

## **EXPERIMENT:2**

### **User Interface for Grade Calculator**

#### **Aim:**

To design a user interface by applying design rules for assigning a grade to students based on the subject marks.

#### **Program:**

```
package com.mycompany.gradecalculator62;

import javax.swing.*;

public class GradeCalculator62Frame extends JFrame {

    private JPanel jPanel1, jPanel2, jPanel3, jPanel4, jPanel5;
    private JLabel jLabel1, jLabel2, jLabel3, jLabel4, jLabel5, jLabel6, jLabel7, jLabel8,
    jLabel9, jLabel10;
    private JTextField engmarks, tamilmarks, mathsmarks, sciencemarks, socialmarks;
    private JTextField enggrade, tamilgrade, mathsgrade, sciencegrade, socialgrade;
    private JTextField totaltf, avgtf;
    private JButton calculatebutton;
    private JSeparator jSeparator1, jSeparator2;

    public GradeCalculator62Frame() {
        initComponents();
    }

    private void initComponents() {

        jPanel1 = new JPanel();
        jPanel2 = new JPanel();
        jLabel1 = new JLabel();
        jPanel3 = new JPanel();
        jLabel2 = new JLabel();
        engmarks = new JTextField();
        tamilmarks = new JTextField();
        mathsmarks = new JTextField();
        sciencemarks = new JTextField();
        socialmarks = new JTextField();
        jLabel3 = new JLabel();
        jLabel4 = new JLabel();
        jLabel5 = new JLabel();
        jLabel6 = new JLabel();
        jLabel7 = new JLabel();
        jSeparator1 = new JSeparator();
        jPanel4 = new JPanel();
```

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jLabel8 = new JLabel();
enggrade = new JTextField();
tamilgrade = new JTextField();
mathsgrade = new JTextField();
sciencegrade = new JTextField();
socialgrade = new JTextField();
jSeparator2 = new JSeparator();
calculatebutton = new JButton();
jPanel5 = new JPanel();
jLabel9 = new JLabel();
jLabel10 = new JLabel();
totaltf = new JTextField();
avgtf = new JTextField();

setDefaultCloseOperation(WindowConstants.EXIT_ON_CLOSE);

jPanel1.setBackground(new java.awt.Color(133, 144, 246));

jPanel2.setBackground(new java.awt.Color(195, 203, 235));
jLabel1.setFont(new java.awt.Font("Sukhumvit Set", 1, 24));
jLabel1.setText("GRADE CALCULATOR");

GroupLayout jPanel2Layout = new GroupLayout(jPanel2);
jPanel2.setLayout(jPanel2Layout);
jPanel2Layout.setHorizontalGroup(
    jPanel2Layout.createParallelGroup(GroupLayout.Alignment.LEADING)
        .addGroup(GroupLayout.Alignment.TRAILING,
jPanel2Layout.createSequentialGroup()
        .addGap(420, Short.MAX_VALUE)
        .addComponent(jLabel1)
        .addGap(438, 438, 438))
    );
jPanel2Layout.setVerticalGroup(
    jPanel2Layout.createParallelGroup(GroupLayout.Alignment.LEADING)
        .addGroup(GroupLayout.Alignment.TRAILING,
jPanel2Layout.createSequentialGroup()
        .addGap(18, Short.MAX_VALUE)
        .addComponent(jLabel1)
        .addGap(14, 14, 14))
    );

jPanel3.setBackground(new java.awt.Color(195, 203, 235));
jLabel2.setFont(new java.awt.Font("Sukhumvit Set", 1, 22));
jLabel2.setText("ENTER MARKS");

JTextField[] marksFields = {engmarks, tamilmarks, mathsmarks, sciencemarks,
socialmarks};
String[] labels = {"ENGLISH", "TAMIL", "MATHS", "SCIENCE", "SOCIAL"};
JLabel[] markLabels = {jLabel3, jLabel4, jLabel5, jLabel6, jLabel7};

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        GroupLayout jPanel3Layout = new GroupLayout(jPanel3);
        jPanel3.setLayout(jPanel3Layout);
        GroupLayout.SequentialGroup hGroup =
jPanel3Layout.createSequentialGroup().addGap(88);
        GroupLayout.SequentialGroup vGroup =
jPanel3Layout.createSequentialGroup().addGap(22)

.addComponent(jLabel2).addPreferredGap(LayoutStyle.ComponentPlacement.UNRELATED
)
        .addComponent(jSeparator1, GroupLayout.PREFERRED_SIZE, 10,
GroupLayout.PREFERRED_SIZE).addGap(21)
        .addGroup(jPanel3Layout.createParallelGroup(GroupLayout.Alignment.BASELINE)

.addComponent(jLabel3).addComponent(jLabel4).addComponent(jLabel5).addComponent(j
Label6).addComponent(jLabel7))
        .addGap(18);

        for (int i = 0; i < marksFields.length; i++) {
            marksFields[i].setFont(new java.awt.Font("Sukhumvit Set", 1, 16));
            marksFields[i].setHorizontalAlignment(JTextField.CENTER);
            hGroup.addComponent(marksFields[i], GroupLayout.PREFERRED_SIZE, 75,
GroupLayout.PREFERRED_SIZE).addGap(132);

vGroup.addGroup(jPanel3Layout.createParallelGroup(GroupLayout.Alignment.BASELINE)
        .addComponent(marksFields[i], GroupLayout.PREFERRED_SIZE, 44,
GroupLayout.PREFERRED_SIZE));
        }

jPanel3Layout.setHorizontalGroup(jPanel3Layout.createParallelGroup(GroupLayout.Alignm
ent.LEADING)
        .addGroup(jPanel3Layout.createSequentialGroup()
            .addContainerGap()

.addGroup(jPanel3Layout.createParallelGroup(GroupLayout.Alignment.LEADING)
            .addComponent(jSeparator1)
            .addGroup(jPanel3Layout.createSequentialGroup()

.addGroup(jPanel3Layout.createParallelGroup(GroupLayout.Alignment.LEADING)
                .addComponent(jLabel2)
                .addGroup(jPanel3Layout.createSequentialGroup()
                    .addGap(78, 78, 78)
                    .addComponent(jLabel3)
                    .addGap(131, 131, 131)
                    .addComponent(jLabel4)
                    .addGap(140, 140, 140)
                    .addComponent(jLabel5)
                    .addGap(149, 149, 149)
                    .addComponent(jLabel6)
                    .addGap(131, 131, 131)
                    .addComponent(jLabel7)))
            )
        )
    )

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        .addGap(0, 0, Short.MAX_VALUE))))
    .addGroup(jPanel3Layout.createSequentialGroup()
        .addGap(98, 98, 98)
        .addGroup(hGroup)
        .addContainerGap(GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE))
    );
jPanel3Layout.setVerticalGroup(vGroup);

jPanel4.setBackground(new java.awt.Color(195, 203, 235));
jLabel8.setFont(new java.awt.Font("Sukhumvit Set", 1, 18));
jLabel8.setText("GRADE");

JTextField[] gradeFields = {enggrade, tamilgrade, mathsgrade, sciencegrade,
socialgrade};

GroupLayout jPanel4Layout = new GroupLayout(jPanel4);
jPanel4.setLayout(jPanel4Layout);
GroupLayout.SequentialGroup hGroupGrades =
jPanel4Layout.createSequentialGroup().addGap(90);
GroupLayout.SequentialGroup vGroupGrades =
jPanel4Layout.createSequentialGroup().addGap(19)

.addComponent(jLabel8).addPreferredGap(LayoutStyle.ComponentPlacement.RELATED)
    .addComponent(jSeparator2, GroupLayout.PREFERRED_SIZE, 10,
GroupLayout.PREFERRED_SIZE).addGap(26);

for (JTextField gradeField : gradeFields) {
    gradeField.setFont(new java.awt.Font("Sukhumvit Set", 1, 16));
    gradeField.setHorizontalAlignment(JTextField.CENTER);
    hGroupGrades.addComponent(gradeField, GroupLayout.PREFERRED_SIZE, 75,
GroupLayout.PREFERRED_SIZE).addGap(132);

vGroupGrades.addGroup(jPanel4Layout.createParallelGroup(GroupLayout.Alignment.BASELINE)
    .addComponent(gradeField, GroupLayout.PREFERRED_SIZE, 45,
GroupLayout.PREFERRED_SIZE));
}

jPanel4Layout.setHorizontalGroup(jPanel4Layout.createParallelGroup(GroupLayout.Alignment.LEADING)
    .addGroup(jPanel4Layout.createSequentialGroup()
        .addGap(98, 98, 98)
        .addGroup(hGroupGrades)
        .addContainerGap(GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE))
    .addGroup(jPanel4Layout.createSequentialGroup()
        .addContainerGap()

    .addGroup(jPanel4Layout.createParallelGroup(GroupLayout.Alignment.LEADING)
        .addComponent(jSeparator2)

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        .addGroup(jPanel4Layout.createSequentialGroup()
            .addComponent(jLabel8)
            .addGap(0, 0, Short.MAX_VALUE))))
    );
    jPanel4Layout.setVerticalGroup(vGroupGrades);

    calculatebutton.setFont(new java.awt.Font("Sukhumvit Set", 1, 18));
    calculatebutton.setText("CALCULATE");
    calculatebutton.addActionListener(evt -> calculateGrades());

    jPanel5.setBackground(new java.awt.Color(195, 203, 235));
    jLabel9.setFont(new java.awt.Font("Sukhumvit Set", 1, 18));
    jLabel9.setText("TOTAL:");
    jLabel10.setFont(new java.awt.Font("Sukhumvit Set", 1, 18));
    jLabel10.setText("AVERAGE:");

    GroupLayout jPanel5Layout = new GroupLayout(jPanel5);
    jPanel5.setLayout(jPanel5Layout);
    jPanel5Layout.setHorizontalGroup(
        jPanel5Layout.createParallelGroup(GroupLayout.Alignment.LEADING)
            .addGroup(jPanel5Layout.createSequentialGroup()
                .addGap(96, 96, 96)
                .addComponent(jLabel9)
                .addGap(28, 28, 28)
                .addComponent(totaltf, GroupLayout.PREFERRED_SIZE, 111,
                    GroupLayout.PREFERRED_SIZE)
                .addPreferredGap(LayoutStyle.ComponentPlacement.RELATED)
                .addComponent(jLabel10)
                .addGap(47, 47, 47)
                .addComponent(avgtf, GroupLayout.PREFERRED_SIZE, 111,
                    GroupLayout.PREFERRED_SIZE)
                .addGap(106, 106, 106))
    );
    jPanel5Layout.setVerticalGroup(
        jPanel5Layout.createParallelGroup(GroupLayout.Alignment.LEADING)
            .addGroup(jPanel5Layout.createSequentialGroup()
                .addGap(42, 42, 42)
                .addGroup(jPanel5Layout.createParallelGroup(GroupLayout.Alignment.BASELINE)
                    .addComponent(jLabel9)
                    .addComponent(jLabel10)
                    .addComponent(totaltf, GroupLayout.PREFERRED_SIZE, 37,
                        GroupLayout.PREFERRED_SIZE)
                    .addComponent(avgtf, GroupLayout.PREFERRED_SIZE, 37,
                        GroupLayout.PREFERRED_SIZE)
                    .addContainerGap(43, Short.MAX_VALUE))
                )
    );

    GroupLayout jPanel1Layout = new GroupLayout(jPanel1);

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jPanel1.setLayout(jPanel1Layout);
jPanel1Layout.setHorizontalGroup(
    jPanel1Layout.createParallelGroup(GroupLayout.Alignment.LEADING)
        .addComponent(jPanel2, GroupLayout.DEFAULT_SIZE,
GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
        .addComponent(jPanel3, GroupLayout.DEFAULT_SIZE,
GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
        .addComponent(jPanel4, GroupLayout.DEFAULT_SIZE,
GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
        .addComponent(jPanel5, GroupLayout.DEFAULT_SIZE,
GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
        .addGroup(GroupLayout.Alignment.TRAILING,
jPanel1Layout.createSequentialGroup()
        .addContainerGap(GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
        .addComponent(calculatebutton)
        .addGap(485, 485, 485))
);
jPanel1Layout.setVerticalGroup(
    jPanel1Layout.createParallelGroup(GroupLayout.Alignment.LEADING)
        .addGroup(jPanel1Layout.createSequentialGroup()
        .addComponent(jPanel2, GroupLayout.PREFERRED_SIZE,
GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
        .addGap(27, 27, 27)
        .addComponent(jPanel3, GroupLayout.PREFERRED_SIZE,
GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
        .addGap(18, 18, 18)
        .addComponent(calculatebutton)
        .addGap(18, 18, 18)
        .addComponent(jPanel4, GroupLayout.PREFERRED_SIZE,
GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
        .addGap(18, 18, 18)
        .addComponent(jPanel5, GroupLayout.PREFERRED_SIZE,
GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
        .addContainerGap(GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE))
);

getContentPane().setLayout(new GroupLayout(getContentPane()));
getContentPane().add(jPanel1, GroupLayout.DEFAULT_SIZE,
GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE);

pack();
}

private void calculateGrades() {
    float[] marks = new float[5];
    JTextField[] marksFields = {engmarks, tamilmarks, mathsmarks, sciencemarks,
socialmarks};
    JTextField[] gradeFields = {enggrade, tamilgrade, mathsgrade, sciencegrade,
socialgrade};
    String[] grades = {"A", "B", "C", "D"};

```

```

for (int i = 0; i < marksFields.length; i++) {
    marks[i] = Float.parseFloat(marksFields[i].getText());
    if (marks[i] >= 90) {
        gradeFields[i].setText(grades[0]);
    } else if (marks[i] >= 80) {
        gradeFields[i].setText(grades[1]);
    } else if (marks[i] >= 70) {
        gradeFields[i].setText(grades[2]);
    } else {
        gradeFields[i].setText(grades[3]);
    }
}

float total = 0;
for (float mark : marks) {
    total += mark;
}
float average = total / marks.length;

totaltf.setText(String.valueOf(total));
avgtf.setText(String.valueOf(average));
}

public static void main(String args[]) {
    java.awt.EventQueue.invokeLater(() -> new
GradeCalulator62Frame().setVisible(true));
}
}

```

## Output:

GRADE CALCULATOR				
ENTER MARKS				
ENGLISH	TAMIL	MATHS	SCIENCE	SOCIAL
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
CALCULATE				
GRADE				
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
TOTAL: <input type="text"/>		AVERAGE: <input type="text"/>		

## Result:

A user interface by applying design rules for assigning a grade to students based on the subject marks was successfully designed and implemented.