Temperature Converter

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1 Create a simple temperature converter application using Android.

XML code:

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:id="@+id/main"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity"
    android:orientation="vertical"
    tools:ignore="NamespaceTypo">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="@string/title"
        android:textSize="30sp"
        android:textStyle="bold"
        android:layout_marginStart="40dp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

   <androidx.cardview.widget.CardView
        android:layout_width="350dp"
        android:layout_height="400dp"
        android:layout_gravity="center"
        android:layout_marginTop="50dp"
        android:backgroundTint="#F6EEEE"
        app:cardCornerRadius="30dp"
        >

        <LinearLayout
            android:layout_width="match_parent"
            android:layout_height="match_parent"
            android:orientation="vertical"
            android:padding="16dp">

            <LinearLayout
                android:layout_width="match_parent"
                android:layout_height="wrap_content"
                android:orientation="horizontal">

                <TextView
                    android:layout_width="wrap_content"
                    android:layout_height="25dp"
                    android:text="@string/inputDropDownText"
                    android:textSize="20sp"
                    android:textStyle="bold"
                    android:layout_marginEnd="20dp"
                    />

                <Spinner
                    android:id="@+id/inputToChoose"
                    android:layout_width="200dp"
```

```
            android:layout_height="48dp"
            android:layout_gravity="center"
            android:layout_marginBottom="20dp"

            />

    </LinearLayout>



    <EditText
        android:id="@+id/temperature"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="@string/textBox"
        android:inputType="numberDecimal"
        android:minHeight="48dp" />


    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:orientation="horizontal">

        <TextView
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="@string/outputDropDownText"
            android:textSize="20sp"
            android:textStyle="bold"
            android:layout_marginEnd="20dp"
            android:layout_marginTop="28dp"
            />

        <Spinner
            android:id="@+id/outputToChoose"
            android:layout_width="200dp"
            android:layout_height="48dp"
            android:layout_gravity="center"
            android:layout_marginTop="20dp"
            android:layout_marginBottom="20dp" />

    </LinearLayout>


    <Button
        android:id="@+id/convertButton"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="80dp"
        android:layout_marginTop="20dp"
        android:backgroundTint="#0CB391"
        android:paddingHorizontal="25dp"
        android:paddingVertical="10dp"
        android:text="@string/btn"
        android:textSize="20sp"
        android:textStyle="bold" />

    <Button
        android:id="@+id/clear_text"
```

```
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:layout_marginStart="90dp"
                android:layout_marginTop="20dp"
                android:backgroundTint="#0CB391"
                android:minHeight="48dp"
                android:paddingHorizontal="25dp"
                android:paddingVertical="10dp"
                android:text="@string/clear"
                android:textSize="20sp"
                android:textStyle="bold" />

        </LinearLayout>


    </androidx.cardview.widget.CardView>

     <TextView
          android:id="@+id/output"
          android:layout_width="match_parent"
          android:layout_height="wrap_content"
          android:layout_margin="60dp"
          android:gravity="center"
          android:text=""
          android:textSize="30sp" />


</LinearLayout>
```

Java code:

```
package com.example.tempconverter;

import android.os.Bundle;
import android.view.View;
import android.widget.ArrayAdapter;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Spinner;
import android.widget.TextView;

import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.graphics.Insets;
import androidx.core.view.ViewCompat;
import androidx.core.view.WindowInsetsCompat;

public class MainActivity extends AppCompatActivity {

    Spinner inputToChoose, outputToChoose;
    Button convertBtn, clearBtn;
    EditText temperature;
    TextView outputBox;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        EdgeToEdge.enable(this);
        setContentView(R.layout.activity_main);
        ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main)
        , (v, insets) -> {
            Insets systemBars = insets.getInsets(WindowInsetsCompat.Type.systemBars())
            v.setPadding(systemBars.left, systemBars.top,
            systemBars.right, systemBars.bottom);
            return insets;
        });

        inputToChoose= findViewById(R.id.inputToChoose);
        outputToChoose= findViewById(R.id.outputToChoose);


        String[] inputOptions = new String[]{"Kelvin", "Celsius", "Fahrenheit"};
        String[] outputOptions = new String[]{"Kelvin", "Celsius", "Fahrenheit"};

        ArrayAdapter<String> inputAdapter = new ArrayAdapter<>(this,
        android.R.layout.simple_spinner_dropdown_item, inputOptions);
        ArrayAdapter<String> outputAdapter = new ArrayAdapter<>(this,
        android.R.layout.simple_spinner_dropdown_item, outputOptions);

        inputToChoose.setAdapter(inputAdapter);
        outputToChoose.setAdapter(outputAdapter);


        temperature=(EditText) findViewById(R.id.temperature);
        outputBox=(TextView) findViewById(R.id.output);
        convertBtn=(Button) findViewById(R.id.convertButton);
        clearBtn=(Button) findViewById(R.id.clear_text);

        //clear the input and output box
        clearBtn.setOnClickListener(new View.OnClickListener() {
```

```
        @Override
        public void onClick(View v) {
            temperature.setText("");
            outputBox.setText("");
        }
    });

    //Conversion logic

    convertBtn.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            String temperatureInput = temperature.getText().toString();

            if (temperatureInput.isEmpty()) {
                outputBox.setText("Please enter a temperature value.");
                return;
            }

            double value;
            try {
                value = Double.parseDouble(temperatureInput);
            } catch (NumberFormatException e) {
                outputBox.setText("Invalid input. Please enter a numeric value.");
                return;
            }

            String selectedInputMenu = inputToChoose.getSelectedItem().toString();
            String selectedOutputMenu = outputToChoose.getSelectedItem()
            .toString();
            double ans;
            String finalAnswer;

            // Perform conversions based on selected units
            switch (selectedInputMenu) {
                case "Kelvin":
                    ans = convertFromKelvin(value, selectedOutputMenu);
                    finalAnswer = "Temperature: " + ans +
                    (selectedOutputMenu.equals("Celsius") ? "C" :
                    selectedOutputMenu.charAt(0));
                    break;

                case "Celsius":
                    ans = convertFromCelsius(value, selectedOutputMenu);
                    finalAnswer = "Temperature: " + ans +
                    (selectedOutputMenu.equals("Kelvin") ? "K" :
                    selectedOutputMenu.charAt(0)) ;
                    break;

                case "Fahrenheit":
                    ans = convertFromFahrenheit(value, selectedOutputMenu);
                    finalAnswer = "Temperature: " + ans +
                    (selectedOutputMenu.equals("Celsius") ? "C" :
                    selectedOutputMenu.charAt(0));
                    break;

                default:
                    finalAnswer="Invalid temperature scale.";
                    outputBox.setText(finalAnswer);
                    return;
```

```
                }

                outputBox.setText(finalAnswer);
            }
        });


    }

    private double convertFromKelvin(double value, String outputUnit) {
        switch (outputUnit) {
            case "Fahrenheit":
                return (value - 273.15) * 1.8 + 32;
            case "Celsius":
                return value - 273.15;
            default:
                return value; // Assuming Kelvin to Kelvin
        }
    }

    private double convertFromCelsius(double value, String outputUnit) {
        switch (outputUnit) {
            case "Fahrenheit":
                return (value * 1.8) + 32;
            case "Kelvin":
                return value + 273.15;
            default:
                return value; // Assuming Celsius to Celsius
        }
    }

    private double convertFromFahrenheit(double value, String outputUnit) {
        switch (outputUnit) {
            case "Celsius":
                return (value - 32) * 5 / 9;
            case "Kelvin":
                return (value - 32) * 5 / 9 + 273.15;
            default:
                return value; // Assuming Fahrenheit to Fahrenheit
        }
    }


}
```

Output:

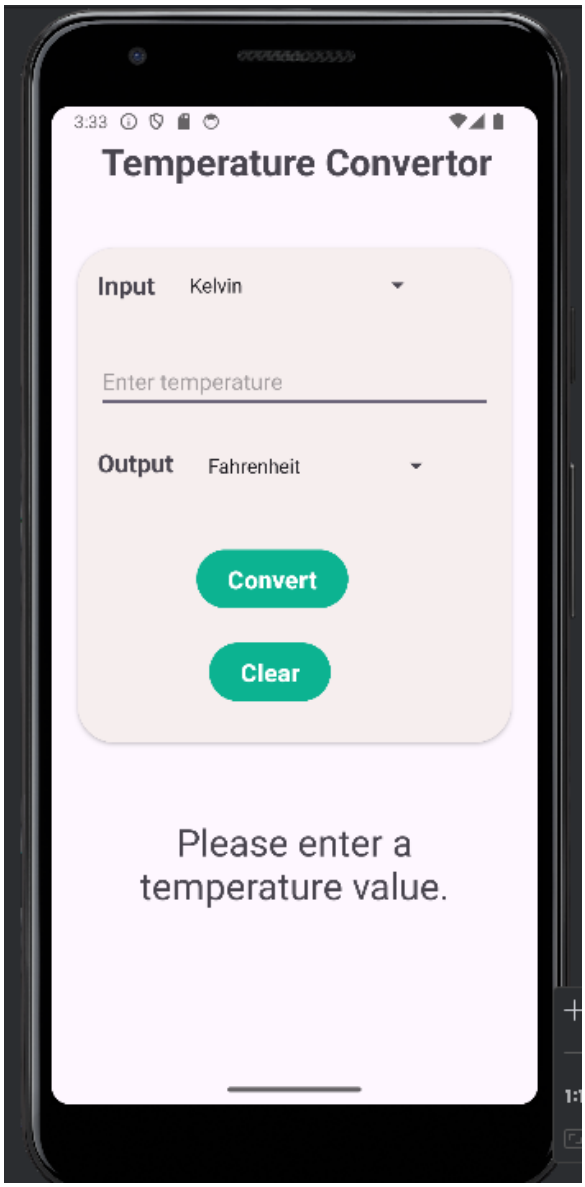

Figure 1: Case: Number not entered

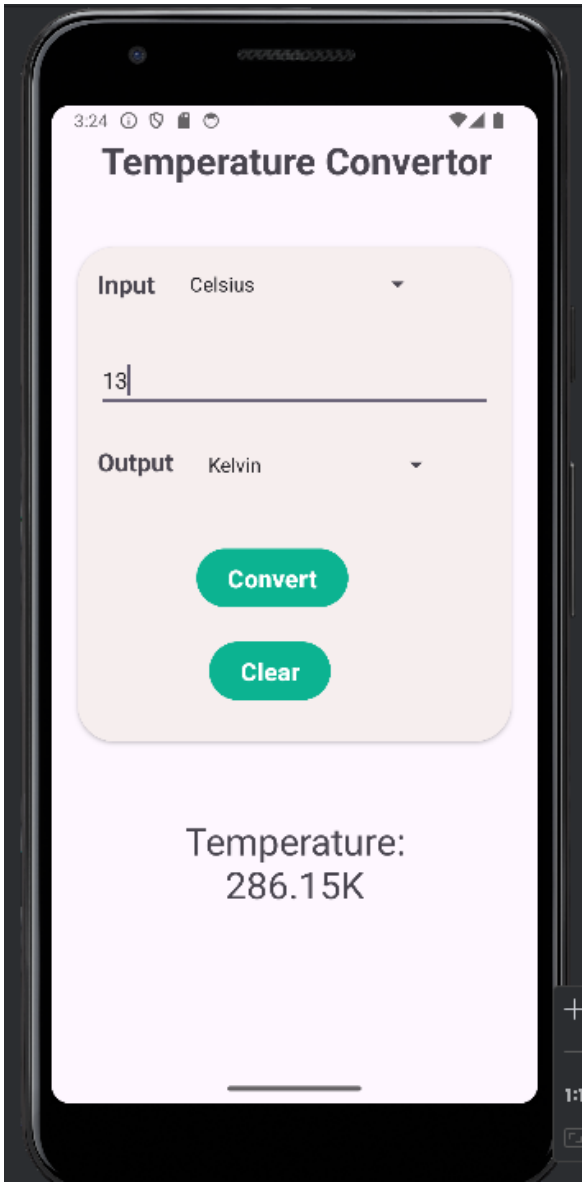

Figure 2: Celsius to Kelvin

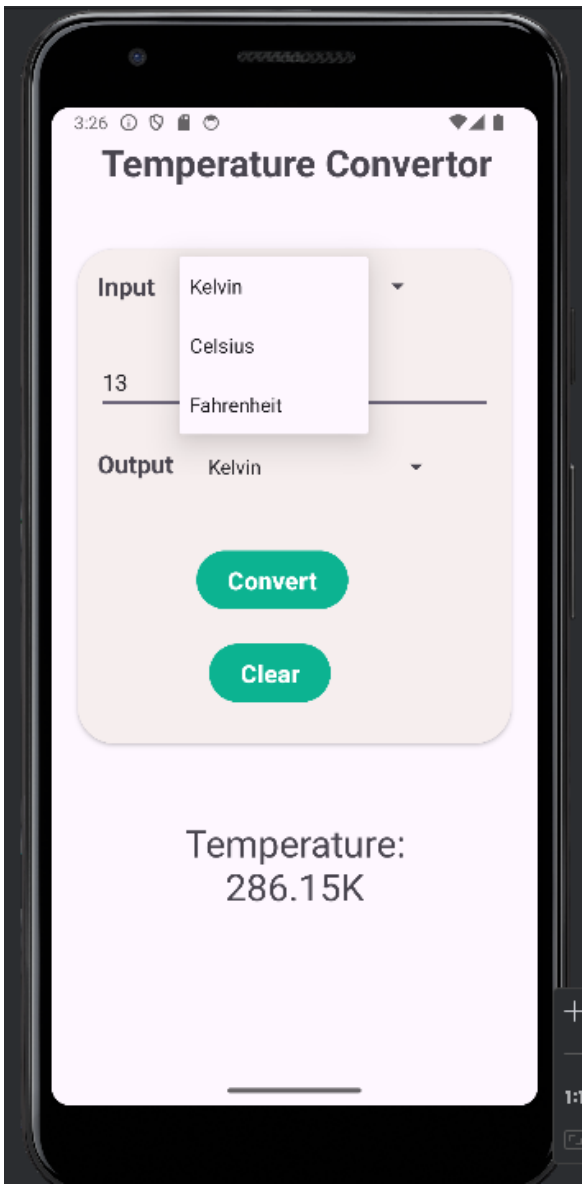

Figure 3: Choosing temperature system

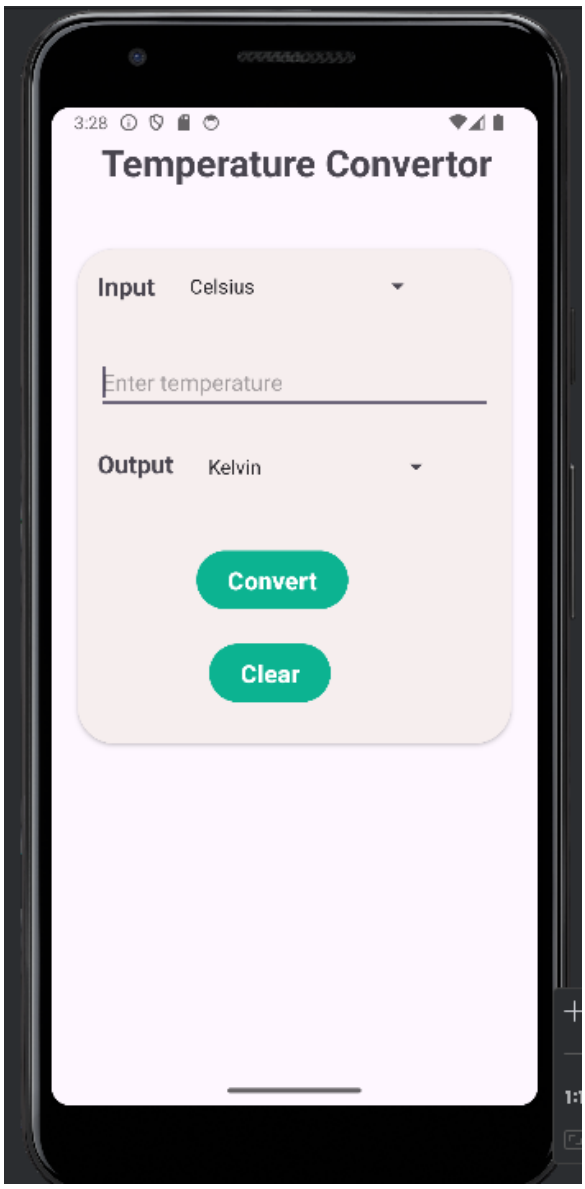

Figure 4: Clear function

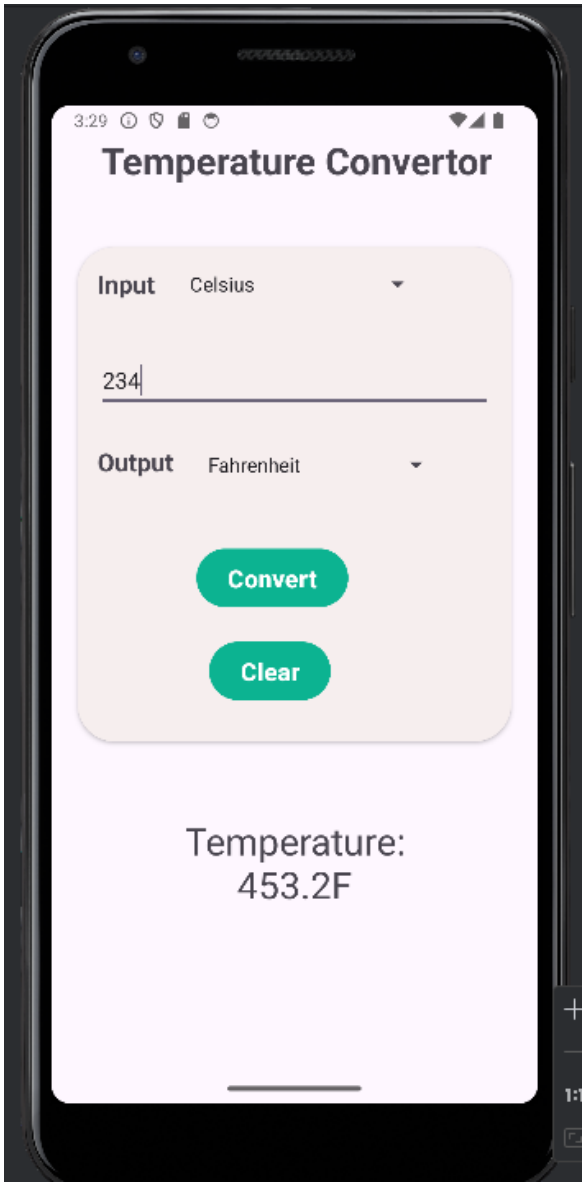

Figure 5: Celsius to Fahrenheit

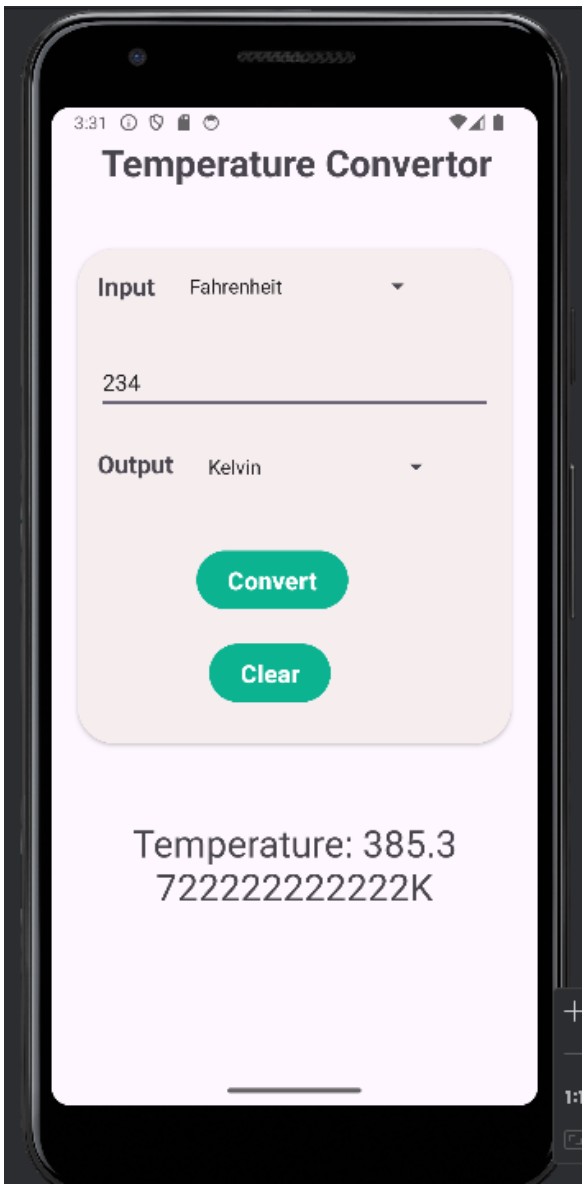

Figure 6: Fahrenheit to Kelvin

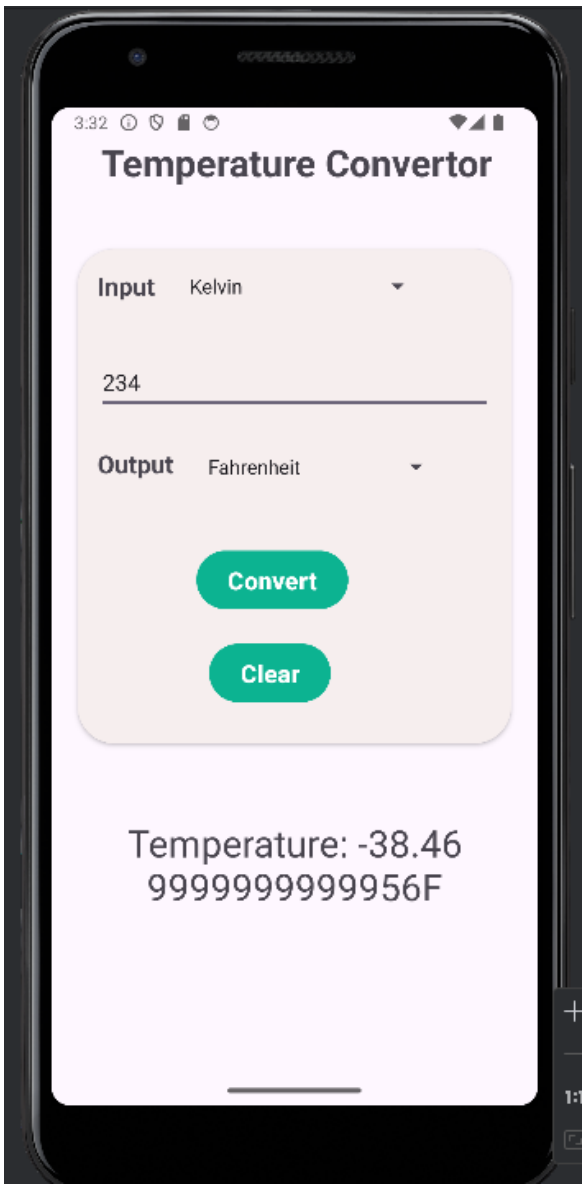

Figure 7: Kelvin to Fahrenheit