String password, Rector instace, int id, String nombre,
        String apellido, String cedula, String genero) {
```

```java
        super(id, nombre, apellido, cedula, genero);

    this.correo = correo;

    this.password = password;


}


private Rector() {


}


public static Rector getInstance() {

    if (Rector.instance == null) {

        Constructor<Rector> constructor;

        try {

            constructor = Rector.class.getDeclaredConstructor();

            constructor.setAccessible(true);

            Rector admin = constructor.newInstance();


            Rector.instance = admin;


            return Rector.instance;

        } catch (Exception e) {

            e.printStackTrace();

        }

        //.instance = new Administrador(1, "", "", "", "", "", "", "", "");


        return Rector.instance;

    }
```

```java
        return Rector.instance;

    }



    public String getCorreo() {

        return correo;

    }


    public void setCorreo(String correo) {

        this.correo = correo;

    }


    public String getPassword() {

        return password;

    }


    public void setPassword(String password) {

        this.password = password;

    }


    @Override
    public String toString() {

        return super.toString() + "Rector: " + "correo=" + correo + ", password=" + password;

    }


}
```

CLASE DOCENTE:

```java
/*
 * To change this license header, choose License Headers in Project Properties.
 * To change this template file, choose Tools | Templates
 * and open the template in the editor.
 */
package ups.edu.ec.modelo;


import java.io.Serializable;
import java.lang.reflect.Constructor;


/**
 *
 * @author User
 */
public class Docente extends Persona implements Serializable {

    private Curso curso;
    private String correo;
    private String password;
    public static Docente instance;


    private Docente(int id, String nombre, String apellido, String cedula, String genero,
```

```java
    String correo, String password) {

  super(id, nombre, apellido, cedula, genero);

  this.correo = correo;

  this.password = password;

}


private Docente() {


}


public static Docente getInstance() {

  if (Docente.instance == null) {

    Constructor<Docente> constructor;

    try {

      constructor = Docente.class.getDeclaredConstructor();

      constructor.setAccessible(true);

      Docente docente = constructor.newInstance();


      Docente.instance = docente;


      return Docente.instance;

    } catch (Exception e) {

      e.printStackTrace();

    }

    //.instance = new Administrador(1, "", "", "", "", "", "", "", "");


    return Docente.instance;

  }
```

```java
        return Docente.instance;

    }


    public Curso getCurso() {

        return curso;

    }


    public void setCurso(Curso curso) {

        this.curso = curso;

    }


    public String getCorreo() {

        return correo;

    }


    public void setCorreo(String correo) {

        this.correo = correo;

    }


    public String getPassword() {

        return password;

    }


    public void setPassword(String password) {

        this.password = password;

    }


    @Override
    public String toString() {
```

```java
        return super.toString() + "Docente: " + "curso=" + curso;
    }


}
```

CLASE ALUMNO:

```java
/*
 * To change this license header, choose License Headers in Project Properties.
 * To change this template file, choose Tools | Templates
 * and open the template in the editor.
 */
package ups.edu.ec.modelo;

import java.io.Serializable;

/**
 *
 * @author User
 */
public class Alumno extends Persona implements Serializable {

    private Curso curso;

    public Alumno(Curso curso, int id, String nombre, String apellido, String cedula, String genero) {
        super(id, nombre, apellido, cedula, genero);
        this.curso = curso;
    }
```

```java
    public Alumno(String cedula) {

        super(cedula);

    }


    public Curso getCurso() {

        return curso;

    }


    public void setCurso(Curso curso) {

        this.curso = curso;

    }


    @Override
    public String toString() {

        return super.toString() + "Alumno:" + "curso=" + curso + '}';

    }


}
```

CLASE CURSO:

```java
/*
 * To change this license header, choose License Headers in Project Properties.
 * To change this template file, choose Tools | Templates
 * and open the template in the editor.
 */
package ups.edu.ec.modelo;


import java.io.Serializable;

import java.util.HashSet;
```

```java
import java.util.List;

import java.util.Map;

import java.util.Set;


/**
 *
 * @author User
 */
public class Curso implements Serializable {

    private int id;

    private String nombreCurso;

    private Docente docente;

    private Set<Alumno> alumnos;

    private Set<Actividad> actividades;



    public Curso(int id, String nombreCurso, Docente docente, Set<Alumno> alumnos, Set<Actividad> actividades) {

        this.id = id;

        this.nombreCurso = nombreCurso;

        this.docente = docente;

        this.alumnos = alumnos;

        this.actividades = actividades;


        alumnos = new HashSet<>();

        actividades = new HashSet<>();

    }


    public Curso(int id, String nombreCurso, Docente docente) {
```

```java
    this.id = id;

    this.nombreCurso = nombreCurso;

    this.docente = docente;


    alumnos = new HashSet<>();

    actividades = new HashSet<>();

}


public Curso(int id) {

    this.id = id;

}


public int getId() {

    return id;

}


public void setId(int id) {

    this.id = id;

}


public String getNombreCurso() {

    return nombreCurso;

}


public void setNombreCurso(String nombreCurso) {

    this.nombreCurso = nombreCurso;

}


public Docente getDocente() {
```

```java
    return docente;

}


public void setDocente(Docente docente) {

    this.docente = docente;

}


public Set<Alumno> getAlumnos() {

    return alumnos;

}


public void setAlumnos(Set<Alumno> alumnos) {

    this.alumnos = alumnos;

}


public Set<Actividad> getActividades() {

    return actividades;

}


public void setActividades(Set<Actividad> actividades) {

    this.actividades = actividades;

}


public boolean añadirAlumno(Alumno alumno) {

    return alumnos.add(alumno);

}


public void actualizar(Alumno alumnoViejo, Alumno alumnoNuevo) {

    alumnos.remove(alumnoViejo);
```

```java
    alumnos.add(alumnoNuevo);

}


public void delete(Alumno alumnoEliminar) {

    alumnos.remove(alumnoEliminar);

}


public boolean añadirActividad(Actividad actividad) {

    return actividades.add(actividad);

}


public void delete(Actividad actividad) {

    actividades.remove(actividad);

}


@Override
public int hashCode() {

    int hash = 7;

    hash = 29 * hash + this.id;

    return hash;

}


@Override
public boolean equals(Object obj) {

    if (this == obj) {

        return true;

    }

    if (obj == null) {

        return false;
```

```java
        }
        if (getClass() != obj.getClass()) {

            return false;

        }
        final Curso other = (Curso) obj;

        if (this.id != other.id) {

            return false;

        }
        return true;

    }




    @Override

    public String toString() {

        return "Curso:" + "id=" + id + ", nombreCurso=" + nombreCurso + ", docente="

                + docente + ", alumnos=" + alumnos + ", actividades=" + actividades;

    }



}



Paquete controlador:

CONTROLADOR:

/*

 * To change this license header, choose License Headers in Project Properties.

 * To change this template file, choose Tools | Templates

 * and open the template in the editor.

 */
```

```java
package ups.edu.ec.controlador;


import java.io.FileInputStream;

import java.io.FileNotFoundException;

import java.io.FileOutputStream;

import java.io.IOException;

import java.io.ObjectInputStream;

import java.io.ObjectOutputStream;

import java.util.ArrayList;

import java.util.List;


/**
 *
 * @author User
 * @param <T>
 */
public abstract class Controlador<T> {


    private String ruta;

    private List<T> listaGenerica;


    public Controlador(String ruta) {

        listaGenerica = new ArrayList<>();


        this.ruta = ruta;

        cargarDatos();

    }


    public abstract int generarID();
```

```java
public void cargarDatos() {

    try {

        FileInputStream archivo = new FileInputStream(ruta);

        ObjectInputStream objetoLectura = new ObjectInputStream(archivo);


        listaGenerica = (List<T>) objetoLectura.readObject();


    } catch (ClassNotFoundException | IOException e) {

        e.printStackTrace();

    }

}


public boolean guardarDatos(List<T> listaGuardar) {

    try {

        FileOutputStream archivo = new FileOutputStream(ruta);

        ObjectOutputStream objetoEscritura = new ObjectOutputStream(archivo);


        objetoEscritura.writeObject(listaGuardar);

        return true;

    } catch (IOException e) {

        e.printStackTrace();

    }


    return false;

}


public boolean create(T objeto) {

    if (!listaGenerica.contains(objeto)) {
```

```java
        listaGenerica.add(objeto);

        return guardarDatos(listaGenerica);

    } else {

        return true;

    }

}


public T read(T objeto) {


    if (listaGenerica.contains(objeto)) {

        int index = listaGenerica.indexOf(objeto);

        return listaGenerica.get(index);

    }

    return null;

}


public boolean update(T objetoAntiguo, T objetoNuevo) {

    int index = listaGenerica.indexOf(objetoAntiguo);

    listaGenerica.set(index, objetoNuevo);

    return guardarDatos(listaGenerica);

}


public boolean delete(T objeto) {

    listaGenerica.remove(objeto);

    return guardarDatos(listaGenerica);

}


public List<T> getListaGenerica() {

    return listaGenerica;
```

```
  }

}




CONTROLADORALUMNO:

/*

 * To change this license header, choose License Headers in Project Properties.

 * To change this template file, choose Tools | Templates

 * and open the template in the editor.

 */

package ups.edu.ec.controlador;


/**

 *

 * @author User

 */

public class ControladorAlumno extends Controlador {


    public ControladorAlumno(String ruta) {

        super(ruta);

    }


    @Override

    public int generarID() {

        return getListaGenerica().size() + 1;

    }


}
```

CONTROLADORRECTOR:

```java
/*
 * To change this license header, choose License Headers in Project Properties.
 * To change this template file, choose Tools | Templates
 * and open the template in the editor.
 */
package ups.edu.ec.controlador;


import java.util.List;
import ups.edu.ec.modelo.Rector;


/**
 *
 * @author User
 */
public class ControladorRector extends Controlador {

    public ControladorRector(String ruta) {
        super(ruta);
    }

    public Rector login(String correo, String password) {
        var listaRector = (List<Rector>) getListaGenerica();

        Rector rector = listaRector.stream().filter(rec -> rec.getCorreo().equals(correo) &&
            rec.getPassword().equals(password)).findAny().get();

        if (rector != null) {
            return Rector.getInstance();
```

```java
        } else {

            return null;

        }

    }


    @Override

    public int generarID() {

        return 1;

    }


}
```

CONTROLADORDOCENTE:

```java
/*

 * To change this license header, choose License Headers in Project Properties.

 * To change this template file, choose Tools | Templates

 * and open the template in the editor.

 */

package ups.edu.ec.controlador;


import java.util.List;

import ups.edu.ec.modelo.Docente;


/**

 *

 * @author User

 */

public class ControladorDocente extends Controlador {
```

```java
    public ControladorDocente(String ruta) {

        super(ruta);

    }


    public Docente login(String correo, String password) {


        var listaDocentes = (List<Docente>) getListaGenerica();

        Docente docente = listaDocentes.stream().filter(docen -> docen.getCorreo().equals(correo)

            && docen.getPassword().equals(password)).findFirst().get();


        if (docente != null) {

            Docente.instance = docente;

            return Docente.instance;

        } else {

            return null;

        }


    }


    @Override
    public int generarID() {

        return getListaGenerica().size() + 1;

    }


}
```

CONTROLADORACTIVIDAD:

```java
/*

 * To change this license header, choose License Headers in Project Properties.

 * To change this template file, choose Tools | Templates
```

```java
 * and open the template in the editor.

 */

package ups.edu.ec.controlador;


import java.io.BufferedReader;

import java.io.IOException;

import java.io.InputStreamReader;

import java.net.MalformedURLException;

import java.net.URL;

import java.net.URLConnection;

import java.util.HashSet;

import java.util.Iterator;

import java.util.List;

import java.util.Set;

import java.util.logging.Level;

import java.util.logging.Logger;

import java.util.regex.Matcher;

import java.util.regex.Pattern;

import ups.edu.ec.modelo.Actividad;


/**

 *

 * @author User

 */

public class ControladorActividad extends Controlador {


    private Pattern patron;

    private Matcher corpus;
```

```java
    public ControladorActividad(String ruta) {

        super(ruta);

        //this.patron =
Pattern.compile("^<a\\shref=\"\\/store\\/apps\\/details?id=com(\\.(\\w)+)+\"><div\\sclass=\"(\\w+\\s\\w+)\"\\stitle=\"(\\w(\\s)?)+\"$");


        //this.patron =
Pattern.compile("<a\\shref=\\\"\\/store\\/apps\\/details\\?id=com(\\.(\\w+))+\\\"(\\s)?><div\\sclass=\\\"((\\w+)\\s(\\w+)

)\\\"\\stitle=\\\"(\\w+)(\\s\\w)*\\\">");

        //this.patron =
Pattern.compile("<a\\shref=\\\"\\/store\\/apps\\/details\\?id=com(\\.(\\w+))+\\\"(\\s)?><div\\sclass=\\\"((\\w+)\\s(\\w+))

\\\"\\stitle=\\\"(\\w+)((\\s\\w+)*)?\\\">");

        //this.patron = Pattern.compile("<a\\shref=\\\"\\/store\\/apps\\/details\\?id=(\\w+)(\\.(\\w+))+\\\"(\\s)?><div\\sclass=

\\\"((\\w+)\\s(\\w+))\\\"\\stitle=\\\".*\\\">");

        this.patron = Pattern.compile("<a\\shref=\\\"\\/store\\/apps\\/details\\?id=(\\w+)(\\.(\\w+))+\\\"(\\s)?><div

\\sclass=\\\"((\\w+)\\s(\\w+))\\\"\\stitle=\\\"(\\w+|([.,\\/#!$%\\^&\\*;:=-_\\s])*)*\\\">");

    }


    public Actividad buscarActividad(String texto) {


        StringBuilder stringBuilder = new StringBuilder();


        try {

            URL urlObject = new URL("https://play.google.com/store/search?q=" + (texto.replaceAll("\\s", "\\20%")) + "&c=apps");

            URLConnection conection = urlObject.openConnection();


            conection.setRequestProperty("User-Agent", "Mozilla/5.0 (Windows NT 6.1; WOW64) AppleWebKit/537.11 (KHTML,
like Gecko) Chrome/23.0.1271.95 Safari/537.11");


            BufferedReader buffer = new BufferedReader(new InputStreamReader(conection.getInputStream(), "UTF-8"));
```

```java
    String inputLine;

    while ((inputLine = buffer.readLine()) != null) {

        if (inputLine.contains(patron.pattern())) {

            stringBuilder.append(inputLine);
            stringBuilder.append("\n");
        } else {
            stringBuilder.append(inputLine);

        }

    }

} catch (MalformedURLException e) {
    e.printStackTrace();
} catch (IOException ex) {
    Logger.getLogger(ControladorActividad.class.getName()).log(Level.SEVERE, null, ex);
}


//System.out.println(stringBuilder.toString());
Set<String> resultado = new HashSet<>();
corpus = patron.matcher(stringBuilder.toString());


while (corpus.find()) {
    resultado.add(corpus.group(0));


}
```

```
      Set<String> resultadoFormaeado = new HashSet<>();

      Iterator it = resultado.iterator();

      while (it.hasNext()) {

         String app = (String) it.next();

         String formatearApp = "";

         //formatearApp = app.replaceAll("<a\\shref=\\\"", "play.google.com").replaceAll("[><]",
"").replaceAll("(div\\sclass=\"(\\w+\\s\\w+)\").replaceAll("(title=)", "Nombre app: ").replaceAll("\"", ""));

         formatearApp = app.replaceAll("a href=", "play.google.com").replaceAll("[><]",
"").replaceAll("(div\\sclass=\"(\\w+\\s\\w+)\")", "").replaceAll("(title=)", "Nombre app: ").replaceAll("\"", "");


         resultadoFormaeado.add(formatearApp);


      }


      Actividad actividad = new Actividad(generarID(), texto, resultadoFormaeado);


      return actividad;


   }


   @Override
   public int generarID() {


      return getListaGenerica().size() + 1;


   }


}
```

CONTROLADORCURSO:

```java
/*
 * To change this license header, choose License Headers in Project Properties.
 * To change this template file, choose Tools | Templates
 * and open the template in the editor.
 */
package ups.edu.ec.controlador;


/**
 *
 * @author User
 */
public class ControladorCurso extends Controlador {

    public ControladorCurso(String ruta) {
        super(ruta);
    }


    @Override
    public int generarID() {
        return getListaGenerica().size() + 1;
    }


}
```

Paquete vista:

VENTANAPRINCIPAL:

```java
/*
 * To change this license header, choose License Headers in Project Properties.
 * To change this template file, choose Tools | Templates
 * and open the template in the editor.
 */
package ups.edu.ec.vista;


import javax.swing.JOptionPane;
import ups.edu.ec.controlador.ControladorActividad;
import ups.edu.ec.controlador.ControladorAlumno;
import ups.edu.ec.controlador.ControladorCurso;
import ups.edu.ec.controlador.ControladorDocente;
import ups.edu.ec.controlador.ControladorRector;
import ups.edu.ec.modelo.Docente;
import ups.edu.ec.modelo.Rector;


/**
 *
 * @author User
 */
public class VentanaPrincipal1 extends javax.swing.JFrame {

    private ControladorRector controladorRector;
    private ControladorDocente controladorDocente;
    private ControladorAlumno controladorAlumno;
    private ControladorActividad controladorActividad;
    private ControladorCurso controladorCurso;
```

```java
    private VentanaRector ventanaRector;

    private VentanaLogIn ventanaLogIn;

    private VentanaCrearDocente ventanaCrearDocente;

    private VentanaAlumno ventanaAlumno;

    private VentanaCursoRector ventanaCursoRector;

    private VentanaCursoDocente ventanaCursoDocente;

    private VentanaActividad ventanaActividad;

    private VentanaGestionCurso ventanaGestionCurso;


    private boolean inicioSesion;


    /**
     * Creates new form VentanaPrincipal
     */
    public VentanaPrincipal1() {

        initComponents();

        controladorRector = new ControladorRector("C:\\Users\\User\\Desktop\\ProgramacionAplicada\\Examen Practico Java\\rector.obj");

        controladorDocente = new ControladorDocente("C:\\Users\\User\\Desktop\\ProgramacionAplicada\\Examen Practico Java\\docentes.obj");

        controladorAlumno = new ControladorAlumno("C:\\Users\\User\\Desktop\\ProgramacionAplicada\\Examen Practico Java\\alumnos.obj");

        controladorActividad = new ControladorActividad("C:\\Users\\User\\Desktop\\ProgramacionAplicada\\Examen Practico Java\\actividades.obj");

        controladorCurso = new ControladorCurso("C:\\Users\\User\\Desktop\\ProgramacionAplicada\\Examen Practico Java\\cursos.obj");


        inicioSesion = false;


        ventanaRector = new VentanaRector(controladorRector);
```

```
ventanaLogIn = new VentanaLogIn(controladorRector, controladorDocente);

ventanaCrearDocente = new VentanaCrearDocente(controladorDocente);

ventanaAlumno = new VentanaAlumno(controladorAlumno, controladorCurso);

ventanaCursoRector = new VentanaCursoRector(controladorCurso, controladorDocente);

ventanaCursoDocente = new VentanaCursoDocente(controladorCurso, controladorActividad, controladorAlumno);

ventanaActividad = new VentanaActividad(controladorActividad);

ventanaGestionCurso = new VentanaGestionCurso(controladorCurso, controladorActividad, controladorAlumno);


desktopPane.add(ventanaRector);

desktopPane.add(ventanaLogIn);

desktopPane.add(ventanaCrearDocente);

desktopPane.add(ventanaAlumno);

desktopPane.add(ventanaCursoRector);

desktopPane.add(ventanaCursoDocente);

desktopPane.add(ventanaActividad);

desktopPane.add(ventanaGestionCurso);


this.setExtendedState(VentanaPrincipal1.MAXIMIZED_BOTH);


}


public void cerrarVentanas() {

ventanaRector.hide();

ventanaLogIn.hide();

ventanaCrearDocente.hide();

ventanaAlumno.hide();

ventanaCursoRector.hide();

ventanaCursoDocente.hide();

ventanaActividad.hide();
```

```java
        ventanaGestionCurso.hide();

}


/**

 * 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">
private void initComponents() {


    desktopPane = new javax.swing.JDesktopPane();

    menuBar = new javax.swing.JMenuBar();

    fileMenu = new javax.swing.JMenu();

    rectorMenuItem = new javax.swing.JMenuItem();

    logInMenuItem = new javax.swing.JMenuItem();

    cerrarSesionMenuItem = new javax.swing.JMenuItem();

    exitMenuItem = new javax.swing.JMenuItem();

    editMenu = new javax.swing.JMenu();

    docenteMenuItem = new javax.swing.JMenuItem();

    alumnoMenuItem = new javax.swing.JMenuItem();

    actividadMenuItem = new javax.swing.JMenuItem();

    cursoAsignarRectorMenuItem = new javax.swing.JMenuItem();

    cursoDocenteMenuItem = new javax.swing.JMenuItem();

    helpMenu = new javax.swing.JMenu();

    gestionCursoMenuItem = new javax.swing.JMenuItem();


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

```java
fileMenu.setMnemonic('f');

fileMenu.setText("Inicio");


rectorMenuItem.setMnemonic('o');

rectorMenuItem.setText("Rector");

rectorMenuItem.addActionListener(new java.awt.event.ActionListener() {

    public void actionPerformed(java.awt.event.ActionEvent evt) {

        rectorMenuItemActionPerformed(evt);

    }

});

fileMenu.add(rectorMenuItem);


logInMenuItem.setMnemonic('s');

logInMenuItem.setText("Log In");

logInMenuItem.addActionListener(new java.awt.event.ActionListener() {

    public void actionPerformed(java.awt.event.ActionEvent evt) {

        logInMenuItemActionPerformed(evt);

    }

});

fileMenu.add(logInMenuItem);


cerrarSesionMenuItem.setMnemonic('a');

cerrarSesionMenuItem.setText("Cerrar Sesión");

cerrarSesionMenuItem.addActionListener(new java.awt.event.ActionListener() {

    public void actionPerformed(java.awt.event.ActionEvent evt) {

        cerrarSesionMenuItemActionPerformed(evt);

    }

});
```

```java
fileMenu.add(cerrarSesionMenuItem);


exitMenuItem.setMnemonic('x');

exitMenuItem.setText("Exit");

exitMenuItem.addActionListener(new java.awt.event.ActionListener() {

   public void actionPerformed(java.awt.event.ActionEvent evt) {

      exitMenuItemActionPerformed(evt);

   }

});

fileMenu.add(exitMenuItem);


menuBar.add(fileMenu);


editMenu.setMnemonic('e');

editMenu.setText("Crear");

editMenu.addActionListener(new java.awt.event.ActionListener() {

   public void actionPerformed(java.awt.event.ActionEvent evt) {

      editMenuActionPerformed(evt);

   }

});


docenteMenuItem.setMnemonic('t');

docenteMenuItem.setText("Docente");

docenteMenuItem.addActionListener(new java.awt.event.ActionListener() {

   public void actionPerformed(java.awt.event.ActionEvent evt) {

      docenteMenuItemActionPerformed(evt);

   }

});

editMenu.add(docenteMenuItem);
```

```java
alumnoMenuItem.setMnemonic('y');

alumnoMenuItem.setText("Alumno");

alumnoMenuItem.addActionListener(new java.awt.event.ActionListener() {

    public void actionPerformed(java.awt.event.ActionEvent evt) {

        alumnoMenuItemActionPerformed(evt);

    }

});

editMenu.add(alumnoMenuItem);


actividadMenuItem.setMnemonic('p');

actividadMenuItem.setText("Actividad");

actividadMenuItem.addActionListener(new java.awt.event.ActionListener() {

    public void actionPerformed(java.awt.event.ActionEvent evt) {

        actividadMenuItemActionPerformed(evt);

    }

});

editMenu.add(actividadMenuItem);


cursoAsignarRectorMenuItem.setMnemonic('d');

cursoAsignarRectorMenuItem.setText("Curso - Rector");

cursoAsignarRectorMenuItem.addActionListener(new java.awt.event.ActionListener() {

    public void actionPerformed(java.awt.event.ActionEvent evt) {

        cursoAsignarRectorMenuItemActionPerformed(evt);

    }

});

editMenu.add(cursoAsignarRectorMenuItem);


cursoDocenteMenuItem.setText("Curso - Docente");
```

```java
cursoDocenteMenuItem.addActionListener(new java.awt.event.ActionListener() {

    public void actionPerformed(java.awt.event.ActionEvent evt) {

        cursoDocenteMenuItemActionPerformed(evt);

    }

});

editMenu.add(cursoDocenteMenuItem);


menuBar.add(editMenu);


helpMenu.setMnemonic('h');

helpMenu.setText("Gestion");


gestionCursoMenuItem.setMnemonic('c');

gestionCursoMenuItem.setText("Curso");

gestionCursoMenuItem.addActionListener(new java.awt.event.ActionListener() {

    public void actionPerformed(java.awt.event.ActionEvent evt) {

        gestionCursoMenuItemActionPerformed(evt);

    }

});

helpMenu.add(gestionCursoMenuItem);


menuBar.add(helpMenu);


setJMenuBar(menuBar);


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

getContentPane().setLayout(layout);

layout.setHorizontalGroup(

    layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
```

```java
        .addComponent(desktopPane, javax.swing.GroupLayout.DEFAULT_SIZE, 400, Short.MAX_VALUE)
    );
    layout.setVerticalGroup(
        layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
        .addComponent(desktopPane, javax.swing.GroupLayout.DEFAULT_SIZE, 279, Short.MAX_VALUE)
    );

    pack();
}// </editor-fold>


private void exitMenuItemActionPerformed(java.awt.event.ActionEvent evt) {
    System.exit(0);
}


private void rectorMenuItemActionPerformed(java.awt.event.ActionEvent evt) {
    // TODO add your handling code here:
    cerrarVentanas();
    ventanaRector.setVisible(true);
}


private void logInMenuItemActionPerformed(java.awt.event.ActionEvent evt) {
    cerrarVentanas();
    if (Rector.instance == null || Docente.instance == null) {
        ventanaLogIn.setVisible(true);
        inicioSesion = true;
    } else {
        JOptionPane.showMessageDialog(this, "Ya existe un usuario que inicio sesión", "Error",
JOptionPane.ERROR_MESSAGE);
    }
```

```java
}


private void cerrarSesionMenuItemActionPerformed(java.awt.event.ActionEvent evt) {
    // TODO add your handling code here:
    if (inicioSesion) {
        Rector.instance = null;
        Docente.instance = null;
        cerrarVentanas();
        JOptionPane.showMessageDialog(this, "Sesión cerrada", "Mensaje", JOptionPane.INFORMATION_MESSAGE);


    } else {
        JOptionPane.showMessageDialog(this, "Nadie ha iniciado sesión", "Error", JOptionPane.ERROR_MESSAGE);
    }
}


private void docenteMenuItemActionPerformed(java.awt.event.ActionEvent evt) {
    // TODO add your handling code here:
    cerrarVentanas();
    if (Rector.instance != null) {
        ventanaCrearDocente.setVisible(true);
    } else {
        JOptionPane.showMessageDialog(this, "Inicie Sesion", "Error", JOptionPane.ERROR_MESSAGE);
    }
}


private void alumnoMenuItemActionPerformed(java.awt.event.ActionEvent evt) {
    // TODO add your handling code here:
    cerrarVentanas();
    if (Docente.instance != null) {
```

```java
        ventanaAlumno.setVisible(true);

    } else {

        JOptionPane.showMessageDialog(this, "Inicie Sesion", "Error", JOptionPane.ERROR_MESSAGE);

    }



}


private void editMenuActionPerformed(java.awt.event.ActionEvent evt) {

    // TODO add your handling code here:



}


private void cursoAsignarRectorMenuItemActionPerformed(java.awt.event.ActionEvent evt) {

    // TODO add your handling code here:

    cerrarVentanas();

    if (Rector.instance != null) {

        ventanaCursoRector.setVisible(true);

    } else {

        JOptionPane.showMessageDialog(this, "Inicie Sesion", "Error", JOptionPane.ERROR_MESSAGE);

    }

}


private void cursoDocenteMenuItemActionPerformed(java.awt.event.ActionEvent evt) {

    // TODO add your handling code here:

    cerrarVentanas();

    if (Docente.instance != null) {

        ventanaCursoDocente.setVisible(true);
```

```java
  } else {

    JOptionPane.showMessageDialog(this, "Inicie Sesion", "Error", JOptionPane.ERROR_MESSAGE);

  }



}


private void actividadMenuItemActionPerformed(java.awt.event.ActionEvent evt) {

  // TODO add your handling code here:

  cerrarVentanas();

  if (Docente.instance != null) {

    ventanaActividad.setVisible(true);

  } else {

    JOptionPane.showMessageDialog(this, "Inicie Sesion", "Error", JOptionPane.ERROR_MESSAGE);

  }

}


private void gestionCursoMenuItemActionPerformed(java.awt.event.ActionEvent evt) {

  // TODO add your handling code here:

  cerrarVentanas();


  if (Docente.instance != null) {

    ventanaGestionCurso.setVisible(true);

  } else {

    JOptionPane.showMessageDialog(this, "Inicie Sesion", "Error", JOptionPane.ERROR_MESSAGE);

  }

}


/**
```

```java
 * @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(VentanaPrincipal1.class.getName()).log(java.util.logging.Level.SEVERE, null, ex);
    } catch (InstantiationException ex) {
        java.util.logging.Logger.getLogger(VentanaPrincipal1.class.getName()).log(java.util.logging.Level.SEVERE, null, ex);
    } catch (IllegalAccessException ex) {
        java.util.logging.Logger.getLogger(VentanaPrincipal1.class.getName()).log(java.util.logging.Level.SEVERE, null, ex);
    } catch (javax.swing.UnsupportedLookAndFeelException ex) {
        java.util.logging.Logger.getLogger(VentanaPrincipal1.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() {
```

```java
        new VentanaPrincipal1().setVisible(true);

      }

    });

  }


// Variables declaration - do not modify

private javax.swing.JMenuItem actividadMenuItem;

private javax.swing.JMenuItem alumnoMenuItem;

private javax.swing.JMenuItem cerrarSesionMenuItem;

private javax.swing.JMenuItem cursoAsignarRectorMenuItem;

private javax.swing.JMenuItem cursoDocenteMenuItem;

private javax.swing.JDesktopPane desktopPane;

private javax.swing.JMenuItem docenteMenuItem;

private javax.swing.JMenu editMenu;

private javax.swing.JMenuItem exitMenuItem;

private javax.swing.JMenu fileMenu;

private javax.swing.JMenuItem gestionCursoMenuItem;

private javax.swing.JMenu helpMenu;

private javax.swing.JMenuItem logInMenuItem;

private javax.swing.JMenuBar menuBar;

private javax.swing.JMenuItem rectorMenuItem;

// End of variables declaration


}
```

VENTANALOGIN:

```java
/*
 * To change this license header, choose License Headers in Project Properties.
 * To change this template file, choose Tools | Templates
 * and open the template in the editor.
 */
package ups.edu.ec.vista;

import javax.swing.JOptionPane;
import ups.edu.ec.controlador.ControladorDocente;
import ups.edu.ec.controlador.ControladorRector;
import ups.edu.ec.modelo.Docente;
import ups.edu.ec.modelo.Rector;

/**
 *
 * @author User
 */
public class VentanaLogIn extends javax.swing.JInternalFrame {

    private ControladorRector controladorRector;
    private ControladorDocente controladorDocente;

    private String opcion;

    /**
     * Creates new form VentanaLogIn
     */
    public VentanaLogIn(ControladorRector controladorRector, ControladorDocente controladorDocente) {
```

```java
    initComponents();

    this.controladorRector = controladorRector;

    this.controladorDocente = controladorDocente;

    opcion = "";

}


public void seleccionarOpcion() {

    txtCorreo.setEditable(false);

    txtPassword.setEditable(false);

    btnLogIn.setEnabled(false);

    btnCancelar.setEnabled(false);

}


public void activarOpcion() {

    txtCorreo.setEditable(true);

    txtPassword.setEditable(true);

    btnLogIn.setEnabled(true);

    btnCancelar.setEnabled(true);

}


public void limpiar() {

    txtCorreo.setText("");

    txtPassword.setText("");

    cbxLogIn.setSelectedIndex(0);

    seleccionarOpcion();


}


/**
```

```
 * 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">

private void initComponents() {


  jPanel1 = new javax.swing.JPanel();

  jLabel1 = new javax.swing.JLabel();

  jLabel2 = new javax.swing.JLabel();

  txtCorreo = new javax.swing.JTextField();

  txtPassword = new javax.swing.JPasswordField();

  jPanel2 = new javax.swing.JPanel();

  btnLogIn = new javax.swing.JButton();

  btnCancelar = new javax.swing.JButton();

  jPanel3 = new javax.swing.JPanel();

  jLabel3 = new javax.swing.JLabel();

  cbxLogIn = new javax.swing.JComboBox<>();


  setClosable(true);

  setDefaultCloseOperation(javax.swing.WindowConstants.HIDE_ON_CLOSE);

  setTitle("Log In");


  jLabel1.setText("Correo:");


  jLabel2.setText("Password:");


  txtCorreo.setEditable(false);
```

```java
txtPassword.setEditable(false);


javax.swing.GroupLayout jPanel1Layout = new javax.swing.GroupLayout(jPanel1);

jPanel1.setLayout(jPanel1Layout);

jPanel1Layout.setHorizontalGroup(

    jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

    .addGroup(jPanel1Layout.createSequentialGroup()

        .addGap(42, 42, 42)

        .addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

            .addComponent(jLabel1)

            .addComponent(jLabel2))

        .addGap(61, 61, 61)

        .addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING, false)

            .addComponent(txtCorreo)

            .addComponent(txtPassword, javax.swing.GroupLayout.DEFAULT_SIZE, 214, Short.MAX_VALUE))

        .addContainerGap(42, Short.MAX_VALUE))

);

jPanel1Layout.setVerticalGroup(

    jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

    .addGroup(jPanel1Layout.createSequentialGroup()

        .addContainerGap()

        .addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)

            .addComponent(jLabel1)

            .addComponent(txtCorreo, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))

        .addGap(25, 25, 25)

        .addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)

            .addComponent(jLabel2)
```

```java
        .addComponent(txtPassword, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))

        .addContainerGap(javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE))

    );


    btnLogIn.setBackground(new java.awt.Color(51, 51, 255));

    btnLogIn.setText("Log In");

    btnLogIn.setEnabled(false);

    btnLogIn.addActionListener(new java.awt.event.ActionListener() {

      public void actionPerformed(java.awt.event.ActionEvent evt) {

        btnLogInActionPerformed(evt);

      }

    });


    btnCancelar.setBackground(new java.awt.Color(255, 51, 51));

    btnCancelar.setText("Cancelar");

    btnCancelar.setEnabled(false);

    btnCancelar.addActionListener(new java.awt.event.ActionListener() {

      public void actionPerformed(java.awt.event.ActionEvent evt) {

        btnCancelarActionPerformed(evt);

      }

    });


    javax.swing.GroupLayout jPanel2Layout = new javax.swing.GroupLayout(jPanel2);

    jPanel2.setLayout(jPanel2Layout);

    jPanel2Layout.setHorizontalGroup(

      jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

      .addGroup(jPanel2Layout.createSequentialGroup()

        .addGap(132, 132, 132)
```

```java
        .addComponent(btnLogIn)

        .addGap(49, 49, 49)

        .addComponent(btnCancelar)

        .addContainerGap(105, Short.MAX_VALUE))
);

jPanel2Layout.setVerticalGroup(

    jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

    .addGroup(jPanel2Layout.createSequentialGroup()

        .addContainerGap()

        .addGroup(jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)

            .addComponent(btnLogIn)

            .addComponent(btnCancelar))

        .addContainerGap(12, Short.MAX_VALUE))
);


jLabel3.setText("Log In de:");


cbxLogIn.setModel(new javax.swing.DefaultComboBoxModel<>(new String[] { "--Seleccionar--", "Rector", "Docente" }));
cbxLogIn.addActionListener(new java.awt.event.ActionListener() {

    public void actionPerformed(java.awt.event.ActionEvent evt) {

        cbxLogInActionPerformed(evt);

    }
});


javax.swing.GroupLayout jPanel3Layout = new javax.swing.GroupLayout(jPanel3);

jPanel3.setLayout(jPanel3Layout);

jPanel3Layout.setHorizontalGroup(

    jPanel3Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

    .addGroup(jPanel3Layout.createSequentialGroup()
```

```
        .addGap(38, 38, 38)

        .addComponent(jLabel3)

        .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED, 90, Short.MAX_VALUE)

        .addComponent(cbxLogIn, javax.swing.GroupLayout.PREFERRED_SIZE, 195,
javax.swing.GroupLayout.PREFERRED_SIZE)

        .addContainerGap())

    );

    jPanel3Layout.setVerticalGroup(

        jPanel3Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

        .addGroup(jPanel3Layout.createSequentialGroup()

        .addContainerGap(28, Short.MAX_VALUE)

        .addGroup(jPanel3Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)

            .addComponent(jLabel3)

            .addComponent(cbxLogIn, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))

        .addGap(21, 21, 21))

    );


    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(30, Short.MAX_VALUE)

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

            .addGroup(javax.swing.GroupLayout.Alignment.TRAILING, layout.createSequentialGroup()

            .addComponent(jPanel1, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)

            .addGap(31, 31, 31))

        .addGroup(javax.swing.GroupLayout.Alignment.TRAILING, layout.createSequentialGroup()
```

```java
        .addComponent(jPanel2, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)

          .addGap(40, 40, 40))))

      .addGroup(layout.createSequentialGroup()

        .addGap(30, 30, 30)

        .addComponent(jPanel3, javax.swing.GroupLayout.PREFERRED_SIZE, javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.PREFERRED_SIZE)

        .addGap(0, 0, Short.MAX_VALUE))
    );
    layout.setVerticalGroup(

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

      .addGroup(layout.createSequentialGroup()

        .addComponent(jPanel3, javax.swing.GroupLayout.PREFERRED_SIZE, javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.PREFERRED_SIZE)

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

        .addComponent(jPanel1, javax.swing.GroupLayout.PREFERRED_SIZE, javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.PREFERRED_SIZE)

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

        .addComponent(jPanel2, javax.swing.GroupLayout.PREFERRED_SIZE, javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.PREFERRED_SIZE)

        .addContainerGap(javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE))
    );


    pack();
  }// </editor-fold>


  private void btnLogInActionPerformed(java.awt.event.ActionEvent evt) {

    // TODO add your handling code here:


    String correo = txtCorreo.getText();

    String password = txtPassword.getText();
```

```java
   if (opcion.equals("Rector")) {

      Rector rector = controladorRector.login(correo, password);


      if (Rector.instance == null) {

         JOptionPane.showMessageDialog(this, "Datos incorrectos intentelo de nuevo", "Error",
JOptionPane.ERROR_MESSAGE);


      } else {

         JOptionPane.showMessageDialog(this, "Sesion iniciada con exito", "Mensaje",
JOptionPane.INFORMATION_MESSAGE);

         limpiar();

         this.hide();

      }
   } else {

      Docente docente = controladorDocente.login(correo, password);

      if (docente == null) {

         JOptionPane.showMessageDialog(this, "Datos incorrectos intentelo de nuevo", "Error",
JOptionPane.ERROR_MESSAGE);

      } else {

         JOptionPane.showMessageDialog(this, "Sesion iniciada con exito", "Mensaje",
JOptionPane.INFORMATION_MESSAGE);

         limpiar();

         this.hide();

      }
   }



  }
```

```java
private void cbxLogInActionPerformed(java.awt.event.ActionEvent evt) {

    // TODO add your handling code here:


    opcion = (String) cbxLogIn.getSelectedItem();


    if (opcion.equals("--Seleccionar--")) {

        seleccionarOpcion();

    } else {

        activarOpcion();

    }



}


private void btnCancelarActionPerformed(java.awt.event.ActionEvent evt) {

    // TODO add your handling code here:

    limpiar();



}



// Variables declaration - do not modify

private javax.swing.JButton btnCancelar;

private javax.swing.JButton btnLogIn;

private javax.swing.JComboBox<String> cbxLogIn;

private javax.swing.JLabel jLabel1;

private javax.swing.JLabel jLabel2;

private javax.swing.JLabel jLabel3;

private javax.swing.JPanel jPanel1;
```

```java
    private javax.swing.JPanel jPanel2;

    private javax.swing.JPanel jPanel3;

    private javax.swing.JTextField txtCorreo;

    private javax.swing.JPasswordField txtPassword;

    // End of variables declaration

}
```

VENTANARECTOR

```java
/*
 * To change this license header, choose License Headers in Project Properties.
 * To change this template file, choose Tools | Templates
 * and open the template in the editor.
 */
package ups.edu.ec.vista;


import java.lang.reflect.Constructor;

import java.lang.reflect.InvocationTargetException;

import java.util.List;

import java.util.logging.Level;

import java.util.logging.Logger;

import javax.swing.JOptionPane;

import ups.edu.ec.controlador.ControladorRector;

import ups.edu.ec.modelo.Rector;


/**
 *
 * @author User
 */
public class VentanaRector extends javax.swing.JInternalFrame {
```

```java
private ControladorRector controladorRector;


/**
 * Creates new form VentanaRector
 *
 * @param controladorRector
 */
public VentanaRector(ControladorRector controladorRector) {
    initComponents();


    this.controladorRector = controladorRector;
    this.comprobarExistencia();
}


public void comprobarExistencia() {
    if (!controladorRector.getListaGenerica().isEmpty()) {
        btnEditar.setEnabled(true);
        btnEliminar.setEnabled(true);
        btnCrear.setEnabled(false);
        cargarDatos();
    } else {
        btnCrear.setEnabled(true);
        btnEditar.setEnabled(false);
        btnEliminar.setEnabled(false);
    }
}


public void cargarDatos() {
```

```java
List<Rector> rector = (List<Rector>) controladorRector.getListaGenerica();


txtNombre.setText(rector.get(0).getNombre());

txtApellido.setText(rector.get(0).getApellido());

txtFormattedCedula.setValue(rector.get(0).getCedula());

txtCorreo.setText(rector.get(0).getCorreo());

txtPassword.setText(rector.get(0).getPassword());

cbxGenero.setSelectedItem(rector.get(0).getGenero());


}


/**
 * 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">
private void initComponents() {


  jPanel1 = new javax.swing.JPanel();

  jLabel1 = new javax.swing.JLabel();

  jLabel2 = new javax.swing.JLabel();

  jLabel3 = new javax.swing.JLabel();

  jLabel4 = new javax.swing.JLabel();

  jLabel5 = new javax.swing.JLabel();

  jLabel6 = new javax.swing.JLabel();

  txtNombre = new javax.swing.JTextField();

  txtApellido = new javax.swing.JTextField();
```

```java
txtCorreo = new javax.swing.JTextField();

txtFormattedCedula = new javax.swing.JFormattedTextField();

txtPassword = new javax.swing.JPasswordField();

cbxGenero = new javax.swing.JComboBox<>();

jPanel2 = new javax.swing.JPanel();

btnCrear = new javax.swing.JButton();

btnEditar = new javax.swing.JButton();

btnEliminar = new javax.swing.JButton();


setClosable(true);

setDefaultCloseOperation(javax.swing.WindowConstants.HIDE_ON_CLOSE);

setTitle("Rector");

addInternalFrameListener(new javax.swing.event.InternalFrameListener() {

    public void internalFrameActivated(javax.swing.event.InternalFrameEvent evt) {

        formInternalFrameActivated(evt);

    }

    public void internalFrameClosed(javax.swing.event.InternalFrameEvent evt) {

    }

    public void internalFrameClosing(javax.swing.event.InternalFrameEvent evt) {

    }

    public void internalFrameDeactivated(javax.swing.event.InternalFrameEvent evt) {

    }

    public void internalFrameDeiconified(javax.swing.event.InternalFrameEvent evt) {

    }

    public void internalFrameIconified(javax.swing.event.InternalFrameEvent evt) {

    }

    public void internalFrameOpened(javax.swing.event.InternalFrameEvent evt) {

    }

});
```

```
jLabel1.setText("Nombre(s):");


jLabel2.setText("Apellidos:");


jLabel3.setText("Cédula:");


jLabel4.setText("Correo:");


jLabel5.setText("Password:");


jLabel6.setText("Género:");


cbxGenero.setModel(new javax.swing.DefaultComboBoxModel<>(new String[] { "--Seleccionar--", "Masculino",
"Femenino" }));


javax.swing.GroupLayout jPanel1Layout = new javax.swing.GroupLayout(jPanel1);

jPanel1.setLayout(jPanel1Layout);

jPanel1Layout.setHorizontalGroup(

    jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

    .addGroup(jPanel1Layout.createSequentialGroup()

      .addGap(15, 15, 15)

      .addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

        .addComponent(jLabel1)

        .addComponent(jLabel2)

        .addComponent(jLabel3)

        .addComponent(jLabel4)

        .addComponent(jLabel5)

        .addComponent(jLabel6))
```

```java
        .addGap(86, 86, 86)

        .addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING, false)

            .addComponent(txtCorreo)

            .addComponent(txtNombre)

            .addComponent(txtApellido)

            .addComponent(txtFormattedCedula)

            .addComponent(txtPassword)

            .addComponent(cbxGenero, 0, 212, Short.MAX_VALUE))

        .addContainerGap(javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE))

    );

    jPanel1Layout.setVerticalGroup(

        jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

        .addGroup(jPanel1Layout.createSequentialGroup()

            .addGap(12, 12, 12)

            .addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)

                .addComponent(jLabel1)

                .addComponent(txtNombre, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))

            .addGap(18, 18, 18)

            .addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)

                .addComponent(jLabel2)

                .addComponent(txtApellido, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))

            .addGap(18, 18, 18)

            .addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)

                .addComponent(jLabel3)

                .addComponent(txtFormattedCedula, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))

            .addGap(18, 18, 18)

            .addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
```

```
        .addComponent(jLabel4)

        .addComponent(txtCorreo, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))

      .addGap(18, 18, 18)

      .addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)

        .addComponent(jLabel5)

        .addComponent(txtPassword, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))

      .addGap(18, 18, 18)

      .addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)

        .addComponent(jLabel6)

        .addComponent(cbxGenero, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))

      .addContainerGap(16, Short.MAX_VALUE))
    );


    btnCrear.setBackground(new java.awt.Color(51, 51, 255));

    btnCrear.setText("Crear");

    btnCrear.addActionListener(new java.awt.event.ActionListener() {

      public void actionPerformed(java.awt.event.ActionEvent evt) {

        btnCrearActionPerformed(evt);

      }

    });


    btnEditar.setBackground(new java.awt.Color(102, 102, 255));

    btnEditar.setText("Editar");

    btnEditar.setEnabled(false);

    btnEditar.addActionListener(new java.awt.event.ActionListener() {

      public void actionPerformed(java.awt.event.ActionEvent evt) {

        btnEditarActionPerformed(evt);
```

```
        }
    });


btnEliminar.setBackground(new java.awt.Color(255, 51, 51));

btnEliminar.setText("Eliminar");

btnEliminar.addActionListener(new java.awt.event.ActionListener() {

    public void actionPerformed(java.awt.event.ActionEvent evt) {

        btnEliminarActionPerformed(evt);

    }

});


javax.swing.GroupLayout jPanel2Layout = new javax.swing.GroupLayout(jPanel2);

jPanel2.setLayout(jPanel2Layout);

jPanel2Layout.setHorizontalGroup(

    jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

    .addGroup(jPanel2Layout.createSequentialGroup()

        .addGap(53, 53, 53)

        .addComponent(btnCrear)

        .addGap(45, 45, 45)

        .addComponent(btnEditar)

        .addGap(44, 44, 44)

        .addComponent(btnEliminar)

        .addContainerGap(130, Short.MAX_VALUE))

);

jPanel2Layout.setVerticalGroup(

    jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

    .addGroup(javax.swing.GroupLayout.Alignment.TRAILING, jPanel2Layout.createSequentialGroup()

        .addContainerGap(javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)

        .addGroup(jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
```

```
        .addComponent(btnCrear)

        .addComponent(btnEditar)

        .addComponent(btnEliminar))

      .addContainerGap())

  );


  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(78, Short.MAX_VALUE)

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

        .addComponent(jPanel1, javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.DEFAULT_SIZE,
Short.MAX_VALUE)

        .addComponent(jPanel2, javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.DEFAULT_SIZE,
Short.MAX_VALUE))

      .addGap(48, 48, 48))

  );

  layout.setVerticalGroup(

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

    .addGroup(layout.createSequentialGroup()

      .addContainerGap()

      .addComponent(jPanel1, javax.swing.GroupLayout.PREFERRED_SIZE, javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.PREFERRED_SIZE)

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

      .addComponent(jPanel2, javax.swing.GroupLayout.PREFERRED_SIZE, javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.PREFERRED_SIZE)

      .addContainerGap(javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE))

  );
```

```java
    pack();

}// </editor-fold>


private void btnEditarActionPerformed(java.awt.event.ActionEvent evt) {

    String nombre = txtNombre.getText();

    String apellido = txtApellido.getText();

    String cedula = (String) txtFormattedCedula.getValue();

    String correo = txtCorreo.getText();

    String password = txtPassword.getText();

    String genero = (String) cbxGenero.getSelectedItem();


    if (nombre.isBlank() || apellido.isBlank() || cedula.isBlank() || correo.isBlank() || password.isBlank()) {

        JOptionPane.showMessageDialog(this, "Llene todos los campos", "Erro", JOptionPane.ERROR_MESSAGE);


    } else {

        try {

            Constructor<Rector> constructor = Rector.class.getDeclaredConstructor();

            constructor.setAccessible(true);

            Rector rector = constructor.newInstance();


            rector.setId(controladorRector.generarID());

            rector.setNombre(nombre);

            rector.setApellido(apellido);

            rector.setCedula(cedula);

            rector.setGenero(genero);

            rector.setCorreo(correo);

            rector.setPassword(password);
```

```java
    if (controladorRector.update(rector, rector)) {

        JOptionPane.showMessageDialog(this, "Administrador creado con exito", "Mensaje",
JOptionPane.INFORMATION_MESSAGE);

    } else {

        JOptionPane.showMessageDialog(this, "Ha existido un problema", "Error", JOptionPane.ERROR_MESSAGE);

    }


    this.hide();

} catch (IllegalAccessException e) {

    e.printStackTrace();

} catch (NoSuchMethodException ex) {

    Logger.getLogger(VentanaRector.class.getName()).log(Level.SEVERE, null, ex);

} catch (SecurityException ex) {

    Logger.getLogger(VentanaRector.class.getName()).log(Level.SEVERE, null, ex);

} catch (InstantiationException ex) {

    Logger.getLogger(VentanaRector.class.getName()).log(Level.SEVERE, null, ex);

} catch (IllegalArgumentException ex) {

    Logger.getLogger(VentanaRector.class.getName()).log(Level.SEVERE, null, ex);

} catch (InvocationTargetException ex) {

    Logger.getLogger(VentanaRector.class.getName()).log(Level.SEVERE, null, ex);

}

    }

}


private void btnCrearActionPerformed(java.awt.event.ActionEvent evt) {


    String nombre = txtNombre.getText();

    String apellido = txtApellido.getText();

    String cedula = txtFormattedCedula.getText();
```

```java
String correo = txtCorreo.getText();

String password = txtPassword.getText();

String genero = (String) cbxGenero.getSelectedItem();


if (nombre.isBlank() || apellido.isBlank() || cedula.isBlank() || correo.isBlank() || password.isBlank()

    || genero.equals("--Seleccionar--")) {

  JOptionPane.showMessageDialog(this, "Llene todos los campos", "Erro", JOptionPane.ERROR_MESSAGE);


} else {


  try {

    Constructor<Rector> constructor = Rector.class.getDeclaredConstructor();

    constructor.setAccessible(true);

    Rector rector = constructor.newInstance();


    rector.setId(controladorRector.generarID());

    rector.setNombre(nombre);

    rector.setApellido(apellido);

    rector.setCedula(cedula);

    rector.setGenero(genero);

    rector.setCorreo(correo);

    rector.setPassword(password);


    if (controladorRector.create(rector)) {

      JOptionPane.showMessageDialog(this, "Rector actualizado con exito", "Mensaje",
JOptionPane.INFORMATION_MESSAGE);

    } else {

      JOptionPane.showMessageDialog(this, "Ha existido un problema", "Error", JOptionPane.ERROR_MESSAGE);

    }
```

```java
        } catch (IllegalAccessException e) {

            e.printStackTrace();

        } catch (NoSuchMethodException ex) {

            Logger.getLogger(VentanaRector.class.getName()).log(Level.SEVERE, null, ex);

        } catch (SecurityException ex) {

            Logger.getLogger(VentanaRector.class.getName()).log(Level.SEVERE, null, ex);

        } catch (InstantiationException ex) {

            Logger.getLogger(VentanaRector.class.getName()).log(Level.SEVERE, null, ex);

        } catch (IllegalArgumentException ex) {

            Logger.getLogger(VentanaRector.class.getName()).log(Level.SEVERE, null, ex);

        } catch (InvocationTargetException ex) {

            Logger.getLogger(VentanaRector.class.getName()).log(Level.SEVERE, null, ex);

        }

    }

}


private void btnEliminarActionPerformed(java.awt.event.ActionEvent evt) {

    // TODO add your handling code here:

    String nombre = txtNombre.getText();

    String apellido = txtApellido.getText();

    String cedula = (String) txtFormattedCedula.getValue();

    String correo = txtCorreo.getText();

    String password = txtPassword.getText();

    String genero = (String) cbxGenero.getSelectedItem();


    if (nombre.isBlank() || apellido.isBlank() || cedula.isBlank() || correo.isBlank() || password.isBlank()) {

        JOptionPane.showMessageDialog(this, "Llene todos los campos", "Erro", JOptionPane.ERROR_MESSAGE);
```

```java
    } else {

        try {

            Constructor<Rector> constructor = Rector.class.getDeclaredConstructor();

            constructor.setAccessible(true);

            Rector rector = constructor.newInstance();


            rector.setId(controladorRector.generarID());

            rector.setNombre(nombre);

            rector.setApellido(apellido);

            rector.setCedula(cedula);

            rector.setGenero(genero);

            rector.setCorreo(correo);

            rector.setPassword(password);


            if (controladorRector.delete(rector)) {

                JOptionPane.showMessageDialog(this, "Rector eliminado con exito", "Mensaje",
JOptionPane.INFORMATION_MESSAGE);

                txtNombre.setText("");

                txtApellido.setText("");

                txtCorreo.setText("");

                txtFormattedCedula.setValue("");

                txtPassword.setText("");

                cbxGenero.setSelectedIndex(0);


            } else {

                JOptionPane.showMessageDialog(this, "Ha existido un problema", "Error", JOptionPane.ERROR_MESSAGE);

            }
```

```java
        } catch (IllegalAccessException e) {

            e.printStackTrace();

        } catch (NoSuchMethodException ex) {

            Logger.getLogger(VentanaRector.class.getName()).log(Level.SEVERE, null, ex);

        } catch (SecurityException ex) {

            Logger.getLogger(VentanaRector.class.getName()).log(Level.SEVERE, null, ex);

        } catch (InstantiationException ex) {

            Logger.getLogger(VentanaRector.class.getName()).log(Level.SEVERE, null, ex);

        } catch (IllegalArgumentException ex) {

            Logger.getLogger(VentanaRector.class.getName()).log(Level.SEVERE, null, ex);

        } catch (InvocationTargetException ex) {

            Logger.getLogger(VentanaRector.class.getName()).log(Level.SEVERE, null, ex);

        }

    }



}



private void formInternalFrameActivated(javax.swing.event.InternalFrameEvent evt) {

    // TODO add your handling code here:

    comprobarExistencia();

}





// Variables declaration - do not modify

private javax.swing.JButton btnCrear;

private javax.swing.JButton btnEditar;

private javax.swing.JButton btnEliminar;

private javax.swing.JComboBox<String> cbxGenero;

private javax.swing.JLabel jLabel1;
```

```java
    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.JPanel jPanel1;

    private javax.swing.JPanel jPanel2;

    private javax.swing.JTextField txtApellido;

    private javax.swing.JTextField txtCorreo;

    private javax.swing.JFormattedTextField txtFormattedCedula;

    private javax.swing.JTextField txtNombre;

    private javax.swing.JPasswordField txtPassword;

    // End of variables declaration
}
```

VENTANACREARDOCENTE:

```java
/*
 * To change this license header, choose License Headers in Project Properties.
 * To change this template file, choose Tools | Templates
 * and open the template in the editor.
 */
package ups.edu.ec.vista;


import java.lang.reflect.Constructor;

import java.lang.reflect.InvocationTargetException;

import java.util.List;

import java.util.logging.Level;

import java.util.logging.Logger;

import javax.swing.JOptionPane;
```

```java
import javax.swing.table.DefaultTableModel;

import ups.edu.ec.controlador.ControladorDocente;

import ups.edu.ec.modelo.Curso;

import ups.edu.ec.modelo.Docente;

import ups.edu.ec.modelo.Rector;


/**
 *
 * @author User
 */
public class VentanaCrearDocente extends javax.swing.JInternalFrame {


    private ControladorDocente controladorDocente;

    private int id;

  // private Curso cursoProfesor;


    /**
     * Creates new form VentanaCrearDocente
     */
    public VentanaCrearDocente(ControladorDocente controladorDocente) {

        initComponents();


        this.controladorDocente = controladorDocente;

       // cursoProfesor = null;

        llenarTablaDocente();

    }


    public void llenarTablaDocente() {

        List<Docente> listaDocentes = (List<Docente>) controladorDocente.getListaGenerica();
```

```java
        DefaultTableModel modelo = (DefaultTableModel) tblDocentes.getModel();

        modelo.setRowCount(0);


        listaDocentes.forEach(var -> {

            String curso = "";

            if (var.getCurso() == null) {

                curso = "Sin cursos";

            } else {


                curso = var.getCurso().getNombreCurso();

            }

            Object[] row = {var.getNombre() + " " + var.getApellido(), var.getCedula(),

                var.getCorreo(), var.getPassword(), curso, var.getGenero()};


            id = var.getId();

            modelo.addRow(row);

        });


        tblDocentes.setModel(modelo);


    }


    public void limpiar() {

        txtNombre.setText("");

        txtApellido.setText("");

        txtFormattedCedula.setValue("");

        txtCorreo.setText("");

        txtPassword.setText("");
```

```java
        cbxGenero.setSelectedIndex(0);


        btnCrear.setEnabled(true);

        btnEditar.setEnabled(false);

        btnEliminar.setEnabled(false);


        tblDocentes.clearSelection();


    }


    public void activarBotones() {

        btnCrear.setEnabled(false);

        btnEditar.setEnabled(true);

        btnEliminar.setEnabled(true);

    }


    /**

     * 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">

    private void initComponents() {


        jPanel1 = new javax.swing.JPanel();

        jLabel1 = new javax.swing.JLabel();

        jLabel2 = new javax.swing.JLabel();

        jLabel3 = new javax.swing.JLabel();
```

```java
jLabel4 = new javax.swing.JLabel();

jLabel5 = new javax.swing.JLabel();

jLabel6 = new javax.swing.JLabel();

txtNombre = new javax.swing.JTextField();

txtApellido = new javax.swing.JTextField();

txtCorreo = new javax.swing.JTextField();

txtFormattedCedula = new javax.swing.JFormattedTextField();

txtPassword = new javax.swing.JPasswordField();

cbxGenero = new javax.swing.JComboBox<>();

jPanel2 = new javax.swing.JPanel();

btnCrear = new javax.swing.JButton();

btnEditar = new javax.swing.JButton();

btnEliminar = new javax.swing.JButton();

btnCancelar = new javax.swing.JButton();

jScrollPane1 = new javax.swing.JScrollPane();

tblDocentes = new javax.swing.JTable();


setClosable(true);

setDefaultCloseOperation(javax.swing.WindowConstants.HIDE_ON_CLOSE);

addAncestorListener(new javax.swing.event.AncestorListener() {

    public void ancestorAdded(javax.swing.event.AncestorEvent evt) {

        formAncestorAdded(evt);

    }

    public void ancestorMoved(javax.swing.event.AncestorEvent evt) {

    }

    public void ancestorRemoved(javax.swing.event.AncestorEvent evt) {

    }

});
```

```java
jLabel1.setText("Nombre(s):");


jLabel2.setText("Apellidos:");


jLabel3.setText("Cédula:");


jLabel4.setText("Correo:");


jLabel5.setText("Password:");


jLabel6.setText("Género:");


cbxGenero.setModel(new javax.swing.DefaultComboBoxModel<>(new String[] { "--Seleccionar--", "Masculino", "Femenino" }));


javax.swing.GroupLayout jPanel1Layout = new javax.swing.GroupLayout(jPanel1);

jPanel1.setLayout(jPanel1Layout);

jPanel1Layout.setHorizontalGroup(

    jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

    .addGroup(jPanel1Layout.createSequentialGroup()

        .addGap(15, 15, 15)

        .addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

            .addComponent(jLabel1)

            .addComponent(jLabel2)

            .addComponent(jLabel3)

            .addComponent(jLabel4)

            .addComponent(jLabel5)

            .addComponent(jLabel6))

        .addGap(86, 86, 86)
```

```
.addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING, false)

    .addComponent(txtCorreo)

    .addComponent(txtNombre)

    .addComponent(txtApellido)

    .addComponent(txtFormattedCedula)

    .addComponent(txtPassword)

    .addComponent(cbxGenero, 0, 212, Short.MAX_VALUE))

    .addContainerGap(34, Short.MAX_VALUE))

);

jPanel1Layout.setVerticalGroup(

    jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

    .addGroup(jPanel1Layout.createSequentialGroup()

        .addGap(12, 12, 12)

        .addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)

            .addComponent(jLabel1)

            .addComponent(txtNombre, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))

        .addGap(18, 18, 18)

        .addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)

            .addComponent(jLabel2)

            .addComponent(txtApellido, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))

        .addGap(18, 18, 18)

        .addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)

            .addComponent(jLabel3)

            .addComponent(txtFormattedCedula, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))

        .addGap(18, 18, 18)

        .addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)

            .addComponent(jLabel4)
```

```java
                .addComponent(txtCorreo, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))

            .addGap(18, 18, 18)

            .addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)

              .addComponent(jLabel5)

              .addComponent(txtPassword, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))

            .addGap(18, 18, 18)

            .addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)

              .addComponent(jLabel6)

              .addComponent(cbxGenero, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))

            .addContainerGap(16, Short.MAX_VALUE))
    );


    btnCrear.setBackground(new java.awt.Color(51, 51, 255));

    btnCrear.setText("Crear");

    btnCrear.addActionListener(new java.awt.event.ActionListener() {

      public void actionPerformed(java.awt.event.ActionEvent evt) {

        btnCrearActionPerformed(evt);

      }

    });


    btnEditar.setBackground(new java.awt.Color(51, 51, 255));

    btnEditar.setText("Editar");

    btnEditar.setEnabled(false);

    btnEditar.addActionListener(new java.awt.event.ActionListener() {

      public void actionPerformed(java.awt.event.ActionEvent evt) {

        btnEditarActionPerformed(evt);

      }
```

```java
});


btnEliminar.setBackground(new java.awt.Color(255, 51, 51));

btnEliminar.setText("Eliminar");

btnEliminar.setEnabled(false);

btnEliminar.addActionListener(new java.awt.event.ActionListener() {

    public void actionPerformed(java.awt.event.ActionEvent evt) {

        btnEliminarActionPerformed(evt);

    }

});


btnCancelar.setBackground(new java.awt.Color(255, 51, 51));

btnCancelar.setText("Cancelar");

btnCancelar.addActionListener(new java.awt.event.ActionListener() {

    public void actionPerformed(java.awt.event.ActionEvent evt) {

        btnCancelarActionPerformed(evt);

    }

});


javax.swing.GroupLayout jPanel2Layout = new javax.swing.GroupLayout(jPanel2);

jPanel2.setLayout(jPanel2Layout);

jPanel2Layout.setHorizontalGroup(

    jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

    .addGroup(jPanel2Layout.createSequentialGroup()

        .addGap(35, 35, 35)

        .addComponent(btnCrear)

        .addGap(41, 41, 41)

        .addComponent(btnEditar)

        .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED, 42, Short.MAX_VALUE)
```

```java
                .addComponent(btnEliminar)

                .addGap(35, 35, 35)

                .addComponent(btnCancelar)

                .addGap(42, 42, 42))

        );

        jPanel2Layout.setVerticalGroup(

            jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

            .addGroup(javax.swing.GroupLayout.Alignment.TRAILING, jPanel2Layout.createSequentialGroup()

                .addContainerGap(javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)

                .addGroup(jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)

                    .addComponent(btnCrear)

                    .addComponent(btnEditar)

                    .addComponent(btnEliminar)

                    .addComponent(btnCancelar))

                .addContainerGap())

        );


        tblDocentes.setModel(new javax.swing.table.DefaultTableModel(

            new Object [][] {


            },

            new String [] {

                "Nombre", "Cédula", "Correo", "Password", "Curso", "Género"

            }

        ) {

            Class[] types = new Class [] {

                java.lang.String.class, java.lang.String.class, java.lang.String.class, java.lang.String.class, java.lang.String.class,
java.lang.String.class

            };
```

```java
    boolean[] canEdit = new boolean [] {
        false, false, false, false, false, false
    };

    public Class getColumnClass(int columnIndex) {
        return types [columnIndex];
    }

    public boolean isCellEditable(int rowIndex, int columnIndex) {
        return canEdit [columnIndex];
    }
});
tblDocentes.addMouseListener(new java.awt.event.MouseAdapter() {
    public void mouseClicked(java.awt.event.MouseEvent evt) {
        tblDocentesMouseClicked(evt);
    }
});
jScrollPane1.setViewportView(tblDocentes);


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()
        .addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
          .addGroup(layout.createSequentialGroup()
            .addGap(24, 24, 24)
            .addComponent(jPanel1, javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE))
```

```
            .addGroup(javax.swing.GroupLayout.Alignment.TRAILING, layout.createSequentialGroup()

                .addContainerGap(javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)

                .addComponent(jPanel2, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)))

            .addGap(18, 18, 18)

            .addComponent(jScrollPane1, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)

            .addGap(41, 41, 41))
    );
    layout.setVerticalGroup(

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

        .addGroup(layout.createSequentialGroup()

            .addGap(48, 48, 48)

            .addComponent(jPanel1, javax.swing.GroupLayout.PREFERRED_SIZE, javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.PREFERRED_SIZE)

            .addGap(18, 18, 18)

            .addComponent(jPanel2, javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.DEFAULT_SIZE,
Short.MAX_VALUE)

            .addGap(74, 74, 74))

        .addGroup(layout.createSequentialGroup()

            .addGap(33, 33, 33)

            .addComponent(jScrollPane1, javax.swing.GroupLayout.PREFERRED_SIZE, 357,
javax.swing.GroupLayout.PREFERRED_SIZE)

            .addContainerGap(javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE))
    );


    pack();

}// </editor-fold>


private void formAncestorAdded(javax.swing.event.AncestorEvent evt) {
```

```java
        llenarTablaDocente();

}


private void btnCrearActionPerformed(java.awt.event.ActionEvent evt) {

    // TODO add your handling code here:

    String nombre = txtNombre.getText();

    String apellido = txtApellido.getText();

    String cedula = txtFormattedCedula.getText();

    String correo = txtCorreo.getText();

    String password = txtPassword.getText();

    String genero = (String) cbxGenero.getSelectedItem();


    if (nombre.isBlank() || apellido.isBlank() || cedula.isBlank() || correo.isBlank() || password.isBlank()

        || genero.equals("--Seleccionar--")) {

        JOptionPane.showMessageDialog(this, "Llene todos los campos", "Error", JOptionPane.ERROR_MESSAGE);


    } else {


        try {

            Constructor<Docente> constructor = Docente.class.getDeclaredConstructor();

            constructor.setAccessible(true);

            Docente docente = constructor.newInstance();


            docente.setId(controladorDocente.generarID());

            docente.setNombre(nombre);

            docente.setApellido(apellido);

            docente.setCedula(cedula);

            docente.setGenero(genero);

            docente.setCorreo(correo);
```

```java
            docente.setPassword(password);


            if (controladorDocente.create(docente)) {

                JOptionPane.showMessageDialog(this, "Docente creado con exito", "Mensaje",
JOptionPane.INFORMATION_MESSAGE);

                llenarTablaDocente();

                limpiar();

            } else {

                JOptionPane.showMessageDialog(this, "Ha existido un problema", "Error", JOptionPane.ERROR_MESSAGE);

            }


        } catch (IllegalAccessException e) {

            e.printStackTrace();

        } catch (NoSuchMethodException ex) {

            Logger.getLogger(VentanaRector.class.getName()).log(Level.SEVERE, null, ex);

        } catch (SecurityException ex) {

            Logger.getLogger(VentanaRector.class.getName()).log(Level.SEVERE, null, ex);

        } catch (InstantiationException ex) {

            Logger.getLogger(VentanaRector.class.getName()).log(Level.SEVERE, null, ex);

        } catch (IllegalArgumentException ex) {

            Logger.getLogger(VentanaRector.class.getName()).log(Level.SEVERE, null, ex);

        } catch (InvocationTargetException ex) {

            Logger.getLogger(VentanaRector.class.getName()).log(Level.SEVERE, null, ex);

        }

    }

}


private void btnEditarActionPerformed(java.awt.event.ActionEvent evt) {

    // TODO add your handling code here:
```

```java
String nombre = txtNombre.getText();

String apellido = txtApellido.getText();

String cedula = txtFormattedCedula.getText();

String correo = txtCorreo.getText();

String password = txtPassword.getText();

String genero = (String) cbxGenero.getSelectedItem();


if (nombre.isBlank() || apellido.isBlank() || cedula.isBlank() || correo.isBlank() || password.isBlank()

    || genero.equals("--Seleccionar--")) {

  JOptionPane.showMessageDialog(this, "Llene todos los campos", "Error", JOptionPane.ERROR_MESSAGE);


} else {


  try {

    Constructor<Docente> constructor = Docente.class.getDeclaredConstructor();

    constructor.setAccessible(true);

    Docente docente = constructor.newInstance();


    docente.setCedula(cedula);


    docente = (Docente) controladorDocente.read(docente);


    docente.setId(docente.getId());

    docente.setNombre(nombre);

    docente.setApellido(apellido);

    docente.setCedula(cedula);

    docente.setGenero(genero);

    docente.setCorreo(correo);

    docente.setPassword(password);
```

```java
        if (controladorDocente.update(docente, docente)) {

            JOptionPane.showMessageDialog(this, "Docente creado con exito", "Mensaje",
JOptionPane.INFORMATION_MESSAGE);

            llenarTablaDocente();

            limpiar();

        } else {

            JOptionPane.showMessageDialog(this, "Ha existido un problema", "Error", JOptionPane.ERROR_MESSAGE);

        }


    } catch (IllegalAccessException e) {

        e.printStackTrace();

    } catch (NoSuchMethodException ex) {

        Logger.getLogger(VentanaRector.class.getName()).log(Level.SEVERE, null, ex);

    } catch (SecurityException ex) {

        Logger.getLogger(VentanaRector.class.getName()).log(Level.SEVERE, null, ex);

    } catch (InstantiationException ex) {

        Logger.getLogger(VentanaRector.class.getName()).log(Level.SEVERE, null, ex);

    } catch (IllegalArgumentException ex) {

        Logger.getLogger(VentanaRector.class.getName()).log(Level.SEVERE, null, ex);

    } catch (InvocationTargetException ex) {

        Logger.getLogger(VentanaRector.class.getName()).log(Level.SEVERE, null, ex);

    }

  }


}


private void btnEliminarActionPerformed(java.awt.event.ActionEvent evt) {

    // TODO add your handling code here:
```

```
try {

    Constructor<Docente> constructor = Docente.class.getDeclaredConstructor();

    constructor.setAccessible(true);

    Docente docente = constructor.newInstance();


    docente.setId(id);

    docente.setCedula((String) txtFormattedCedula.getValue());


    if (controladorDocente.delete(docente)) {

        JOptionPane.showMessageDialog(this, "Docente eliminado", "Aviso", JOptionPane.INFORMATION_MESSAGE);

        llenarTablaDocente();

        limpiar();

    } else {

        JOptionPane.showMessageDialog(this, "Ha existido un problema", "Error", JOptionPane.ERROR_MESSAGE);

    }


} catch (IllegalAccessException e) {

    e.printStackTrace();

} catch (NoSuchMethodException ex) {

    Logger.getLogger(VentanaRector.class.getName()).log(Level.SEVERE, null, ex);

} catch (SecurityException ex) {

    Logger.getLogger(VentanaRector.class.getName()).log(Level.SEVERE, null, ex);

} catch (InstantiationException ex) {

    Logger.getLogger(VentanaRector.class.getName()).log(Level.SEVERE, null, ex);

} catch (IllegalArgumentException ex) {

    Logger.getLogger(VentanaRector.class.getName()).log(Level.SEVERE, null, ex);

} catch (InvocationTargetException ex) {

    Logger.getLogger(VentanaRector.class.getName()).log(Level.SEVERE, null, ex);
```

```java
    }



}


private void tblDocentesMouseClicked(java.awt.event.MouseEvent evt) {

    // TODO add your handling code here:

    int fila = tblDocentes.getSelectedRow();


    String nombres = (String) tblDocentes.getValueAt(fila, 0);

    String[] nombre = nombres.split(" ", 2);


    txtNombre.setText(nombre[0]);

    txtApellido.setText(nombre[1]);

    txtFormattedCedula.setValue((String) tblDocentes.getValueAt(fila, 1));

    txtCorreo.setText((String) tblDocentes.getValueAt(fila, 2));

    txtPassword.setText((String) tblDocentes.getValueAt(fila, 3));

    cbxGenero.setSelectedItem((String) tblDocentes.getValueAt(fila, 5));


    activarBotones();

}


private void btnCancelarActionPerformed(java.awt.event.ActionEvent evt) {

    // TODO add your handling code here:

    limpiar();

}
```

```java
// Variables declaration - do not modify

private javax.swing.JButton btnCancelar;

private javax.swing.JButton btnCrear;

private javax.swing.JButton btnEditar;

private javax.swing.JButton btnEliminar;

private javax.swing.JComboBox<String> cbxGenero;

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.JPanel jPanel1;

private javax.swing.JPanel jPanel2;

private javax.swing.JScrollPane jScrollPane1;

private javax.swing.JTable tblDocentes;

private javax.swing.JTextField txtApellido;

private javax.swing.JTextField txtCorreo;

private javax.swing.JFormattedTextField txtFormattedCedula;

private javax.swing.JTextField txtNombre;

private javax.swing.JPasswordField txtPassword;
// End of variables declaration

}
```

VENTANAACTIVIDAD:

```java
/*
 * To change this license header, choose License Headers in Project Properties.
 * To change this template file, choose Tools | Templates
 * and open the template in the editor.
 */
package ups.edu.ec.vista;

import java.util.HashSet;
import java.util.Iterator;
import java.util.List;
import java.util.Set;
import javax.swing.JOptionPane;
import javax.swing.table.DefaultTableModel;
import ups.edu.ec.controlador.ControladorActividad;
import ups.edu.ec.modelo.Actividad;

/**
 *
 * @author User
 */
public class VentanaActividad extends javax.swing.JInternalFrame {

    private ControladorActividad controladorActividad;

    private Set<String> aplicacionesActividad;
    private Actividad actividad;

    /**
```

```
 * Creates new form VentanaActividad
 */
public VentanaActividad(ControladorActividad controladorActividad) {

    initComponents();


    this.controladorActividad = controladorActividad;


    aplicacionesActividad = new HashSet<>();

    cargarNumeroActividad();

    //llenarTablaActividades();

}


public void llenarTablaAplicaciones(Set<String> aplicaciones) {

    aplicacionesActividad = aplicaciones;

    Iterator it = aplicaciones.iterator();


    System.out.println(aplicaciones);


    DefaultTableModel modelo = (DefaultTableModel) tblAplicacion.getModel();

    modelo.setRowCount(0);


    while (it.hasNext()) {

        String aplicacion = (String) it.next();

        Object[] row = {aplicacion};

        modelo.addRow(row);


    }


    tblAplicacion.setModel(modelo);
```

```java
}



public void llenarTablaActividades() {

    List<Actividad> actividades = (List<Actividad>) controladorActividad.getListaGenerica();


    DefaultTableModel modelo = (DefaultTableModel) tblActividades.getModel();

    modelo.setRowCount(0);


    if (!actividades.isEmpty()) {

        for (Actividad var : actividades) {


            Object[] row = {var.getId(), var.getTitulo(), var.getAplicaciones()};

            modelo.addRow(row);


        }

    }


    tblActividades.setModel(modelo);


}


public void limpiar() {

    txtTitulo.setText("");


    DefaultTableModel modelo = (DefaultTableModel) tblAplicacion.getModel();

    modelo.setRowCount(0);

    tblAplicacion.setModel(modelo);

    cargarNumeroActividad();
```

```java
//llenarTablaActividades();


    btnEditar.setEnabled(false);

    btnEliminar.setEnabled(false);

    btnAnadir.setEnabled(true);

    btnBuscar.setEnabled(true);


    tblActividades.clearSelection();
}


public void cargarNumeroActividad() {

    txtActividadNumero.setText(String.valueOf(controladorActividad.generarID()));

}


/**
 * 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">
private void initComponents() {


    jPanel1 = new javax.swing.JPanel();

    jLabel1 = new javax.swing.JLabel();

    txtTitulo = new javax.swing.JTextField();

    btnBuscar = new javax.swing.JButton();

    btnCancelar = new javax.swing.JButton();

    jLabel2 = new javax.swing.JLabel();
```

```java
txtActividadNumero = new javax.swing.JTextField();

btnEditar = new javax.swing.JButton();

btnEliminar = new javax.swing.JButton();

jPanel2 = new javax.swing.JPanel();

btnAnadir = new javax.swing.JButton();

jScrollPane1 = new javax.swing.JScrollPane();

tblAplicacion = new javax.swing.JTable();

jScrollPane2 = new javax.swing.JScrollPane();

tblActividades = new javax.swing.JTable();


setClosable(true);

setDefaultCloseOperation(javax.swing.WindowConstants.HIDE_ON_CLOSE);

setTitle("Actividad");

addInternalFrameListener(new javax.swing.event.InternalFrameListener() {

    public void internalFrameActivated(javax.swing.event.InternalFrameEvent evt) {

        formInternalFrameActivated(evt);

    }

    public void internalFrameClosed(javax.swing.event.InternalFrameEvent evt) {

    }

    public void internalFrameClosing(javax.swing.event.InternalFrameEvent evt) {

    }

    public void internalFrameDeactivated(javax.swing.event.InternalFrameEvent evt) {

    }

    public void internalFrameDeiconified(javax.swing.event.InternalFrameEvent evt) {

    }

    public void internalFrameIconified(javax.swing.event.InternalFrameEvent evt) {

    }

    public void internalFrameOpened(javax.swing.event.InternalFrameEvent evt) {

    }
```

```java
});


jLabel1.setText("Título/Busqueda actividades:");


btnBuscar.setBackground(new java.awt.Color(51, 51, 255));

btnBuscar.setText("Buscar");

btnBuscar.addActionListener(new java.awt.event.ActionListener() {

    public void actionPerformed(java.awt.event.ActionEvent evt) {

        btnBuscarActionPerformed(evt);

    }

});


btnCancelar.setBackground(new java.awt.Color(255, 51, 51));

btnCancelar.setText("Cancelar");

btnCancelar.addActionListener(new java.awt.event.ActionListener() {

    public void actionPerformed(java.awt.event.ActionEvent evt) {

        btnCancelarActionPerformed(evt);

    }

});


jLabel2.setText("Actividad número:");


txtActividadNumero.setEditable(false);

txtActividadNumero.setBackground(new java.awt.Color(153, 153, 153));


btnEditar.setBackground(new java.awt.Color(51, 51, 255));

btnEditar.setText("Editar");

btnEditar.setEnabled(false);

btnEditar.addActionListener(new java.awt.event.ActionListener() {
```

```java
public void actionPerformed(java.awt.event.ActionEvent evt) {

    btnEditarActionPerformed(evt);

  }

});


btnEliminar.setBackground(new java.awt.Color(255, 0, 0));

btnEliminar.setText("Eliminar");

btnEliminar.setEnabled(false);

btnEliminar.addActionListener(new java.awt.event.ActionListener() {

  public void actionPerformed(java.awt.event.ActionEvent evt) {

    btnEliminarActionPerformed(evt);

  }

});


javax.swing.GroupLayout jPanel1Layout = new javax.swing.GroupLayout(jPanel1);

jPanel1.setLayout(jPanel1Layout);

jPanel1Layout.setHorizontalGroup(

  jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

  .addGroup(jPanel1Layout.createSequentialGroup()

    .addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

      .addGroup(jPanel1Layout.createSequentialGroup()

        .addGap(53, 53, 53)

        .addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

          .addComponent(jLabel2)

          .addComponent(jLabel1)))

      .addGroup(jPanel1Layout.createSequentialGroup()

        .addGap(83, 83, 83)

        .addComponent(btnBuscar)

        .addGap(47, 47, 47)
```

```
                    .addComponent(btnEditar)))
              .addGap(7, 7, 7)
              .addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.TRAILING)
                 .addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING, false)
                    .addComponent(txtTitulo)
                    .addComponent(txtActividadNumero, javax.swing.GroupLayout.DEFAULT_SIZE, 208, Short.MAX_VALUE))
                 .addGroup(jPanel1Layout.createSequentialGroup()
                    .addComponent(btnEliminar)
                    .addGap(47, 47, 47)
                    .addComponent(btnCancelar)))
              .addContainerGap(javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE))
         );
         jPanel1Layout.setVerticalGroup(
            jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
            .addGroup(jPanel1Layout.createSequentialGroup()
              .addGap(17, 17, 17)
              .addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
                 .addComponent(jLabel2)
                 .addComponent(txtActividadNumero, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))
              .addGap(18, 18, 18)
              .addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
                 .addComponent(jLabel1)
                 .addComponent(txtTitulo, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))
              .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.UNRELATED)
              .addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
                 .addComponent(btnBuscar)
                 .addComponent(btnCancelar)
                 .addComponent(btnEditar)
```

```
            .addComponent(btnEliminar))

        .addContainerGap(14, Short.MAX_VALUE))

);


btnAnadir.setBackground(new java.awt.Color(51, 51, 255));

btnAnadir.setText("Añadir");

btnAnadir.addActionListener(new java.awt.event.ActionListener() {

    public void actionPerformed(java.awt.event.ActionEvent evt) {

        btnAnadirActionPerformed(evt);

    }

});


tblAplicacion.setModel(new javax.swing.table.DefaultTableModel(

    new Object [][] {


    },

    new String [] {

        "Aplicaciones"

    }

) {

    Class[] types = new Class [] {

        java.lang.String.class

    };

    boolean[] canEdit = new boolean [] {

        false

    };


    public Class getColumnClass(int columnIndex) {

        return types [columnIndex];
```

```
        }

    public boolean isCellEditable(int rowIndex, int columnIndex) {

        return canEdit [columnIndex];

    }

});

jScrollPane1.setViewportView(tblAplicacion);


javax.swing.GroupLayout jPanel2Layout = new javax.swing.GroupLayout(jPanel2);

jPanel2.setLayout(jPanel2Layout);

jPanel2Layout.setHorizontalGroup(

    jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

    .addGroup(javax.swing.GroupLayout.Alignment.TRAILING, jPanel2Layout.createSequentialGroup()

        .addContainerGap(25, Short.MAX_VALUE)

        .addComponent(jScrollPane1, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)

        .addGap(68, 68, 68))

    .addGroup(jPanel2Layout.createSequentialGroup()

        .addGap(219, 219, 219)

        .addComponent(btnAnadir)

        .addContainerGap(javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE))

    );

    jPanel2Layout.setVerticalGroup(

    jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

    .addGroup(jPanel2Layout.createSequentialGroup()

        .addContainerGap()

        .addComponent(jScrollPane1, javax.swing.GroupLayout.PREFERRED_SIZE, 335,
javax.swing.GroupLayout.PREFERRED_SIZE)

        .addGap(18, 18, 18)

        .addComponent(btnAnadir)
```

```java
            .addContainerGap(20, Short.MAX_VALUE))
    );


    tblActividades.setModel(new javax.swing.table.DefaultTableModel(
        new Object [][] {

        },
        new String [] {
            "ID", "Título", "Aplicaciones"
        }
    ) {
        Class[] types = new Class [] {
            java.lang.Integer.class, java.lang.String.class, java.lang.String.class
        };
        boolean[] canEdit = new boolean [] {
            false, false, false
        };


        public Class getColumnClass(int columnIndex) {
            return types [columnIndex];
        }


        public boolean isCellEditable(int rowIndex, int columnIndex) {
            return canEdit [columnIndex];
        }
    });
    tblActividades.addMouseListener(new java.awt.event.MouseAdapter() {
        public void mouseClicked(java.awt.event.MouseEvent evt) {
            tblActividadesMouseClicked(evt);
```

```
        }

    });

    jScrollPane2.setViewportView(tblActividades);


    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(24, 24, 24)

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

                .addComponent(jPanel2, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)

                .addComponent(jPanel1, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))

            .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED,
javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)

            .addComponent(jScrollPane2, javax.swing.GroupLayout.PREFERRED_SIZE, 600,
javax.swing.GroupLayout.PREFERRED_SIZE)

            .addGap(66, 66, 66))

    );

    layout.setVerticalGroup(

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

        .addGroup(layout.createSequentialGroup()

            .addContainerGap()

            .addComponent(jPanel1, javax.swing.GroupLayout.PREFERRED_SIZE, javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.PREFERRED_SIZE)

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

            .addComponent(jPanel2, javax.swing.GroupLayout.PREFERRED_SIZE, javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.PREFERRED_SIZE)

            .addContainerGap(12, Short.MAX_VALUE))
```

```
        .addGroup(javax.swing.GroupLayout.Alignment.TRAILING, layout.createSequentialGroup()

            .addContainerGap(javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)

            .addComponent(jScrollPane2, javax.swing.GroupLayout.PREFERRED_SIZE, 454,
javax.swing.GroupLayout.PREFERRED_SIZE)

            .addGap(67, 67, 67))

    );


    pack();

}// </editor-fold>


private void btnBuscarActionPerformed(java.awt.event.ActionEvent evt) {

    // TODO add your handling code here:


    String titulo = txtTitulo.getText();


    if (titulo.isBlank()) {

        JOptionPane.showMessageDialog(this, "Llene el campo título", "Error", JOptionPane.ERROR_MESSAGE);

    } else {

        actividad = controladorActividad.buscarActividad(titulo);

        llenarTablaAplicaciones(actividad.getAplicaciones());

    }


}


private void btnCancelarActionPerformed(java.awt.event.ActionEvent evt) {

    // TODO add your handling code here:

    limpiar();

}
```

```java
private void btnAnadirActionPerformed(java.awt.event.ActionEvent evt) {

    // TODO add your handling code here:


    if (controladorActividad.create(actividad)) {

        JOptionPane.showMessageDialog(this, "Actividad creada con exito", "Mensaje",
JOptionPane.INFORMATION_MESSAGE);

        limpiar();

        llenarTablaActividades();

    } else {

        JOptionPane.showMessageDialog(this, "La actividad ya existe", "Error", JOptionPane.ERROR_MESSAGE);

    }


}


private void formInternalFrameActivated(javax.swing.event.InternalFrameEvent evt) {

    // TODO add your handling code here:

    cargarNumeroActividad();

    limpiar();


}


private void tblActividadesMouseClicked(java.awt.event.MouseEvent evt) {

    // TODO add your handling code here:

    int fila = tblActividades.getSelectedRow();


    txtActividadNumero.setText((String) tblActividades.getValueAt(fila, 0));

    txtTitulo.setText((String) tblActividades.getValueAt(fila, 1));

    Actividad acti = (Actividad) controladorActividad.read(new Actividad(Integer.valueOf((String)
tblActividades.getValueAt(fila, 0)), (String) tblActividades.getValueAt(fila, 1)));

    llenarTablaAplicaciones(acti.getAplicaciones());
```

```java
        btnEditar.setEnabled(true);

        btnEliminar.setEnabled(true);

        btnAnadir.setEnabled(false);

        btnBuscar.setEnabled(true);

    }


    private void btnEditarActionPerformed(java.awt.event.ActionEvent evt) {

        // TODO add your handling code here:

        String titulo = txtTitulo.getText();


        if (titulo.isBlank()) {

            JOptionPane.showMessageDialog(this, "Llene el campo título", "Error", JOptionPane.ERROR_MESSAGE);

        } else {

            actividad = controladorActividad.buscarActividad(titulo);

            actividad.setId(Integer.valueOf(txtActividadNumero.getText()));


            if (controladorActividad.update(actividad, actividad)) {

                JOptionPane.showMessageDialog(this, "Actividad actualiza con exito", "Mensaje",
JOptionPane.INFORMATION_MESSAGE);

                limpiar();

                llenarTablaActividades();

            } else {

                JOptionPane.showMessageDialog(this, "Ha ocurrido un error", "Error", JOptionPane.ERROR_MESSAGE);

                limpiar();

            }

        }

    }
```

```java
    private void btnEliminarActionPerformed(java.awt.event.ActionEvent evt) {

        // TODO add your handling code here:


        Actividad actividad2 = new Actividad(Integer.valueOf(txtActividadNumero.getText()), txtTitulo.getText());


        controladorActividad.delete(actividad2);

        JOptionPane.showMessageDialog(this, "Actividad eliminada con exito", "Mensaje",
JOptionPane.INFORMATION_MESSAGE);

        limpiar();

        llenarTablaActividades();


    }



    // Variables declaration - do not modify

    private javax.swing.JButton btnAnadir;

    private javax.swing.JButton btnBuscar;

    private javax.swing.JButton btnCancelar;

    private javax.swing.JButton btnEditar;

    private javax.swing.JButton btnEliminar;

    private javax.swing.JLabel jLabel1;

    private javax.swing.JLabel jLabel2;

    private javax.swing.JPanel jPanel1;

    private javax.swing.JPanel jPanel2;

    private javax.swing.JScrollPane jScrollPane1;

    private javax.swing.JScrollPane jScrollPane2;

    private javax.swing.JTable tblActividades;

    private javax.swing.JTable tblAplicacion;

    private javax.swing.JTextField txtActividadNumero;
```

```java
    private javax.swing.JTextField txtTitulo;

    // End of variables declaration

}
```

VENTANAALUMNO:

```java
/*
 * To change this license header, choose License Headers in Project Properties.
 * To change this template file, choose Tools | Templates
 * and open the template in the editor.
 */
package ups.edu.ec.vista;


import java.lang.reflect.Constructor;

import java.util.List;

import javax.swing.JOptionPane;

import javax.swing.table.DefaultTableModel;

import ups.edu.ec.controlador.ControladorAlumno;

import ups.edu.ec.controlador.ControladorCurso;

import ups.edu.ec.modelo.Alumno;

import ups.edu.ec.modelo.Curso;

import ups.edu.ec.modelo.Docente;


/**
 *
 * @author User
 */
public class VentanaAlumno extends javax.swing.JInternalFrame {


    private ControladorAlumno controladorAlumno;

    private ControladorCurso controladorCurso;
```

```java
private Alumno alumno;

private String cursoAlumnoSeleccionado;


/**
 * Creates new form VentanaAlumno
 */
public VentanaAlumno(ControladorAlumno controladorAlumno, ControladorCurso controladorCurso) {

    initComponents();


    this.controladorAlumno = controladorAlumno;

    this.controladorAlumno = controladorAlumno;

    llenarTablaAlumnos();

}


public void limpiar() {

    txtNombre.setText("");

    txtApellido.setText("");

    txtFormattedCedula.setValue("");


    cbxGenero.setSelectedIndex(0);


    btnCrear.setEnabled(true);

    btnEditar.setEnabled(false);

    btnEliminar.setEnabled(false);


    tblAlumnos.clearSelection();


    cursoAlumnoSeleccionado = "";
```

```java
}


public void activarBotones() {

    btnCrear.setEnabled(false);

    btnEditar.setEnabled(true);

    btnEliminar.setEnabled(true);

}


public void llenarTablaAlumnos() {

    List<Alumno> listaAlumnos = (List<Alumno>) controladorAlumno.getListaGenerica();


    DefaultTableModel modelo = (DefaultTableModel) tblAlumnos.getModel();

    modelo.setRowCount(0);


    listaAlumnos.stream().map(var -> {

        String curso = "";

        if (var.getCurso() == null) {

            curso = "sin curso";

        } else {

            curso = var.getId() + "|" + var.getCurso().getNombreCurso();

        }

        Object[] row = {var.getNombre() + " " + var.getApellido(), var.getCedula(),

            var.getGenero(), curso};

        return row;

    }).forEachOrdered(row -> {

        modelo.addRow(row);

    });
```

```java
        tblAlumnos.setModel(modelo);


    }


    /**
     * 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">
    private void initComponents() {

        jPanel1 = new javax.swing.JPanel();
        jLabel1 = new javax.swing.JLabel();
        jLabel2 = new javax.swing.JLabel();
        jLabel3 = new javax.swing.JLabel();
        jLabel6 = new javax.swing.JLabel();
        txtNombre = new javax.swing.JTextField();
        txtApellido = new javax.swing.JTextField();
        txtFormattedCedula = new javax.swing.JFormattedTextField();
        cbxGenero = new javax.swing.JComboBox<>();
        jPanel2 = new javax.swing.JPanel();
        btnCrear = new javax.swing.JButton();
        btnEditar = new javax.swing.JButton();
        btnEliminar = new javax.swing.JButton();
        btnCancelar = new javax.swing.JButton();
        jScrollPane1 = new javax.swing.JScrollPane();
        tblAlumnos = new javax.swing.JTable();
```

```java
setClosable(true);

setDefaultCloseOperation(javax.swing.WindowConstants.HIDE_ON_CLOSE);

setTitle("Alumno");

addInternalFrameListener(new javax.swing.event.InternalFrameListener() {

  public void internalFrameActivated(javax.swing.event.InternalFrameEvent evt) {

    formInternalFrameActivated(evt);

  }

  public void internalFrameClosed(javax.swing.event.InternalFrameEvent evt) {

  }

  public void internalFrameClosing(javax.swing.event.InternalFrameEvent evt) {

  }

  public void internalFrameDeactivated(javax.swing.event.InternalFrameEvent evt) {

  }

  public void internalFrameDeiconified(javax.swing.event.InternalFrameEvent evt) {

  }

  public void internalFrameIconified(javax.swing.event.InternalFrameEvent evt) {

  }

  public void internalFrameOpened(javax.swing.event.InternalFrameEvent evt) {

  }

});


jLabel1.setText("Nombre(s):");


jLabel2.setText("Apellidos:");


jLabel3.setText("Cédula:");


jLabel6.setText("Género:");
```

```java
    cbxGenero.setModel(new javax.swing.DefaultComboBoxModel<>(new String[] { "--Seleccionar--", "Masculino",
"Femenino" }));


    javax.swing.GroupLayout jPanel1Layout = new javax.swing.GroupLayout(jPanel1);

    jPanel1.setLayout(jPanel1Layout);

    jPanel1Layout.setHorizontalGroup(

      jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

      .addGroup(jPanel1Layout.createSequentialGroup()

        .addGap(15, 15, 15)

        .addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

          .addComponent(jLabel1)

          .addComponent(jLabel2)

          .addComponent(jLabel3)

          .addComponent(jLabel6))

        .addGap(86, 86, 86)

        .addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING, false)

          .addComponent(txtNombre)

          .addComponent(txtApellido)

          .addComponent(txtFormattedCedula)

          .addComponent(cbxGenero, 0, 212, Short.MAX_VALUE))

        .addContainerGap(javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE))

    );

    jPanel1Layout.setVerticalGroup(

      jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

      .addGroup(jPanel1Layout.createSequentialGroup()

        .addGap(63, 63, 63)

        .addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)

          .addComponent(jLabel1)
```

```java
        .addComponent(txtNombre, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))

      .addGap(18, 18, 18)

      .addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)

        .addComponent(jLabel2)

        .addComponent(txtApellido, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))

      .addGap(18, 18, 18)

      .addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)

        .addComponent(jLabel3)

        .addComponent(txtFormattedCedula, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))

      .addGap(18, 18, 18)

      .addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

        .addComponent(jLabel6)

        .addComponent(cbxGenero, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))

      .addContainerGap(javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE))
  );


  btnCrear.setBackground(new java.awt.Color(51, 51, 255));

  btnCrear.setText("Crear");

  btnCrear.addActionListener(new java.awt.event.ActionListener() {

    public void actionPerformed(java.awt.event.ActionEvent evt) {

      btnCrearActionPerformed(evt);

    }

  });


  btnEditar.setBackground(new java.awt.Color(51, 51, 255));

  btnEditar.setText("Editar");
```

```java
btnEditar.setEnabled(false);

btnEditar.addActionListener(new java.awt.event.ActionListener() {

    public void actionPerformed(java.awt.event.ActionEvent evt) {

        btnEditarActionPerformed(evt);

    }

});


btnEliminar.setBackground(new java.awt.Color(255, 51, 51));

btnEliminar.setText("Eliminar");

btnEliminar.setEnabled(false);

btnEliminar.addActionListener(new java.awt.event.ActionListener() {

    public void actionPerformed(java.awt.event.ActionEvent evt) {

        btnEliminarActionPerformed(evt);

    }

});


btnCancelar.setBackground(new java.awt.Color(255, 51, 51));

btnCancelar.setText("Cancelar");

btnCancelar.addActionListener(new java.awt.event.ActionListener() {

    public void actionPerformed(java.awt.event.ActionEvent evt) {

        btnCancelarActionPerformed(evt);

    }

});


javax.swing.GroupLayout jPanel2Layout = new javax.swing.GroupLayout(jPanel2);

jPanel2.setLayout(jPanel2Layout);

jPanel2Layout.setHorizontalGroup(

    jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

    .addGroup(jPanel2Layout.createSequentialGroup()
```

```
        .addGap(35, 35, 35)

        .addComponent(btnCrear)

        .addGap(41, 41, 41)

        .addComponent(btnEditar)

        .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED, 42, Short.MAX_VALUE)

        .addComponent(btnEliminar)

        .addGap(35, 35, 35)

        .addComponent(btnCancelar)

        .addGap(42, 42, 42))
);
jPanel2Layout.setVerticalGroup(

    jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

    .addGroup(javax.swing.GroupLayout.Alignment.TRAILING, jPanel2Layout.createSequentialGroup()

        .addContainerGap(javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)

        .addGroup(jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)

            .addComponent(btnCrear)

            .addComponent(btnEditar)

            .addComponent(btnEliminar)

            .addComponent(btnCancelar))

        .addContainerGap())
);


tblAlumnos.setModel(new javax.swing.table.DefaultTableModel(

    new Object [][] {

    },
    new String [] {

        "Nombre", "Cedula", "Género", "Curso"

    }
```

```
) {

  Class[] types = new Class [] {

    java.lang.String.class, java.lang.String.class, java.lang.String.class, java.lang.String.class

  };

  boolean[] canEdit = new boolean [] {

    false, false, false, false

  };


  public Class getColumnClass(int columnIndex) {

    return types [columnIndex];

  }


  public boolean isCellEditable(int rowIndex, int columnIndex) {

    return canEdit [columnIndex];

  }

});

tblAlumnos.addMouseListener(new java.awt.event.MouseAdapter() {

  public void mouseClicked(java.awt.event.MouseEvent evt) {

    tblAlumnosMouseClicked(evt);

  }

});

jScrollPane1.setViewportView(tblAlumnos);


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(20, 20, 20)
```

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

            .addComponent(jPanel1, javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)

            .addGroup(layout.createSequentialGroup()

              .addComponent(jPanel2, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)

              .addGap(0, 14, Short.MAX_VALUE)))

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

          .addComponent(jScrollPane1, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)

          .addGap(39, 39, 39))
    );
    layout.setVerticalGroup(

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

      .addGroup(layout.createSequentialGroup()

        .addGap(26, 26, 26)

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

          .addGroup(layout.createSequentialGroup()

            .addComponent(jScrollPane1, javax.swing.GroupLayout.PREFERRED_SIZE, 364,
javax.swing.GroupLayout.PREFERRED_SIZE)

            .addContainerGap(65, Short.MAX_VALUE))

          .addGroup(layout.createSequentialGroup()

            .addComponent(jPanel1, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)

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

            .addComponent(jPanel2, javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)

            .addGap(108, 108, 108))))
    );


    pack();
```

```java
}// </editor-fold>


private void btnCrearActionPerformed(java.awt.event.ActionEvent evt) {

    // TODO add your handling code here:

    String nombre = txtNombre.getText();

    String apellido = txtApellido.getText();

    String cedula = txtFormattedCedula.getText();


    String genero = (String) cbxGenero.getSelectedItem();


    if (nombre.isBlank() || apellido.isBlank() || cedula.isBlank() || genero.equals("--Seleccionar--")) {

        JOptionPane.showMessageDialog(this, "Llene todos los campos", "Error", JOptionPane.ERROR_MESSAGE);


    } else {

        alumno = new Alumno(null, controladorAlumno.generarID(), nombre, apellido, cedula, genero);

        if (controladorAlumno.create(alumno)) {

            JOptionPane.showMessageDialog(this, "Alumno creado con exito", "Mensaje",
JOptionPane.INFORMATION_MESSAGE);

            llenarTablaAlumnos();

            limpiar();

        } else {

            JOptionPane.showMessageDialog(this, "Alumno ya existe", "Error", JOptionPane.ERROR_MESSAGE);

        }

    }

}


private void btnEditarActionPerformed(java.awt.event.ActionEvent evt) {

    // TODO add your handling code here:

    String nombre = txtNombre.getText();
```

```java
String apellido = txtApellido.getText();

String cedula = txtFormattedCedula.getText();


String genero = (String) cbxGenero.getSelectedItem();


if (nombre.isBlank() || apellido.isBlank() || cedula.isBlank() || genero.equals("--Seleccionar--")) {

    JOptionPane.showMessageDialog(this, "Llene todos los campos", "Error", JOptionPane.ERROR_MESSAGE);


} else {

    Curso cur = null;

    if (cursoAlumnoSeleccionado != null) {

        try {

            String[] opciones = cursoAlumnoSeleccionado.split("|");

            cur = new Curso(Integer.valueOf(opciones[0].trim()), opciones[1], null, null, null);

            cur = (Curso) controladorCurso.read(cur);

        } catch (NumberFormatException e) {

            e.printStackTrace();

        }


        cursoAlumnoSeleccionado = null;

    } else {

        cur = null;

    }


    alumno = new Alumno(cur, controladorAlumno.generarID(), nombre, apellido, cedula, genero);

    if (controladorAlumno.update(alumno, alumno)) {

        JOptionPane.showMessageDialog(this, "Alumno creado con exito", "Mensaje",
JOptionPane.INFORMATION_MESSAGE);

        llenarTablaAlumnos();
```

```java
            limpiar();

        } else {

            JOptionPane.showMessageDialog(this, "Alumno ya existe", "Error", JOptionPane.ERROR_MESSAGE);

        }

    }


    private void btnEliminarActionPerformed(java.awt.event.ActionEvent evt) {

        // TODO add your handling code here:


        alumno = new Alumno(null, 0, txtNombre.getText(), txtApellido.getText(), (String) txtFormattedCedula.getValue(),

            (String) cbxGenero.getSelectedItem());


        controladorAlumno.delete(alumno);

        JOptionPane.showMessageDialog(this, "Alumno eliminado con exito", "Mensaje",
JOptionPane.INFORMATION_MESSAGE);

        limpiar();

        llenarTablaAlumnos();


    }


    private void btnCancelarActionPerformed(java.awt.event.ActionEvent evt) {

        // TODO add your handling code here:

        limpiar();

    }


    private void formInternalFrameActivated(javax.swing.event.InternalFrameEvent evt) {

        // TODO add your handling code here:

        llenarTablaAlumnos();
```

```java
}


private void tblAlumnosMouseClicked(java.awt.event.MouseEvent evt) {

    // TODO add your handling code here:

    int fila = tblAlumnos.getSelectedRow();


    String nombres = (String) tblAlumnos.getValueAt(fila, 0);

    String[] nombre = nombres.split(" ", 2);


    txtNombre.setText(nombre[0]);

    txtApellido.setText(nombre[1]);

    txtFormattedCedula.setValue((String) tblAlumnos.getValueAt(fila, 1));

    cbxGenero.setSelectedItem((String) tblAlumnos.getValueAt(fila, 2));


    cursoAlumnoSeleccionado = (String) tblAlumnos.getValueAt(fila, 3);


    activarBotones();

}



// Variables declaration - do not modify

private javax.swing.JButton btnCancelar;

private javax.swing.JButton btnCrear;

private javax.swing.JButton btnEditar;

private javax.swing.JButton btnEliminar;

private javax.swing.JComboBox<String> cbxGenero;

private javax.swing.JLabel jLabel1;

private javax.swing.JLabel jLabel2;

private javax.swing.JLabel jLabel3;
```

```java
    private javax.swing.JLabel jLabel6;

    private javax.swing.JPanel jPanel1;

    private javax.swing.JPanel jPanel2;

    private javax.swing.JScrollPane jScrollPane1;

    private javax.swing.JTable tblAlumnos;

    private javax.swing.JTextField txtApellido;

    private javax.swing.JFormattedTextField txtFormattedCedula;

    private javax.swing.JTextField txtNombre;

    // End of variables declaration

}
```

VENTANACURSORECTOR:

```java
/*
 * To change this license header, choose License Headers in Project Properties.
 * To change this template file, choose Tools | Templates
 * and open the template in the editor.
 */
package ups.edu.ec.vista;


import java.lang.reflect.Constructor;

import java.lang.reflect.InvocationTargetException;

import java.util.List;

import java.util.logging.Level;

import java.util.logging.Logger;

import javax.swing.JOptionPane;

import javax.swing.table.DefaultTableModel;

import ups.edu.ec.controlador.ControladorCurso;

import ups.edu.ec.controlador.ControladorDocente;

import ups.edu.ec.modelo.Curso;
```

```java
import ups.edu.ec.modelo.Docente;

/**
 *
 * @author User
 */
public class VentanaCursoRector extends javax.swing.JInternalFrame {

    private ControladorCurso controladorCurso;
    private ControladorDocente controladorDocente;

    /**
     * Creates new form VentanaCursoRector
     */
    public VentanaCursoRector(ControladorCurso controladorCurso, ControladorDocente controladorDocente) {
        initComponents();

        this.controladorCurso = controladorCurso;
        this.controladorDocente = controladorDocente;


        cargarNumeroGrupo();
        llenarTablaDocentes();
    }

    public void llenarTablaDocentes() {

        DefaultTableModel modelo = (DefaultTableModel) tblDocentes.getModel();
        modelo.setRowCount(0);
```

```java
    for (Docente var : (List<Docente>) controladorDocente.getListaGenerica()) {

        if (var.getCurso() == null) {
            Object[] row = {var.getNombre() + "||" + var.getApellido(), var.getCedula(),
                var.getCorreo(), var.getGenero()};
            modelo.addRow(row);
        }
    }

    tblDocentes.setModel(modelo);
}

public void llenarTablaDocenteBuscar(Docente docente) {
    DefaultTableModel modelo = (DefaultTableModel) tblDocentes.getModel();
    modelo.setRowCount(0);

    Object[] row = {docente.getNombre() + "||" + docente.getApellido(), docente.getCedula(),
        docente.getCorreo(), docente.getGenero()};
    modelo.addRow(row);

    tblDocentes.setModel(modelo);
}

public void limpiar() {
    txtNombreCurso.setText("");
    txtFormattedCedula.setValue("");
    cargarNumeroGrupo();
    llenarTablaDocentes();
```

```java
}


public void cargarNumeroGrupo(){

  txtNumeroGrupo.setText(String.valueOf(controladorCurso.generarID()));

}


public Docente busquedaDocente(String cedula) {

  try {

    Constructor<Docente> constructor = Docente.class.getDeclaredConstructor();

    constructor.setAccessible(true);

    Docente docente = constructor.newInstance();


    docente.setId(controladorDocente.generarID());


    docente.setCedula(cedula);


    return (Docente) controladorDocente.read(docente);


  } catch (IllegalAccessException e) {

    e.printStackTrace();

  } catch (NoSuchMethodException ex) {

    Logger.getLogger(VentanaRector.class.getName()).log(Level.SEVERE, null, ex);

  } catch (SecurityException ex) {

    Logger.getLogger(VentanaRector.class.getName()).log(Level.SEVERE, null, ex);

  } catch (InstantiationException ex) {

    Logger.getLogger(VentanaRector.class.getName()).log(Level.SEVERE, null, ex);

  } catch (IllegalArgumentException ex) {

    Logger.getLogger(VentanaRector.class.getName()).log(Level.SEVERE, null, ex);
```

```java
    } catch (InvocationTargetException ex) {

        Logger.getLogger(VentanaRector.class.getName()).log(Level.SEVERE, null, ex);

    }

    return null;

}


/**

 * 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">

private void initComponents() {


    jPanel1 = new javax.swing.JPanel();

    jLabel1 = new javax.swing.JLabel();

    txtNombreCurso = new javax.swing.JTextField();

    jScrollPane1 = new javax.swing.JScrollPane();

    tblDocentes = new javax.swing.JTable();

    jLabel2 = new javax.swing.JLabel();

    txtFormattedCedula = new javax.swing.JFormattedTextField();

    btnCrear = new javax.swing.JButton();

    btnCancelar = new javax.swing.JButton();

    btnBuscar = new javax.swing.JButton();

    jLabel3 = new javax.swing.JLabel();

    txtNumeroGrupo = new javax.swing.JTextField();


    setClosable(true);
```

```java
setDefaultCloseOperation(javax.swing.WindowConstants.HIDE_ON_CLOSE);

setTitle("Asignar docente a un curso");

addInternalFrameListener(new javax.swing.event.InternalFrameListener() {

  public void internalFrameActivated(javax.swing.event.InternalFrameEvent evt) {

    formInternalFrameActivated(evt);

  }

  public void internalFrameClosed(javax.swing.event.InternalFrameEvent evt) {

  }

  public void internalFrameClosing(javax.swing.event.InternalFrameEvent evt) {

  }

  public void internalFrameDeactivated(javax.swing.event.InternalFrameEvent evt) {

  }

  public void internalFrameDeiconified(javax.swing.event.InternalFrameEvent evt) {

  }

  public void internalFrameIconified(javax.swing.event.InternalFrameEvent evt) {

  }

  public void internalFrameOpened(javax.swing.event.InternalFrameEvent evt) {

  }

});


jLabel1.setText("Nombre del curso:");


tblDocentes.setModel(new javax.swing.table.DefaultTableModel(

  new Object [][] {

  },
  new String [] {

    "Nombre", "Cédula", "Correo", "Género"

  }
```

```java
) {
    Class[] types = new Class [] {
        java.lang.String.class, java.lang.String.class, java.lang.String.class, java.lang.String.class
    };
    boolean[] canEdit = new boolean [] {
        false, false, true, false
    };

    public Class getColumnClass(int columnIndex) {
        return types [columnIndex];
    }

    public boolean isCellEditable(int rowIndex, int columnIndex) {
        return canEdit [columnIndex];
    }
});
jScrollPane1.setViewportView(tblDocentes);


jLabel2.setText("Buscar docente(cédula):");


btnCrear.setBackground(new java.awt.Color(51, 51, 255));
btnCrear.setText("Crear");
btnCrear.addActionListener(new java.awt.event.ActionListener() {
    public void actionPerformed(java.awt.event.ActionEvent evt) {
        btnCrearActionPerformed(evt);
    }
});


btnCancelar.setBackground(new java.awt.Color(255, 51, 51));
```

```java
btnCancelar.setText("Cancelar");

btnCancelar.addActionListener(new java.awt.event.ActionListener() {

    public void actionPerformed(java.awt.event.ActionEvent evt) {

        btnCancelarActionPerformed(evt);

    }

});


btnBuscar.setBackground(new java.awt.Color(51, 51, 255));

btnBuscar.setText("Buscar");

btnBuscar.addActionListener(new java.awt.event.ActionListener() {

    public void actionPerformed(java.awt.event.ActionEvent evt) {

        btnBuscarActionPerformed(evt);

    }

});


jLabel3.setText("Número grupo:");


txtNumeroGrupo.setEditable(false);

txtNumeroGrupo.setBackground(new java.awt.Color(153, 153, 153));


javax.swing.GroupLayout jPanel1Layout = new javax.swing.GroupLayout(jPanel1);

jPanel1.setLayout(jPanel1Layout);

jPanel1Layout.setHorizontalGroup(

    jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

    .addGroup(jPanel1Layout.createSequentialGroup()

        .addGap(300, 300, 300)

        .addComponent(btnCrear)

        .addGap(59, 59, 59)

        .addComponent(btnCancelar)
```

```
                .addContainerGap(javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE))
            .addGroup(javax.swing.GroupLayout.Alignment.TRAILING, jPanel1Layout.createSequentialGroup()
              .addContainerGap(25, Short.MAX_VALUE)
              .addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.TRAILING)
                .addGroup(jPanel1Layout.createSequentialGroup()
                  .addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
                    .addComponent(jLabel2)
                    .addGroup(jPanel1Layout.createSequentialGroup()
                      .addComponent(jLabel3)
                      .addGap(18, 18, 18)
                      .addComponent(txtNumeroGrupo, javax.swing.GroupLayout.PREFERRED_SIZE, 82,
javax.swing.GroupLayout.PREFERRED_SIZE)))
                  .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
                  .addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
                    .addGroup(jPanel1Layout.createSequentialGroup()
                      .addComponent(txtFormattedCedula, javax.swing.GroupLayout.PREFERRED_SIZE, 211,
javax.swing.GroupLayout.PREFERRED_SIZE)
                      .addGap(36, 36, 36)
                      .addComponent(btnBuscar)
                      .addGap(0, 0, Short.MAX_VALUE))
                    .addGroup(javax.swing.GroupLayout.Alignment.TRAILING, jPanel1Layout.createSequentialGroup()
                      .addComponent(jLabel1)
                      .addGap(18, 18, 18)
                      .addComponent(txtNombreCurso, javax.swing.GroupLayout.PREFERRED_SIZE, 220,
javax.swing.GroupLayout.PREFERRED_SIZE))))
                .addComponent(jScrollPane1, javax.swing.GroupLayout.PREFERRED_SIZE, 642,
javax.swing.GroupLayout.PREFERRED_SIZE))
              .addGap(22, 22, 22))
      );
      jPanel1Layout.setVerticalGroup(
```

```
jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

.addGroup(jPanel1Layout.createSequentialGroup()

    .addContainerGap()

    .addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)

        .addComponent(jLabel1)

        .addComponent(txtNombreCurso, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)

        .addComponent(jLabel3)

        .addComponent(txtNumeroGrupo, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))

    .addGap(27, 27, 27)

    .addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)

        .addComponent(jLabel2)

        .addComponent(txtFormattedCedula, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)

        .addComponent(btnBuscar))

    .addGap(18, 18, 18)

    .addComponent(jScrollPane1, javax.swing.GroupLayout.PREFERRED_SIZE, 341,
javax.swing.GroupLayout.PREFERRED_SIZE)

    .addGap(26, 26, 26)

    .addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)

        .addComponent(btnCrear)

        .addComponent(btnCancelar))

    .addContainerGap(18, Short.MAX_VALUE))
);


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

getContentPane().setLayout(layout);

layout.setHorizontalGroup(

    layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
```

```
            .addGroup(layout.createSequentialGroup()

                .addContainerGap()

                .addComponent(jPanel1, javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)

                .addContainerGap())
        );

        layout.setVerticalGroup(

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

            .addGroup(layout.createSequentialGroup()

                .addContainerGap()

                .addComponent(jPanel1, javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)

                .addContainerGap())
        );


        pack();
    }// </editor-fold>


    private void formInternalFrameActivated(javax.swing.event.InternalFrameEvent evt) {

        // TODO add your handling code here:

        llenarTablaDocentes();

    }


    private void btnBuscarActionPerformed(java.awt.event.ActionEvent evt) {

        // TODO add your handling code here:

        String cedula = (String) txtFormattedCedula.getValue();


        if (cedula.isBlank()) {

            JOptionPane.showMessageDialog(this, "Llene el campo de busqueda", "Error",
JOptionPane.ERROR_MESSAGE);
```

```java
    } else {

        var docente = busquedaDocente(cedula);


        if (docente != null && docente.getCurso() != null) {

            JOptionPane.showMessageDialog(this, "El docente ya tiene un curso", "Error",
JOptionPane.ERROR_MESSAGE);

        } else if (docente == null) {

            JOptionPane.showMessageDialog(this, "El docente no ha sido encontrado", "Error",
JOptionPane.ERROR_MESSAGE);

        } else {

            llenarTablaDocenteBuscar(docente);


        }

    }


}


private void btnCrearActionPerformed(java.awt.event.ActionEvent evt) {

    // TODO add your handling code here:


    String nombreCurso = txtNombreCurso.getText();


    if (nombreCurso.isBlank() || tblDocentes.getSelectedRow() == -1) {

        JOptionPane.showMessageDialog(this, "Seleccione un docente", "Error", JOptionPane.ERROR_MESSAGE);

    } else {


        var docen = (Docente) busquedaDocente((String) tblDocentes.getValueAt(tblDocentes.getSelectedRow(), 1));


        Curso cursoNuevo = new Curso(controladorCurso.generarID(), nombreCurso, docen);

        if (controladorCurso.create(cursoNuevo)) {
```

```java
        JOptionPane.showMessageDialog(this, "Curso creado", "Mensaje",
JOptionPane.INFORMATION_MESSAGE);

        docen.setCurso(cursoNuevo);

        controladorDocente.update(docen, docen);

        limpiar();

     } else {

        JOptionPane.showMessageDialog(this, "Ya existe el curso", "Error", JOptionPane.ERROR_MESSAGE);

     }


   }



private void btnCancelarActionPerformed(java.awt.event.ActionEvent evt) {

    // TODO add your handling code here:

    limpiar();

}




// Variables declaration - do not modify

private javax.swing.JButton btnBuscar;

private javax.swing.JButton btnCancelar;

private javax.swing.JButton btnCrear;

private javax.swing.JLabel jLabel1;

private javax.swing.JLabel jLabel2;

private javax.swing.JLabel jLabel3;

private javax.swing.JPanel jPanel1;

private javax.swing.JScrollPane jScrollPane1;
```

```java
    private javax.swing.JTable tblDocentes;

    private javax.swing.JFormattedTextField txtFormattedCedula;

    private javax.swing.JTextField txtNombreCurso;

    private javax.swing.JTextField txtNumeroGrupo;

    // End of variables declaration
}
```

VENTANACURSODOCENTE:

```java
/*
 * To change this license header, choose License Headers in Project Properties.
 * To change this template file, choose Tools | Templates
 * and open the template in the editor.
 */
package ups.edu.ec.vista;


import java.util.List;

import javax.swing.JOptionPane;

import javax.swing.table.DefaultTableModel;

import ups.edu.ec.controlador.ControladorActividad;

import ups.edu.ec.controlador.ControladorAlumno;

import ups.edu.ec.controlador.ControladorCurso;

import ups.edu.ec.modelo.Actividad;

import ups.edu.ec.modelo.Alumno;

import ups.edu.ec.modelo.Curso;

import ups.edu.ec.modelo.Docente;


/**
 *
 * @author User
 */
```

```java
public class VentanaCursoDocente extends javax.swing.JInternalFrame {


    private ControladorCurso controladorCurso;

    private ControladorActividad controladorActividad;

    private ControladorAlumno controladorAlumno;


    private Curso curso;

    private Actividad actividad;

    private Alumno alumno;


    /**

     * Creates new form VentanaCursoDocente

     */

    public VentanaCursoDocente(ControladorCurso controladorCurso, ControladorActividad controladorActividad,

            ControladorAlumno controladorAlumno) {

        initComponents();


        this.controladorCurso = controladorCurso;

        this.controladorActividad = controladorActividad;

        this.controladorAlumno = controladorAlumno;


        llenarTablaAlumnos();

        llenarTablaActividades();


    }


    public void cargarCurso() {

        if (Docente.instance.getCurso() != null) {

            txtBuscarCurso.setText(String.valueOf(Docente.instance.getCurso().getId()));
```

```java
        curso = Docente.instance.getCurso();

    }

}


public void llenarTablaAlumnoEncontrado(Alumno alumno) {


    DefaultTableModel modelo = (DefaultTableModel) tblAlumnos.getModel();

    modelo.setRowCount(0);


    Object[] row = {alumno.getNombre() + "||" + alumno.getApellido(), alumno.getCedula(), alumno.getGenero()};

    modelo.addRow(row);


    tblAlumnos.setModel(modelo);

}


public void llenarTablaAlumnos() {

    List<Alumno> listaAlumnos = (List<Alumno>) controladorAlumno.getListaGenerica();


    DefaultTableModel modelo = (DefaultTableModel) tblAlumnos.getModel();

    modelo.setRowCount(0);


    for (Alumno alumno : listaAlumnos) {

      if (alumno.getCurso() == null) {

        Object[] row = {alumno.getNombre() + "||" + alumno.getApellido(), alumno.getCedula(), alumno.getGenero()};

        modelo.addRow(row);

      }

    }


    tblAlumnos.setModel(modelo);
```

```java
}

public void llenarTablaActividadEncontrada(Actividad actividad) {

    DefaultTableModel modelo = (DefaultTableModel) tblActividades.getModel();
    modelo.setRowCount(0);

    Object[] row = {actividad.getId(), actividad.getTitulo(), actividad.getAplicaciones()};
    modelo.addRow(row);

    tblActividades.setModel(modelo);
}

public void llenarTablaActividades() {
    List<Actividad> listaActividades = (List<Actividad>) controladorActividad.getListaGenerica();

    DefaultTableModel modelo = (DefaultTableModel) tblActividades.getModel();
    modelo.setRowCount(0);

    for (Actividad acti : listaActividades) {

        Object[] row = {acti.getId(), acti.getTitulo(), acti.getAplicaciones()};
        modelo.addRow(row);

    }

    tblActividades.setModel(modelo);
}
```

```java
/**
 * 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">
private void initComponents() {

    jPanel1 = new javax.swing.JPanel();
    jLabel1 = new javax.swing.JLabel();
    txtBuscarEstudiante = new javax.swing.JPasswordField();
    btnBuscarAlumno = new javax.swing.JButton();
    jScrollPane1 = new javax.swing.JScrollPane();
    tblAlumnos = new javax.swing.JTable();
    btnAnadirAlumno = new javax.swing.JButton();
    btnCancelarAlumno = new javax.swing.JButton();
    jSeparator1 = new javax.swing.JSeparator();
    jPanel3 = new javax.swing.JPanel();
    jLabel3 = new javax.swing.JLabel();
    txtBuscarCurso = new javax.swing.JTextField();
    btnBuscarCurso = new javax.swing.JButton();
    btnCancelarTodo = new javax.swing.JButton();
    jPanel2 = new javax.swing.JPanel();
    jLabel2 = new javax.swing.JLabel();
    txtBuscarActividad = new javax.swing.JTextField();
    btnBuscarActividad = new javax.swing.JButton();
    jScrollPane2 = new javax.swing.JScrollPane();
```

```java
tblActividades = new javax.swing.JTable();

btnAnadirActividad = new javax.swing.JButton();

btnCancelarActividad = new javax.swing.JButton();


setClosable(true);

setDefaultCloseOperation(javax.swing.WindowConstants.HIDE_ON_CLOSE);

setTitle("Aginar alumnos y actividades del curso");

addInternalFrameListener(new javax.swing.event.InternalFrameListener() {

    public void internalFrameActivated(javax.swing.event.InternalFrameEvent evt) {

        formInternalFrameActivated(evt);

    }

    public void internalFrameClosed(javax.swing.event.InternalFrameEvent evt) {

    }

    public void internalFrameClosing(javax.swing.event.InternalFrameEvent evt) {

    }

    public void internalFrameDeactivated(javax.swing.event.InternalFrameEvent evt) {

    }

    public void internalFrameDeiconified(javax.swing.event.InternalFrameEvent evt) {

    }

    public void internalFrameIconified(javax.swing.event.InternalFrameEvent evt) {

    }

    public void internalFrameOpened(javax.swing.event.InternalFrameEvent evt) {

    }

});


jPanel1.setBorder(javax.swing.BorderFactory.createTitledBorder(javax.swing.BorderFactory.createLineBorder(new
java.awt.Color(41, 43, 45)), "Alumno", javax.swing.border.TitledBorder.LEFT, javax.swing.border.TitledBorder.TOP));


jLabel1.setText("Buscar por cédula:");
```

```java
btnBuscarAlumno.setText("Buscar");

btnBuscarAlumno.addActionListener(new java.awt.event.ActionListener() {

   public void actionPerformed(java.awt.event.ActionEvent evt) {

      btnBuscarAlumnoActionPerformed(evt);

   }

});


tblAlumnos.setModel(new javax.swing.table.DefaultTableModel(

   new Object [][] {


   },

   new String [] {

      "Nombre", "Cédula", "Género"

   }

) {

   boolean[] canEdit = new boolean [] {

      false, false, false

   };


   public boolean isCellEditable(int rowIndex, int columnIndex) {

      return canEdit [columnIndex];

   }

});

tblAlumnos.addMouseListener(new java.awt.event.MouseAdapter() {

   public void mouseClicked(java.awt.event.MouseEvent evt) {

      tblAlumnosMouseClicked(evt);

   }

});
```

```java
jScrollPane1.setViewportView(tblAlumnos);


btnAnadirAlumno.setBackground(new java.awt.Color(51, 51, 255));

btnAnadirAlumno.setText("Añadir");

btnAnadirAlumno.addActionListener(new java.awt.event.ActionListener() {

  public void actionPerformed(java.awt.event.ActionEvent evt) {

    btnAnadirAlumnoActionPerformed(evt);

  }

});


btnCancelarAlumno.setBackground(new java.awt.Color(255, 51, 51));

btnCancelarAlumno.setText("Cancelar");

btnCancelarAlumno.addActionListener(new java.awt.event.ActionListener() {

  public void actionPerformed(java.awt.event.ActionEvent evt) {

    btnCancelarAlumnoActionPerformed(evt);

  }

});


javax.swing.GroupLayout jPanel1Layout = new javax.swing.GroupLayout(jPanel1);

jPanel1.setLayout(jPanel1Layout);

jPanel1Layout.setHorizontalGroup(

  jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

  .addGroup(jPanel1Layout.createSequentialGroup()

    .addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

      .addGroup(jPanel1Layout.createSequentialGroup()

        .addGap(64, 64, 64)

        .addComponent(jLabel1)

        .addGap(27, 27, 27)
```

```
                .addComponent(txtBuscarEstudiante, javax.swing.GroupLayout.PREFERRED_SIZE, 156,
javax.swing.GroupLayout.PREFERRED_SIZE)

                .addGap(72, 72, 72)

                .addComponent(btnBuscarAlumno))

            .addGroup(jPanel1Layout.createSequentialGroup()

                .addGap(34, 34, 34)

                .addComponent(jScrollPane1, javax.swing.GroupLayout.PREFERRED_SIZE, 520,
javax.swing.GroupLayout.PREFERRED_SIZE))

            .addGroup(jPanel1Layout.createSequentialGroup()

                .addGap(188, 188, 188)

                .addComponent(btnAnadirAlumno)

                .addGap(83, 83, 83)

                .addComponent(btnCancelarAlumno)))

        .addContainerGap(34, Short.MAX_VALUE))
    );
    jPanel1Layout.setVerticalGroup(

        jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

        .addGroup(jPanel1Layout.createSequentialGroup()

            .addGap(12, 12, 12)

            .addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)

                .addComponent(jLabel1)

                .addComponent(txtBuscarEstudiante, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)

                .addComponent(btnBuscarAlumno))

            .addGap(18, 18, 18)

            .addComponent(jScrollPane1, javax.swing.GroupLayout.PREFERRED_SIZE, 449,
javax.swing.GroupLayout.PREFERRED_SIZE)

            .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED,
javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)

            .addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)

                .addComponent(btnAnadirAlumno)
```

```java
            .addComponent(btnCancelarAlumno))
        .addGap(25, 25, 25))
);


    jPanel3.setBorder(javax.swing.BorderFactory.createTitledBorder(javax.swing.BorderFactory.createLineBorder(new
java.awt.Color(41, 43, 45)), "Busqueda curso", javax.swing.border.TitledBorder.LEFT, javax.swing.border.TitledBorder.TOP));


    jLabel3.setText("Buscar curso por ID:");


    txtBuscarCurso.setEditable(false);


    btnBuscarCurso.setBackground(new java.awt.Color(51, 51, 255));

    btnBuscarCurso.setText("Buscar");

    btnBuscarCurso.addActionListener(new java.awt.event.ActionListener() {

      public void actionPerformed(java.awt.event.ActionEvent evt) {

        btnBuscarCursoActionPerformed(evt);

      }

    });


    btnCancelarTodo.setText("Cancelar");

    btnCancelarTodo.addActionListener(new java.awt.event.ActionListener() {

      public void actionPerformed(java.awt.event.ActionEvent evt) {

        btnCancelarTodoActionPerformed(evt);

      }

    });


    javax.swing.GroupLayout jPanel3Layout = new javax.swing.GroupLayout(jPanel3);

    jPanel3.setLayout(jPanel3Layout);

    jPanel3Layout.setHorizontalGroup(
```

```
jPanel3Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

    .addGroup(jPanel3Layout.createSequentialGroup()

        .addGap(25, 25, 25)

        .addComponent(jLabel3)

        .addGap(18, 18, 18)

        .addComponent(txtBuscarCurso, javax.swing.GroupLayout.PREFERRED_SIZE, 214,
javax.swing.GroupLayout.PREFERRED_SIZE)

        .addGap(18, 18, 18)

        .addComponent(btnBuscarCurso)

        .addGap(33, 33, 33)

        .addComponent(btnCancelarTodo)

        .addContainerGap(34, Short.MAX_VALUE))

    );

    jPanel3Layout.setVerticalGroup(

        jPanel3Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

    .addGroup(jPanel3Layout.createSequentialGroup()

        .addGap(19, 19, 19)

        .addGroup(jPanel3Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)

            .addComponent(jLabel3)

            .addComponent(txtBuscarCurso, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)

            .addComponent(btnBuscarCurso)

            .addComponent(btnCancelarTodo))

        .addContainerGap(21, Short.MAX_VALUE))

    );


    jPanel2.setBorder(javax.swing.BorderFactory.createTitledBorder(javax.swing.BorderFactory.createLineBorder(new
java.awt.Color(41, 43, 45)), "Actividad", javax.swing.border.TitledBorder.LEFT, javax.swing.border.TitledBorder.TOP));


    jLabel2.setText("Buscar por ID:");
```

```java
btnBuscarActividad.setBackground(new java.awt.Color(51, 51, 255));

btnBuscarActividad.setText("Buscar");

btnBuscarActividad.addActionListener(new java.awt.event.ActionListener() {

    public void actionPerformed(java.awt.event.ActionEvent evt) {

        btnBuscarActividadActionPerformed(evt);

    }

});


tblActividades.setModel(new javax.swing.table.DefaultTableModel(

    new Object [][] {


    },
    new String [] {

        "ID", "Titulo", "Aplicaciones"

    }

) {

    Class[] types = new Class [] {

        java.lang.Integer.class, java.lang.String.class, java.lang.String.class

    };

    boolean[] canEdit = new boolean [] {

        false, false, false

    };


    public Class getColumnClass(int columnIndex) {

        return types [columnIndex];

    }


    public boolean isCellEditable(int rowIndex, int columnIndex) {
```

```java
        return canEdit [columnIndex];
      }
    });
    tblActividades.addMouseListener(new java.awt.event.MouseAdapter() {
      public void mouseClicked(java.awt.event.MouseEvent evt) {
        tblActividadesMouseClicked(evt);
      }
    });
    jScrollPane2.setViewportView(tblActividades);


    btnAnadirActividad.setBackground(new java.awt.Color(51, 51, 255));
    btnAnadirActividad.setText("Añadir");
    btnAnadirActividad.addActionListener(new java.awt.event.ActionListener() {
      public void actionPerformed(java.awt.event.ActionEvent evt) {
        btnAnadirActividadActionPerformed(evt);
      }
    });


    btnCancelarActividad.setBackground(new java.awt.Color(255, 51, 51));
    btnCancelarActividad.setText("Cancelar");
    btnCancelarActividad.addActionListener(new java.awt.event.ActionListener() {
      public void actionPerformed(java.awt.event.ActionEvent evt) {
        btnCancelarActividadActionPerformed(evt);
      }
    });


    javax.swing.GroupLayout jPanel2Layout = new javax.swing.GroupLayout(jPanel2);
    jPanel2.setLayout(jPanel2Layout);
    jPanel2Layout.setHorizontalGroup(
```

```
jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

    .addGroup(jPanel2Layout.createSequentialGroup()

        .addGroup(jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

            .addGroup(jPanel2Layout.createSequentialGroup()

                .addContainerGap()

                .addComponent(jScrollPane2))

            .addGroup(jPanel2Layout.createSequentialGroup()

                .addGap(23, 23, 23)

                .addComponent(jLabel2)

                .addGap(50, 50, 50)

                .addComponent(txtBuscarActividad, javax.swing.GroupLayout.PREFERRED_SIZE, 213,
javax.swing.GroupLayout.PREFERRED_SIZE)

                .addGap(27, 27, 27)

                .addComponent(btnBuscarActividad)

                .addGap(0, 0, Short.MAX_VALUE)))

        .addContainerGap())

    .addGroup(jPanel2Layout.createSequentialGroup()

        .addGap(186, 186, 186)

        .addComponent(btnAnadirActividad)

        .addGap(64, 64, 64)

        .addComponent(btnCancelarActividad)

        .addContainerGap(javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE))
);
jPanel2Layout.setVerticalGroup(

    jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

    .addGroup(jPanel2Layout.createSequentialGroup()

        .addGap(13, 13, 13)

        .addGroup(jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)

            .addComponent(jLabel2)
```

```
            .addComponent(txtBuscarActividad, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)

            .addComponent(btnBuscarActividad))

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

        .addComponent(jScrollPane2, javax.swing.GroupLayout.PREFERRED_SIZE, 354,
javax.swing.GroupLayout.PREFERRED_SIZE)

        .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED, 33, Short.MAX_VALUE)

        .addGroup(jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)

          .addComponent(btnAnadirActividad)

          .addComponent(btnCancelarActividad))

        .addGap(25, 25, 25))
    );


    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()

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

          .addComponent(jPanel3, javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.DEFAULT_SIZE,
Short.MAX_VALUE)

          .addComponent(jPanel2, javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.DEFAULT_SIZE,
Short.MAX_VALUE))

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

        .addComponent(jSeparator1, javax.swing.GroupLayout.PREFERRED_SIZE, 10,
javax.swing.GroupLayout.PREFERRED_SIZE)

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

        .addComponent(jPanel1, javax.swing.GroupLayout.PREFERRED_SIZE, javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.PREFERRED_SIZE)

        .addContainerGap())
```

```
    );

    layout.setVerticalGroup(

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

        .addComponent(jSeparator1)

        .addGroup(layout.createSequentialGroup()

            .addContainerGap()

            .addComponent(jPanel3, javax.swing.GroupLayout.PREFERRED_SIZE, javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.PREFERRED_SIZE)

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

            .addComponent(jPanel2, javax.swing.GroupLayout.PREFERRED_SIZE, javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.PREFERRED_SIZE)

            .addContainerGap(javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE))

        .addGroup(layout.createSequentialGroup()

            .addComponent(jPanel1, javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.DEFAULT_SIZE,
Short.MAX_VALUE)

            .addContainerGap())
    );


    pack();
  }// </editor-fold>


  private void btnBuscarCursoActionPerformed(java.awt.event.ActionEvent evt) {
    // TODO add your handling code here:
    curso = new Curso(Integer.valueOf((String) txtBuscarCurso.getText()));
    curso = (Curso) controladorCurso.read(curso);


    if (curso != null) {
      JOptionPane.showMessageDialog(this, "Curso encontrado con exito");
    } else {
      JOptionPane.showMessageDialog(this, "Curso no encontrado");
```

```java
    }


}


private void btnBuscarActividadActionPerformed(java.awt.event.ActionEvent evt) {

    // TODO add your handling code here:

    actividad = (Actividad) controladorActividad.read(new Actividad(Integer.valueOf((String) txtBuscarActividad.getText())));


    if (actividad != null) {

        llenarTablaActividadEncontrada(actividad);

    } else {

        JOptionPane.showMessageDialog(this, "Actividad no encontrado");

    }

}


private void btnAnadirActividadActionPerformed(java.awt.event.ActionEvent evt) {

    // TODO add your handling code here:

    if (curso.añadirActividad(actividad)) {

        JOptionPane.showMessageDialog(this, "Actividad añadida con exito");

        controladorCurso.update(curso, curso);

    } else {

        JOptionPane.showMessageDialog(this, "Error al añadir la actividad");

    }


}


private void tblActividadesMouseClicked(java.awt.event.MouseEvent evt) {

    // TODO add your handling code here:
```

```java
    int fila = tblActividades.getSelectedRow();


    int id = (int) tblActividades.getValueAt(fila, 0);

    actividad = (Actividad) controladorActividad.read(new Actividad((id)));


}


private void btnCancelarActividadActionPerformed(java.awt.event.ActionEvent evt) {

    // TODO add your handling code here:


    txtBuscarActividad.setText("");

    llenarTablaActividades();




}


private void btnBuscarAlumnoActionPerformed(java.awt.event.ActionEvent evt) {

    // TODO add your handling code here:

    alumno = (Alumno) controladorAlumno.read(new Alumno(txtBuscarEstudiante.getText()));


    if (alumno != null) {

        llenarTablaAlumnoEncontrado(alumno);

    } else {

        JOptionPane.showMessageDialog(this, "Alumno no encontrado");


    }


}
```

```java
private void tblAlumnosMouseClicked(java.awt.event.MouseEvent evt) {

    // TODO add your handling code here:

    int fila = tblAlumnos.getSelectedRow();


    alumno = (Alumno) controladorAlumno.read(new Alumno((String) tblAlumnos.getValueAt(fila, 1)));



}


private void btnAnadirAlumnoActionPerformed(java.awt.event.ActionEvent evt) {

    // TODO add your handling code here:

    if (curso.añadirAlumno(alumno)) {

        JOptionPane.showMessageDialog(this, "Alumno añadido con exito");

        alumno.setCurso(curso);


        curso.actualizar(alumno, alumno);

        controladorAlumno.update(alumno, alumno);


        controladorCurso.update(curso, curso);

    } else {

        JOptionPane.showMessageDialog(this, "Error al añadir al alumno");

    }

}


private void btnCancelarAlumnoActionPerformed(java.awt.event.ActionEvent evt) {

    // TODO add your handling code here:


    txtBuscarEstudiante.setText("");

    llenarTablaAlumnos();
```

```java
    }


    private void btnCancelarTodoActionPerformed(java.awt.event.ActionEvent evt) {
        // TODO add your handling code here:
        txtBuscarEstudiante.setText("");
        llenarTablaAlumnos();


        txtBuscarActividad.setText("");
        llenarTablaActividades();


        txtBuscarCurso.setText("");
    }


    private void formInternalFrameActivated(javax.swing.event.InternalFrameEvent evt) {
        // TODO add your handling code here:
        cargarCurso();
        llenarTablaActividades();
        llenarTablaAlumnos();
    }



    // Variables declaration - do not modify
    private javax.swing.JButton btnAnadirActividad;
    private javax.swing.JButton btnAnadirAlumno;
    private javax.swing.JButton btnBuscarActividad;
    private javax.swing.JButton btnBuscarAlumno;
    private javax.swing.JButton btnBuscarCurso;
    private javax.swing.JButton btnCancelarActividad;
```

```java
    private javax.swing.JButton btnCancelarAlumno;

    private javax.swing.JButton btnCancelarTodo;

    private javax.swing.JLabel jLabel1;

    private javax.swing.JLabel jLabel2;

    private javax.swing.JLabel jLabel3;

    private javax.swing.JPanel jPanel1;

    private javax.swing.JPanel jPanel2;

    private javax.swing.JPanel jPanel3;

    private javax.swing.JScrollPane jScrollPane1;

    private javax.swing.JScrollPane jScrollPane2;

    private javax.swing.JSeparator jSeparator1;

    private javax.swing.JTable tblActividades;

    private javax.swing.JTable tblAlumnos;

    private javax.swing.JTextField txtBuscarActividad;

    private javax.swing.JTextField txtBuscarCurso;

    private javax.swing.JPasswordField txtBuscarEstudiante;

    // End of variables declaration

}
```

VENTANAGESTIONCURSO:

```java
/*
 * To change this license header, choose License Headers in Project Properties.
 * To change this template file, choose Tools | Templates
 * and open the template in the editor.
 */
package ups.edu.ec.vista;


import java.util.Arrays;

import java.util.Iterator;

import java.util.Set;
```

```java
import javax.swing.JOptionPane;

import javax.swing.table.DefaultTableModel;

import ups.edu.ec.controlador.ControladorActividad;

import ups.edu.ec.controlador.ControladorAlumno;

import ups.edu.ec.controlador.ControladorCurso;

import ups.edu.ec.modelo.Actividad;

import ups.edu.ec.modelo.Alumno;

import ups.edu.ec.modelo.Curso;

import ups.edu.ec.modelo.Docente;


/**
 *
 * @author User
 */
public class VentanaGestionCurso extends javax.swing.JInternalFrame {

    private ControladorCurso controladorCurso;

    private ControladorActividad controladorActividad;

    private ControladorAlumno controladorAlumno;


    private Curso curso;

    private Actividad actividad;

    private Alumno alumno;


    /**
     * Creates new form VentanaGestionCurso
     */
    public VentanaGestionCurso(ControladorCurso controladorCurso, ControladorActividad controladorActividad,

        ControladorAlumno controladorAlumno) {
```

```java
        initComponents();


        this.controladorActividad = controladorActividad;

        this.controladorCurso = controladorCurso;

        this.controladorAlumno = controladorAlumno;


        cargarDatos();


}


public void cargarDatos() {

    if (Docente.instance != null) {


        curso = Docente.instance.getCurso();

        llenarTablaActivades();

        System.out.println(curso.getActividades());

        llenarTablaAlumnos();

        txtBuscarCurso.setText(String.valueOf(curso.getId()));


        txtDocente.setText(Docente.instance.getNombre() + " " + Docente.instance.getApellido());

    }

}


public void llenarTablaActivades() {


    if (!curso.getActividades().isEmpty()) {


        System.out.println("hola");

        Set<Actividad> actividades = curso.getActividades();
```

```java
        Iterator it = actividades.iterator();


        DefaultTableModel modelo = (DefaultTableModel) tblActividades.getModel();

        modelo.setRowCount(0);


        while (it.hasNext()) {

            Actividad acti = (Actividad) it.next();

            Object[] row = {acti.getId(), acti.getTitulo(), acti.getAplicaciones()};

            modelo.addRow(row);

        }


        tblActividades.setModel(modelo);

    }


}


public void llenarTablaAlumnos() {


    if (!curso.getAlumnos().isEmpty()) {

        Set<Alumno> alumnos = curso.getAlumnos();


        System.out.println("hola");

        Iterator it = alumnos.iterator();


        DefaultTableModel modelo = (DefaultTableModel) tblAlumnos.getModel();

        modelo.setRowCount(0);


        while (it.hasNext()) {

            Alumno alumno2 = (Alumno) it.next();
```

```java
        Object[] row = {alumno2.getNombre() + "||" + alumno2.getApellido(), alumno2.getCedula(),
alumno2.getGenero()};

        modelo.addRow(row);

        System.out.println(Arrays.toString(row));

    }



    tblAlumnos.setModel(modelo);

  }



}


public void limpiar() {

    txtBuscarCurso.setText("");

    DefaultTableModel modelo = (DefaultTableModel) tblActividades.getModel();

    modelo.setRowCount(0);

    tblActividades.setModel(modelo);


    btnEliminarAlumno.setEnabled(false);

    btnEliminarActividad.setEnabled(false);


    DefaultTableModel modelo1 = (DefaultTableModel) tblAlumnos.getModel();

    modelo.setRowCount(0);

    tblAlumnos.setModel(modelo1);


}


/**

 * 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
```

```java
 * regenerated by the Form Editor.
 */

@SuppressWarnings("unchecked")

// <editor-fold defaultstate="collapsed" desc="Generated Code">

private void initComponents() {


    jPanel1 = new javax.swing.JPanel();

    jLabel1 = new javax.swing.JLabel();

    txtBuscarCurso = new javax.swing.JTextField();

    jPanel2 = new javax.swing.JPanel();

    jScrollPane1 = new javax.swing.JScrollPane();

    tblActividades = new javax.swing.JTable();

    btnEliminarActividad = new javax.swing.JButton();

    btnCancelarActividad = new javax.swing.JButton();

    jPanel3 = new javax.swing.JPanel();

    jLabel2 = new javax.swing.JLabel();

    txtDocente = new javax.swing.JTextField();

    jPanel4 = new javax.swing.JPanel();

    jScrollPane2 = new javax.swing.JScrollPane();

    tblAlumnos = new javax.swing.JTable();

    btnEliminarAlumno = new javax.swing.JButton();

    btnCancelarAlumno = new javax.swing.JButton();


    setClosable(true);

    setDefaultCloseOperation(javax.swing.WindowConstants.HIDE_ON_CLOSE);

    setTitle("Gestion Curso");

    addInternalFrameListener(new javax.swing.event.InternalFrameListener() {

      public void internalFrameActivated(javax.swing.event.InternalFrameEvent evt) {

        formInternalFrameActivated(evt);
```

```java
        }
        public void internalFrameClosed(javax.swing.event.InternalFrameEvent evt) {
        }
        public void internalFrameClosing(javax.swing.event.InternalFrameEvent evt) {
        }
        public void internalFrameDeactivated(javax.swing.event.InternalFrameEvent evt) {
        }
        public void internalFrameDeiconified(javax.swing.event.InternalFrameEvent evt) {
        }
        public void internalFrameIconified(javax.swing.event.InternalFrameEvent evt) {
        }
        public void internalFrameOpened(javax.swing.event.InternalFrameEvent evt) {
        }
    });


    jLabel1.setText("Curso ID:");


    javax.swing.GroupLayout jPanel1Layout = new javax.swing.GroupLayout(jPanel1);
    jPanel1.setLayout(jPanel1Layout);
    jPanel1Layout.setHorizontalGroup(
        jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
        .addGroup(jPanel1Layout.createSequentialGroup()
            .addGap(71, 71, 71)
            .addComponent(jLabel1)
            .addGap(39, 39, 39)
            .addComponent(txtBuscarCurso, javax.swing.GroupLayout.PREFERRED_SIZE, 168, javax.swing.GroupLayout.PREFERRED_SIZE)
            .addContainerGap(javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE))
    );
```

```
jPanel1Layout.setVerticalGroup(

    jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

    .addGroup(jPanel1Layout.createSequentialGroup()

        .addGap(31, 31, 31)

        .addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)

            .addComponent(jLabel1)

            .addComponent(txtBuscarCurso, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))

        .addContainerGap(47, Short.MAX_VALUE))

    );


    jPanel2.setBorder(javax.swing.BorderFactory.createTitledBorder("Actividad"));


    tblActividades.setModel(new javax.swing.table.DefaultTableModel(

        new Object [][] {

        },
        new String [] {

            "Id", "Titulo", "Aplicaciones"

        }

    ) {

        Class[] types = new Class [] {

            java.lang.String.class, java.lang.String.class, java.lang.String.class

        };

        boolean[] canEdit = new boolean [] {

            false, false, false

        };


        public Class getColumnClass(int columnIndex) {
```

```
        return types [columnIndex];

    }


    public boolean isCellEditable(int rowIndex, int columnIndex) {

        return canEdit [columnIndex];

    }
});
tblActividades.addMouseListener(new java.awt.event.MouseAdapter() {

    public void mouseClicked(java.awt.event.MouseEvent evt) {

        tblActividadesMouseClicked(evt);

    }
});
jScrollPane1.setViewportView(tblActividades);


btnEliminarActividad.setText("Eliminar");

btnEliminarActividad.setEnabled(false);

btnEliminarActividad.addActionListener(new java.awt.event.ActionListener() {

    public void actionPerformed(java.awt.event.ActionEvent evt) {

        btnEliminarActividadActionPerformed(evt);

    }
});


btnCancelarActividad.setText("Cancelar");

btnCancelarActividad.addActionListener(new java.awt.event.ActionListener() {

    public void actionPerformed(java.awt.event.ActionEvent evt) {

        btnCancelarActividadActionPerformed(evt);

    }
});
```

```java
javax.swing.GroupLayout jPanel2Layout = new javax.swing.GroupLayout(jPanel2);

jPanel2.setLayout(jPanel2Layout);

jPanel2Layout.setHorizontalGroup(

    jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

    .addGroup(jPanel2Layout.createSequentialGroup()

        .addGroup(jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

            .addGroup(jPanel2Layout.createSequentialGroup()

                .addGap(19, 19, 19)

                .addComponent(jScrollPane1, javax.swing.GroupLayout.PREFERRED_SIZE, 387,
javax.swing.GroupLayout.PREFERRED_SIZE))

            .addGroup(jPanel2Layout.createSequentialGroup()

                .addGap(98, 98, 98)

                .addComponent(btnEliminarActividad)

                .addGap(72, 72, 72)

                .addComponent(btnCancelarActividad)))

        .addContainerGap(18, Short.MAX_VALUE))

);
jPanel2Layout.setVerticalGroup(

    jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

    .addGroup(jPanel2Layout.createSequentialGroup()

        .addGap(26, 26, 26)

        .addComponent(jScrollPane1, javax.swing.GroupLayout.PREFERRED_SIZE, 192,
javax.swing.GroupLayout.PREFERRED_SIZE)

        .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED, 27, Short.MAX_VALUE)

        .addGroup(jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)

            .addComponent(btnEliminarActividad)

            .addComponent(btnCancelarActividad))

        .addGap(23, 23, 23))

);
```

```java
jLabel2.setText("Docente:");


javax.swing.GroupLayout jPanel3Layout = new javax.swing.GroupLayout(jPanel3);

jPanel3.setLayout(jPanel3Layout);

jPanel3Layout.setHorizontalGroup(

    jPanel3Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

    .addGroup(jPanel3Layout.createSequentialGroup()

        .addGap(57, 57, 57)

        .addComponent(jLabel2)

        .addGap(52, 52, 52)

        .addComponent(txtDocente, javax.swing.GroupLayout.PREFERRED_SIZE, 306,
javax.swing.GroupLayout.PREFERRED_SIZE)

        .addContainerGap(76, Short.MAX_VALUE))

    );

    jPanel3Layout.setVerticalGroup(

    jPanel3Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

    .addGroup(jPanel3Layout.createSequentialGroup()

        .addGap(14, 14, 14)

        .addGroup(jPanel3Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)

        .addComponent(jLabel2)

        .addComponent(txtDocente, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))

        .addContainerGap(23, Short.MAX_VALUE))

    );


    jPanel4.setBorder(javax.swing.BorderFactory.createTitledBorder("Alumnos"));


    tblAlumnos.setModel(new javax.swing.table.DefaultTableModel(

    new Object [][] {
```

```java
        },
        new String [] {
            "Nombre", "Cedula", "Genero"
        }
    ) {
        boolean[] canEdit = new boolean [] {
            false, false, false
        };

        public boolean isCellEditable(int rowIndex, int columnIndex) {
            return canEdit [columnIndex];
        }
    });
    tblAlumnos.addMouseListener(new java.awt.event.MouseAdapter() {
        public void mouseClicked(java.awt.event.MouseEvent evt) {
            tblAlumnosMouseClicked(evt);
        }
    });
    jScrollPane2.setViewportView(tblAlumnos);


    btnEliminarAlumno.setText("Eliminar");
    btnEliminarAlumno.setEnabled(false);
    btnEliminarAlumno.addActionListener(new java.awt.event.ActionListener() {
        public void actionPerformed(java.awt.event.ActionEvent evt) {
            btnEliminarAlumnoActionPerformed(evt);
        }
    });


    btnCancelarAlumno.setText("Cancelar");
```

```
btnCancelarAlumno.addActionListener(new java.awt.event.ActionListener() {

    public void actionPerformed(java.awt.event.ActionEvent evt) {

        btnCancelarAlumnoActionPerformed(evt);

    }

});


javax.swing.GroupLayout jPanel4Layout = new javax.swing.GroupLayout(jPanel4);

jPanel4.setLayout(jPanel4Layout);

jPanel4Layout.setHorizontalGroup(

    jPanel4Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

    .addGroup(javax.swing.GroupLayout.Alignment.TRAILING, jPanel4Layout.createSequentialGroup()

        .addContainerGap(28, Short.MAX_VALUE)

        .addComponent(jScrollPane2, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)

        .addGap(19, 19, 19))

    .addGroup(jPanel4Layout.createSequentialGroup()

        .addGap(146, 146, 146)

        .addComponent(btnEliminarAlumno)

        .addGap(83, 83, 83)

        .addComponent(btnCancelarAlumno)

        .addContainerGap(javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE))

);

jPanel4Layout.setVerticalGroup(

    jPanel4Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

    .addGroup(jPanel4Layout.createSequentialGroup()

        .addContainerGap()

        .addComponent(jScrollPane2, javax.swing.GroupLayout.PREFERRED_SIZE, 217,
javax.swing.GroupLayout.PREFERRED_SIZE)

        .addGap(18, 18, 18)

        .addGroup(jPanel4Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
```

```
            .addComponent(btnEliminarAlumno)

            .addComponent(btnCancelarAlumno))

        .addContainerGap(24, Short.MAX_VALUE))

   );


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

   getContentPane().setLayout(layout);

   layout.setHorizontalGroup(

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

      .addGroup(layout.createSequentialGroup()

        .addContainerGap()

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

          .addComponent(jPanel2, javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)

          .addComponent(jPanel1, javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE))

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

          .addGroup(layout.createSequentialGroup()

            .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED,
javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)

            .addComponent(jPanel3, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)

            .addContainerGap())

          .addGroup(layout.createSequentialGroup()

            .addGap(40, 40, 40)

            .addComponent(jPanel4, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)

            .addContainerGap(16, Short.MAX_VALUE))))

   );

   layout.setVerticalGroup(

      layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
```

```java
            .addGroup(layout.createSequentialGroup()

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

                    .addGroup(layout.createSequentialGroup()

                        .addComponent(jPanel1, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)

                        .addGap(10, 10, 10))

                    .addGroup(javax.swing.GroupLayout.Alignment.TRAILING, layout.createSequentialGroup()

                        .addComponent(jPanel3, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)

                        .addGap(36, 36, 36)))

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

                    .addComponent(jPanel2, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)

                    .addComponent(jPanel4, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))

                .addContainerGap(javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE))
        );


        pack();
    }// </editor-fold>


    private void btnCancelarAlumnoActionPerformed(java.awt.event.ActionEvent evt) {
        // TODO add your handling code here:
        tblAlumnos.clearSelection();
        btnEliminarAlumno.setEnabled(false);


    }


    private void btnEliminarActividadActionPerformed(java.awt.event.ActionEvent evt) {
        // TODO add your handling code here:
```

```java
    curso.delete(actividad);


    controladorCurso.update(curso, curso);


}


private void tblActividadesMouseClicked(java.awt.event.MouseEvent evt) {

    // TODO add your handling code here:


    int fila = tblActividades.getSelectedRow();


    actividad = new Actividad(Integer.valueOf((String) tblActividades.getValueAt(fila, 0)));


    actividad = (Actividad) controladorActividad.read(actividad);


    btnEliminarActividad.setEnabled(true);



}


private void btnCancelarActividadActionPerformed(java.awt.event.ActionEvent evt) {

    // TODO add your handling code here:

    tblActividades.clearSelection();

    btnEliminarActividad.setEnabled(false);

}


private void tblAlumnosMouseClicked(java.awt.event.MouseEvent evt) {

    // TODO add your handling code here:
```

```java
    int fila = tblAlumnos.getSelectedRow();


    alumno = new Alumno((String) tblAlumnos.getValueAt(fila, 1));



    alumno = (Alumno) controladorAlumno.read(alumno);


    btnEliminarAlumno.setEnabled(true);
}


private void btnEliminarAlumnoActionPerformed(java.awt.event.ActionEvent evt) {
    // TODO add your handling code here:


    curso.delete(alumno);
    alumno.setCurso(null);
    controladorCurso.update(curso, curso);




}


private void formInternalFrameActivated(javax.swing.event.InternalFrameEvent evt) {
    // TODO add your handling code here:
    cargarDatos();
}



// Variables declaration - do not modify
private javax.swing.JButton btnCancelarActividad;
```
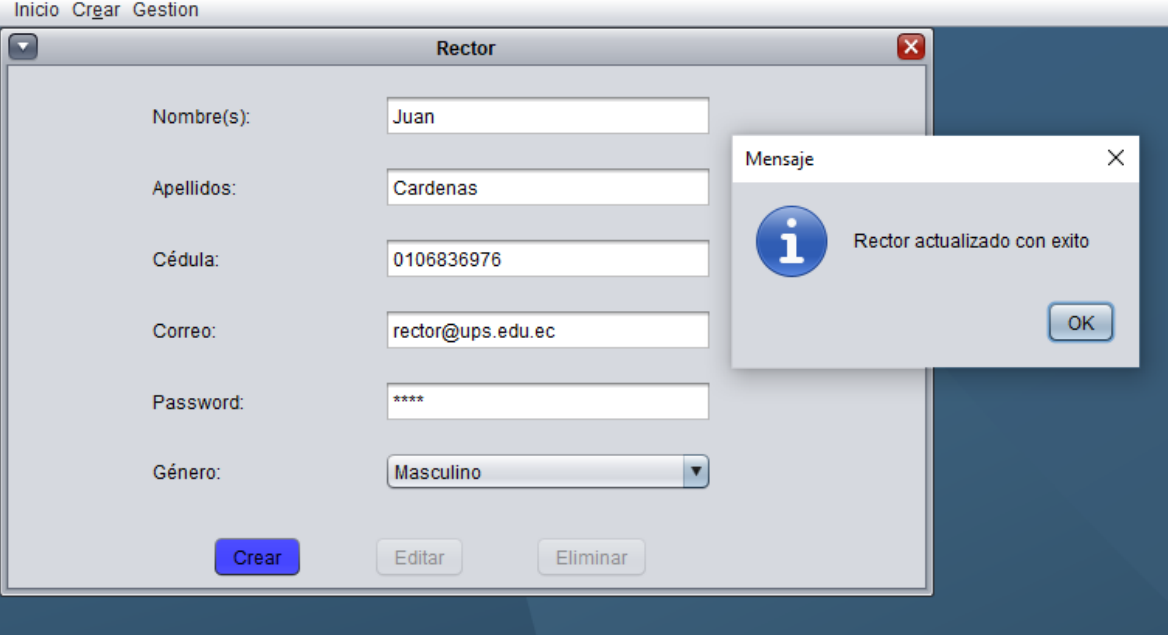
```
    private javax.swing.JButton btnCancelarAlumno;

    private javax.swing.JButton btnEliminarActividad;

    private javax.swing.JButton btnEliminarAlumno;

    private javax.swing.JLabel jLabel1;

    private javax.swing.JLabel jLabel2;

    private javax.swing.JPanel jPanel1;

    private javax.swing.JPanel jPanel2;

    private javax.swing.JPanel jPanel3;

    private javax.swing.JPanel jPanel4;

    private javax.swing.JScrollPane jScrollPane1;

    private javax.swing.JScrollPane jScrollPane2;

    private javax.swing.JTable tblActividades;

    private javax.swing.JTable tblAlumnos;

    private javax.swing.JTextField txtBuscarCurso;

    private javax.swing.JTextField txtDocente;

    // End of variables declaration

}
```

4. Probar su funcionamiento y rendimiento dentro de los equipos de cómputo de programación genérica.

Primero creamos un rector o editamos la información de un rector para poder iniciar sesión:

Luego hacemos un Log in:

El rector solo puede crear docentes y cursos.

Luego creamos un docente:

Luego creamos un curso, aquí aparecerán solo los docentes que no tienen un curso asignado:

Inicio Crear Gestion

Asignar docente a un curso

Número grupo: 4   Nombre del curso: Lenguaje

Buscar docente(cédula): [   ]   Buscar

Nombre	Cédula	Correo	Género
Pepe||Aguirre	0106836976	pepe@ups.edu.ec	Masculino

Mensaje

ⓘ Curso creado

OK

Crear   Cancelar

Luego iniciamos sesión con el docente:
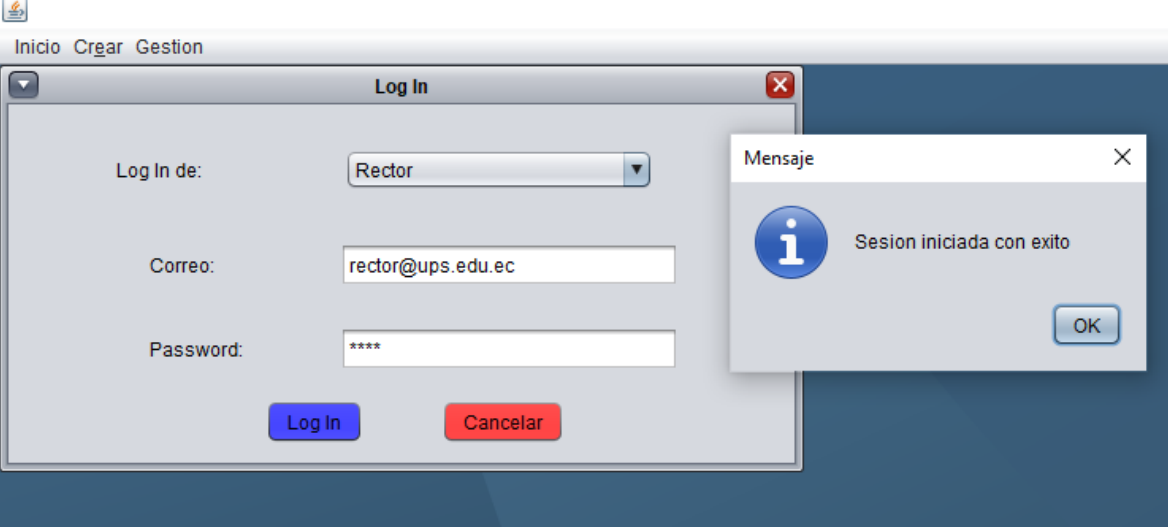
Inicio Crear Gestion

Log In

Log In de: Docente ▼

Correo: pepe@ups.edu.ec

Password: ****

Log In   Cancelar
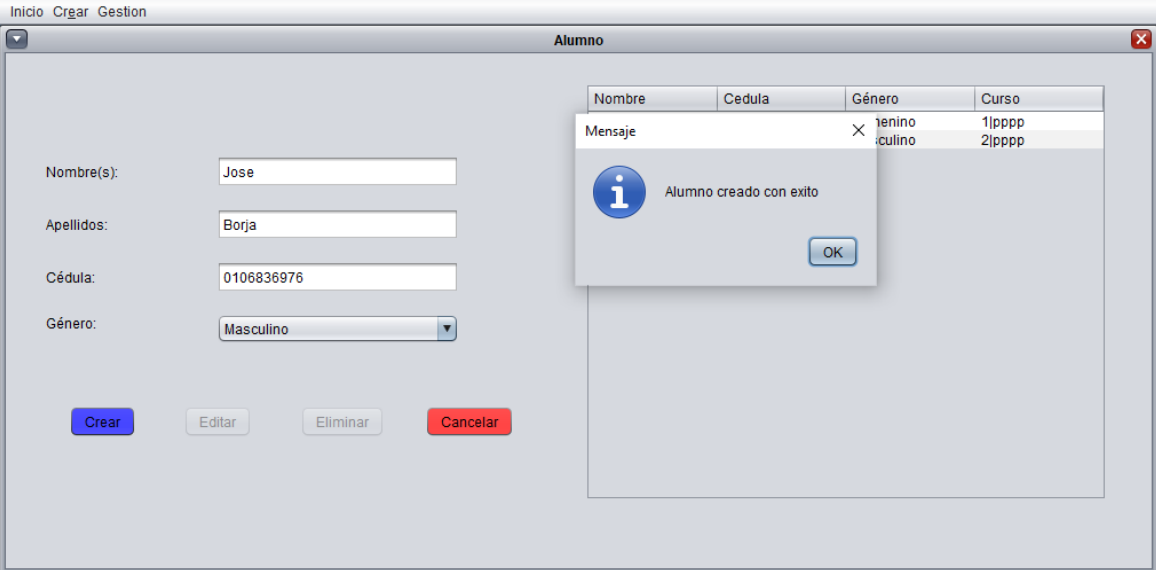
Mensaje

ⓘ Sesion iniciada con exito

OK
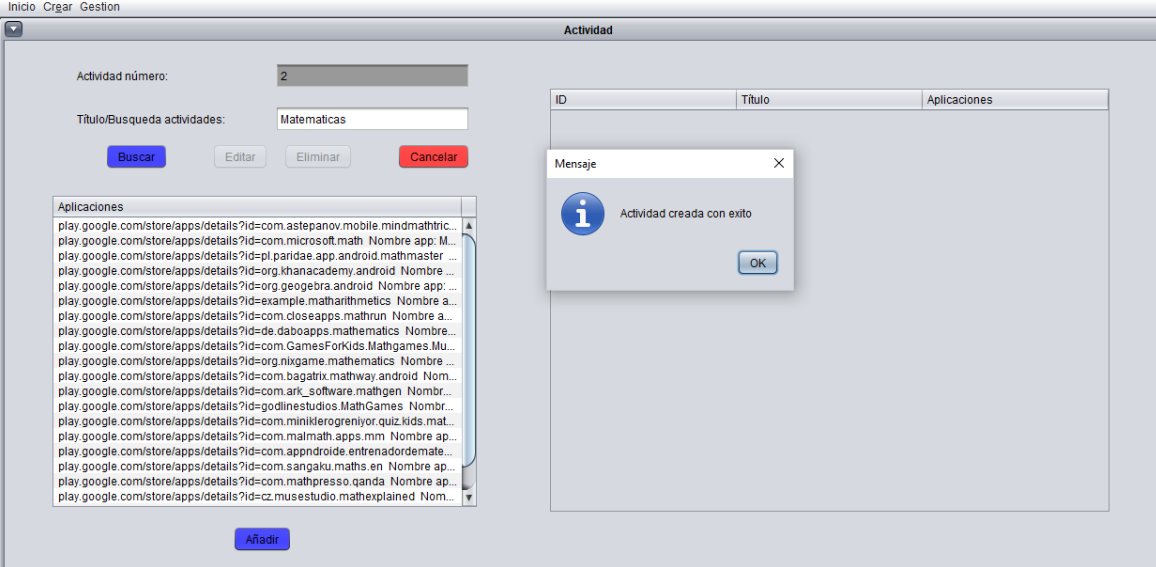
El docente solamente puede crear alumnos, actividades y asignar estos al curso que dirige.

Luego creamos un alumno:
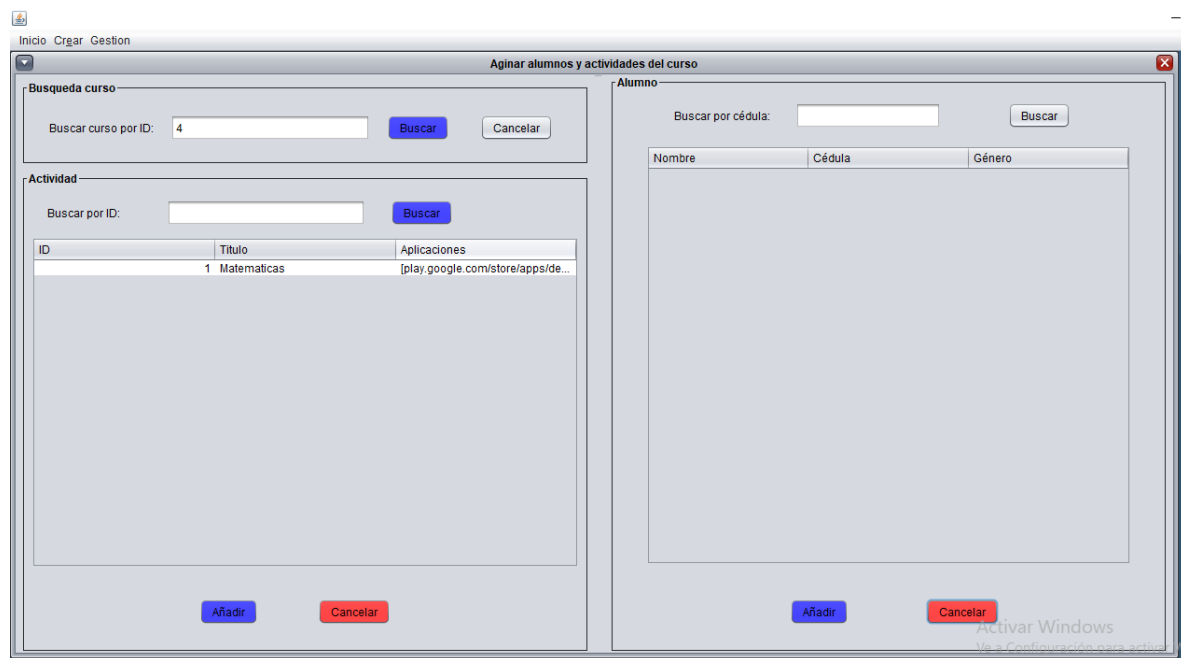
Luego creamos una actividad:

Luego asignamos la actividad y un alumno a un curso:
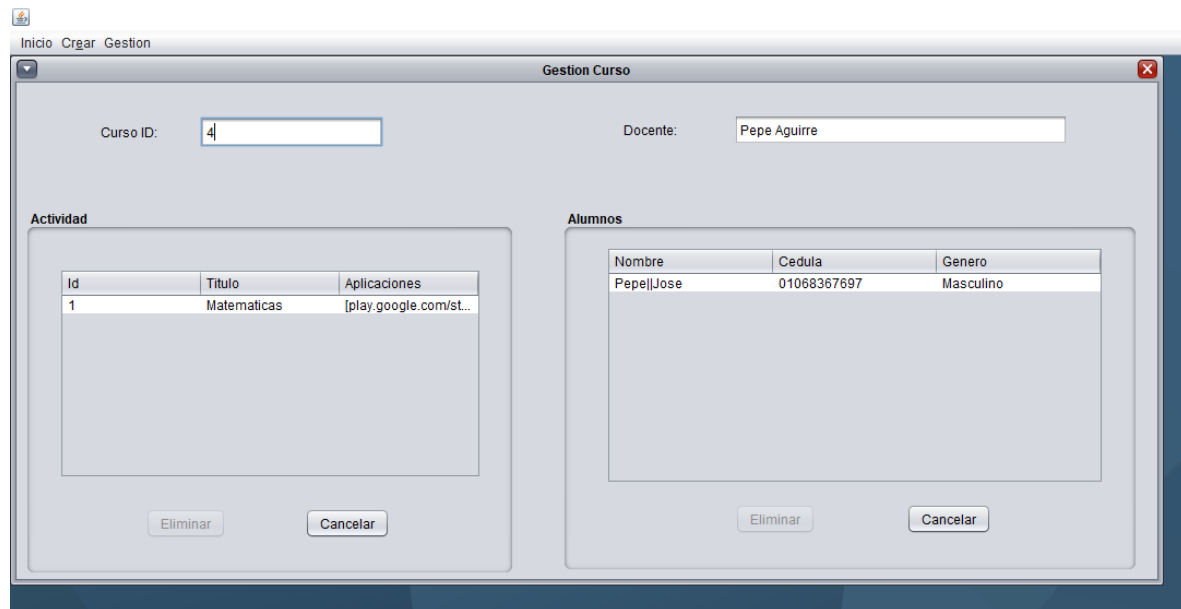
Luego vemos las características del curso:

RESULTADO(S) OBTENIDO(S):

Aplicar todos los conocimientos obtenidos durante el primer ciclo de esta materia.

Estar actualizados sobre las nuevas versiones de Java y sus cambios que traen.

Aplicar los distintos conceptos conocidos en clase.

CONCLUSIONES:

- Este trabajo ha sido de mucha ayuda para afianzar los conocimientos aprendidos y adquiridos durante este primer inter-ciclo y poder aplicarlos en una práctica. Esto nos ayuda como futuros programadores para poder crear aplicaciones en tiempos cortos de producción. Además, mejoramos nuestras técnicas de programación.

RECOMENDACIONES:

- Pienso que todo estuvo bien.

*Nombre de estudiante***: ADOLFO SEBASTIAN JARA GAVILANES.**

*Firma de estudiante***:** _____