PRACTICAL: 4

AIM: Create a temperature converter Application. (Fahrenheit-Celsius).

THEORY: About elements used:

RadioGroup: This class is used to create a multiple-exclusion scope for a set of radio buttons. Checking one radio button that belongs to a radio group unchecks any previously checked radio button within the same group. Initially, all of the radio buttons are unchecked. While it is not possible to uncheck a particular radio button, the radio group can be cleared to remove the checked state. The selection is identified by the unique id of the radio button as defined in the XML layout file. We have used switch case to switch between different radio button applications.

CODE:

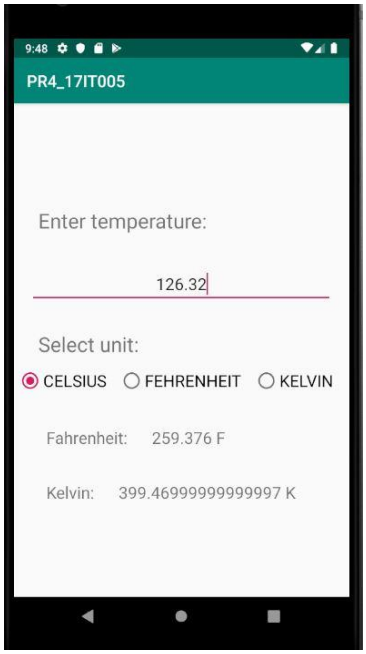
```
//activity_main.xml
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity"
    android:orientation="vertical"
    android:gravity="center">

    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:paddingVertical="12dp"
        android:paddingLeft="30dp"
        android:text="Enter temperature: "
        android:textSize="25dp"
        android:layout_marginBottom="5dp"/>
    <EditText
        android:id="@+id/Edit1"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_margin="20dp"
        android:gravity="center"
        android:hint="Temperature"
        android:textSize="20sp"
        android:inputType="numberDecimal"
        android:layout_marginBottom="20dp"
        />
    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Select unit: "
        android:paddingLeft="30dp"
```

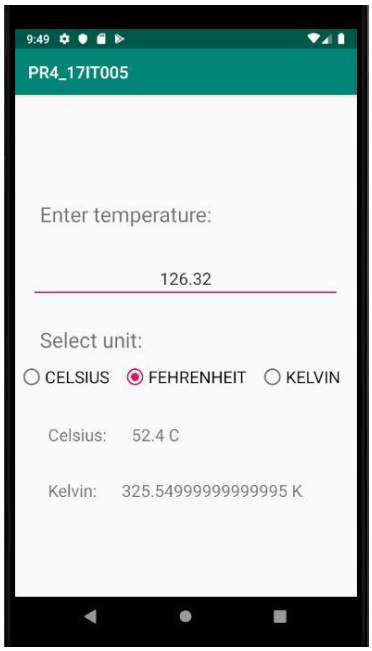
```
    android:paddingVertical="12dp"
    android:textSize="25dp"/>
  <LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:orientation="horizontal"
    android:gravity="center">
    <RadioGroup
      android:id="@+id/radioGroup"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:orientation="horizontal">
    <RadioButton
      android:id="@+id/C"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="CELSIUS"
      android:layout_marginRight="15dp"
      android:textSize="20dp"
      />
    <RadioButton
      android:id="@+id/F"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="FEHRENHEIT"
      android:layout_marginRight="15dp"
      android:textSize="20dp"
      />
    <RadioButton
      android:id="@+id/K"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="KELVIN"
      android:layout_marginRight="15dp"
      android:textSize="20dp"
      /></RadioGroup>
  </LinearLayout>
  <LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:orientation="horizontal"
    android:layout_marginTop="40dp">
  <TextView
    android:id="@+id/text1"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginLeft="40dp"
    android:textSize="20sp"/>
  <TextView
    android:id="@+id/text2"
    android:layout_width="wrap_content"
```

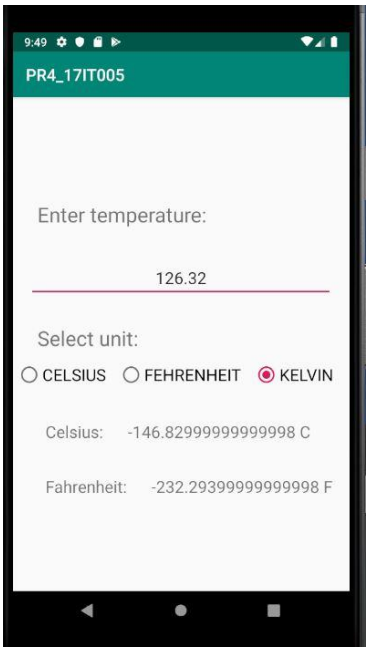
```
        android:layout_height="wrap_content"
        android:layout_marginLeft="30dp"
        android:textSize="20sp"/>
    </LinearLayout>
    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:orientation="horizontal"
        android:layout_marginTop="40dp">
        <TextView
            android:id="@+id/text3"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_marginLeft="40dp"
            android:textSize="20sp"/>
        <TextView
            android:id="@+id/text4"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_marginLeft="30dp"
            android:textSize="20sp"/>
    </LinearLayout>

</LinearLayout>

//MainActivity.java
package com.example.pr4_17it005;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.view.View;
import android.widget.EditText;
import android.widget.LinearLayout;
import android.widget.RadioGroup;
import android.widget.TextView;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {
    private EditText Temp;
    private RadioGroup radioGroup;
    private TextView text1,text2,text3,text4;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        Temp = findViewById(R.id.Edit1);
        radioGroup=findViewById(R.id.radioGroup);
        text1 = findViewById(R.id.text1);
        text2 = findViewById(R.id.text2);
```

```
        text3 = findViewById(R.id.text3);
        text4 = findViewById(R.id.text4);
        radioGroup.setOnCheckedChangeListener(new RadioGroup.OnCheckedChangeListener() {
            @Override
            public void onCheckedChanged(RadioGroup group, int checkedId) {
                switch (checkedId){
                    case R.id.C:
                        double K,F;
                        double intValue = Double.valueOf(Temp.getText().toString());
                        K = intValue + 273.15;
                        F = (intValue*9/5) + 32;
                        text1.setText("Fahrenheit:");
                        text3.setText("Kelvin:");
                        text4.setText(Double.toString(K) +" K" );
                        text2.setText(Double.toString(F) + " F");
                        break;
                    case R.id.F:
                        double C,K1;
                        double intValue1 = Double.valueOf(Temp.getText().toString());
                        C = (intValue1-32)*5/9;
                        K1 = C+273.15;
                        text1.setText("Celsius:");
                        text3.setText("Kelvin:");
                        text4.setText(Double.toString(K1) +" K" );
                        text2.setText(Double.toString(C) + " C");
                        break;
                    case R.id.K:
                        double C1,F1;
                        double intValue2 = Double.valueOf(Temp.getText().toString());
                        C1 = intValue2 - 273.15;
                        F1 = (C1*9/5) + 32;
                        text3.setText("Fahrenheit:");
                        text1.setText("Celsius:");
                        text2.setText(Double.toString(C1) +" C" );
                        text4.setText(Double.toString(F1) + " F");
                        break;
                    default:
                        Toast.makeText(getApplicationContext(),"Please select unit
properly",Toast.LENGTH_LONG).show();
                        break;
                }
            }
        });
    }
}
```

OUTPUT:







Here, in this application, first you enter temperature and then enter the unit of temperature, as you select any unit, let's say you selected Celsius, the application will provide you the same temperature in Fahrenheit and Kelvin. And same goes when you select any of other two units.

LATEST APPLICATIONS: These type of temperature conversions are used in many fields for example: The temperature unit of Fahrenheit is used to record surface temperature measurements by meteorologists in the United States. Most of the other countries in the world use Celsius. It is important to be able to convert from units of degrees Fahrenheit to degrees Celsius.

LEARNING OUTCOME: In this application RadioGroup is used, and to learn how to implement different bit of codes on selection of different radio buttons.