RadioButton

- RadioButton is used when you have to allow selection of only one option among the list of multiple options.
- It is used under its parent view – RadioGroup so that we can get one selected value out of all the listed radio buttons.
- Also RadioGroup is a subclass of LinearLayout and arranges the radio button vertically because it has vertical orientation by default.
- But you can change that by adding the attribute android:orientation="horizontal" to your RadioGroup in the layout XML file.

CheckBox

- Checkbox is used when you have to show multiple options to the user and the user is allowed to choose as many options as they want, by tapping on them.

- You can set its default check status as true or false and other properties are the same as TextView.

- Create android Application that displays selected values from raadio buttons and checkboxes

Activity_main.xml

```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"
    android:orientation="vertical"
    android:layout_margin="20dp"
    tools:context=".MainActivity">
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Gender"
        android:textSize="10pt"
        android:textStyle="bold"
        android:id="@+id/TextView1"
        android:layout_margin="15dp"
        />

    <RadioGroup
        android:id="@+id/radioGroup1"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:padding="10dp">

        <RadioButton
            android:id="@+id/radioButton"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:text="Male" />

        <RadioButton
            android:id="@+id/radioButton2"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:text="Female" />
    </RadioGroup>
```

```xml
<TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Hobbies"
        android:textSize="10pt"
        android:textStyle="bold"
        android:id="@+id/TextView2"
        android:layout_margin="15dp"/>

    <CheckBox
        android:id="@+id/checkBox"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Cricket"
       android:layout_marginLeft="10dp"/>

    <CheckBox
        android:id="@+id/checkBox2"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Dance"
        android:layout_marginLeft="10dp"/>

    <CheckBox
        android:id="@+id/checkBox3"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Football"
        android:layout_marginLeft="10dp"/>
    <Button
        android:id="@+id/button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="center_horizontal"
        android:text="Submit"/>
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/TextView3"/>

</LinearLayout>
```

MainActivity.java

```java
package com.example.radiobutton;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.CheckBox;
import android.widget.RadioButton;
import android.widget.RadioGroup;
import android.widget.TextView;

public class MainActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        RadioGroup radioGroup=findViewById(R.id.radioGroup1);
        CheckBox cricket=findViewById(R.id.checkBox);
        CheckBox dance=findViewById(R.id.checkBox2);
        CheckBox football=findViewById(R.id.checkBox3);
```
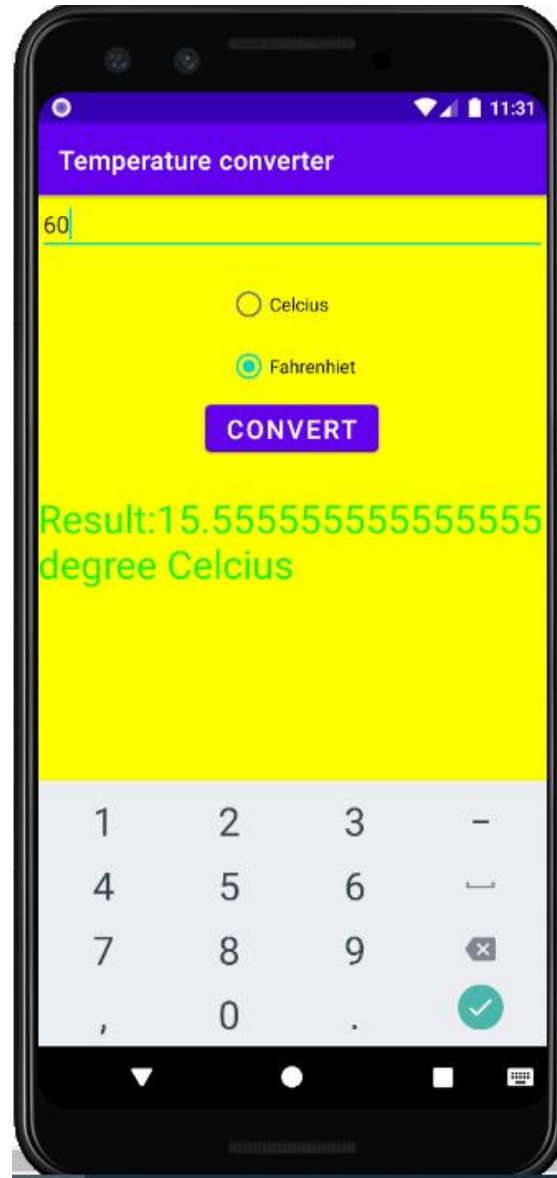
```java
findViewById(R.id.button).setOnClickListener(new
View.OnClickListener() {
        @Override
        public void onClick(View view) {
            String result="";
          int radioId=radioGroup.getCheckedRadioButtonId();
            RadioButton Checkedradio=findViewById(radioId);
            TextView text=findViewById(R.id.TextView3);
            if(cricket.isChecked())
                result+="Cricket";
            if(dance.isChecked())
                result+="Dance";
            if(football.isChecked())
                result+="Football";
        text.setText("Gender:
"+Checkedradio.getText().toString()+"\nHobbies: "+result);
        }
    });
  }
}
```

Unit	Description	Units Per Physical Inch	Density Independent?	Same Physical Size On Every Scree
px	Pixels	Varies	No	No
in	Inches	1	Yes	Yes
mm	Millimeters	25.4	Yes	Yes
pt	Points	72	Yes	Yes
dp	Density Independent Pixels	~160	Yes	No
sp	Scale Independent Pixels	~160	Yes	No

- Create a Temperature Converter Application. (Use Edit text, Radio button, Button and TextView to display result).

Activity_main.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
xmlns:android="http://schemas.android.com/apk/res/android"
    android:id="@+id/ll"
    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"
    android:orientation="vertical"
    tools:context=".MainActivity">
    <EditText
        android:id="@+id/editText1"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:inputType="numberDecimal" >
    </EditText>
    <RadioGroup
        android:id="@+id/radioGroup1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="15dp"
        android:layout_gravity="center_horizontal">
        <RadioButton
            android:id="@+id/cb"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:checked="true"
            android:text="Celcius" />
        <RadioButton
            android:id="@+id/fb"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Fahrenhiet" />
    </RadioGroup>
```

```xml
    <Button
            android:id="@+id/button1"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:onClick="add"
            android:text="Convert"
            android:textSize="20sp"

android:layout_gravity="center_horizontal"/>
        <TextView
            android:id="@+id/result"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:textSize="30sp"
            android:textColor="#18f211"
            android:layout_marginTop="25dp"

android:layout_gravity="center_horizontal"
            />
</LinearLayout>
```

```java
MainActivity.java

package com.example.temperatureconverter;

import androidx.appcompat.app.AppCompatActivity;

import android.graphics.Color;
import android.os.Bundle;
import android.view.View;
import android.widget.EditText;
import android.widget.LinearLayout;
import android.widget.RadioButton;
import android.widget.TextView;

public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }
    public void add(View v)
    {
        LinearLayout ll=(LinearLayout)findViewById(R.id.ll);
        TextView result=(TextView)findViewById(R.id.result);
        EditText et1=(EditText)findViewById(R.id.editText1);

        double a=Double.parseDouble(String.valueOf(et1.getText()));
        RadioButton cb=(RadioButton)findViewById(R.id.cb);
        RadioButton fb=(RadioButton)findViewById(R.id.fb);
```

```java
if(cb.isChecked())
        {
                //change background colour
                ll.setBackgroundColor(Color.YELLOW);
                //display conversion
                result.setText("Result:"+f2c(a)+" degree Celcius");
                fb.setChecked(true);
        }
        else
        {
                ll.setBackgroundColor(Color.CYAN);
                result.setText("Result:"+c2f(a)+" degree Fahrenhiet");
                cb.setChecked(true);
        }
    }

    private double c2f(double c)
    {
        return (c*9)/5+32;
    }
    private double f2c(double f)
    {
        return (f-32)*5/9;
    }
}
```

- **Write program to change background color using RadioButton**

Activity_main.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout
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"
    android:padding="16dp"
    android:id="@+id/relativeLayout"
    android:background="#4FC3F7"
    tools:context=".MainActivity">

    <RadioGroup android:id="@+id/radioGroup"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_centerHorizontal="true"
        android:layout_centerVertical="true">

        <RadioButton android:id="@+id/radiobutton1"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="RED"/>

        <RadioButton android:id="@+id/radiobutton2"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Green"/>

        <RadioButton
        android:id="@+id/radiobutton3"

        android:layout_width="wrap_content"

        android:layout_height="wrap_content"
                android:text="BLUE"/>

        <RadioButton
        android:id="@+id/radiobutton4"

        android:layout_width="wrap_content"

        android:layout_height="wrap_content"
                android:text="Yellow"/>

    </RadioGroup>

</RelativeLayout>
```

```java
MainActivity.java
package com.example.colorchanger;

import androidx.appcompat.app.AppCompatActivity;
import android.graphics.Color;
import android.os.Bundle;
import android.widget.RadioGroup;
import android.widget.RelativeLayout;

public class MainActivity extends AppCompatActivity {
    RadioGroup radioGroup;
    RelativeLayout relativeLayout;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        radioGroup = (RadioGroup)findViewById(R.id.radioGroup);
        relativeLayout = (RelativeLayout)findViewById(R.id.relativeLayout);
        radioGroup.setOnCheckedChangeListener(new RadioGroup.OnCheckedChangeListener()
{

            @Override
            public void onCheckedChanged(RadioGroup radioGroup, int i) {
                switch (i) {
                    case R.id.radiobutton1:
                        relativeLayout.setBackgroundColor(Color.parseColor("#ff0000"));
                        break;
                    case R.id.radiobutton2:
                        relativeLayout.setBackgroundColor(Color.parseColor("#00ff00"));
                        break;
                    case R.id.radiobutton3:

                        relativeLayout.setBackgroundColor(Color.parseColor("#0000ff"));
                    case R.id.radiobutton4:
                        relativeLayout.setBackgroundColor(Color.parseColor("#00ffff"));
                }
            }
        });
    }
}
```