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Temperature Convertor

Aim

Create an app that converts temperatures between Celsius and Fahrenheit. Users can enter a temperature in an EditText, press a Button to perform the conversion, and see the result in a TextView.

Procedure:

Temperature Converter (EXP01D)

1. ***Open Android Studio** and create a new project using **Empty Views Activity**.*
2. *Enter the project name and select **Kotlin** as the programming language.*
3. *Choose the minimum SDK and click **Finish** to create the project.*
4. *Open the activity_main.xml file and design the user interface using a **LinearLayout**.*
5. *Add an **EditText** to accept the temperature value from the user.*
6. *Add three **Button** components labeled **Celsius**, **Fahrenheit**, and **Clear**.*
7. *Apply **green and light blue color themes** to the buttons and background.*
8. *Add a **TextView** to display the converted temperature result.*
9. *Open MainActivity.kt and enable edge-to-edge layout using enableEdgeToEdge().*
10. *Initialize all UI components using findViewById().*
11. *Implement the Celsius button to convert temperature from **Celsius to Fahrenheit**.*
12. *Implement the Fahrenheit button to convert temperature from **Fahrenheit to Celsius**.*
13. *Display an error message when no temperature value is entered.*
14. *Implement the Clear button to reset the input and output fields.*
15. *Save all files and select **Build → Rebuild Project** to check for errors.*
16. *Run the application on an emulator or physical Android device.*
17. *Observe the converted temperature value displayed in the TextView.*

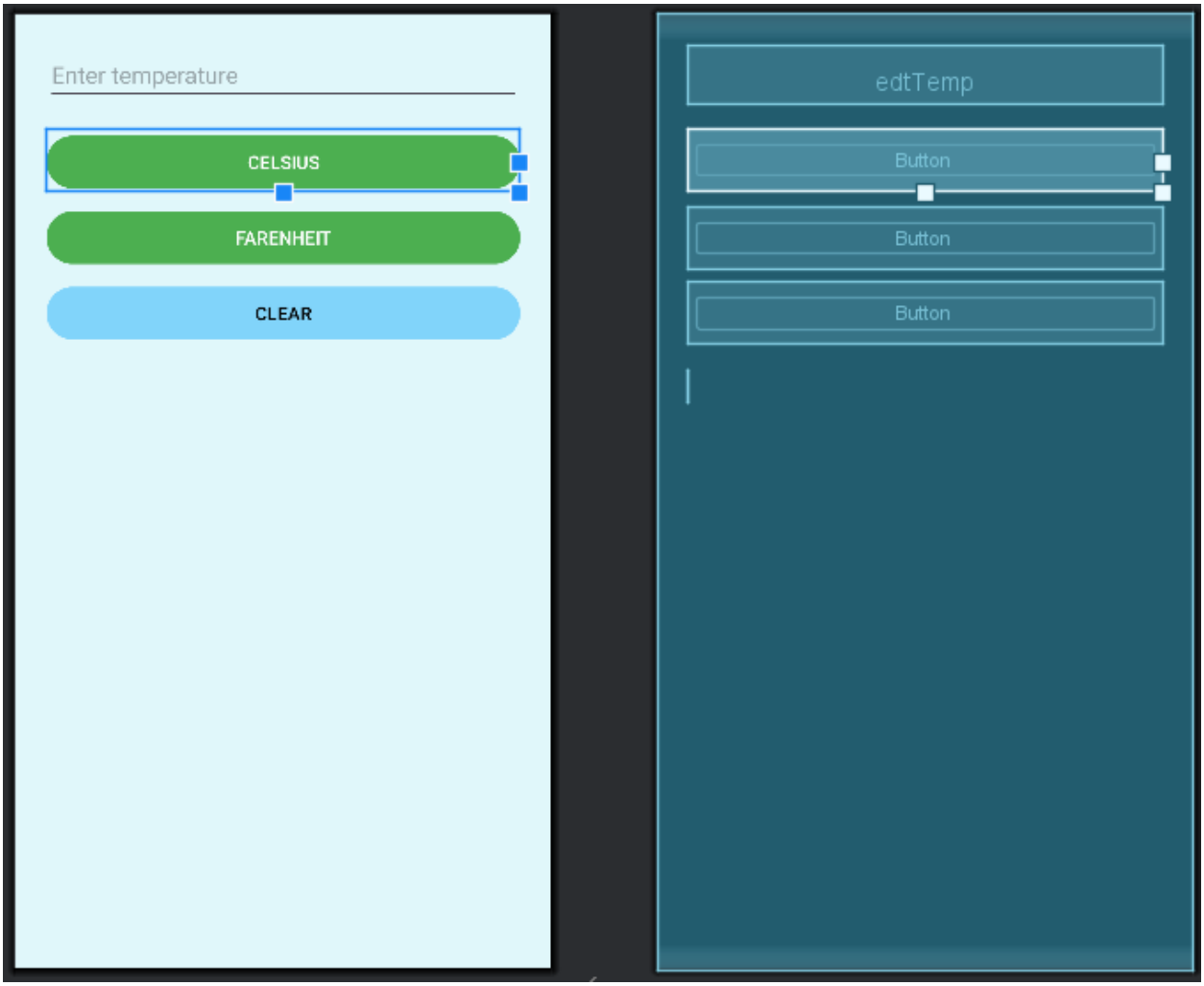
AndroidManifest.xml

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
   xmlns:tools="http://schemas.android.com/tools">

   <application
      android:allowBackup="true"
      android:dataExtractionRules="@xml/data_extraction_rules"
      android:fullBackupContent="@xml/backup_rules"
      android:icon="@mipmap/ic_launcher"
      android:label="@string/app_name"
      android:roundIcon="@mipmap/ic_launcher_round"
      android:supportsRtl="true"
      android:theme="@style/Theme.EXP01D">
      <activity
         android:name=".MainActivity"
         android:exported="true">
         <intent-filter>
            <action android:name="android.intent.action.MAIN" />

            <category android:name="android.intent.category.LAUNCHER" />
         </intent-filter>
      </activity>
   </application>

</manifest>
```

Activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:id="@+id/main"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:padding="24dp"
    android:background="#E0F7FA">

    <!-- Input Temperature -->
    <EditText
        android:id="@+id/edtTemp"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Enter temperature"
        android:inputType="numberDecimal"
        android:textColor="#000000"
        android:layout_marginBottom="20dp" />

    <!-- Celsius Button -->
    <Button
        android:id="@+id/btnCelsius"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="CELSIUS"
        android:backgroundTint="#4CAF50"
        android:textColor="#FFFFFF"
        android:layout_marginBottom="10dp" />

    <!-- Fahrenheit Button -->
    <Button
        android:id="@+id/btnFahrenheit"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="FARENHEIT"
        android:backgroundTint="#4CAF50"
        android:textColor="#FFFFFF"
        android:layout_marginBottom="10dp" />

    <!-- Clear Button -->
    <Button
        android:id="@+id/btnClear"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="CLEAR"
```

```
        android:backgroundTint="#81D4FA"
        android:textColor="#000000"
        android:layout_marginBottom="20dp" />

    <!-- Result -->
    <TextView
        android:id="@+id/txtResult"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text=""
        android:textSize="18sp"
        android:textColor="#1565C0" />

</LinearLayout>
```

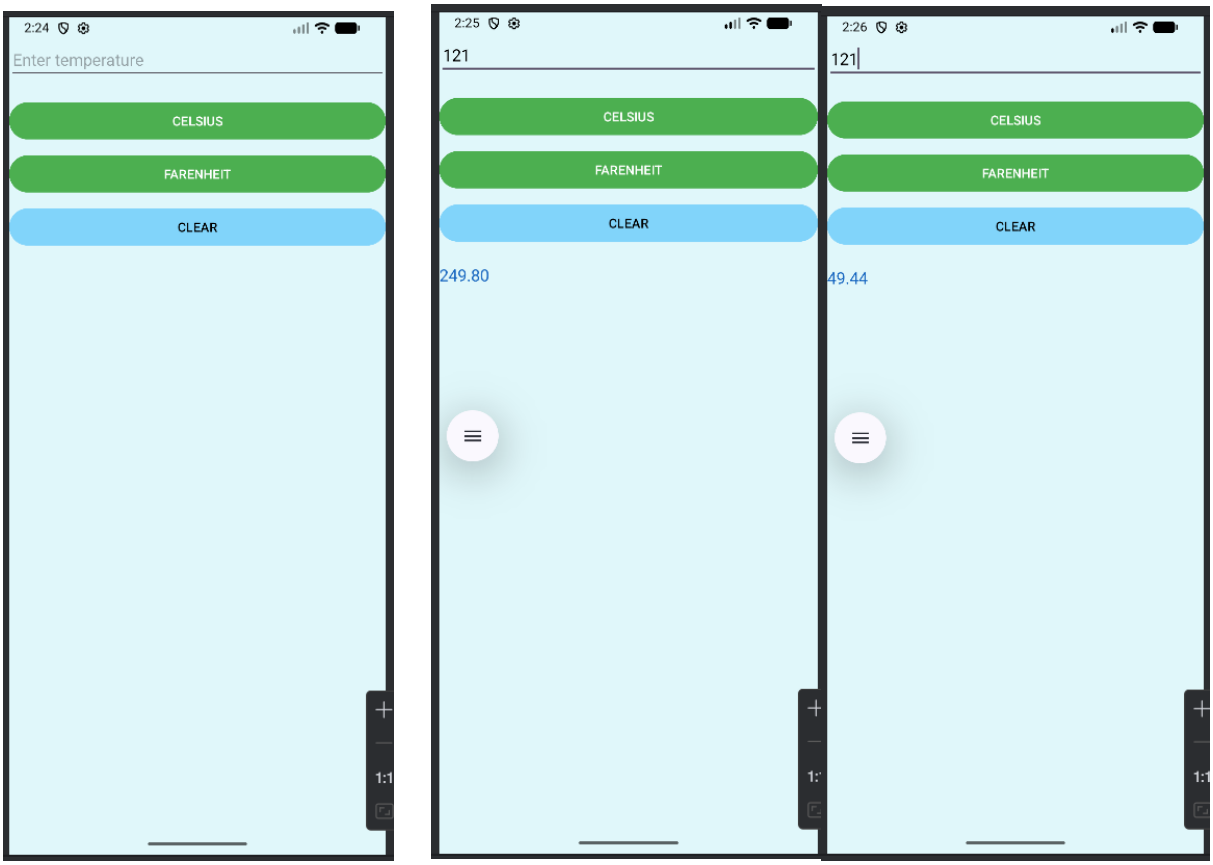


MainActivity.kt

```
package com.example.exp01d

import android.os.Bundle
import android.widget.Button
import android.widget.EditText
import android.widget.TextView
import androidx.activity.enableEdgeToEdge
import androidx.appcompat.app.AppCompatActivity
import androidx.core.view.ViewCompat
import androidx.core.view.WindowInsetsCompat

class MainActivity : AppCompatActivity() {

    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        enableEdgeToEdge()
        setContentView(R.layout.activity_main)

        ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main)) { v, insets ->
            val systemBars = insets.getInsets(WindowInsetsCompat.Type.systemBars())
            v.setPadding(systemBars.left, systemBars.top, systemBars.right, systemBars.bottom)
            insets
        }

        val edtTemp = findViewById<EditText>(R.id.edtTemp)
        val btnCelsius = findViewById<Button>(R.id.btnCelsius)
        val btnFahrenheit = findViewById<Button>(R.id.btnFahrenheit)
        val btnClear = findViewById<Button>(R.id.btnClear)
        val txtResult = findViewById<TextView>(R.id.txtResult)

        // Celsius → Fahrenheit
        btnCelsius.setOnClickListener {
            if (edtTemp.text.isEmpty()) {
                txtResult.text = "Please enter the temperature"
            } else {
                val celsius = edtTemp.text.toString().toDouble()
                val fahrenheit = (celsius * 9 / 5) + 32
                txtResult.text = "%.2f".format(fahrenheit)
            }
        }

        // Fahrenheit → Celsius
        btnFahrenheit.setOnClickListener {
            if (edtTemp.text.isEmpty()) {
              txtResult.text = "Please enter the temperature"
```

```
            } else {
                val fahrenheit = edtTemp.text.toString().toDouble()
                val celsius = (fahrenheit - 32) * 5 / 9
                txtResult.text = "%.2f".format(celsius)
            }
        }

        // Clear
        btnClear.setOnClickListener {
            edtTemp.text.clear()
            txtResult.text = ""
        }
    }
}
```

Output


2:24
Enter temperature
CELSIUS
FARENHEIT
CLEAR
2:25
121
CELSIUS
FARENHEIT
CLEAR
249.80
2:26
121
CELSIUS
FARENHEIT
CLEAR
49.44

Result:

The Temperature Converter Android application was successfully designed, developed, and executed.
The application accepted a temperature value from the user and converted it accurately between Celsius and Fahrenheit based on the selected button.

- **When the Celsius button was pressed, the temperature was converted from Celsius to Fahrenheit.**
- **When the Fahrenheit button was pressed, the temperature was converted from Fahrenheit to Celsius.**
- **The Clear button reset the input and output fields.**
- **An appropriate message was displayed when no input value was entered.**

Thus, the application performed temperature conversion correctly using a green and light blue themed user interface.