JAVA PROJECT REPORT

(Project Term January-May 2023)

Temperature Converter

Submitted by

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CSE 310

Under the Guidance of

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DECLARATION

We hereby declare that the project work entitled ("Temperature Converter") is an authentic record of our own work carried out as requirements of Capstone Project for the award of B. Tech degree in BTech CSE from Lovely Professional University, Phagwara, under the guidance of (Dr. Ranjith Kumar A), during January to May 2023. All the information furnished in this capstone project report is based on our own intensive work and is genuine.

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INTRODUCTION

A Temperature Converter is a tool that allows you to convert temperatures from one unit of measurement to another. Temperature is a measure of the degree of hotness or coldness of an object or substances, and it is usually measured in degree Celsius($°C$), degrees Fahrenheit($°F$), or Kelvin (K).

Temperature converter are useful in a wide range of applications, including science, engineering cooking, and weather forecasting. They can help you to quickly and accurately convert temperatures between different units, allowing you to work with the data more easily.

1.1. USER-FRIENDLY INTERFACE

The layout of the temperature converter should be simple, with a clear and concise design. Users should be able to easily identify the input and output fields, and any buttons or controls needed to operate the converter. Display the converted temperature value in a clear and concise manner, using a large font size and contrasting color to make it easily readable. Ensure that the temperature converter interface is mobile-friendly, with large buttons and clear labels that are easy to tap on a touch screen.

1.1 PURPOSE OF THE PROJECT

The The main purpose of our project on a temperature converter can be to create a tool that allows users to easily convert temperature values between different temperature scales. project could be used for various

purposes, such as educational, scientific, or practical applications. Here are some potential uses for a temperature converter:

Education: A temperature converter project can be used to help students learn about the different temperature scales and how to convert between them. It can be a useful tool for teaching concepts related to temperature, thermodynamics, and heat transfer.
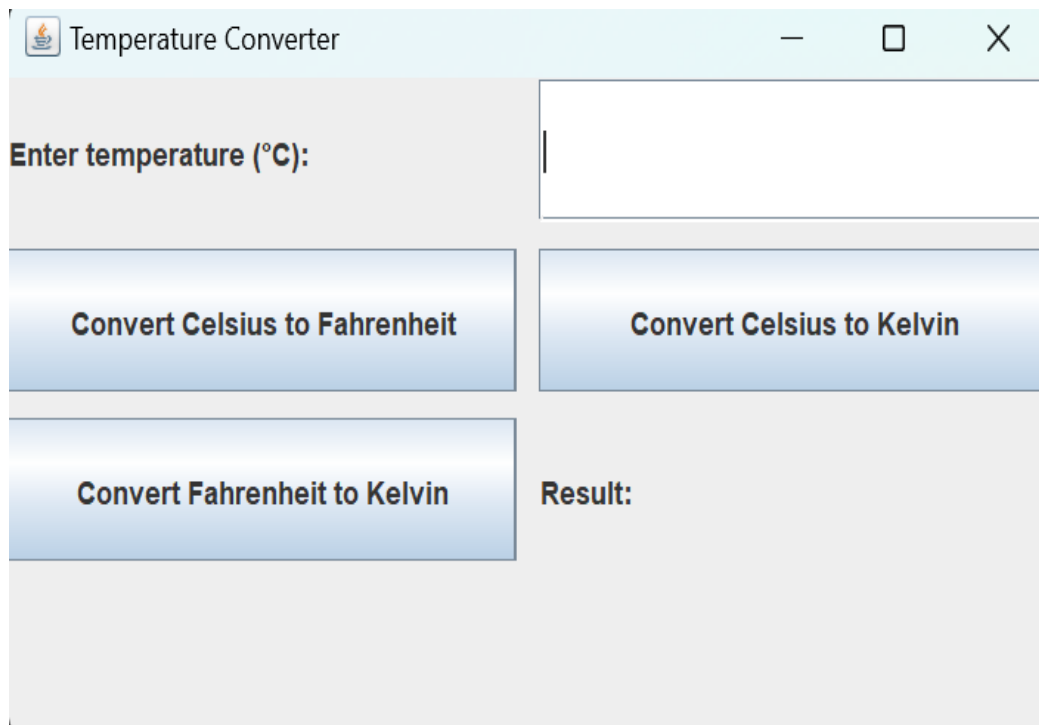
Scientific Research: Temperature conversions are important in scientific research, especially in fields such as physics, chemistry, and engineering. A temperature converter project can help scientists and researchers quickly and easily convert temperature values between different units of measurement.

Everyday Use: A temperature converter project can be a practical tool for everyday use. For example, it can be used by people who travel frequently to different parts of the world where different temperature scales are used. It can also be used by people who need to convert temperature values for cooking, baking, or other household tasks.

Technical Applications: Temperature conversions are important in various technical applications, such as HVAC (Heating, Ventilation, and Air Conditioning), electronics, and manufacturing. A temperature converter project can be used by professionals working in these fields to quickly and easily convert temperature values as needed.

PROJECT LAYOUT

The First Layout Of Temperature Converter:

Converting Celsius to Fahrenheit:

Converting Celsius to Kelvin:

Converting Fahrenheit to kelvin:
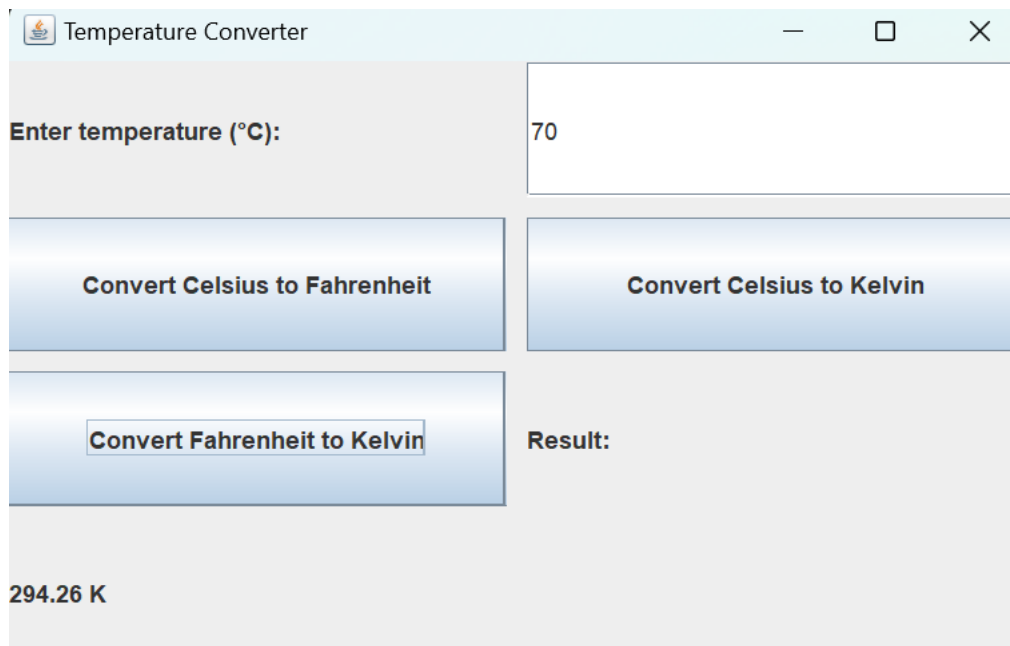
SAMPLE CODE

```
// Import necessary packages
    import javax.swing.*;
    import java.awt.*;
    import java.awt.event.*;


    // Define a class that extends JFrame and implements ActionListener
    public class TemperatureConverterGUI extends JFrame implements
    ActionListener {
        // Declare instance variables
```

```java
    private JTextField inputField;

    private JButton cToFButton, cToKButton, fToKButton;

    private JLabel resultLabel;


    // Define the constructor for the class

    public TemperatureConverterGUI() {

        // Call the constructor of the JFrame superclass and set the title of

the JFrame

        super("Temperature Converter");


        // Set the layout of the JFrame to a grid layout with 4 rows, 2

columns, and 10

        // pixels of horizontal and vertical spacing

        setLayout(new GridLayout(4, 2, 20, 20));


        // Create a label and a text field for the input temperature

        JLabel inputLabel = new JLabel("Enter temperature:");

        inputField = new JTextField(10);


        // Create three buttons for the three temperature conversions

        cToFButton = new JButton("Convert Celsius to Fahrenheit");

        cToKButton = new JButton("Convert Celsius to Kelvin");

        fToKButton = new JButton("Convert Fahrenheit to Kelvin");


        // Add an action listener to each button

        cToFButton.addActionListener(this);

        cToKButton.addActionListener(this);

        fToKButton.addActionListener(this);
```

```java
        // Create a label for the result of the temperature conversion
        JLabel resultTextLabel = new JLabel("Result:");
        resultLabel = new JLabel("");

        // Add all the components to the JFrame
        add(inputLabel);
        add(inputField);
        add(cToFButton);
        add(cToKButton);
        add(fToKButton);
        add(resultTextLabel);
        add(resultLabel);

        // Set the default close operation and pack the JFrame
        setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        pack();

        // Set the JFrame to be visible
        setVisible(true);
    }
    // Define the actionPerformed method from the ActionListener
interface
    public void actionPerformed(ActionEvent e) {
        // Get the input temperature from the text field as a double
        double celsius = Double.parseDouble(inputField.getText());

        // Determine which button was clicked and perform the appropriate
temperature
        // conversion
```

```java
        if (e.getSource() == cToFButton) {
            // Convert Celsius to Fahrenheit using the formula and update
the result label
            double fahrenheit = celsius * 9 / 5 + 32;
            resultLabel.setText(String.format("%.2f °F", fahrenheit));
        } else if (e.getSource() == cToKButton) {
            // Convert Celsius to Kelvin using the formula and update the
result label
            double kelvin = celsius + 273.15;
            resultLabel.setText(String.format("%.2f K", kelvin));
        } else if (e.getSource() == fToKButton) {
            // Get the input temperature as Fahrenheit and convert
Fahrenheit to Kelvin
            // using the formula and update the result label
            double fahrenheit = Double.parseDouble(inputField.getText());
            double kelvin = (fahrenheit + 459.67) * 5 / 9;
            resultLabel.setText(String.format("%.2f K", kelvin));
        }
    }
    // Define the main method of the class
    public static void main(String[] args) {
        // Create an instance of the TemperatureConverterGUI class
        TemperatureConverterGUI        gui        =        new
TemperatureConverterGUI();
    }
}
```

CONCLUSION

In conclusion, the temperature converter project is a great way to learn about programming concepts such as input/output, data types, conditional statements, and arithmetic operations. It also provides practical experience in developing programs that solve real-world problems and can be used to enhance productivity and efficiency. The temperature converter project is a useful tool that allows users to convert temperatures between different units of measurement. The project involves creating a program that takes in user input, performs a conversion calculation, and outputs the result in the desired unit.

The program can be designed to support conversions between various temperature units such as Celsius, Fahrenheit, and Kelvin. It is important to ensure that the program handles errors and invalid input appropriately to provide accurate and reliable results.

FUTURE SCOPE

The temperature converter project can be further developed and enhanced to provide additional functionality and capabilities. Some possible future scope and enhancements of the project include:

→GUI interface: Currently, the temperature converter project may be a command-line interface or a simple web page.

→Support for more temperature units: The program can be expanded to support additional temperature units such as Rankine, Réaumur, and Delisle.

→Integration with other applications: The temperature converter project can be integrated with other applications or systems that require temperature conversions.

→Real-time temperature conversion: The program can be enhanced to provide real-time temperature conversion, such as for monitoring and controlling temperature in industrial or scientific applications.