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Task: **Temperature Conversion**

**Project Report: Temperature Converter GUI**

**Introduction**

The "Temperature Converter GUI" is a Java application that provides a user-friendly graphical interface to convert temperatures between Celsius, Fahrenheit, and Kelvin scales. This project report presents an in-depth analysis of the features, functions, and design aspects of the GUI temperature converter application.

**Features**

**User Interface Design**

The application features a visually appealing and intuitive user interface, designed using the Swing framework. The interface includes the following components:

* **Labels:** Clearly labeled fields and buttons provide user guidance and enhance usability.
* **Text Fields:** Two text fields allow users to input temperature values and view the converted result.
* **Combo Boxes:** Dropdown menus let users select the original and target temperature scales (Celsius, Fahrenheit, or Kelvin).
* **Buttons:** The "Convert," "Clear," and "Exit" buttons offer interactive functionality to perform conversions, reset fields, and exit the application.

**Conversion Logic**

The core functionality of the application is its temperature conversion logic. The program enables users to convert temperatures between different scales by performing the necessary calculations based on user input.

* The program supports conversions between Celsius, Fahrenheit, and Kelvin scales using appropriate conversion formulas.
* Users can select the original and target scales using the combo boxes, and the application computes and displays the converted value in real-time.

**User Interaction**

The application offers various interactive features to enhance the user experience:

* **Convert Button:** Initiates the temperature conversion process when clicked. The converted value is displayed in the target text field.
* **Clear Button:** Resets both input and output fields to their default states, allowing users to perform new conversions easily.
* **Exit Button:** Closes the application gracefully when clicked, ensuring a seamless user experience.

**Aesthetic Appeal:**

The GUI design incorporates pleasing aesthetics and visual elements:

* **Background Color:** A calming background color (blue-green) enhances the visual appeal and maintains a consistent theme throughout the interface.
* **Fonts:** The choice of fonts, sizes, and styles for labels and text fields ensures readability and a professional look.

**Functions and Implementation**

**Temperature Conversion Logic:**

The `jButton1ActionPerformed` function is the event handler for the "Convert" button. It implements the conversion logic based on the selected scales:

* It retrieves the selected scales from the combo boxes.
* It performs the appropriate temperature conversion calculations based on the selected scales.
* The converted value is displayed in the target text field.

**Clear Functionality**

The `jButton2ActionPerformed` function is the event handler for the "Clear" button. When clicked, this function resets both input and output fields, allowing users to perform new conversions without any confusion.

**Exit Functionality**

The `jButton3ActionPerformed` function is the event handler for the "Exit" button. Clicking this button gracefully closes the application.

**Conclusion**

The "Temperature Converter GUI" project demonstrates the power of Java's Swing framework to create user-friendly and functional graphical interfaces. By offering a clear and intuitive design, interactive features, and accurate temperature conversion, this application provides a valuable tool for users to quickly and efficiently convert temperatures across different scales. The project report has highlighted the application's features, functions, and design principles, showcasing its effectiveness in addressing the task of temperature conversion while prioritizing user experience and aesthetic appeal.

**Acknowledgments**

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**Contact Information**

For inquiries or feedback related to this project, please contact:

Maryam Siddiqui

Note: This project report template serves as a starting point and can be customized further to match your specific project's details and requirements.

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**Source code:**

/\*

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

\* Click nbfs://nbhost/SystemFileSystem/Templates/GUIForms/JFrame.java to edit this template

\*/

package temprature;

/\*\*

\*

\* @author Arooj

\*/

public class Interface extends javax.swing.JFrame {

/\*\*

\* Creates new form Interface

\*/

public Interface() {

initComponents();

}

/\*\*

\* This method is called from within the constructor to initialize the form.

\* WARNING: Do NOT modify this code. The content of this method is always

\* regenerated by the Form Editor.

\*/

@SuppressWarnings("unchecked")

// <editor-fold defaultstate="collapsed" desc="Generated Code">

private void initComponents() {

jPanel1 = new javax.swing.JPanel();

jLabel1 = new javax.swing.JLabel();

jLabel2 = new javax.swing.JLabel();

jComboBox1 = new javax.swing.JComboBox<>();

jComboBox2 = new javax.swing.JComboBox<>();

jTextField1 = new javax.swing.JTextField();

jTextField2 = new javax.swing.JTextField();

jButton1 = new javax.swing.JButton();

jButton2 = new javax.swing.JButton();

jButton3 = new javax.swing.JButton();

setDefaultCloseOperation(javax.swing.WindowConstants.EXIT\_ON\_CLOSE);

setTitle("Temperature Conversion");

setResizable(false);

jPanel1.setBackground(new java.awt.Color(0, 102, 102));

jLabel1.setFont(new java.awt.Font("Segoe UI", 1, 24)); // NOI18N

jLabel1.setForeground(new java.awt.Color(255, 255, 255));

jLabel1.setText("Temperature Conversion");

jLabel2.setForeground(new java.awt.Color(255, 255, 255));

jLabel2.setText("Created By Maryam Siddiqui");

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

jPanel1.setLayout(jPanel1Layout);

jPanel1Layout.setHorizontalGroup(

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

.addGroup(jPanel1Layout.createSequentialGroup()

.addContainerGap(51, Short.MAX\_VALUE)

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

.addGroup(javax.swing.GroupLayout.Alignment.TRAILING, jPanel1Layout.createSequentialGroup()

.addComponent(jLabel1, javax.swing.GroupLayout.PREFERRED\_SIZE, 316, javax.swing.GroupLayout.PREFERRED\_SIZE)

.addGap(33, 33, 33))

.addGroup(javax.swing.GroupLayout.Alignment.TRAILING, jPanel1Layout.createSequentialGroup()

.addComponent(jLabel2)

.addContainerGap())))

);

jPanel1Layout.setVerticalGroup(

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

.addGroup(jPanel1Layout.createSequentialGroup()

.addGap(16, 16, 16)

.addComponent(jLabel1, javax.swing.GroupLayout.PREFERRED\_SIZE, 32, javax.swing.GroupLayout.PREFERRED\_SIZE)

.addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED, javax.swing.GroupLayout.DEFAULT\_SIZE, Short.MAX\_VALUE)

.addComponent(jLabel2))

);

jComboBox1.setModel(new javax.swing.DefaultComboBoxModel<>(new String[] { "Celsius", "Fahrenheit", "Kelvin" }));

jComboBox2.setModel(new javax.swing.DefaultComboBoxModel<>(new String[] { "Celsius", "Fahrenheit", "Kelvin", " " }));

jTextField1.addActionListener(new java.awt.event.ActionListener() {

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

jTextField1ActionPerformed(evt);

}

});

jTextField2.setEditable(false);

jButton1.setText("Convert");

jButton1.addActionListener(new java.awt.event.ActionListener() {

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

jButton1ActionPerformed(evt);

}

});

jButton2.setText("Clear");

jButton2.addActionListener(new java.awt.event.ActionListener() {

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

jButton2ActionPerformed(evt);

}

});

jButton3.setText("Exit");

jButton3.addActionListener(new java.awt.event.ActionListener() {

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

jButton3ActionPerformed(evt);

}

});

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

getContentPane().setLayout(layout);

layout.setHorizontalGroup(

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()

.addGap(19, 19, 19)

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

.addComponent(jButton3, javax.swing.GroupLayout.PREFERRED\_SIZE, 91, javax.swing.GroupLayout.PREFERRED\_SIZE)

.addGroup(layout.createSequentialGroup()

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

.addComponent(jComboBox2, 0, javax.swing.GroupLayout.DEFAULT\_SIZE, Short.MAX\_VALUE)

.addComponent(jComboBox1, 0, javax.swing.GroupLayout.DEFAULT\_SIZE, Short.MAX\_VALUE))

.addGap(69, 69, 69)

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

.addGroup(layout.createSequentialGroup()

.addComponent(jButton1)

.addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED, 26, Short.MAX\_VALUE)

.addComponent(jButton2))

.addComponent(jTextField1)

.addComponent(jTextField2))))

.addContainerGap(javax.swing.GroupLayout.DEFAULT\_SIZE, Short.MAX\_VALUE))

);

layout.setVerticalGroup(

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(26, 26, 26)

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

.addComponent(jComboBox1, javax.swing.GroupLayout.PREFERRED\_SIZE, 30, javax.swing.GroupLayout.PREFERRED\_SIZE)

.addComponent(jTextField1, javax.swing.GroupLayout.PREFERRED\_SIZE, 30, javax.swing.GroupLayout.PREFERRED\_SIZE))

.addGap(29, 29, 29)

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

.addComponent(jButton1)

.addComponent(jButton2))

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

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

.addComponent(jComboBox2, javax.swing.GroupLayout.PREFERRED\_SIZE, 33, javax.swing.GroupLayout.PREFERRED\_SIZE)

.addComponent(jTextField2, javax.swing.GroupLayout.Alignment.TRAILING, javax.swing.GroupLayout.PREFERRED\_SIZE, 30, javax.swing.GroupLayout.PREFERRED\_SIZE))

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

.addComponent(jButton3, javax.swing.GroupLayout.DEFAULT\_SIZE, 49, Short.MAX\_VALUE)

.addGap(16, 16, 16))

);

pack();

}// </editor-fold>

private void jTextField1ActionPerformed(java.awt.event.ActionEvent evt) {

// TODO add your handling code here:

}

private void jButton2ActionPerformed(java.awt.event.ActionEvent evt) {

// TODO add your handling code here:

jTextField1.setText("");

jTextField2.setText("");

}

private void jButton3ActionPerformed(java.awt.event.ActionEvent evt) {

// TODO add your handling code here:

System.exit(0);

}

private void jButton1ActionPerformed(java.awt.event.ActionEvent evt) {

String box1 = (String)jComboBox1.getSelectedItem();

String box2 = (String)jComboBox2.getSelectedItem();

if(box1.equals("Celsius")&& box2.equals("Fahrenheit"))

{

double c =Double.parseDouble(jTextField1.getText());

double f =(double) (c\* 1.8 + 32);

jTextField2.setText(String.valueOf(f));

}

if(box1.equals("Celsius")&& box2.equals("Kelvin"))

{

double c =Double.parseDouble(jTextField1.getText());

double k =(double) (c + 273.15);

jTextField2.setText(String.valueOf(k));

}

if(box1.equals("Celsius")&& box2.equals("Celsius"))

{

double c =Double.parseDouble(jTextField1.getText());

jTextField2.setText(String.valueOf(c));

}

if(box1.equals("Fahrenheit") && box2.equals("Celsius"))

{

double f = Double.parseDouble(jTextField1.getText());

double c = (double)((f - 32)\*5/9);

jTextField2.setText(String.valueOf(c));

}

else if(box1.equals("Fahrenheit") && box2.equals("Kelvin"))

{

double f = Double.parseDouble(jTextField1.getText());

double k = (double)((f - 32)\*5/9 + 273.15);

jTextField2.setText(String.valueOf(k));

}

else if(box1.equals("Fahrenheit") && box2.equals("Fahrenheit"))

{

double f = Double.parseDouble(jTextField1.getText());

jTextField2.setText(String.valueOf(f));

}

//------------------------------------------------------------------------------

if(box1.equals("Kelvin") && box2.equals("Celsius"))

{

double k = Double.parseDouble(jTextField1.getText());

double c = (double)(0 - 273.15);

jTextField2.setText(String.valueOf(c));

}

else if(box1.equals("Kelvin") && box2.equals("Fahrenheit"))

{

double k = Double.parseDouble(jTextField1.getText());

double f = (double)(0 - 273.15) \* 9/5 +32;

jTextField2.setText(String.valueOf(f));

}

else if(box1.equals("Kelvin") && box2.equals("Kelvin"))

{

double k = Double.parseDouble(jTextField1.getText());

jTextField2.setText(String.valueOf(k));

}

}

/\*\*

\* @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(Interface.class.getName()).log(java.util.logging.Level.SEVERE, null, ex);

} catch (InstantiationException ex) {

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

} catch (IllegalAccessException ex) {

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

} catch (javax.swing.UnsupportedLookAndFeelException ex) {

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

}

//</editor-fold>

/\* Create and display the form \*/

java.awt.EventQueue.invokeLater(new Runnable() {

public void run() {

new Interface().setVisible(true);

}

});

}

// Variables declaration - do not modify

private javax.swing.JButton jButton1;

private javax.swing.JButton jButton2;

private javax.swing.JButton jButton3;

private javax.swing.JComboBox<String> jComboBox1;

private javax.swing.JComboBox<String> jComboBox2;

private javax.swing.JLabel jLabel1;

private javax.swing.JLabel jLabel2;

private javax.swing.JPanel jPanel1;

private javax.swing.JTextField jTextField1;

private javax.swing.JTextField jTextField2;

// End of variables declaration

}

**Output:**

