

Temperature Conversion App v-1.0

Objective To develop an android application for temperature conversion.

Notes

Radio button are labelled as follows-

1. "Celsius to Fahrenheit"
2. "Fahrenheit to Celsius"

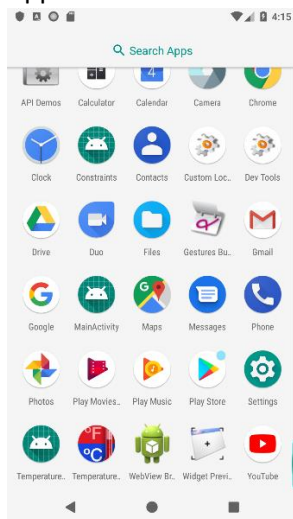
The button is labelled as "CONVERT"

Once the user clicks on the button, the converted value appears on the edit text, and the background color changes according to the following ranges set in the code:

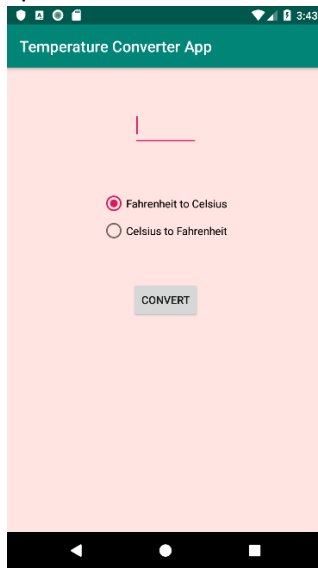
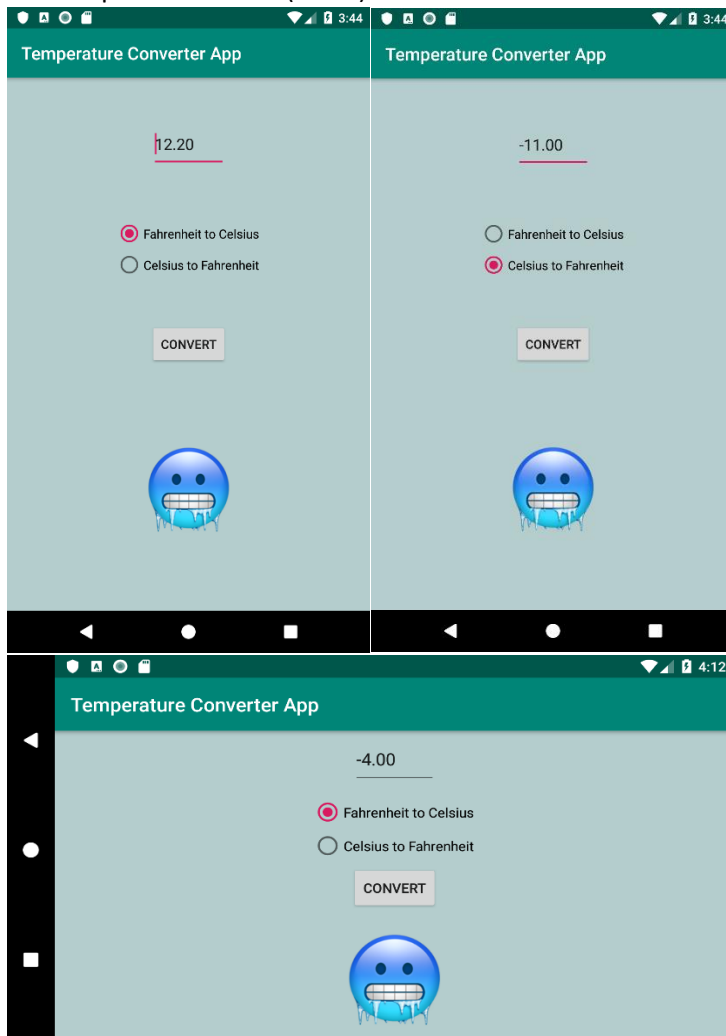
1. $< 14^{\circ}\text{F}$ (-10°C) : #B4CDCD (Grey)
 2. 14°F (-10°C) – 50°F (10°C) : #87CEFF (Blue)
 3. 50°F (10°C) – 95°F (35°C) : #FFE900 (Yellow)
 4. $> 95^{\circ}\text{F}$ (35°C) : #BA0909 (Red)
-

Snapshots of Testcases:

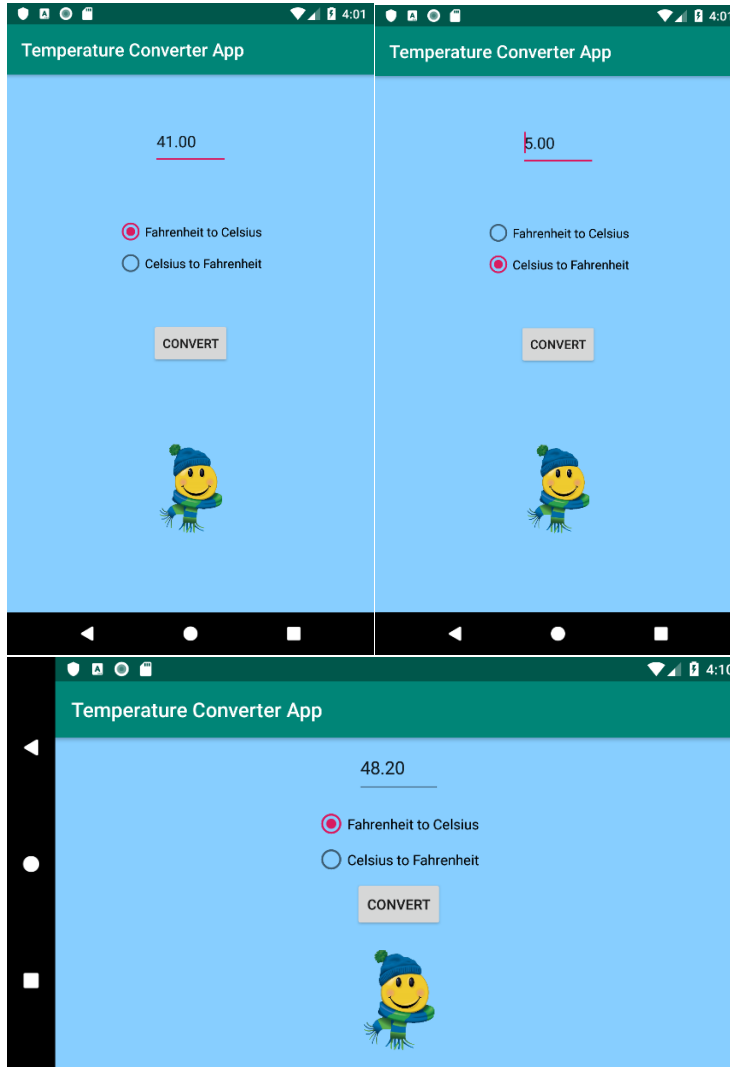
1. App Icon



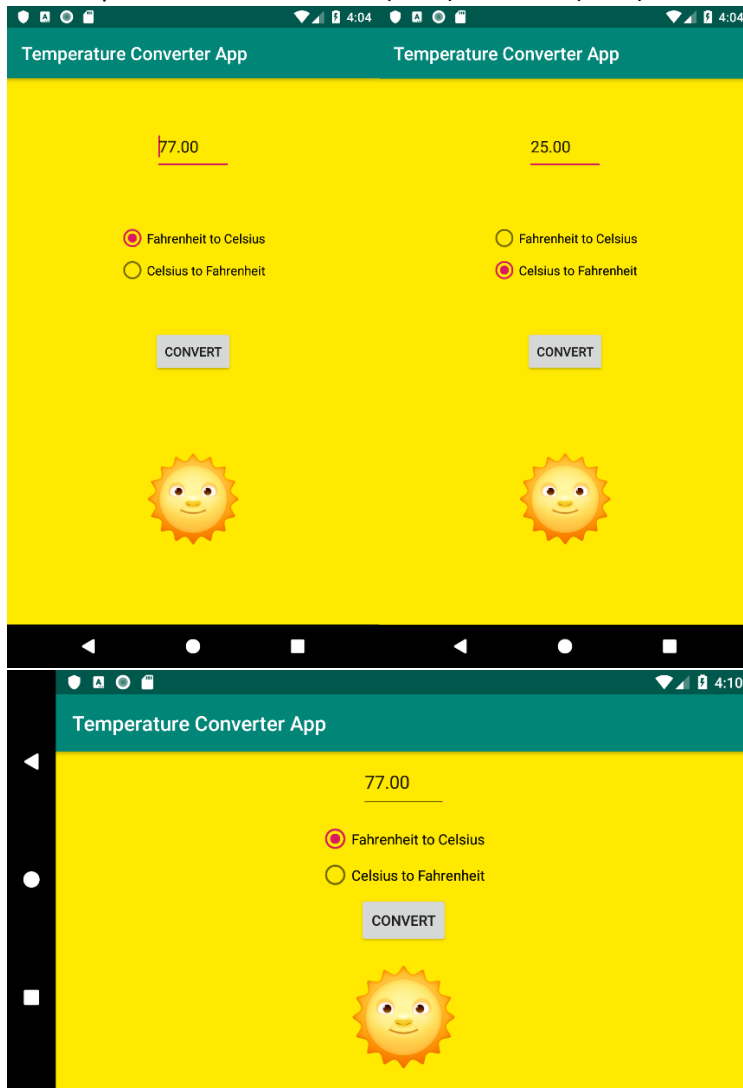
2. Splash screen

3. For temperature $<14^{\circ}\text{F}$ (-10°C)

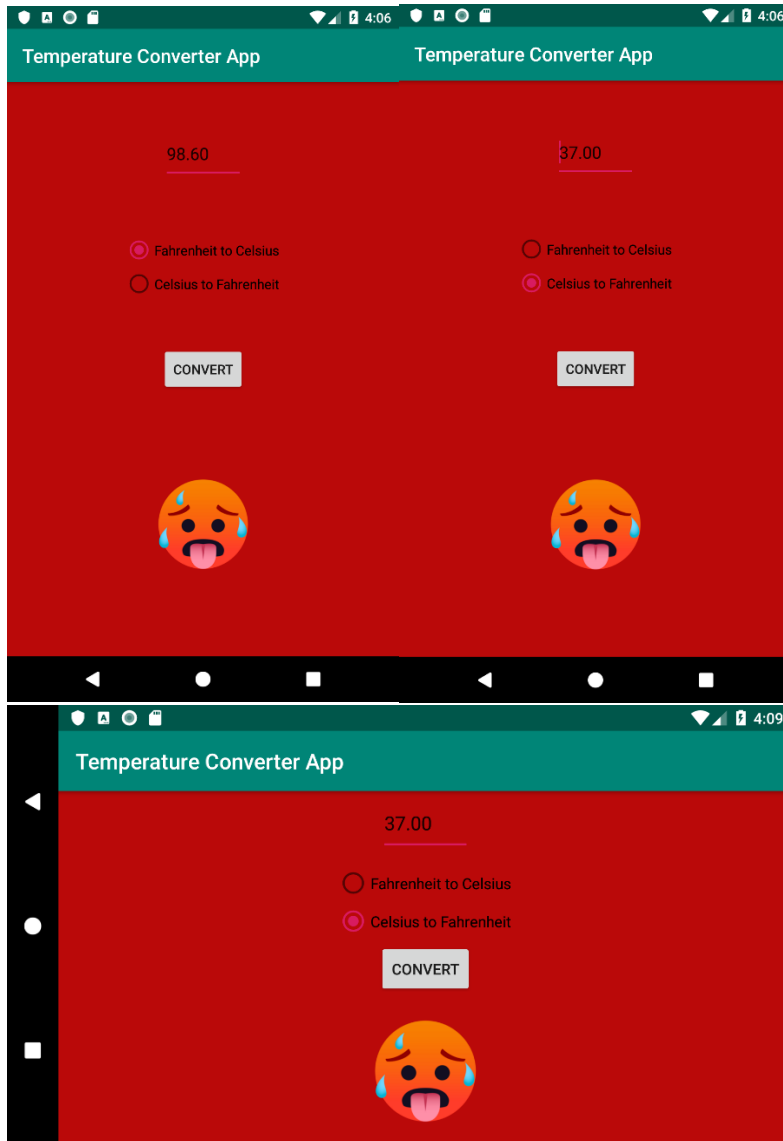
4. For temperature between 14°F (-10°C) and 50°F (10°C)



5. For temperature between 50°F (10°C) and 95°F (35°C):



6. For Temperature $> 95^{\circ}\text{F}$ (35°C)



Source Code:**1. AndroidManifest.xml**

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

    <application
        android:allowBackup="true"
        android:icon="@mipmap/icon"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportRtl="true"
        android:theme="@style/AppTheme">
        <activity android:name=".MainActivity"
            android:configChanges="keyboardHidden|orientation|screenSize">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />

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

</manifest>
```

2. activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<android.support.constraint.ConstraintLayout
    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/activity_main"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:background="@color/myColor"
    tools:context=".MainActivity">

    <EditText
        android:id="@+id/temp"
        android:layout_width="84dp"
```

```
        android:layout_height="55dp"

        android:layout_marginStart="8dp"
        android:layout_marginLeft="8dp"
        android:layout_marginTop="8dp"
        android:layout_marginEnd="8dp"
        android:layout_marginRight="8dp"
        android:layout_marginBottom="8dp"
        android:ems="5"
        android:inputType="numberDecimal|numberSigned"
        app:layout_constraintBottom_toTopOf="@+id/radioGrp"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent">

        <requestFocus />
    </EditText>

    <RadioGroup
        android:id="@+id/radioGrp"
        android:layout_width="166dp"
        android:layout_height="71dp"
        android:layout_marginStart="8dp"
        android:layout_marginLeft="8dp"
        android:layout_marginTop="8dp"
        android:layout_marginEnd="8dp"
        android:layout_marginRight="8dp"
        android:layout_marginBottom="8dp"
        android:verticalScrollbarPosition="left"
        app:layout_constraintBottom_toTopOf="@+id/calc"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/temp">

        <RadioButton
            android:id="@+id/toCelsius"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_weight="1"
            android:checked="true"
            android:text="Fahrenheit to Celsius" />

        <RadioButton
            android:id="@+id/toFahrenheit"
```

```
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:text="Celsius to Fahrenheit" />
```

```
</RadioGroup>
```

```
<Button
```

```
    android:id="@+id/calc"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="8dp"
    android:layout_marginLeft="8dp"
    android:layout_marginTop="8dp"
    android:layout_marginEnd="8dp"
    android:layout_marginRight="8dp"
    android:layout_marginBottom="8dp"
    android:onClick="onClick"
    android:text="CONVERT"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    tools:text="@string/calc" />
```

```
<ImageView
```

```
    android:id="@+id/imageView"
    android:layout_width="100dp"
    android:layout_height="100dp"
    android:layout_marginStart="8dp"
    android:layout_marginLeft="8dp"
    android:layout_marginTop="8dp"
    android:layout_marginEnd="8dp"
    android:layout_marginRight="8dp"
    android:layout_marginBottom="8dp"
    android:scaleType="centerInside"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/calc"
    app:srcCompat="@android:drawable/screen_background_light_transparent"
    tools:srcCompat="@tools:sample/backgrounds/scenic" />
```

```
</android.support.constraint.ConstraintLayout>
```


3. MainActivity.java

```
/**
 * Author: Dhivya Udaya Kumar
 * Program: Temperature Conversion Application
 * Description: The application converts temperature between Celsius and Fahrenheit and
 changes background color based on temperature
 */
package com.example.temperatureconverterapp;

import android.graphics.Color;
import android.os.Bundle;
import android.support.v7.app.AppCompatActivity;
import android.view.View;
import android.widget.EditText;
import android.widget.ImageView;
import android.widget.RadioButton;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {

    private EditText tempText;
    ImageView iv;

    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        tempText = findViewById(R.id.temp);
        iv = findViewById(R.id.imageView);
        iv.setVisibility(View.INVISIBLE);
    }

    /**
     * This method is called when user clicks on Convert button
     */
    public void onClick(View view){
        switch (view.getId()){
            case R.id.calc:
                RadioButton celsiusBtn = findViewById(R.id.toCelsius);
                RadioButton fahrenheitBtn = findViewById(R.id.toFahrenheit);
                if(tempText.getText().length() == 0){
```

```
        Toast.makeText(this, "Please enter a valid number", Toast.LENGTH_LONG).show();
        return;
    }
    float inputValue = Float.parseFloat(tempText.getText().toString());
    if(celsiusBtn.isChecked()){
        tempText.setText(String.format("%.2f",
ConverterUtil.convertFahrenheitToCelsius(inputValue)));
        celsiusBtn.setChecked(false);
        fahrenheitBtn.setChecked(true);
    }
    else {
        tempText.setText(String.format("%.2f",
ConverterUtil.convertCelsiusToFahrenheit(inputValue)));
        celsiusBtn.setChecked(true);
        fahrenheitBtn.setChecked(false);
    }
    inputValue = Float.parseFloat(tempText.getText().toString());
    view = findViewById(R.id.activity_main);
    iv = findViewById(R.id.imageView);

    if((inputValue < 14 && (!fahrenheitBtn.isChecked())) || (inputValue < -10 &&
(!celsiusBtn.isChecked())) {
        view.setBackgroundColor(Color.parseColor("#B4CD CD"));
        iv.setVisibility(View.VISIBLE);
        ((ImageView) iv.findViewById(R.id.imageView)).setImageResource(0);
        iv.setImageResource(R.drawable.extreme_cold_2);
    }
    else if((inputValue >= 14 && inputValue < 50 && (!fahrenheitBtn.isChecked())) ||
(inputValue >= -10 && inputValue < 10 && (!celsiusBtn.isChecked())) {
        view.setBackgroundColor(Color.parseColor("#87CE FF"));
        iv.setVisibility(View.VISIBLE);
        ((ImageView) iv.findViewById(R.id.imageView)).setImageResource(0);
        iv.setImageResource(R.drawable.cool_1);
    }
    else if ((inputValue >= 50 && inputValue <= 95 && (!fahrenheitBtn.isChecked())) ||
(inputValue >= 10 && inputValue <= 35 && (!celsiusBtn.isChecked())) {
        view.setBackgroundColor(Color.parseColor("#FF E900"));
        iv.setVisibility(View.VISIBLE);
        ((ImageView) iv.findViewById(R.id.imageView)).setImageResource(0);
        iv.setImageResource(R.drawable.warmth);
    }
    else if ((inputValue > 95 && (!fahrenheitBtn.isChecked())) || (inputValue > 35 &&
(!celsiusBtn.isChecked())) {
        view.setBackgroundColor(Color.parseColor("#BA0909"));
```

```
        iv.setVisibility(View.VISIBLE);
        ((ImageView) iv.findViewById(R.id.imageView)).setImageResource(0);
        iv.setImageResource(R.drawable.extreme_hot);
    }
    break;
}
}
}
```

4. ConverterUtil.java

```
package com.example.temperatureconverterapp;

public class ConverterUtil {

    /**
     * @param float
     * @return double
     * converts to Celsius
     */
    public static double convertFahrenheitToCelsius(float fahrenheit){

        return ((fahrenheit - 32) * 5.0/9.0);
    }

    /**
     * @param float
     * @return double
     * converts to Fahrenheit
     */
    public static double convertCelsiusToFahrenheit(float celsius){
        return ((celsius * 9.0/5.0) + 32);
    }
}
```

5. Strings.xml

```
<resources>
    <string name="app_name">Temperature Converter App</string>
    <color name="myColor">#FFE4E1</color>
    <string name="celsius">To Celsius</string>
    <string name="fahrenheit">To Fahrenheit</string>
    <string name="calc">Calculate</string>
</resources>
```