TRINITY INTERNATIONAL COLLEGE

(Tribhuvan University Affiliated)

Lab Report:2,3 User Interface Components using Swing, Exception Handling

Submitted by: **Submitted to:**

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Unit 2, 3: User Interface Components with Swing, Event Handling

1. **Write a program using components to add two numbers. Use text fields. For inputs and output. Your program should display the result when the user presses a button. [2069]**

```java
package labassignment_2_3;

import java.awt.FlowLayout;
import java.awt.event.ActionEvent;
import java.awt.event.ActionListener;
import javax.swing.JButton;
import javax.swing.JFrame;
import javax.swing.JLabel;
import javax.swing.JTextField;


public class Addtwonumbers_Q1 extends JFrame{
    public static void main(String[] args) {
        Addtwonumbers_Q1 add=new Addtwonumbers_Q1();
        add.setVisible(true);
    }
    public Addtwonumbers_Q1(){
        setLayout(new FlowLayout());

        add(new JLabel("Enter first number:"));
        JTextField oneTextField=new JTextField(20);
        add(oneTextField);

        add(new JLabel("Enter second number:"));
        JTextField secondTextField=new JTextField(20);
        add(secondTextField);

        add(new JLabel("Sum"));
        JTextField sumTextField=new JTextField(20);
        sumTextField.setEditable(false);
        add(sumTextField);

        JButton calculateButton=new JButton("Calculate Sum");
        add(calculateButton);

        calculateButton.addActionListener(new ActionListener() {
            @Override
            public void actionPerformed(ActionEvent ae) {
                double a=Double.parseDouble(oneTextField.getText());
                double b=Double.parseDouble(secondTextField.getText());
                double sum=a+b;
                sumTextField.setText(String.valueOf(sum));
            }
        });

        pack();
        setDefaultCloseOperation(EXIT_ON_CLOSE);
    }
}
```
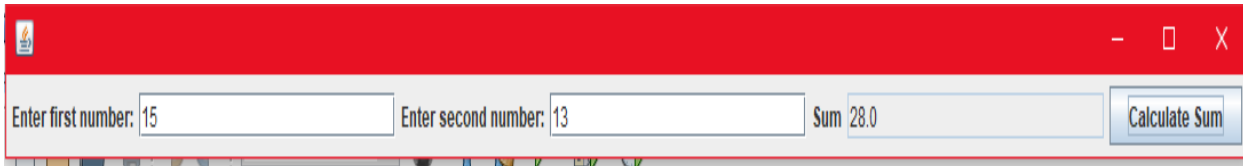
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2. Write a program using swing components to multiply two numbers. Use text fields for inputs and output. Your program should display the result when the user presses a button. [2070]

```java
package labassignment_2_3;

import java.awt.FlowLayout;
import java.awt.event.ActionEvent;
import java.awt.event.ActionListener;
import javax.swing.JButton;
import javax.swing.JFrame;
import static javax.swing.JFrame.EXIT_ON_CLOSE;
import javax.swing.JLabel;
import javax.swing.JTextField;


public class MultiplyTwonumbers_Q2 extends JFrame{
    public static void main(String[] args) {
        MultiplyTwonumbers_Q2 add=new MultiplyTwonumbers_Q2();
        add.setVisible(true);
    }
    public MultiplyTwonumbers_Q2(){
        setLayout(new FlowLayout());

        add(new JLabel("Enter first number:"));
        JTextField oneTextField=new JTextField(20);
        add(oneTextField);

        add(new JLabel("Enter second number:"));
        JTextField secondTextField=new JTextField(20);
        add(secondTextField);

        add(new JLabel("Multiply"));
        JTextField multiplyTextField=new JTextField(20);
        multiplyTextField.setEditable(false);
        add(multiplyTextField);

        JButton calculateButton=new JButton("Calculate Multiply");
        add(calculateButton);

        calculateButton.addActionListener(new ActionListener() {
            @Override
            public void actionPerformed(ActionEvent ae) {
                double a=Double.parseDouble(oneTextField.getText());
                double b=Double.parseDouble(secondTextField.getText());
                double sum=a*b;
```

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```
                multiplyTextField.setText(String.valueOf(sum));
            }
        });

         pack();
         setDefaultCloseOperation(EXIT_ON_CLOSE);
    }
}
```


3. Write a program using swing components to find simple interest. Use text fields for inputs and output. Your program should display the result when the user presses a button. [2071, 2074]

```
package labassignment_2_3;

import java.awt.FlowLayout;
import java.awt.event.ActionEvent;
import java.awt.event.ActionListener;
import javax.swing.JButton;
import javax.swing.JFrame;
import javax.swing.JLabel;
import javax.swing.JTextField;

/**
 *
 * @author student
 */
public class FlSimpleInterest_Q3 extends JFrame {

    public static void main(String[] args) {
        FlSimpleInterest_Q3 flow = new FlSimpleInterest_Q3();
        flow.setVisible(true);
    }

    public FlSimpleInterest_Q3() {
        setLayout(new FlowLayout());

        add(new JLabel("Principal:"));
        JTextField pTextField = new JTextField(10);
        add(pTextField);

        add(new JLabel("Rate:"));
        JTextField rTextField = new JTextField(10);
        add(rTextField);

        add(new JLabel("Time:"));
        JTextField tTextField = new JTextField(10);
```

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```java
        add(tTextField);

        add(new JLabel("Interest:"));
        JTextField interestTextField = new JTextField(10);
        interestTextField.setEditable(false);
        add(interestTextField);

        JButton calculateButton = new JButton("Calculate");
        add(calculateButton);

        calculateButton.addActionListener(new ActionListener() {

            @Override
            public void actionPerformed(ActionEvent e) {
                try{
                double p = Double.parseDouble(pTextField.getText());
                double r = Double.parseDouble(rTextField.getText());
                double t = Double.parseDouble(tTextField.getText());
                double interest = (p * t * r) / 100;
                interestTextField.setText(String.valueOf(interest));
                }
                catch(NumberFormatException er){
                    System.out.print("Enter number,not string");
                }
            }

        });

        pack();
        setDefaultCloseOperation(EXIT_ON_CLOSE);

    }

}
```
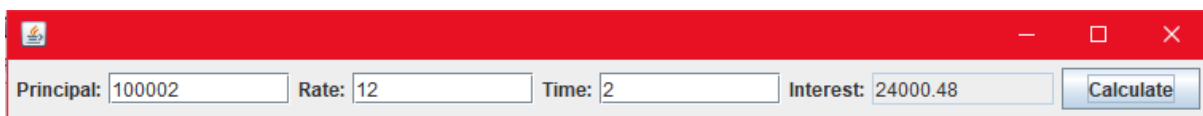

4. **Design a GUI form using swing with a text field, a text label for displaying the input message "Input any string", and three buttons with caption "Check Palindrome", "Reverse", "Find Vowels". Write a complete program for above scenario and for checking palindrome in first button, reverse it after clicking second button and extract the vowels from it after clicking third button. [2075]**

```java
package labassignment_2_3;

import java.util.*;
import java.awt.FlowLayout;
import java.awt.event.ActionEvent;
import java.awt.event.ActionListener;
```

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```java
import javax.swing.JButton;
import javax.swing.JFrame;
import javax.swing.JLabel;
import javax.swing.JTextField;

public class Palindrome_Reverse_Vowels_Q4 extends JFrame {

    public static void main(String[] args) {
        Palindrome_Reverse_Vowels_Q4 app = new
Palindrome_Reverse_Vowels_Q4();
        app.setVisible(true);
    }

    public Palindrome_Reverse_Vowels_Q4() {
        setLayout(new FlowLayout());
        add(new JLabel("Input The String :"));
        JTextField inputTextField = new JTextField(20);
        add(inputTextField);

        add(new JLabel("Result :"));
        JTextField resultTextField = new JTextField(20);
        resultTextField.setEditable(false);
        add(resultTextField);

        JButton palindrome = new JButton("Check Palindrome");
        add(palindrome);
        JButton reverse = new JButton("Check Reverse");
        add(reverse);
        JButton vowels = new JButton("Check Vowels");
        add(vowels);

        palindrome.addActionListener(new ActionListener() {
            @Override
            public void actionPerformed(ActionEvent e) {
                String input = inputTextField.getText();
                int length = input.length();
                String reverse = "";
                for (int i = length - 1; i >= 0; i--) {
                    reverse = reverse + input.charAt(i);
                }
                if (input.equals(reverse)) {
                    resultTextField.setText("Entered    string    is    a
palindrome.");
                } else {
                    resultTextField.setText("Entered    string    isn't    a
palindrome.");
                }

            }

        });

        reverse.addActionListener(new ActionListener() {
            @Override
            public void actionPerformed(ActionEvent e) {
                String input = inputTextField.getText();
```

```java
                int length = input.length();
                String reverse = "";
                for (int i = length - 1; i >= 0; i--) {
                    reverse = reverse + input.charAt(i);
                }

                resultTextField.setText(reverse);

            }
        });

        vowels.addActionListener(new ActionListener() {
            @Override
            public void actionPerformed(ActionEvent e) {
                String string = inputTextField.getText();
                String input = string.toLowerCase();
                int length = input.length();
                String vowellist = "";
                char[] vowel = new char[length];
                for (int i = 0; i < length; i++) {
                    if (input.charAt(i) == 'a' || input.charAt(i) == 'e'
|| input.charAt(i) == 'i'|| input.charAt(i) == 'o' || input.charAt(i)
== 'u') {
                        vowel[i] = input.charAt(i);
            vowellist = vowellist + String.valueOf(vowel[i]);
                    }
                    System.out.println(vowellist);
                }
                resultTextField.setText(vowellist);

            }
        });

        pack();

        setDefaultCloseOperation(EXIT_ON_CLOSE);
    }
}
```
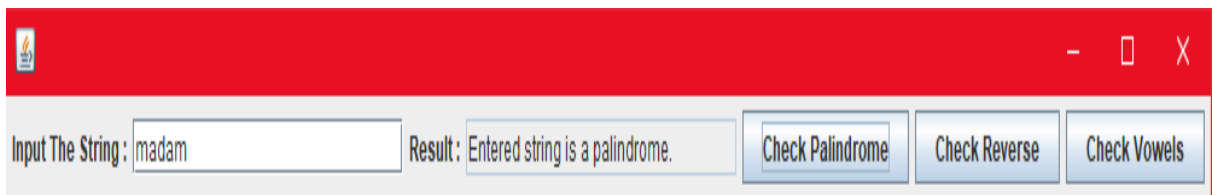

5. Write a program to illustrate the use of BorderLayout. [2073]
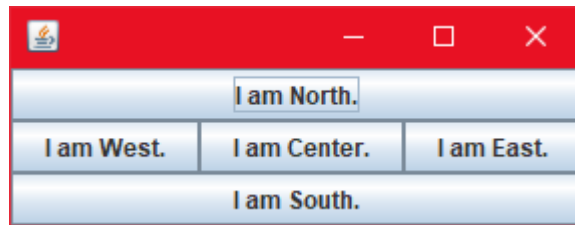
```java
package labassignment_2_3;

import java.awt.BorderLayout;
import javax.swing.JButton;
```

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```java
import javax.swing.JFrame;


public class BorderLayout_Q5 extends JFrame {
    public static void main(String[] args) {
        BorderLayout_Q5 border=new BorderLayout_Q5();
        border.setVisible(true);
    }
    public BorderLayout_Q5(){
        setLayout(new BorderLayout());
        add(new JButton("I am North."),BorderLayout.NORTH);
        add(new JButton("I am West."),BorderLayout.WEST);
        add(new JButton("I am Center."),BorderLayout.CENTER);
        add(new JButton("I am East."),BorderLayout.EAST);
        add(new JButton("I am South."),BorderLayout.SOUTH);

        pack();
        setDefaultCloseOperation(EXIT_ON_CLOSE);

    }
}
```


6. Write a program to calculate simple interest using

a) GridLayout

```java
package labassignment_2_3;

import java.awt.GridLayout;
import java.awt.event.ActionEvent;
import java.awt.event.ActionListener;
import javax.swing.JButton;
import javax.swing.JFrame;
import static javax.swing.JFrame.EXIT_ON_CLOSE;
import javax.swing.JLabel;
import javax.swing.JTextField;

/**
 *
 * @author user
 */
public class GridlayoutSimpleInterest_Q6_b extends JFrame {

    public static void main(String[] args) {
                GridlayoutSimpleInterest_Q6_b grid = new
            GridlayoutSimpleInterest_Q6_b();
        grid.setVisible(true);
    }
```

```java
    public GridlayoutSimpleInterest_Q6_b() {
        setLayout(new GridLayout(5, 2));
        add(new JLabel("Principal:"));
        JTextField pTextField = new JTextField(10);
        add(pTextField);

        add(new JLabel("Rate:"));
        JTextField rTextField = new JTextField(10);
        add(rTextField);

        add(new JLabel("Time:"));
        JTextField tTextField = new JTextField(10);
        add(tTextField);

        add(new JLabel("Interest:"));
        JTextField interestTextField = new JTextField(10);
        interestTextField.setEditable(false);
        add(interestTextField);

        JButton calculateButton = new JButton("Calculate");
        add(calculateButton);

        calculateButton.addActionListener(new ActionListener() {

            @Override
            public void actionPerformed(ActionEvent e) {
                try {
          double p = Double.parseDouble(pTextField.getText());
          double r = Double.parseDouble(rTextField.getText());
          double t = Double.parseDouble(tTextField.getText());
                    double interest = (p * t * r) / 100;

interestTextField.setText(String.valueOf(interest));
                } catch (NumberFormatException er) {
                    add(new JLabel("Error::Enter Number,not string"));
                    setSize(400,150);


                }
            }

        });

        pack();
        setDefaultCloseOperation(EXIT_ON_CLOSE);

    }

}
```

Principal:	1233
Rate:	2
Time:	1
Interest:	24.66
Calculate	

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b) GridBagLayout

```
package labassignment_2_3;

import java.awt.Dimension;
import java.awt.GridBagConstraints;
import java.awt.GridBagLayout;
import java.awt.event.ActionEvent;
import java.awt.event.ActionListener;
import javax.swing.JButton;
import javax.swing.JFrame;
import static javax.swing.JFrame.EXIT_ON_CLOSE;
import javax.swing.JLabel;
import javax.swing.JTextField;




/**
 *
 * @author user
 */
public class GridbaglayoutSimpleInterest_Q6_c extends JFrame {
    public static void main(String[] args) {
                GridbaglayoutSimpleInterest_Q6_c g = new
                    GridbaglayoutSimpleInterest_Q6_c();
        g.setVisible(true);


    }
    public GridbaglayoutSimpleInterest_Q6_c(){
        setLayout(new GridBagLayout());
        GridBagConstraints c = new GridBagConstraints();
        c.fill = GridBagConstraints.HORIZONTAL;


        c.gridx=1;
        c.gridy=0;
        add(new JLabel("Principal:"),c);
        JTextField pTextField = new JTextField(10);
        c.gridx=2;
        c.gridy=0;
        c.weightx=0.5;
        add(pTextField,c);

        c.gridx=1;
        c.gridy=1;
        add(new JLabel("Rate:"),c);
        JTextField rTextField = new JTextField(10);
        c.gridx=2;
        c.gridy=1;
        c.weightx=0.5;
        add(rTextField,c);

        c.gridx=1;
        c.gridy=2;
        add(new JLabel("Time:"),c);
```

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```java
JTextField tTextField = new JTextField(10);
c.gridx=2;
c.gridy=2;
c.weightx=0.5;
add(tTextField,c);

c.gridx=1;
c.gridy=3;
add(new JLabel("Interest:"),c);
JTextField interestTextField = new JTextField(10);
interestTextField.setEditable(false);
c.gridx=2;
c.gridy=3;
c.weightx=0.5;
add(interestTextField,c);

JButton calculateButton = new JButton("Calculate");
c.gridx=1;
c.gridy=4;
c.gridwidth=0;
add(calculateButton,c);

setPreferredSize(new Dimension(300,300));

calculateButton.addActionListener(new ActionListener() {

    @Override
    public void actionPerformed(ActionEvent e) {
        try {
  double p = Double.parseDouble(pTextField.getText());
  double r = Double.parseDouble(rTextField.getText());
  double t = Double.parseDouble(tTextField.getText());
        double interest = (p * t * r) / 100;
  interestTextField.setText(String.valueOf(interest));
        } catch (NumberFormatException er) {
System.out.println("Error:Enter integer,not string..");

        }
    }

});

pack();
setDefaultCloseOperation(EXIT_ON_CLOSE);

    }

}
```
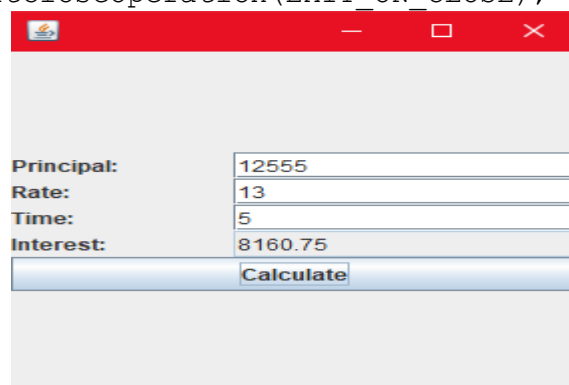
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7. Create a login form with username and password fields. Print "access granted" if the username and password both are "admin", when user clicks on Login button. If authentication fails, print "access denied".

```java
package labassignment_2_3;

import java.awt.FlowLayout;
import java.awt.event.ActionEvent;
import java.awt.event.ActionListener;
import java.util.Arrays;
import javax.swing.JButton;
import javax.swing.JFrame;
import javax.swing.JLabel;
import javax.swing.JPasswordField;
import javax.swing.JTextField;

/**
 *
 * @author student
 */
public class LoginForm_Q7 extends JFrame {
    public static void main(String[] args) {
        LoginForm_Q7 login = new LoginForm_Q7();
        login.setVisible(true);
    }
    public LoginForm_Q7(){
        setLayout(new FlowLayout());

        add(new JLabel("Username"));
        JTextField userTextField = new JTextField(20);
        add(userTextField);

        add(new JLabel("Password"));
        JPasswordField pwdTextField = new JPasswordField(20);
        add(pwdTextField);

        JButton loginbutton = new JButton("Login");
        add(loginbutton);

        pack();

        loginbutton.addActionListener(new ActionListener(){
            @Override

            public void actionPerformed(ActionEvent e) {
                String username = userTextField.getText();
                char[] password = pwdTextField.getPassword();
                char[] actualPassword = {'a','d','m','i','n'};
                if(username.equals("admin")                    &&
Arrays.equals(password,actualPassword)){
                    System.out.println("Access Granted....");
                }
                else{
                    System.out.println("Access Denied....");
                }
```

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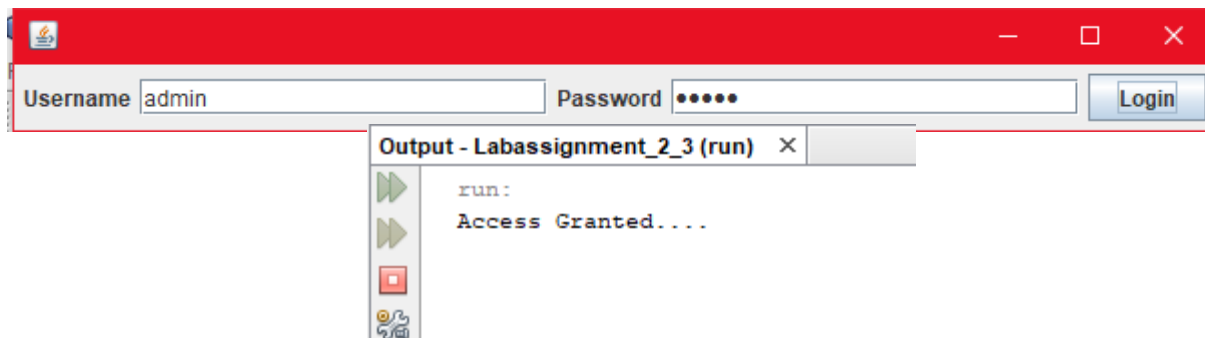
```
                    }
            });

            pack();
            setDefaultCloseOperation(EXIT_ON_CLOSE);

    }

}
```


8.(Optional) Create a basic notepad app with the following features:
  a) New
  b) Open
  c) Save
  d) Exit
  Use JButton components to implement these features.

```
package labassignment_2_3;

import java.awt.BorderLayout;
import java.awt.event.ActionEvent;
import java.awt.event.ActionListener;
import java.io.BufferedReader;
import java.io.File;
import java.io.FileReader;
import java.io.FileWriter;
import java.io.IOException;
import java.io.PrintWriter;
import java.util.logging.Level;
import java.util.logging.Logger;
import javax.swing.JButton;
import javax.swing.JFrame;
import static javax.swing.JFrame.EXIT_ON_CLOSE;
import javax.swing.JPanel;
import javax.swing.JTextArea;

/**
 *
 * @author user
 */
public class NotePad_Q8 extends JFrame {
```

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```java
    public static void main(String[] args) {
        NotePad_Q8 note = new NotePad_Q8();
        note.setVisible(true);
        note.setSize(500, 500);

    }

    public NotePad_Q8() {
        setLayout(new BorderLayout());

        JPanel panel = new JPanel();

        JButton newfilebutton = new JButton("New");
        panel.add(newfilebutton);

        JButton openbutton = new JButton("Open");
        panel.add(openbutton);

        JButton savebutton = new JButton("Save");
        panel.add(savebutton);

        JButton exitbutton = new JButton("Exit");
        panel.add(exitbutton);

        add(panel, BorderLayout.PAGE_START);
        panel.setSize(300, 100);

        JTextArea textArea = new JTextArea(10, 50);
        add(textArea);

        newfilebutton.addActionListener(new ActionListener() {
            @Override
            public void actionPerformed(ActionEvent ae) {
                textArea.setText("");
            }

        });

        openbutton.addActionListener(new ActionListener() {
            @Override
            public void actionPerformed(ActionEvent ae) {
                BufferedReader in = null;
                try {
                    in          =          new          BufferedReader(new
FileReader("source.txt"));
                    String line;
                    while (true) {
                        line = in.readLine();
                        if (line == null) {
                            break;
                        }
                        textArea.append(line);

                    }
                } catch (IOException ex) {
```

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```java
Logger.getLogger(NotePad_Q8.class.getName()).log(Level.SEVERE,    null,
ex);
                }
            }

        });

        savebutton.addActionListener(new ActionListener() {
            @Override
            public void actionPerformed(ActionEvent ae) {
                PrintWriter out = null;

                try {
                    String title = textArea.getText();
                    FileWriter      fw      =      new      FileWriter(new
File("destination.txt"));
                    fw.write(title);
                    fw.close();
                } catch (IOException ex) {

Logger.getLogger(NotePad_Q8.class.getName()).log(Level.SEVERE,    null,
ex);
                }

            }

        }
        );

        exitbutton.addActionListener(
                new ActionListener() {
            @Override
            public void actionPerformed(ActionEvent ae
            ) {
                System.exit(0);
            }

        }
        );

        pack();
        setDefaultCloseOperation(EXIT_ON_CLOSE);
    }
}
```

9.Create an application with UI similar to the windows notepad app.

```java
package labassignment_2_3;


import java.awt.BorderLayout;
import javax.swing.JCheckBoxMenuItem;
import javax.swing.JFrame;
import javax.swing.JMenu;
import javax.swing.JMenuBar;
import javax.swing.JMenuItem;
import javax.swing.JScrollPane;
import javax.swing.JTextArea;

/**
 *
 * @author student
 */
public class NotepadUI_Q9 extends JFrame{
    public static void main(String[] args) {
        NotepadUI_Q9 notepad=new NotepadUI_Q9();
        notepad.setVisible(true);
        notepad.setSize(400,400);
    }

    public NotepadUI_Q9(){
        super("Notepad");
        setLayout(new BorderLayout());

        JMenuBar menuBar=new JMenuBar();
        setJMenuBar(menuBar);

        JMenu fileMenu = new JMenu("File");
        menuBar.add(fileMenu);

        JMenu editMenu = new JMenu("Edit");
        menuBar.add(editMenu);

        JMenu formatMenu = new JMenu("Format");
        menuBar.add(formatMenu);

        JMenu viewMenu = new JMenu("View");
        menuBar.add(viewMenu);

        JMenu helpMenu = new JMenu("Help");
        menuBar.add(helpMenu);

        JMenuItem newMenuItem = new JMenuItem("New");
        fileMenu.add(newMenuItem);
        JMenuItem openMenuItem = new JMenuItem("Open");
        fileMenu.add(openMenuItem);
        JMenuItem saveMenuItem = new JMenuItem("Save");
        fileMenu.add(saveMenuItem);
        JMenuItem exitMenuItem = new JMenuItem("Exit");
        fileMenu.add(exitMenuItem);
```

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```java
        JMenuItem cutMenuItem = new JMenuItem("Cut");
        editMenu.add(cutMenuItem);
        JMenuItem copyMenuItem = new JMenuItem("Copy");
        editMenu.add(copyMenuItem);
        JMenuItem pasteMenuItem = new JMenuItem("Paste");
        editMenu.add(pasteMenuItem);

        JCheckBoxMenuItem wordwrapitem = new  JCheckBoxMenuItem("Word
Wrap");
        formatMenu.add(wordwrapitem);
        wordwrapitem.setSelected(false);
        JMenuItem fontMenuItem = new JMenuItem("Font");
        formatMenu.add(fontMenuItem);

        JCheckBoxMenuItem  viewitem  =  new  JCheckBoxMenuItem("Status
Bar");
        viewMenu.add(viewitem);
        wordwrapitem.setSelected(false);

        JMenuItem viewhelpMenuItem = new JMenuItem("View Help");
        helpMenu.add(viewhelpMenuItem);
        JMenuItem abouthelpMenuItem = new JMenuItem("About Notepad");
        helpMenu.add(abouthelpMenuItem);

        JTextArea textArea = new JTextArea(10,50);
        JScrollPane scrollPane = new JScrollPane(textArea);
        add(scrollPane);


        pack();
        setDefaultCloseOperation(EXIT_ON_CLOSE);
    }


}
```
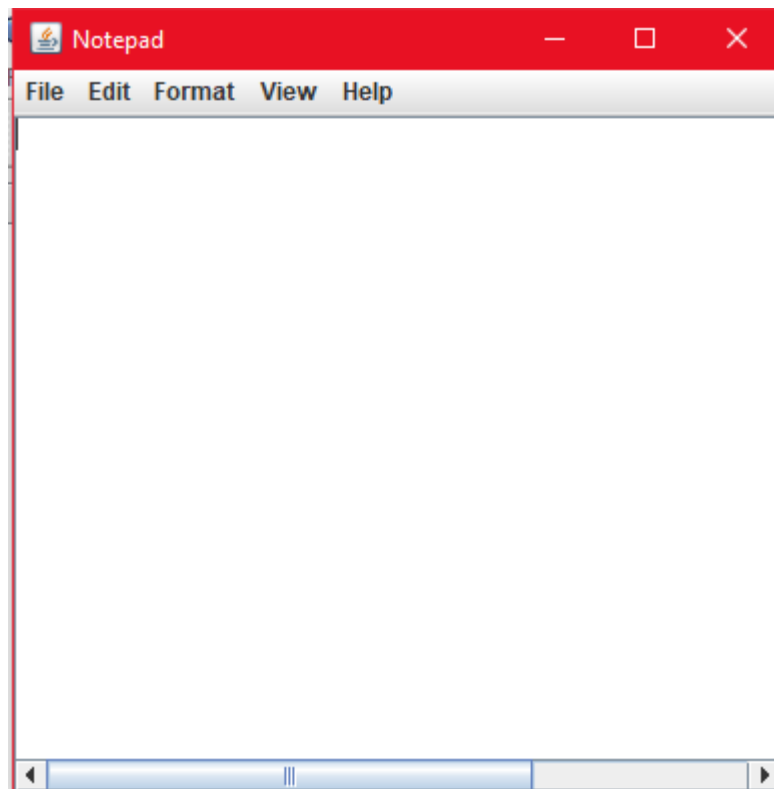
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10. Create the UI for tic-tac-toe app using JButton array and GridLayout.

```java
package labassignment_2_3;

import java.awt.GridLayout;
import javax.swing.JButton;
import javax.swing.JFrame;

/**
 *
 * @author user
 */
public class Tic_Tac_Toe_UI_Q10 extends JFrame {
    public static void main(String[] args) {
        Tic_Tac_Toe_UI_Q10 tictactoe=new Tic_Tac_Toe_UI_Q10();
        tictactoe.setVisible(true);
        tictactoe.setBounds(200,200,200,200);
    }
    public Tic_Tac_Toe_UI_Q10() {
        setLayout(new GridLayout(3,3));
        JButton[] JButtonArray = new JButton[9];
        setLayout(new GridLayout(3,3));

        for (int i=0; i<9; i++)
        {
            JButtonArray[i] = new JButton();
            add(JButtonArray[i]);
        }
        pack();
        setDefaultCloseOperation(EXIT_ON_CLOSE);
    }

}
```
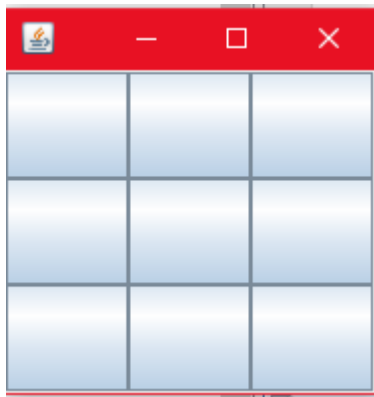

11. Demonstrate the use of Open and Save dialogs for opening and saving files.

```java
package labassignment_2_3;

import java.awt.BorderLayout;
import java.awt.event.ActionEvent;
import java.awt.event.ActionListener;
import java.io.File;
import javax.swing.JFileChooser;
```

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```java
import javax.swing.JFrame;
import javax.swing.JMenu;
import javax.swing.JMenuBar;
import javax.swing.JMenuItem;
import javax.swing.filechooser.FileSystemView;
import static javax.swing.JOptionPane.showMessageDialog;

/**
 *
 * @author user
 */
public class Open_Save_Dialog_Q11 extends JFrame {

    public static void main(String[] args) {
        Open_Save_Dialog_Q11 opensave = new Open_Save_Dialog_Q11();
        opensave.setVisible(true);
        opensave.setSize(400, 400);
    }

    public Open_Save_Dialog_Q11() {
        super("Notepad");
        setLayout(new BorderLayout());

        JMenuBar menuBar = new JMenuBar();
        setJMenuBar(menuBar);

        JMenu fileMenu = new JMenu("File");
        menuBar.add(fileMenu);

        JMenu editMenu = new JMenu("Edit");
        menuBar.add(editMenu);

        JMenu formatMenu = new JMenu("Format");
        menuBar.add(formatMenu);

        JMenu viewMenu = new JMenu("View");
        menuBar.add(viewMenu);

        JMenu helpMenu = new JMenu("Help");
        menuBar.add(helpMenu);

        JMenuItem openMenuItem = new JMenuItem("Open");
        fileMenu.add(openMenuItem);
        JMenuItem saveMenuItem = new JMenuItem("Save");
        fileMenu.add(saveMenuItem);

        openMenuItem.addActionListener(new ActionListener() {
            @Override
            public void actionPerformed(ActionEvent ae) {
                JFileChooser            jfc            =            new
JFileChooser(FileSystemView.getFileSystemView().getHomeDirectory());

                int returnValue = jfc.showOpenDialog(null);
                // int returnValue = jfc.showSaveDialog(null);

                if (returnValue == JFileChooser.APPROVE_OPTION) {
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```
                    File selectedFile = jfc.getSelectedFile();

System.out.println(selectedFile.getAbsolutePath());
                }
            }

        });

        saveMenuItem.addActionListener(new ActionListener() {
            @Override
            public void actionPerformed(ActionEvent ae) {
                JFileChooser fileChooser = new JFileChooser();
                int option = fileChooser.showSaveDialog(null);
                if (option == JFileChooser.APPROVE_OPTION) {
                    File file = fileChooser.getSelectedFile();
                    showMessageDialog(null,    "File    is    saved    as
::"+file.getName());

                } else {
                    showMessageDialog(null, "Save Command Failed.");
                }

            }
        }
        );

    }
}
```
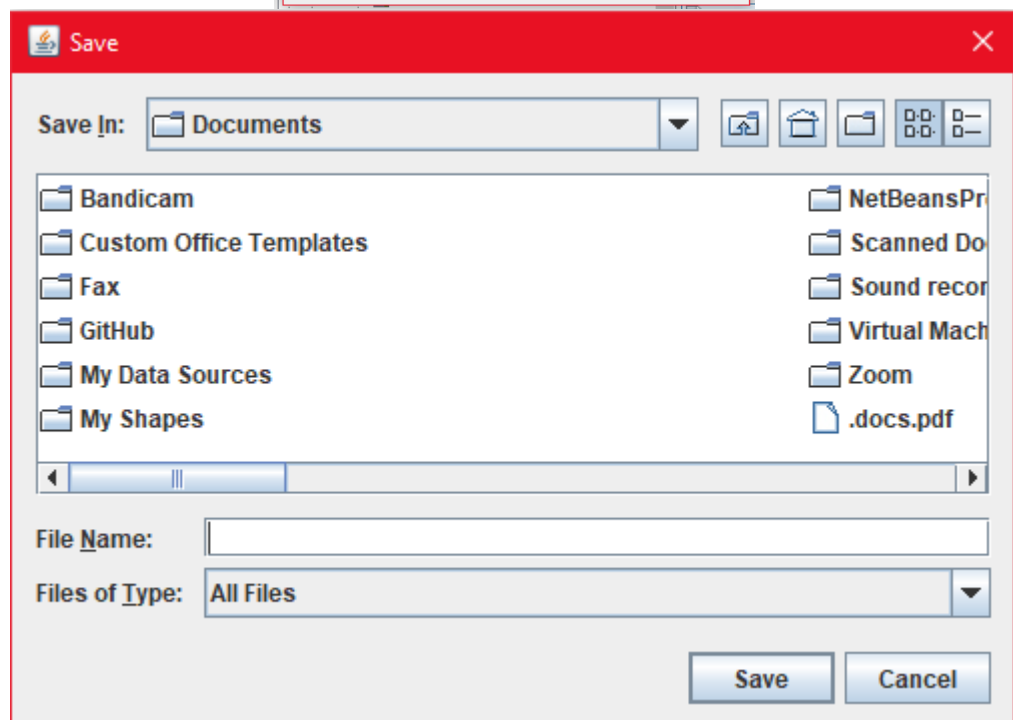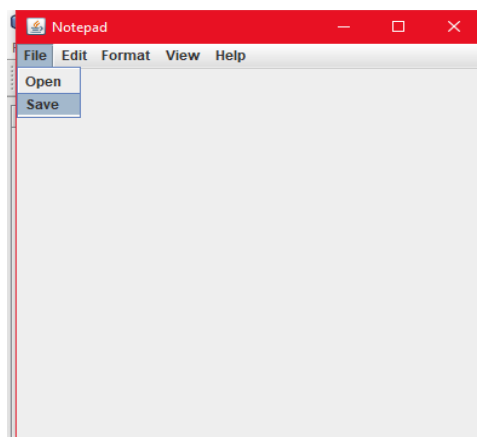
12. Create a simple app with menus. Include a menu item inside the Help menu to show a custom dialog named AboutDialog. The dialog must contain your App name, version and copyright information, along with a working close button (JButton).

```
package labassignment_2_3;

import java.awt.FlowLayout;
import java.awt.event.ActionEvent;
import java.awt.event.ActionListener;
import javax.swing.JButton;
import javax.swing.JDialog;
import javax.swing.JFrame;
import static javax.swing.JFrame.EXIT_ON_CLOSE;
import javax.swing.JMenu;
import javax.swing.JMenuBar;
import javax.swing.JMenuItem;
import javax.swing.JTextArea;

/**
 *
 * @author user
 */
public class HelpMenu_Q12 extends JFrame {

    public static void main(String[] args) {
        HelpMenu_Q12 menu = new HelpMenu_Q12();
        menu.setVisible(true);
        menu.setSize(400, 400);
    }

    public HelpMenu_Q12() {
        setLayout(new FlowLayout());
        JMenuBar menuBar = new JMenuBar();
        setJMenuBar(menuBar);

        JMenu helpMenu = new JMenu("Help");
        menuBar.add(helpMenu);

        JMenuItem aboutMenuItem = new JMenuItem("About App");
        helpMenu.add(aboutMenuItem);

        aboutMenuItem.addActionListener(new ActionListener() {
            @Override
            public void actionPerformed(ActionEvent ae) {
                JDialog dialog = new JDialog(HelpMenu_Q12.this, "About
the App");
                dialog.setLayout(new FlowLayout());
                dialog.setBounds(100, 70, 500, 100);
                dialog.setVisible(true);
                JTextArea text = new JTextArea();
                text.setText("Name:Helping
App\nVersion:1.0\nCopyright:This    app    content    is    subject    to
copyright.@2020");
                JButton close = new JButton("Close");
                dialog.add(text);
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                    dialog.add(close);

                    close.addActionListener(new ActionListener() {
                        @Override
                        public void actionPerformed(ActionEvent ae) {
                            dialog.dispose();
                        }
                    });

                }
            }
            );

            pack();

            setDefaultCloseOperation(EXIT_ON_CLOSE);

        }
    }
```
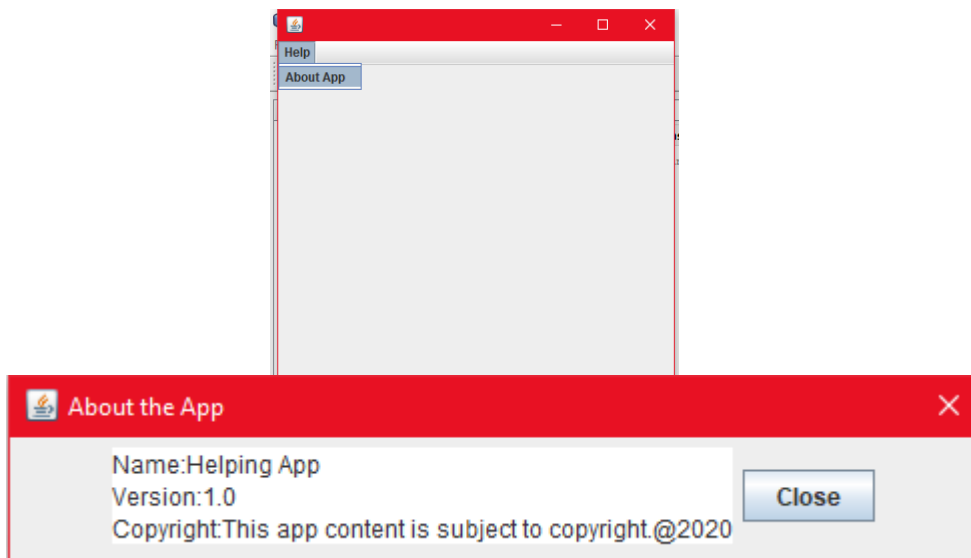

13. **Create a form using JFrame to collect the records of students in Trinity. Each record should contain the following information:**
a) First Name (JTextField)
b) Last Name (JTextField)
c) Age (JTextField)
d) Gender (JRadioButton)
e) Faculty (JComboBox/JList)
f) Semester (JComboBox/JList)
g) Remarks (JTextArea)
Add both menus and toolbars to save the form to a file (display a save dialog). Also add menu/toolbar items to reset the form as well as exit the program. Remember to close the file on exit command.

```
package labassignment_2_3;

import java.awt.GridLayout;
import java.awt.event.ActionEvent;
```

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```java
import java.awt.event.ActionListener;
import java.io.File;
import java.io.IOException;
import java.io.PrintWriter;
import javax.swing.ButtonGroup;
import javax.swing.JButton;
import javax.swing.JComboBox;
import javax.swing.JFileChooser;
import javax.swing.JFrame;
import static javax.swing.JFrame.EXIT_ON_CLOSE;
import javax.swing.JLabel;
import javax.swing.JMenu;
import javax.swing.JMenuBar;
import javax.swing.JMenuItem;
import javax.swing.JRadioButton;
import javax.swing.JTextArea;
import javax.swing.JTextField;
import javax.swing.JToolBar;
import javax.swing.filechooser.FileNameExtensionFilter;

/**
 *
 * @author user
 */
public class StudentsRecordForm_Q13 extends JFrame {

    public static void main(String[] args) {
        StudentsRecordForm_Q13 record = new StudentsRecordForm_Q13();
        record.setVisible(true);
        record.setTitle("Student Record Form");
        record.setSize(500, 400);
    }
    JTextField firstname, lastname, age;
    JRadioButton maleRadiobutton, femaleRadiobutton;
    JComboBox cb, sem;
    JTextArea remarks;
    ButtonGroup group;

    public StudentsRecordForm_Q13() {
        setLayout(new GridLayout(10, 2));
        JMenuBar menuBar = new JMenuBar();
        setJMenuBar(menuBar);

        JMenu fileMenu = new JMenu("File");
        menuBar.add(fileMenu);

        JMenuItem resetMenuItem = new JMenuItem("Reset");
        fileMenu.add(resetMenuItem);
        JMenuItem saveMenuItem = new JMenuItem("Save");
        fileMenu.add(saveMenuItem);
        JMenuItem exitMenuItem = new JMenuItem("Exit");
        fileMenu.add(exitMenuItem);

        add(new JLabel("First Name"));
        firstname = new JTextField(25);
        add(firstname);
```

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        add(new JLabel("Last Name"));
        lastname = new JTextField(25);
        add(lastname);

        add(new JLabel("Age"));
        age = new JTextField(25);
        add(age);

        add(new JLabel("Faculty"));
        String faculty[] = {"BScCSIT", "BIT", "BCA", "BBS", "BSW",
"BBM"};
        cb = new JComboBox(faculty);
        add(cb);

        add(new JLabel("Semester"));
        String semester[] = {"First", "Second", "Third", "Fourth",
"Fifth", "Sixth", "Seventh", "Eighth"};
        sem = new JComboBox(semester);
        sem.setBounds(50, 50, 90, 20);
        add(sem);

        add(new JLabel("Remarks"));
        remarks = new JTextArea(50, 50);
        add(remarks);

        add(new JLabel("\nGender"));
        group = new ButtonGroup();
        femaleRadiobutton = new JRadioButton("Female");
        add(femaleRadiobutton);
        add(new JLabel("\nGender"));
        group.add(femaleRadiobutton);
        maleRadiobutton = new JRadioButton("Male");
        add(maleRadiobutton);
        group.add(maleRadiobutton);

        JToolBar toolBar = new JToolBar();
        add(toolBar);

        JButton saveButton = new JButton("SAVE");
        toolBar.add(saveButton);
        toolBar.addSeparator();
        toolBar.addSeparator();
        JButton resetButton = new JButton("RESET FORM");
        toolBar.add(resetButton);
        toolBar.addSeparator();
        toolBar.addSeparator();
        JButton exitButton = new JButton("EXIT");
        toolBar.add(exitButton);

        saveMenuItem.addActionListener(new ActionListener() {
            @Override
            public void actionPerformed(ActionEvent actionEvent) {
                String[] text = getFieldValue();
                try {
                    saveFormData(text);
```

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                } catch (Exception e) {
                    System.out.println(e.getMessage());
                }
            }
        });

        resetMenuItem.addActionListener(new ActionListener() {
            @Override
            public void actionPerformed(ActionEvent actionEvent) {
                resetMethods();
            }
        });
        exitMenuItem.addActionListener(new ActionListener() {
            @Override
            public void actionPerformed(ActionEvent actionEvent) {
                System.exit(0);
            }
        });

        saveButton.addActionListener(new ActionListener() {
            @Override
            public void actionPerformed(ActionEvent actionEvent) {
                String[] text = getFieldValue();
                try {
                    saveFormData(text);
                } catch (Exception e) {
                    System.out.println(e.getMessage());
                }
            }
        });

        resetButton.addActionListener(new ActionListener() {
            @Override
            public void actionPerformed(ActionEvent actionEvent) {
                resetMethods();

            }
        });

        exitButton.addActionListener(new ActionListener() {
            @Override
            public void actionPerformed(ActionEvent actionEvent) {
                System.exit(0);
            }
        });

        pack();
        setDefaultCloseOperation(EXIT_ON_CLOSE);
    }

//******************** Methods for Reset and Save
*****************************************************************
*********
    private void resetMethods() {
        firstname.setText("");
        lastname.setText("");
```

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        age.setText("");
        group.clearSelection();
        cb.setSelectedIndex(0);
        sem.setSelectedIndex(0);
        remarks.setText("");
    }

    private String[] getFieldValue() {
        maleRadiobutton.setActionCommand("Male");
        femaleRadiobutton.setActionCommand("Female");

        String[] text = {
            firstname.getText(),
            lastname.getText(),
            age.getText(),
            group.getSelection().getActionCommand(),
            (String) cb.getSelectedItem(),
            (String) sem.getSelectedItem(),
            remarks.getText()
        };
        return text;
    }

    @SuppressWarnings("empty-statement")
    private void saveFormData(String[] text) throws IOException {
        String userDir = System.getProperty("user.home");
        JFileChooser chooser = new JFileChooser(userDir + "/Desktop");

        chooser.setFileFilter(new  FileNameExtensionFilter("Text  Files
(*.txt)", "txt"));
        chooser.setSelectedFile(new File(".txt"));
        int result = chooser.showSaveDialog(this);

        if (result == JFileChooser.APPROVE_OPTION) {
            File file = chooser.getSelectedFile();
            try (PrintWriter out = new PrintWriter(file)) {
                String[]  data  =  {"FirstName",  "LastName",  "Age",
"Gender",
                    "Faculty", "Semester", "Remarks"};

                out.println("Student  Record  of" + " " + text[0] +
"..!!!!\n");

                for (int i = 0; i < text.length; i++) {

                    out.print(data[i] + "=" + text[i] + "\n");

                }
            }
        } else {
            return;
        }

    }
}
```

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