# Practical No 6

Q.1 Student Information

```xml
<TableLayout xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <TableRow>
        <TextView
            android:layout_marginStart="10dp"
            android:layout_marginEnd="30dp"
            android:textAlignment="center"
            android:text="Roll No"
            android:textColor="#000" />
        <TextView
            android:layout_marginStart="10dp"
            android:layout_marginEnd="30dp"
            android:textAlignment="center"
            android:text="Name"
            android:textColor="#000" />
        <TextView
            android:layout_marginStart="10dp"
            android:layout_marginEnd="30dp"
            android:textAlignment="center"
            android:text="Marks"
            android:textColor="#000" />
        <TextView
            android:layout_marginStart="10dp"
            android:layout_marginEnd="30dp"
            android:textAlignment="center"
            android:text="City"
            android:textColor="#000" />
    </TableRow>
    <TableRow>
        <TextView
            android:layout_marginStart="10dp"
            android:layout_marginEnd="30dp"
            android:textAlignment="center"
            android:text="01" />
        <TextView
            android:layout_marginStart="10dp"
            android:layout_marginEnd="30dp"
            android:textAlignment="center"
            android:text="Student 1" />
        <TextView
            android:layout_marginStart="10dp"
            android:layout_marginEnd="30dp"
            android:textAlignment="center"
            android:text="94" />
    </TableRow>
    <TableRow>
        <TextView
            android:layout_marginStart="10dp"
            android:layout_marginEnd="30dp"
            android:textAlignment="center"
            android:text="02" />
        <TextView
            android:layout_marginStart="10dp"
            android:layout_marginEnd="30dp"
            android:textAlignment="center"
            android:text="Student 2 " />
        <TextView
            android:layout_marginStart="10dp"
            android:layout_marginEnd="30dp"
            android:textAlignment="center"
            android:text="86" />
        <TextView
```
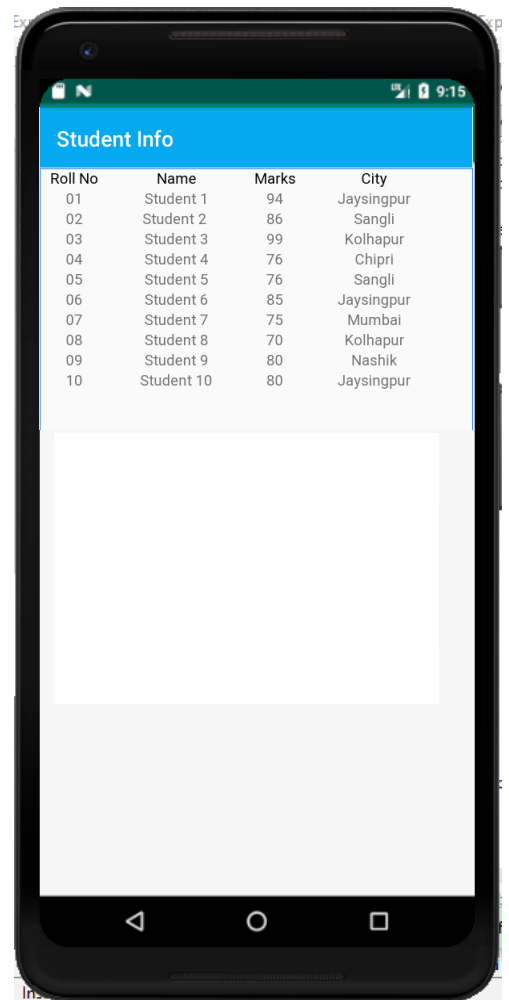
```xml
                android:layout_marginStart="10dp"
                android:layout_marginEnd="30dp"
                android:textAlignment="center"
                android:text="Sangli" />
        </TableRow>
        <TableRow>
            <TextView
                android:layout_marginStart="10dp"
                android:layout_marginEnd="30dp"
                android:textAlignment="center"
                android:text="03" />
            <TextView
                android:layout_marginStart="10dp"
                android:layout_marginEnd="30dp"
                android:textAlignment="center"
                android:text="Student 3" />
            <TextView
                android:layout_marginStart="10dp"
                android:layout_marginEnd="30dp"
                android:textAlignment="center"
                android:text="99" />
            <TextView
                android:layout_marginStart="10dp"
                android:layout_marginEnd="30dp"
                android:textAlignment="center"
                android:text="Kolhapur" />
        </TableRow>
        <TableRow>
            <TextView
                android:layout_marginStart="10dp"
                android:layout_marginEnd="30dp"
                android:textAlignment="center"
                android:text="05" />
            <TextView
                android:layout_marginStart="10dp"
                android:layout_marginEnd="30dp"
                android:textAlignment="center"
                android:text="Student 5" />
            <TextView
                android:layout_marginStart="10dp"
                android:layout_marginEnd="30dp"
                android:textAlignment="center"
                android:text="76" />
            <TextView
                android:layout_marginStart="10dp"
                android:layout_marginEnd="30dp"
                android:textAlignment="center"
                android:text="Sangli" />
        </TableRow>
        <TableRow>
            <TextView
                android:layout_marginStart="10dp"
                android:layout_marginEnd="30dp"
                android:textAlignment="center"
                android:text="10" />
            <TextView
                android:layout_marginStart="10dp"
                android:layout_marginEnd="30dp"
                android:textAlignment="center"
                android:text="Student 10" />
            <TextView
                android:layout_marginStart="10dp"
                android:layout_marginEnd="30dp"
                android:textAlignment="center"
                android:text="80" />
            <TextView
                android:layout_marginStart="10dp"
                android:layout_marginEnd="30dp"
                android:textAlignment="center"
                android:text="Jaysingpur" />
        </TableRow>
    </TableLayout>
```

Q. 2 Frame Layout OOP

```xml
<?xml version="1.0" encoding="utf-8"?>
<FrameLayout xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".FrameOOP">

    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="bottom"
        android:text="STRING" />

    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="right|end"
        android:text="CHAR" />

    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="center"
        android:text="FLOAT" />

    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="center|top"
        android:text="LONG" />

    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="center|left"
        android:text="array" />

    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="center|right"
        android:text="Vector" />

    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="center|top"
        android:text="LONG" />

    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="INT" />

    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="bottom|center"
        android:text="BOLEAN" />

    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="bottom|right"
        android:text="DOUBLE" />

</FrameLayout>
```
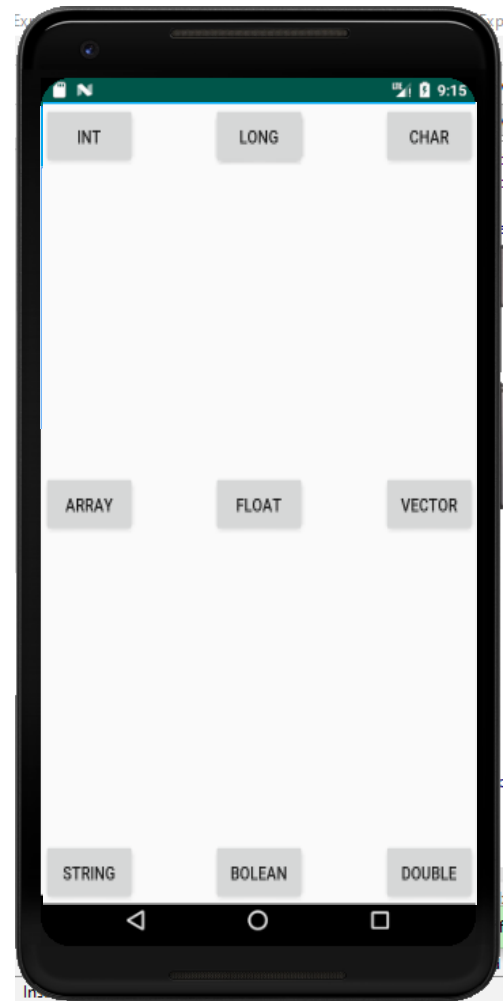
Practical No 7

Q.1 Username and Password

```xml
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    tools:context=".MainActivity"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:layout_margin="100dp" >

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Username"
        android:textSize="18sp"/>
    <EditText
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:ems="10" />

    <TextView
        android:layout_width="wrap_content"
        android:textSize="18sp"
        android:layout_height="wrap_content"
        android:text="Password" />
    <EditText
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:ems="10" />
    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Login" />
</LinearLayout>
```
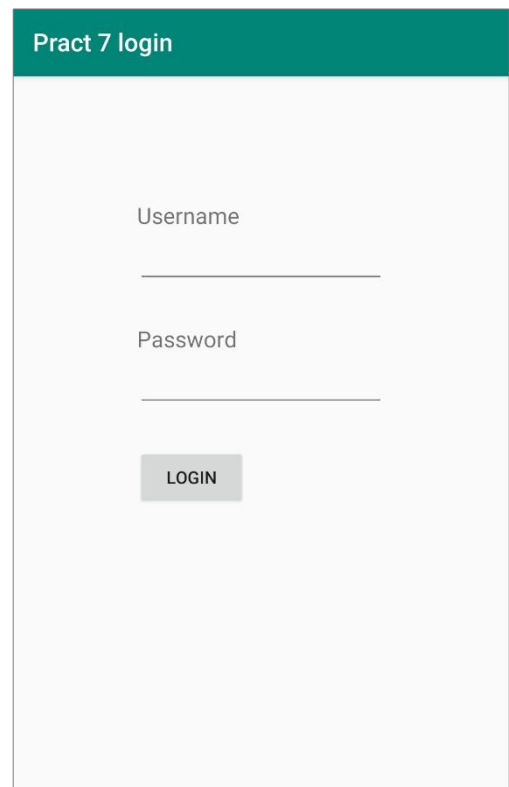
Q. 2 Student Data

```xml
<?xml version="1.0" encoding="utf-8"?>
<AbsoluteLayout
    xmlns:tools="http://schemas.android.com/tools"
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="40dp"
        android:layout_y="115dp"
        android:text="Roll No" />

    <EditText
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="150dp"
        android:layout_y="95dp"
        android:ems="10"
        android:inputType="number" />

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="40dp"
        android:layout_y="165dp"
        android:text="First Name" />

    <EditText
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="150dp"
        android:layout_y="145dp"
        android:ems="10"
        android:inputType="text" />

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="40dp"
        android:layout_y="215dp"
        android:text="Last Name" />

    <EditText
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="150dp"
        android:layout_y="195dp"
        android:ems="10"
        android:inputType="text" />

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="40dp"
        android:layout_y="265dp"
        android:text="Gender" />
```

```xml
    <EditText
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="150dp"
        android:layout_y="245dp"
        android:ems="10"
        android:inputType="text" />

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="40dp"
        android:layout_y="315dp"
        android:text="Age" />

    <EditText
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="150dp"
        android:layout_y="295dp"
        android:ems="10"
        android:inputType="number" />

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="40dp"
        android:layout_y="365dp"
        android:text="Email" />

    <EditText
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="150dp"
        android:layout_y="345dp"
        android:ems="10"
        android:inputType="textEmailAddress" />

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="40dp"
        android:layout_y="415dp"
        android:text="DOB" />

    <EditText
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="150dp"
        android:layout_y="395dp"
        android:ems="10"
        android:inputType="date" />

    <Button
        android:layout_width="112dp"
        android:layout_height="wrap_content"
        android:layout_x="247dp"
        android:layout_y="493dp"
        android:text="Submit" />

</AbsoluteLayout>
```

MainActivity.java

```java
package com.example.pract7stud;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        Button btn = (Button)findViewById(R.id.button);
        btn.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                EditText roll = (EditText)findViewById(R.id.roll);
                EditText fn = (EditText)findViewById(R.id.fname);
                EditText ln = (EditText)findViewById(R.id.lname);
                EditText gen = (EditText)findViewById(R.id.gender);
                EditText age = (EditText)findViewById(R.id.age);
                EditText email = (EditText)findViewById(R.id.email);
                EditText dob = (EditText)findViewById(R.id.dob);
                Toast.makeText(getApplicationContext(),
                        "Roll No : "+roll.getText()+
                        "\nFirst Name : "+fn.getText()+
                        "\nLast Name : "+ln.getText()+
                        "\nGender : "+gen.getText()+
                        "\nAge : "+age.getText()+
                        "\nEmail : "+email.getText()+
                        "\nDOB : "+dob.getText(),Toast.LENGTH_LONG).show();

            }
        });
    }
}
```

Practical No 8

Q. 1 Search Engine

Activity_main.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Enter a Text"/>

    <AutoCompleteTextView
        android:id="@+id/autocomp"
        android:layout_width="300dp"
        android:layout_height="wrap_content"
        android:layout_marginTop="44dp"
        android:completionHint="Select Text"
        android:completionThreshold="1"
        android:hint="Enter a Text here"/>

</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java

```java
package com.example.exp8autocomplete;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.widget.ArrayAdapter;
import android.widget.AutoCompleteTextView;

public class MainActivity extends AppCompatActivity {
    String[] searches = new String[]{
            "Google","Youtube","Facebook","Whatsapp","C","C++","Python","Php","Java","Advance
Java",".net","VB.net"
    };

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        AutoCompleteTextView autotxt = findViewById(R.id.autocomp);
        ArrayAdapter<String> aa = new
        ArrayAdapter<String>(this,android.R.layout.simple_list_item_1, searches);
        autotxt.setAdapter(aa);
    }
}
```
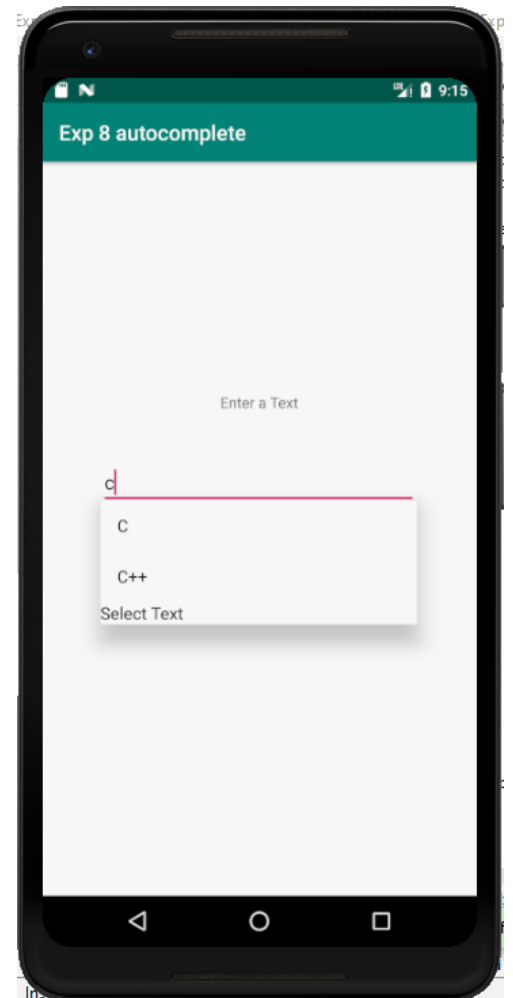
Q.2 AutoCompleteTextView Subjects

activity_main.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Select Subject"
        android:textSize="18sp" />

    <AutoCompleteTextView
        android:id="@+id/autoSub"
        android:layout_width="300dp"
        android:layout_height="wrap_content"
        android:layout_marginTop="100dp"
        android:hint="Enter Subject"
        android:completionThreshold="0"/>

</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java

```java
package com.example.exp8subjects;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.widget.ArrayAdapter;
import android.widget.AutoCompleteTextView;

public class MainActivity extends AppCompatActivity {
    String[] searches = new String[]{
            "MAD","WPD","MGT","PWP","ETI","EDE","CPE"
    };

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        AutoCompleteTextView autotxt = findViewById(R.id.autoSub);
        ArrayAdapter<String> aa = new
                ArrayAdapter<String>(this,android.R.layout.simple_list_item_1, searches);
        autotxt.setAdapter(aa);
    }
}
```
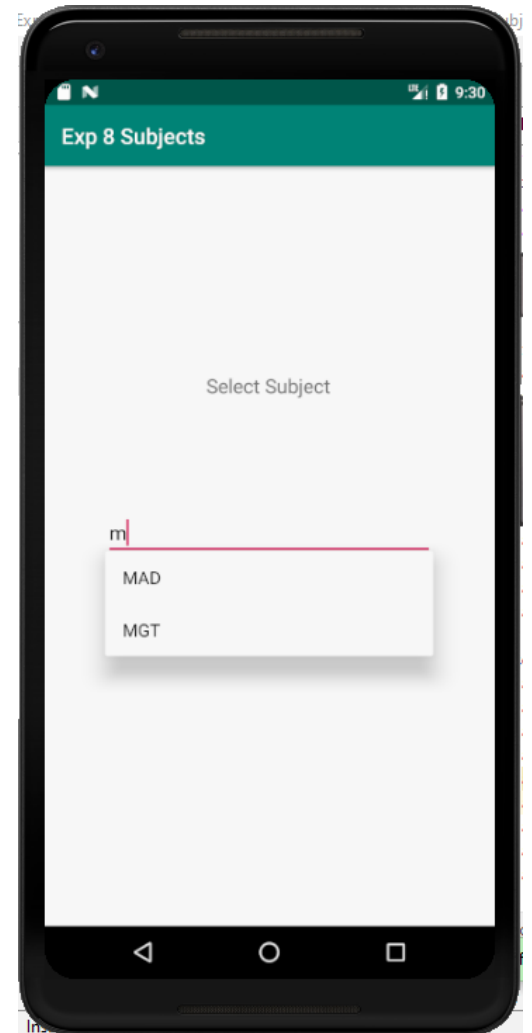
Practical No 9

Toggle Button Bluetooth

- **AndroidManifest.xml**

```xml
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.exp9bluetooth">
    <uses-permission android:name="android.permission.BLUETOOTH"></uses-permission>
    <uses-permission android:name="android.permission.BLUETOOTH_ADMIN" />
    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/AppTheme">
        <activity android:name=".MainActivity">
            <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
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.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:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <TextView
        android:id="@+id/msg"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="256dp"
        android:text="Turn Bluetooth ON / OFF"
        android:textSize="18sp"/>

    <ToggleButton
        android:id="@+id/btnBluetooth"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="60dp"
        android:text="ToggleButton"/>

</androidx.constraintlayout.widget.ConstraintLayout>
```

- **MainActivity.java**

```java
package com.example.exp9bluetooth;

import androidx.appcompat.app.AppCompatActivity;
import android.bluetooth.BluetoothAdapter;
import android.content.Intent;
import android.os.Bundle;
import android.widget.CompoundButton;
import android.widget.TextView;
import android.widget.ToggleButton;

public class MainActivity extends AppCompatActivity {
    ToggleButton btn;
    TextView msg;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        btn = findViewById(R.id.btnBluetooth);
        msg = findViewById(R.id.msg);
        final BluetoothAdapter blue = BluetoothAdapter.getDefaultAdapter();

        btn.setOnCheckedChangeListener(new CompoundButton.OnCheckedChangeListener() {
            @Override
            public void onCheckedChanged(CompoundButton buttonView, boolean isChecked) {
                if (isChecked){
                    if(blue.getState() == BluetoothAdapter.STATE_ON){
                        blue.disable();
                        msg.setText("Bluetooth is OFF");
                    }
                }
                else{
                    blue.enable();
                    msg.setText("Bluetooth is ON");
                }
            }
        });
    }
}
```

Simple Calculator

```xml
<?xml version="1.0" encoding="utf-8"?>
<AbsoluteLayout 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">

    <EditText
        android:id="@+id/num1"
        android:layout_width="304dp"
        android:layout_height="wrap_content"
        android:hint="Enter Num 1"
        android:inputType="number" />

    <EditText
        android:id="@+id/num2"
        android:layout_width="304dp"
        android:layout_height="wrap_content"
        android:hint="Enter Num 2"
        android:inputType="number" />

    <Button
        android:id="@+id/btsub"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="270dp"
        android:layout_y="387dp"
        android:text="SUB" />

    <Button
        android:id="@+id/btdiv"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="DIV" />

    <Button
        android:id="@+id/btmul"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="MUL" />

    <Button
        android:id="@+id/btadd"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="ADD" />

    <EditText
        android:id="@+id/result"
        android:layout_width="304dp"
        android:layout_height="wrap_content"
        android:layout_x="55dp"
        android:layout_y="309dp"
        android:inputType="number" />

</AbsoluteLayout>
```
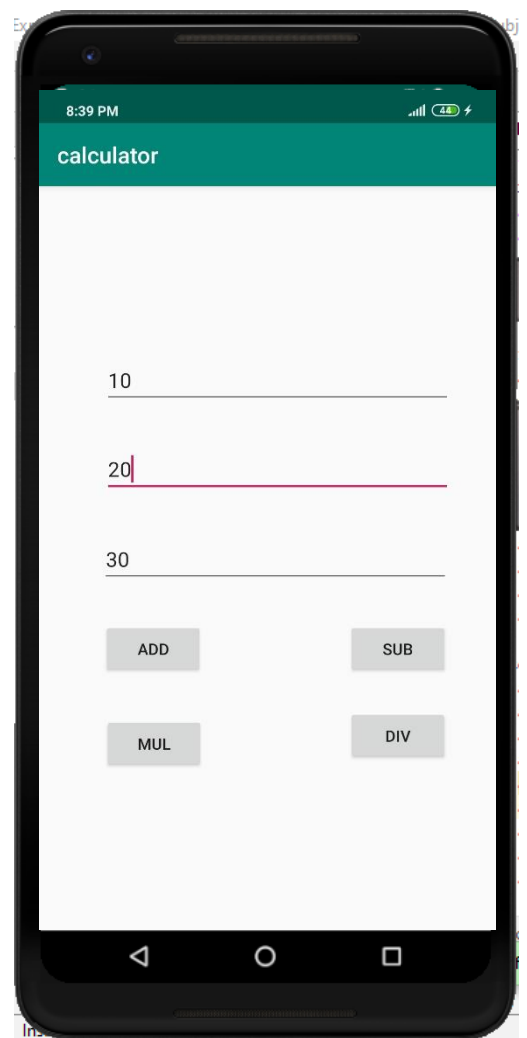
MainActivity.java

```java
package com.example.calculator;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;

public class MainActivity extends AppCompatActivity {

    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        EditText n1 = (EditText)findViewById(R.id.num1);
        EditText n2 = (EditText)findViewById(R.id.num2);
        res = (EditText)findViewById(R.id.result);
        Button add = (Button)findViewById(R.id.btadd);
        Button sub = (Button)findViewById(R.id.btsub);
        Button mul = (Button)findViewById(R.id.btmul);
        Button div = (Button)findViewById(R.id.btdiv);

        add.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                int r = Integer.parseInt(n1.getText().toString()) +
                        Integer.parseInt(n2.getText().toString());
                res.setText(String.valueOf(r));
            }
        });

        sub.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                int r = Integer.parseInt(n1.getText().toString()) -
                        Integer.parseInt(n2.getText().toString());
                res.setText(String.valueOf(r));
            }
        });

        mul.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                int r = Integer.parseInt(n1.getText().toString()) *
                        Integer.parseInt(n2.getText().toString());
                res.setText(String.valueOf(r));
            }
        });

        div.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                int r = Integer.parseInt(n1.getText().toString()) /
                        Integer.parseInt(n2.getText().toString());
                res.setText(String.valueOf(r));
            }
        });
    }
}
```

Practical No 10

Social Network Login

```xml
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    tools:context=".MainActivity"
    android:background="@drawable/bgimg">

    <TextView
        android:layout_width="match_parent"
        android:layout_height="200dp"
        android:fontFamily="cursive"
        android:text="Login"
        android:textAlignment="center"
        android:textColor="#39000000"
        android:textSize="60sp" />

    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Username"
        android:textColor="#FFFFFF"
        android:layout_marginHorizontal="20dp"
        android:layout_marginTop="40dp" />

    <EditText
        android:layout_width="match_parent"
        android:layout_height="45dp"
        android:layout_marginHorizontal="30dp"
        android:textColor="#fff"
        android:background="#2C000000" />

    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Password"
        android:textColor="#FFFFFF"
        android:layout_marginHorizontal="20dp"
        android:layout_marginTop="20dp" />

    <EditText
        android:layout_width="match_parent"
        android:layout_height="45dp"
        android:layout_marginHorizontal="30dp"
        android:textColor="#fff"
        android:background="#2C000000"
        android:inputType="textPassword"/>

    <Button
        android:layout_width="match_parent"
        android:layout_height="60dp"
        android:text="Login"
        android:background="#BFFFFFFF"
        android:layout_marginHorizontal="30dp"
        android:layout_marginTop="40dp" />
</LinearLayout>
```
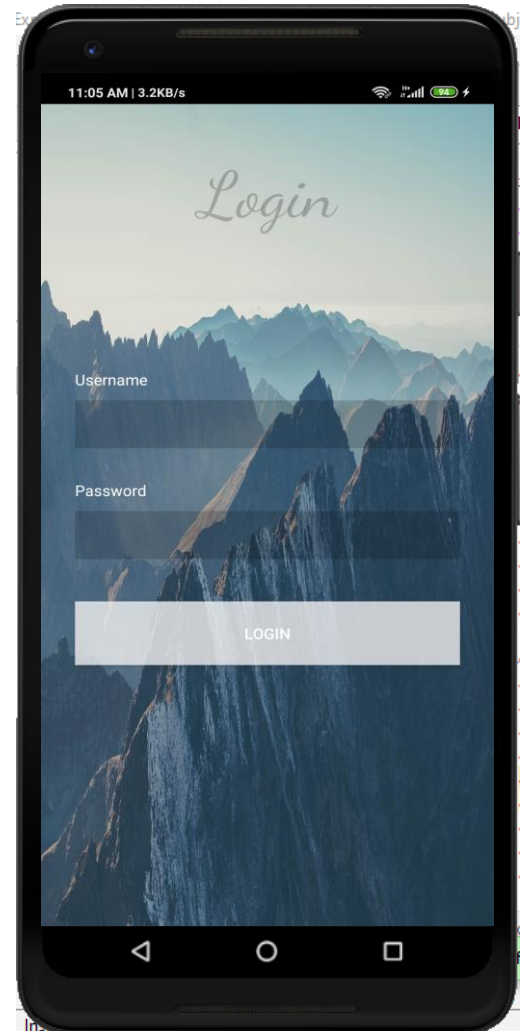
Student Registration Login Form

```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="Enrollment No"/>

    <EditText
        android:layout_marginVertical="10dp"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:ems="10"
        android:inputType="text" />

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Password"/>

    <EditText
        android:layout_marginVertical="10dp"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:ems="10"
        android:inputType="textPassword" />

    <Button
        android:layout_marginVertical="10dp"
        android:layout_width="match_parent"
        android:background="#16A5DD"
        android:textColor="#fff"
        android:layout_height="60dp"
        android:text="Login" />

    <Button
        android:layout_marginVertical="10dp"
        android:layout_width="match_parent"
        android:textColor="#fff"
        android:background="#F31051"
        android:layout_height="60dp"
        android:text="Register" />

</LinearLayout>
```
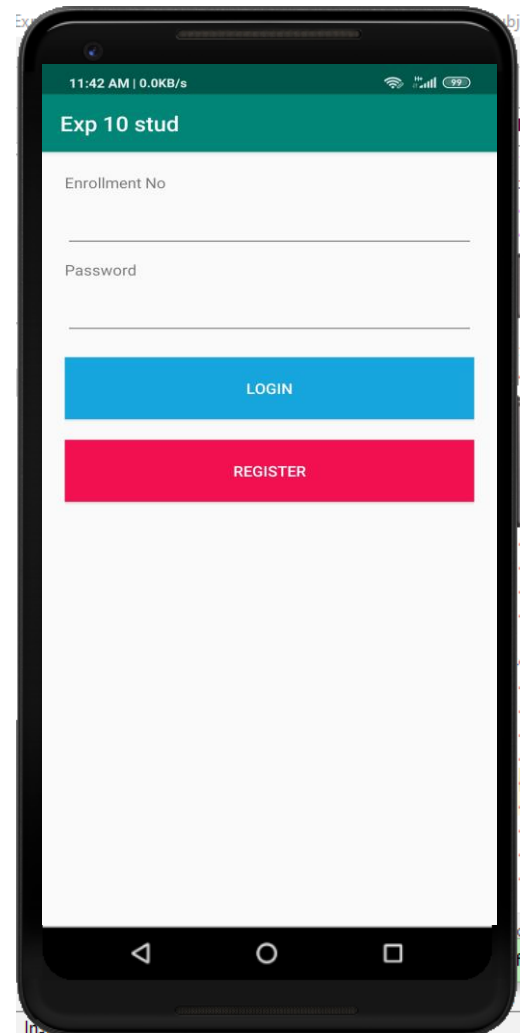
Practical No 11

CheckBox Toast

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:orientation="vertical"
    android:layout_margin="80dp"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <CheckBox
        android:id="@+id/cb_c"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="C"
        android:layout_marginVertical="10dp"
        android:onClick="show"/>

    <CheckBox
        android:id="@+id/cb_cpp"
        android:layout_marginVertical="10dp"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="C++"
        android:onClick="show"/>

    <CheckBox
        android:layout_marginVertical="10dp"
        android:id="@+id/cb_java"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Java"
        android:onClick="show"/>

    <CheckBox
        android:layout_marginVertical="10dp"
        android:id="@+id/cb_py"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Python"
        android:onClick="show"/>

    <CheckBox
        android:layout_marginVertical="10dp"
        android:id="@+id/cb_php"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="PHP"
        android:onClick="show"/>
</LinearLayout>
```
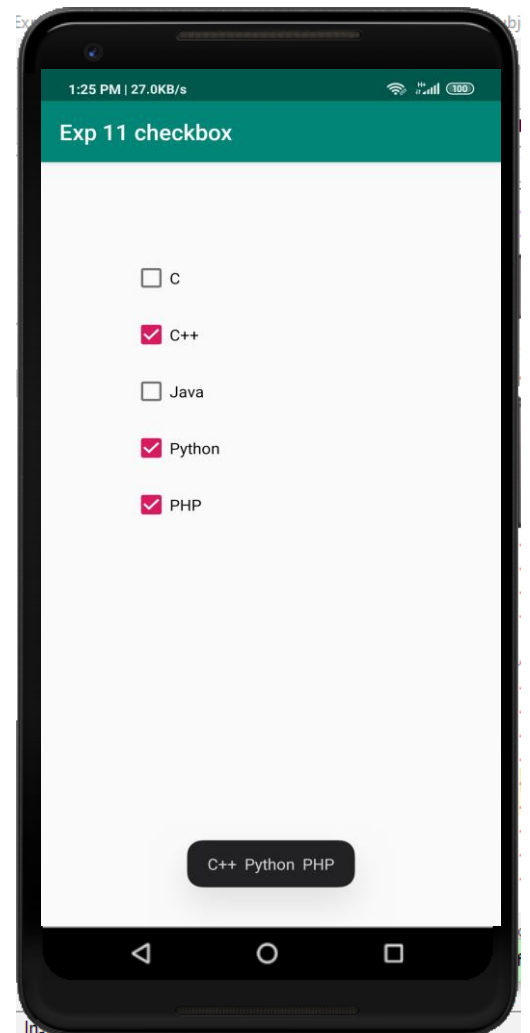
MainActivity.java

```java
package com.example.exp11checkbox;

import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.CheckBox;
import android.widget.CompoundButton;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {
    CheckBox c, cpp, java, php, py;
    String str = new String();

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        c = findViewById(R.id.cb_c);
        cpp = findViewById(R.id.cb_cpp);
        java = findViewById(R.id.cb_java);
        php = findViewById(R.id.cb_php);
        py = findViewById(R.id.cb_py);
    }

    public void show(View view) {
        if(c.isChecked()){
            str += " C ";
        }
        if(cpp.isChecked()) {
            str += " C++ ";
        }
        if(java.isChecked()){
            str += " Java ";
        }
        if(py.isChecked()){
            str += " Python ";
        }
        if(php.isChecked()){
            str += " PHP ";
        }
        Toast.makeText(getApplicationContext(),str,Toast.LENGTH_LONG).show();
        str = "";
    }
}
```

Practical No 12

Radio Button

Activity_main.xml

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

    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_x="-2dp"
        android:layout_y="51dp"
        android:text="Single Radio Button" />

    <RadioButton
        android:id="@+id/rb1"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_x="2dp"
        android:layout_y="93dp"
        android:text="Radio Button 1" />

    <RadioButton
        android:id="@+id/rb2"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_x="6dp"
        android:layout_y="139dp"
        android:text="Radio Button 2" />

    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_x="-2dp"
        android:layout_y="51dp"
        android:text="Radio Button inside RadioGroup"
        android:textAlignment="center" />

    <RadioGroup
        android:layout_width="match_parent"
        android:layout_height="wrap_content" >

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

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

    <Button
        android:layout_width="wrap_content"
        android:id="@+id/btn"
        android:layout_margin="70dp"
        android:layout_height="wrap_content"
        android:text="SHOW Selected" />

</LinearLayout>
```
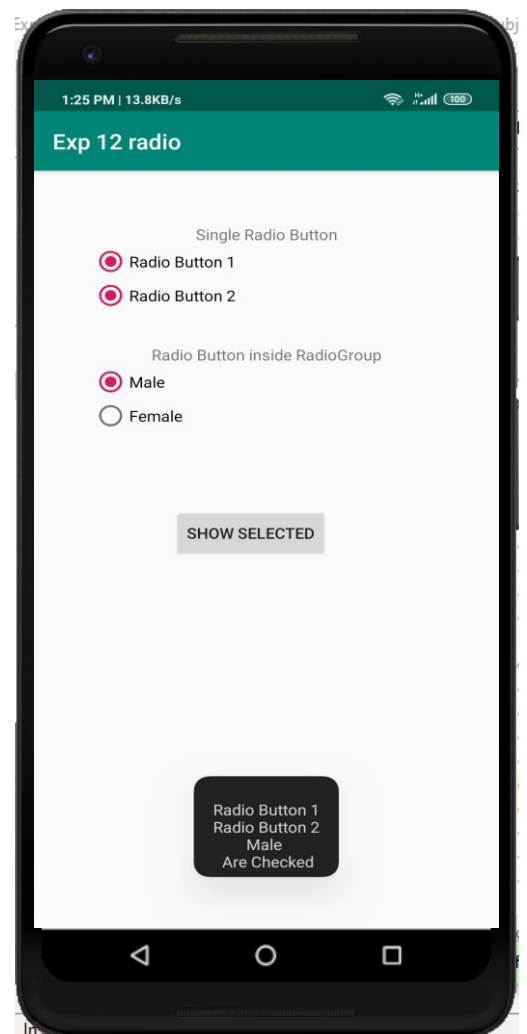
MainActivty.java

```java
package com.example.exp12radio;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.RadioButton;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {
    RadioButton r1, r2, male, female;
    Button btn;
    String str = new String();

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        r1 = findViewById(R.id.rb1);
        r2 = findViewById(R.id.rb2);
        male = findViewById(R.id.grpMale);
        female = findViewById(R.id.grpFemale);
        btn = findViewById(R.id.btn);

        btn.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                if (r1.isChecked())
                    str += "\nRadio Button 1";
                if (r2.isChecked())
                    str += "\nRadio Button 2";
                if (male.isChecked())
                    str += "\nMale";
                if (female.isChecked())
                    str += "\nFemale";
                Toast.makeText(getApplicationContext(), str+" \n Are
                            Checked",Toast.LENGTH_LONG).show();
                str = "";

            }
        });
    }
}
```
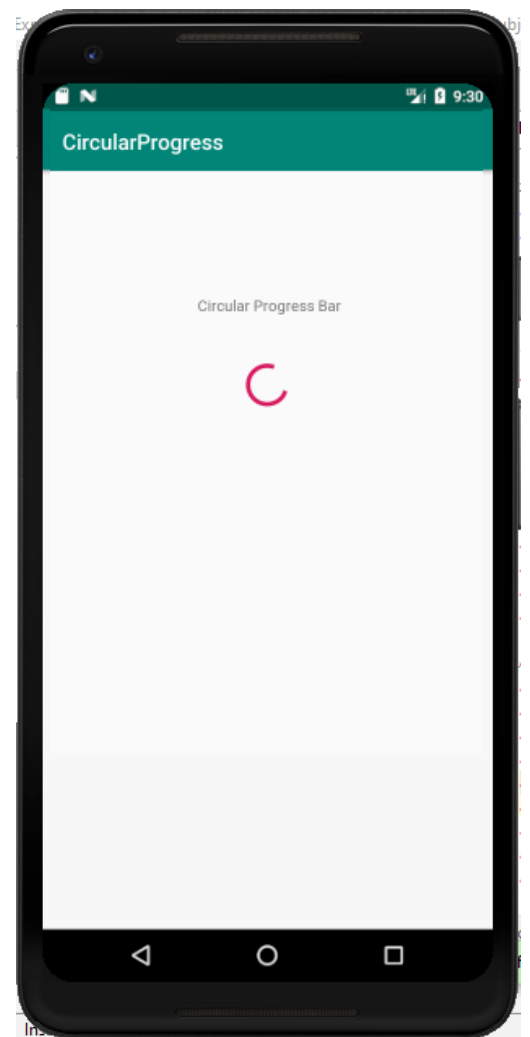
Practical No 13

Circular Progressbar

```xml
<?xml version="1.0" encoding="utf-8"?>
<AbsoluteLayout 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">

    <ProgressBar
        android:id="@+id/progressBar2"
        style="?android:attr/progressBarStyle"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="184dp"
        android:layout_y="176dp" />

    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="179dp"
        android:layout_y="115dp"
        android:text="Circular Progress Bar" />

</AbsoluteLayout>
```

Progressbar Dialog

Activity.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<AbsoluteLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">
    <Button
        android:id="@+id/button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="147dp"
        android:layout_y="319dp"
        android:text="Download File" />
</AbsoluteLayout>
```

MainActivity.java

```java
import android.app.ProgressDialog;
import android.os.Handler;
import android.widget.Button;
public class MainActivity extends AppCompatActivity {
    int progress = 0;
    Handler progressHandler = new Handler();
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        Button btn = (Button)findViewById(R.id.button);
        btn.setOnClickListener(new View.OnClickListener() {
            public void onClick(View v) {
                ProgressDialog bar = new ProgressDialog(v.getContext());
                bar.setMessage("File Downloading...");
                bar.setProgressStyle(ProgressDialog.STYLE_HORIZONTAL);
                bar.setProgress(0);
                bar.setMax(100);
                bar.show();
                new Thread(new Runnable() {
                    public void run() {
                        while (progress < 100){
                            progress++;
                            try{
                                Thread.sleep(500);
                            }catch (Exception e){e.printStackTrace();}

                            progressHandler.post(new Runnable() {
                                public void run() {
                                    bar.setProgress(progress);
                                }
                            });
                        }
                        bar.dismiss();
                    }
                }).start();
            }
        });
    }
}
```

Practical No 14

ListView

```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"
    tools:context=".MainActivity">

    <ListView
        android:id="@+id/lang"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        tools:layout_editor_absoluteX="1dp"
        tools:layout_editor_absoluteY="1dp" />
</RelativeLayout>
```

MainActivity.java

```java
package com.example.listviewshow;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.widget.ArrayAdapter;
import android.widget.ListView;
import android.widget.Toast;
import java.util.List;

public class MainActivity extends AppCompatActivity {
    ListView list ;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        list = (ListView)findViewById(R.id.lang);
        String prog[] = new String[]{
                "Android","Java","Php","Hadoop","Sap","Python",
                "Ajax","C++","Ruby","Rails",".Net"
        };
        List<String> langlist = new ArrayList<String>(Arrays.asList(prog));
        ArrayAdapter<String> adapter = new ArrayAdapter<String>(this,
                android.R.layout.simple_list_item_1 ,langlist);
        list.setAdapter(adapter);
        list.setOnItemClickListener(new AdapterView.OnItemClickListener() {
            @Override
            public void onItemClick(AdapterView<> parent, View view, int position, long id)
            {
                Toast.makeText(getApplicationContext(),
                    list.getItemAtPosition(position).toString(), Toast.LENGTH_SHORT).show();
            }
        });
    }
}
```

ImageView Change

```xml
<?xml version="1.0" encoding="utf-8"?>
<AbsoluteLayout 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">

    <ImageView
        android:id="@+id/imageView"
        android:layout_width="match_parent"
        android:layout_height="251dp"
        android:layout_x="0dp"
        android:layout_y="101dp"
        android:src="@drawable/i2" />

    <Button
        android:id="@+id/btn"
        android:layout_width="149dp"
        android:layout_height="60dp"
        android:layout_x="147dp"
        android:layout_y="426dp"
        android:text="Change Image" />
</AbsoluteLayout>
```

MainActivity.java

```java
package com.example.imagechange;
import android.view.View;
import android.widget.Button;
import android.widget.ImageView;

public class MainActivity extends AppCompatActivity {
    boolean i = true;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        final ImageView img = (ImageView)findViewById(R.id.imageView);
        final Button btn = (Button)findViewById(R.id.btn);
        btn.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                if(i){
                    img.setImageResource(R.drawable.i1);
                    i = false;
                }
                else{
                    img.setImageResource(R.drawable.i2);
                    i = true;
                }
            }
        });
    }
}
```
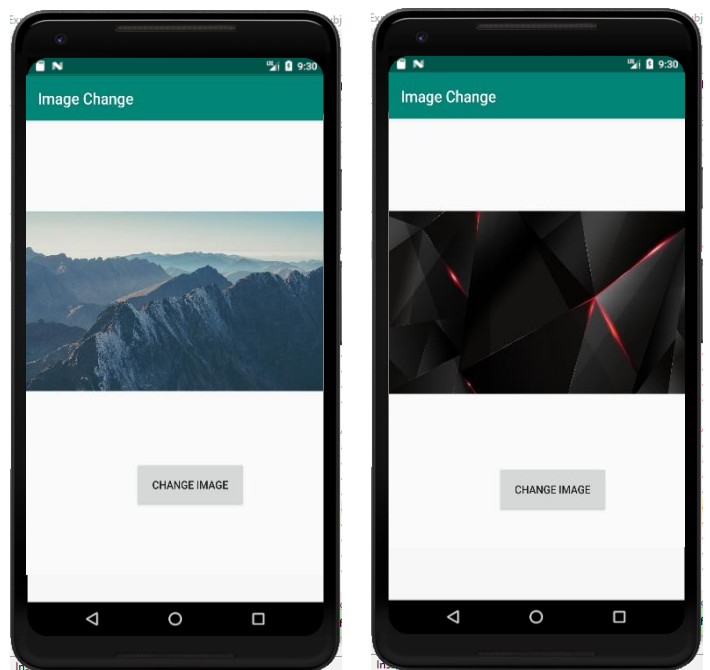
Vertical Scroll view

```xml
<?xml version="1.0" encoding="utf-8"?>
<AbsoluteLayout 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">

    <ScrollView
        android:layout_width="match_parent"
        android:layout_height="297dp"
        android:layout_x="0dp"
        android:layout_y="213dp">

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

            <TextView
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:textSize="30dp"
                android:text="TextView" />

            <TextView
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:layout_marginTop="300dp"
                android:text="TextView" />

            <TextView
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:layout_marginTop="300dp"
                android:text="TextView" />
        </LinearLayout>
    </ScrollView>

</AbsoluteLayout>
```

Practical No 15

Toast Message

activity_main.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<AbsoluteLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="10dp"
        android:layout_y="9dp"
        android:text="Hello World, Toast Example"/>

    <Button
        android:id="@+id/button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="13dp"
        android:layout_y="36dp"
        android:text="Show Toast" />

</AbsoluteLayout>
```

Customtoast.xml

```xml
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:background="#000"
    android:padding="10dp"
    android:id="@+id/custtoast">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Message for you :"
        android:textSize="30sp"
        android:textColor="#fff"/>
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="You have got mail?"
        android:textSize="20sp"
        android:textColor="#fff"/>

</LinearLayout>
```

MainActivity.java

```java
package com.example.customtoast;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.view.Gravity;
import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;
import android.widget.Button;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        Button bt = (Button)findViewById(R.id.button);
        bt.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                LayoutInflater li = getLayoutInflater();
                View layout  = li.inflate(R.layout.customtoast,
                                (ViewGroup)findViewById(R.id.custtoast));
                Toast toast = new Toast(getApplicationContext());
                toast.setDuration(Toast.LENGTH_LONG);
                toast.setView(layout);
                toast.setGravity(Gravity.CENTER_HORIZONTAL|Gravity.CENTER_VERTICAL,0,0);
                toast.show();
            }
        });
    }
}
```

Checkbox Order Toast

```xml
<?xml version="1.0" encoding="utf-8"?>
<AbsoluteLayout 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">


    <CheckBox
        android:id="@+id/cPizza"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="180dp"
        android:layout_y="116dp"
        android:text="Pizza" />

    <CheckBox
        android:id="@+id/cBurger"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="180dp"
        android:layout_y="255dp"
        android:text="Burger" />

    <CheckBox
        android:id="@+id/cCoffee"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="180dp"
        android:layout_y="183dp"
        android:text="Coffee" />

    <Button
        android:id="@+id/button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="168dp"
        android:layout_y="386dp"
        android:text="order" />

</AbsoluteLayout>
```

MainActivity.java

```java
package com.example.checkboxtoast;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.CheckBox;
import android.widget.CompoundButton;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {
    int total, priceP = 0, priceC = 0, priceB = 0;
    boolean p = false,c = false,b = false;
    String str = "Selected Items:";
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        final CheckBox pizza = (CheckBox)findViewById(R.id.cPizza);
        final CheckBox coffee = (CheckBox)findViewById(R.id.cCoffee);
        final CheckBox burger = (CheckBox)findViewById(R.id.cBurger);
        Button btn = (Button)findViewById(R.id.button);
        btn.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                if(pizza.isChecked()){
                    priceP = 100;
                    str += "\nPizza : "+priceP+" RS";
                }
                if(coffee.isChecked()){
                    priceC = 50;
                    str += "\nCoffee : "+priceC+" RS";
                }
                if(burger.isChecked()){
                    priceB = 120;
                    str += "\nBurger : "+priceB+" RS";
                }

                total = priceB + priceC + priceP;
                str += "\n\nTotal "+total;
                Toast.makeText(getApplicationContext(),str,Toast.LENGTH_LONG).show();
                priceP = priceC = priceB = 0;
                str = "Selected Items :";
            }
        });
    }
}
```

Practical No 16

1.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"
    tools:context=".MainActivity">

    <TextView
        android:id="@+id/textView1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_above="@+id/button1"
        android:layout_alignParentStart="true"
        android:layout_alignParentLeft="true"
        android:layout_marginStart="36dp"
        android:layout_marginLeft="36dp"
        android:layout_marginBottom="34dp"
        android:text="" />

    <Button
        android:id="@+id/button1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentBottom="true"
        android:layout_centerHorizontal="true"
        android:layout_marginBottom="20dp"
        android:text="Change Time" />


    <TimePicker
        android:id="@+id/timePicker"
        android:layout_width="390dp"
        android:layout_height="446dp"
        android:layout_above="@+id/textView1"
        android:layout_centerHorizontal="true"
        android:layout_marginBottom="35dp" />
</RelativeLayout>
```
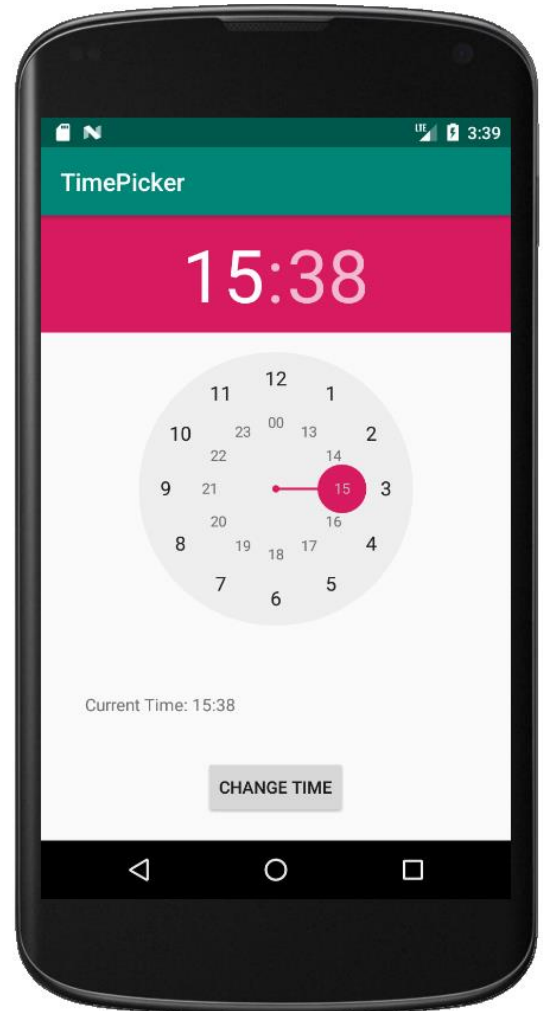
Mainactivity.java

```java
package com.example.timepicker;

import androidx.appcompat.app.AppCompatActivity;
import android.view.View;
import android.widget.Button;
import android.widget.TextView;
import android.widget.TimePicker;
import android.os.Bundle;

public class MainActivity extends AppCompatActivity {

    TextView textview1;
    TimePicker timepicker;
    Button changetime;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        textview1=(TextView)findViewById(R.id.textView1);
        timepicker=(TimePicker)findViewById(R.id.timePicker);
        //Uncomment the below line of code for 24 hour view
        timepicker.setIs24HourView(true);
        changetime=(Button)findViewById(R.id.button1);

        textview1.setText(getCurrentTime());

        changetime.setOnClickListener(new View.OnClickListener()
        {
            @Override
            public void onClick(View view) {
                textview1.setText(getCurrentTime());
            }
        });

    }

    public String getCurrentTime(){
        String currentTime="Current Time:
"+timepicker.getCurrentHour()+":"+timepicker.getCurrentMinute();
        return currentTime;
    }

}
```
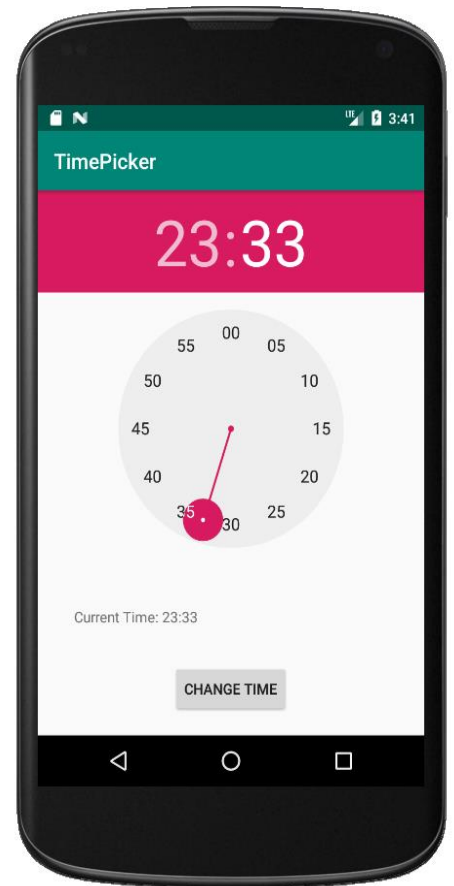
Practical No 16

2. Select date and time

```xml
<?xml version="1.0" encoding="utf-8"?>
<AbsoluteLayout 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">

    <EditText
        android:id="@+id/timeText"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="34dp"
        android:layout_y="297dp"
        android:ems="10"
        android:inputType="text" />

    <Button
        android:id="@+id/timebtn"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="279dp"
        android:layout_y="292dp"
        android:text="Select Time" />

    <EditText
        android:id="@+id/dateText"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="34dp"
        android:layout_y="199dp"
        android:ems="10"
        android:inputType="text" />

    <Button
        android:id="@+id/datebtn"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="279dp"
        android:layout_y="194dp"
        android:text="Select Date" />

</AbsoluteLayout>
```
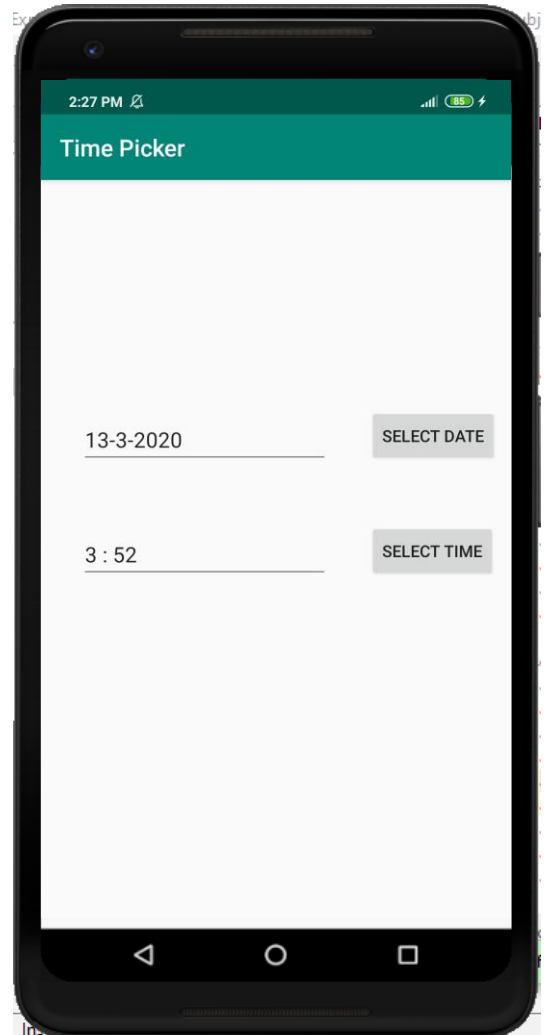
MainActivity.java

```java
package com.example.timepicker;

import androidx.appcompat.app.AppCompatActivity;
import android.app.DatePickerDialog;
import android.app.DialogFragment;
import android.app.TimePickerDialog;
import android.os.Bundle;
import android.widget.TimePicker;

public class MainActivity extends AppCompatActivity   implements
DatePickerDialog.OnDateSetListener{
    int mYear, mMonth, mDay, mHour, mMin;
    EditText txtdate, txttime;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        txtdate = (EditText)findViewById(R.id.dateText);
        txttime = (EditText)findViewById(R.id.timeText);
        Button btdate = (Button)findViewById(R.id.datebtn);
        Button bttime = (Button)findViewById(R.id.timebtn);

        btdate.setOnClickListener(new View.OnClickListener() {

            @Override
            public void onClick(View v) {
                showDatePickerDialog();
            }
        });

        bttime.setOnClickListener(new View.OnClickListener() {

            @Override
            public void onClick(View v) {
                DialogFragment newFragment = new TimePickerFragment();
                newFragment.show(getFragmentManager(),"TimePicker");
            }
        });
    }

    private void showDatePickerDialog() {
        DatePickerDialog datePickerDialog = new DatePickerDialog(this, this,
                Calendar.getInstance().get(Calendar.YEAR),
                Calendar.getInstance().get(Calendar.MONTH),
                Calendar.getInstance().get(Calendar.DAY_OF_MONTH));
        datePickerDialog.show();
    }

    @Override
    public void onDateSet(DatePicker view, int year, int month, int dayOfMonth) {
        month = month + 1;
        String date = dayOfMonth + "-" + month + "-" + year;
        txtdate.setText(date);
    }
}
```

TimePickerFragment.java

```java
package com.example.timepicker;

import android.app.TimePickerDialog;
import android.os.Bundle;
import android.app.Fragment;
import android.text.format.DateFormat;
import android.widget.EditText;
import android.widget.TextView;
import android.app.DialogFragment;
import android.app.Dialog;
import java.util.Calendar;
import android.widget.TimePicker;


public class TimePickerFragment extends DialogFragment implements
TimePickerDialog.OnTimeSetListener{

    @Override
    public Dialog onCreateDialog(Bundle savedInstanceState){
        final Calendar c = Calendar.getInstance();
        int hour = c.get(Calendar.HOUR_OF_DAY);
        int minute = c.get(Calendar.MINUTE);

        return new TimePickerDialog(getActivity(),this, hour, minute,
                DateFormat.is24HourFormat(getActivity()));
    }

    public void onTimeSet(TimePicker view, int hourOfDay, int minute){
        EditText tv = (EditText) getActivity().findViewById(R.id.timeText);
        tv.setText(String.valueOf(hourOfDay) + " : " + String.valueOf(minute));
    }
}
```

Practical No 17

Mainactivity.java

```java
package com.example.activitylifecycle;

import androidx.appcompat.app.AppCompatActivity;
import android.app.Activity;
import android.util.Log;
import android.os.Bundle;

public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        Log.d("lifecycle","onCreate invoked");
    }
    @Override
    protected void onStart() {
        super.onStart();
        Log.d("lifecycle","onStart invoked");
    }
    @Override
    protected void onResume() {
        super.onResume();
        Log.d("lifecycle","onResume invoked");
    }
    @Override
    protected void onPause() {
        super.onPause();
        Log.d("lifecycle","onPause invoked");
    }
    @Override
    protected void onStop() {
        super.onStop();
        Log.d("lifecycle","onStop invoked");
    }
    @Override
    protected void onRestart() {
        super.onRestart();
        Log.d("lifecycle","onRestart invoked");
    }
    @Override
    protected void onDestroy() {
        super.onDestroy();
        Log.d("lifecycle","onDestroy invoked");
    }
}
```

Logcat

```
2020-04-29 20:03:48.698 29581-29581/com.example.activitylifecycle D/lifecycle: onStop invoked
2020-04-29 20:03:54.190 29581-29581/com.example.activitylifecycle D/lifecycle: onDestroy invoked
2020-04-29 20:04:45.252 29773-29773/com.example.activitylifecycle D/lifecycle: onCreate invoked
2020-04-29 20:04:45.256 29773-29773/com.example.activitylifecycle D/lifecycle: onStart invoked
2020-04-29 20:04:45.258 29773-29773/com.example.activitylifecycle D/lifecycle: onResume invoked
2020-04-29 20:05:14.813 29773-29773/com.example.activitylifecycle D/lifecycle: onPause invoked
2020-04-29 20:05:15.228 29773-29773/com.example.activitylifecycle D/lifecycle: onStop invoked
```

Practical No 18

1. Activity_main.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout

xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <EditText
        android:id="@+id/editText"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginEnd="8dp"
        android:layout_marginStart="8dp"
        android:layout_marginTop="60dp"
        android:ems="10"/>

    <Button
        android:id="@+id/button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginRight="8dp"
        android:layout_marginLeft="156dp"
        android:layout_marginTop="172dp"
        android:text="Visit"/>
</androidx.constraintlayout.widget.ConstraintLayout>
```

Mainactivity.java

```java
package com.example.navigate;

import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.content.Intent;
import android.net.Uri;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;

public class MainActivity extends AppCompatActivity {

    Button button;
    EditText editText;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        button = findViewById(R.id.button);
        editText =  findViewById(R.id.editText);

        button.setOnClickListener(new
View.OnClickListener() {
            @Override
            public void onClick(View view) {
                String url=editText.getText().toString();
                Intent intent=new
Intent(Intent.ACTION_VIEW, Uri.parse(url));
                startActivity(intent);
            }
        });
    }
}
```
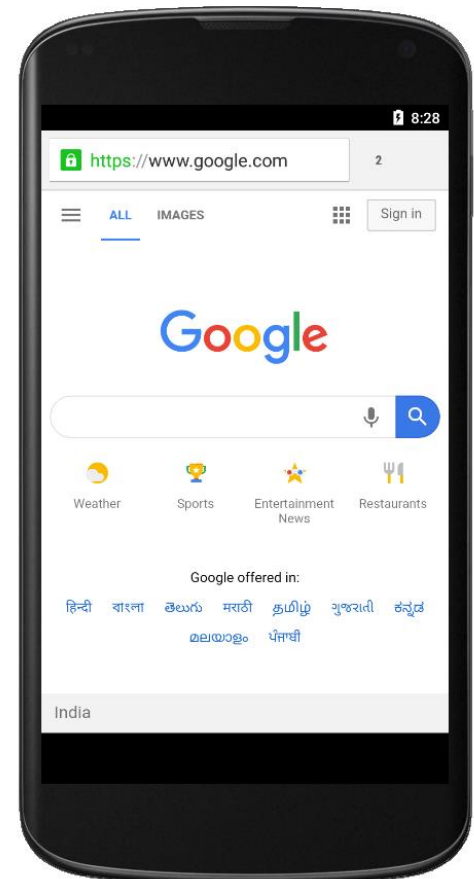
2. Dialer

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"
    tools:context=".MainActivity">

    <Button
        android:id="@+id/btn_do_task"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Start Dialer" />
</LinearLayout>
```
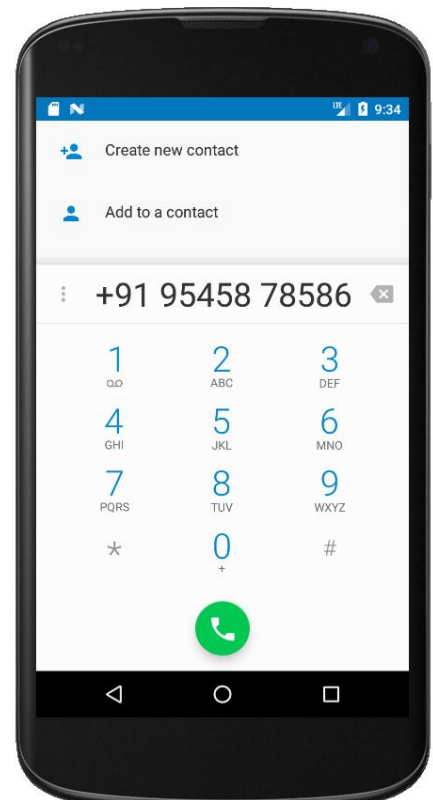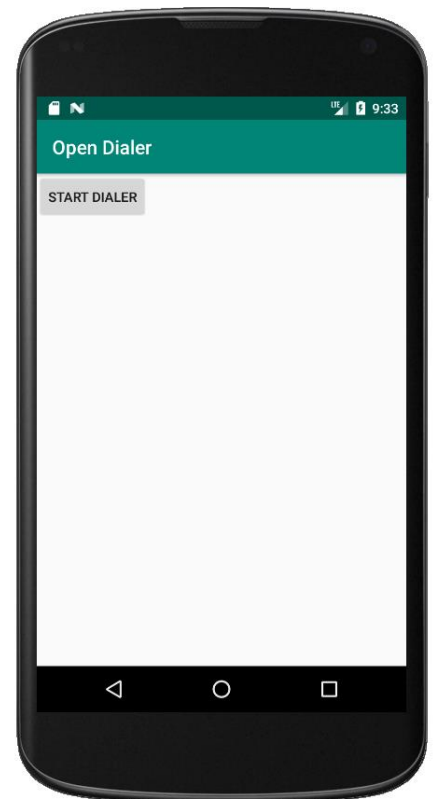
Mainactivity.java

```java
package com.example.opendialer;

import androidx.appcompat.app.AppCompatActivity;
import android.app.Activity;
import android.content.Context;
import android.content.Intent;
import android.widget.Button;
import android.widget.LinearLayout;

public class MainActivity extends AppCompatActivity {
    private Context mContext;
    private Activity mActivity;
    private LinearLayout mRootLayout;
    private Button mBtnDoTask;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        mContext = getApplicationContext();
        mActivity = MainActivity.this;
        mRootLayout = findViewById(R.id.root_layout);
        mBtnDoTask = findViewById(R.id.btn_do_task);
        mBtnDoTask.setOnClickListener(new
View.OnClickListener() {
            @Override
            public void onClick(View view) {
                openDialer();
            }
        });
    }

    protected void openDialer(){
        Intent intent = new Intent(Intent.ACTION_DIAL);
        intent.setData(Uri.parse("tel:" + "+919545878586"));
        startActivity(intent);
    }
}
```

Practical No 19

Content Provider
MainActivity.java

```java
package com.example.MyApplication;
import android.net.Uri;
import android.os.Bundle;
import android.app.Activity;
import android.content.ContentValues;
import android.content.CursorLoader;

public class MainActivity extends Activity {
  @Override
  protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
  }
  public void onClickAddName(View view) {
    ContentValues values = new ContentValues();
    values.put(StudentsProvider.NAME,
      ((EditText)findViewById(R.id.editText2)).getText().toString());
    values.put(StudentsProvider.GRADE,
      ((EditText)findViewById(R.id.editText3)).getText().toString());
    Uri uri = getContentResolver().insert(
      StudentsProvider.CONTENT_URI, values);
    Toast.makeText(getBaseContext(),
      uri.toString(), Toast.LENGTH_LONG).show();
  }
  public void onClickRetrieveStudents(View view) {
    String URL = "content://com.example.MyApplication.StudentsProvider";
    Uri students = Uri.parse(URL);
    Cursor c = managedQuery(students, null, null, null, "name");
    if (c.moveToFirst()) {
      do{
        Toast.makeText(this,
          c.getString(c.getColumnIndex(StudentsProvider._ID)) +
            ", " +  c.getString(c.getColumnIndex( StudentsProvider.NAME)) +
              ", " + c.getString(c.getColumnIndex( StudentsProvider.GRADE)),
        Toast.LENGTH_SHORT).show();
      } while (c.moveToNext());
    }
  }
}
```

StudentsProvider.java

```java
package com.example.MyApplication;
import java.util.HashMap;
import android.content.UriMatcher;
import android.database.SQLException;

public class StudentsProvider extends ContentProvider {
  static final String PROVIDER_NAME = "com.example.MyApplication.StudentsProvider";
  static final String URL = "content://" + PROVIDER_NAME + "/students";
  static final Uri CONTENT_URI = Uri.parse(URL);
```

```java
static final String _ID = "_id";
static final String NAME = "name";
static final String GRADE = "grade";
private static HashMap<String, String> STUDENTS_PROJECTION_MAP;
static final int STUDENTS = 1;
static final int STUDENT_ID = 2;
static final UriMatcher uriMatcher;
static{
  uriMatcher = new UriMatcher(UriMatcher.NO_MATCH);
  uriMatcher.addURI(PROVIDER_NAME, "students", STUDENTS);
  uriMatcher.addURI(PROVIDER_NAME, "students/#", STUDENT_ID);
}
private SQLiteDatabase db;
static final String DATABASE_NAME = "College";
static final String STUDENTS_TABLE_NAME = "students";
static final int DATABASE_VERSION = 1;
static final String CREATE_DB_TABLE =
  " CREATE TABLE " + STUDENTS_TABLE_NAME +
    " (_id INTEGER PRIMARY KEY AUTOINCREMENT, " +
    " name TEXT NOT NULL, " +
    " grade TEXT NOT NULL);";
private static class DatabaseHelper extends SQLiteOpenHelper {
  DatabaseHelper(Context context){
    super(context, DATABASE_NAME, null, DATABASE_VERSION);
  }
  public void onCreate(SQLiteDatabase db) {
    db.execSQL(CREATE_DB_TABLE);
  }
  public void onUpgrade(SQLiteDatabase db, int oldVersion, int newVersion) {
    db.execSQL("DROP TABLE IF EXISTS " +  STUDENTS_TABLE_NAME);
    onCreate(db);
  }
}
public boolean onCreate() {
  Context context = getContext();
  DatabaseHelper dbHelper = new DatabaseHelper(context);
  db = dbHelper.getWritableDatabase();
  return (db == null)? false:true;
}

@Override
public Uri insert(Uri uri, ContentValues values) {
  long rowID = db.insert( STUDENTS_TABLE_NAME, "", values);
  if (rowID > 0) {
    Uri _uri = ContentUris.withAppendedId(CONTENT_URI, rowID);
    getContext().getContentResolver().notifyChange(_uri, null);
    return _uri;
  }
  throw new SQLException("Failed to add a record into " + uri);
}

@Override
public Cursor query(Uri uri, String[] projection,
  String selection,String[] selectionArgs, String sortOrder) {
  SQLiteQueryBuilder qb = new SQLiteQueryBuilder();
```

```java
      qb.setTables(STUDENTS_TABLE_NAME);
    switch (uriMatcher.match(uri)) {
      case STUDENTS:
        qb.setProjectionMap(STUDENTS_PROJECTION_MAP);
      break;
      case STUDENT_ID:
        qb.appendWhere( _ID + "=" + uri.getPathSegments().get(1));
      break;
    }
    c.setNotificationUri(getContext().getContentResolver(), uri);
    return c;
}

@Override
public int delete(Uri uri, String selection, String[] selectionArgs) {
    int count = 0;
    switch (uriMatcher.match(uri)){
      case STUDENTS:
        count = db.delete(STUDENTS_TABLE_NAME, selection, selectionArgs);
      break;

      case STUDENT_ID:
        String id = uri.getPathSegments().get(1);
        count = db.delete( STUDENTS_TABLE_NAME, _ID +  " = " + id +
          (!TextUtils.isEmpty(selection) ? "
          AND (" + selection + ')' : ""), selectionArgs);
      break;
      default:
        throw new IllegalArgumentException("Unknown URI " + uri);
    }

    getContext().getContentResolver().notifyChange(uri, null);
    return count;
}

@Override
public int update(Uri uri, ContentValues values,
    String selection, String[] selectionArgs) {
    int count = 0;
    switch (uriMatcher.match(uri)) {
      case STUDENTS:
        count = db.update(STUDENTS_TABLE_NAME, values, selection, selectionArgs);
      break;

      case STUDENT_ID:
        count = db.update(STUDENTS_TABLE_NAME, values,
          _ID + " = " + uri.getPathSegments().get(1) +
          (!TextUtils.isEmpty(selection) ? "
          AND (" +selection + ')' : ""), selectionArgs);
      break;
      default:
        throw new IllegalArgumentException("Unknown URI " + uri );
    }
```

```java
        getContext().getContentResolver().notifyChange(uri, null);
        return count;
    }

    @Override
    public String getType(Uri uri) {
        switch (uriMatcher.match(uri)){
            case STUDENTS:
                return "vnd.android.cursor.dir/vnd.example.students";
            case STUDENT_ID:
                return "vnd.android.cursor.item/vnd.example.students";
            default:
                throw new IllegalArgumentException("Unsupported URI: " + uri);
        }
    }
}
```

activity_main.xml
```xml
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:paddingBottom="@dimen/activity_vertical_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin"
    tools:context="com.example.MyApplication.MainActivity">

    <TextView
        android:id="@+id/textView1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Content provider"/>

    <TextView
        android:id="@+id/textView2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Tutorials point "/>

    <ImageButton
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/imageButton"
        android:src="@drawable/abc"/>

    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/button2"
        android:text="Add Name"
        android:onClick="onClickAddName"/>
```

```
<EditText
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:id="@+id/editText" />

<EditText
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:id="@+id/editText2"
    android:hint="Name"/>

<Button
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Retrive student"
    android:id="@+id/button"/>
</RelativeLayout>
```
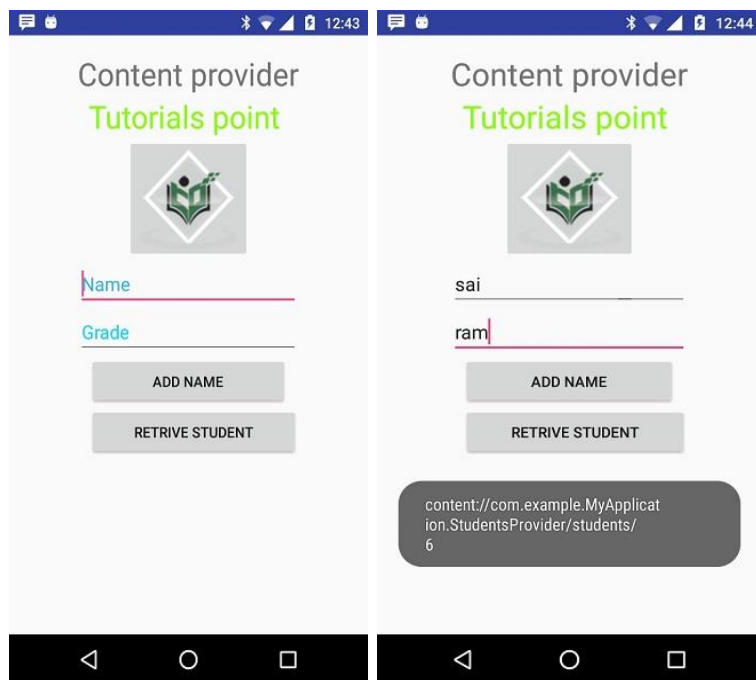
Output

Practical No 20

WiFi start
Activity_main.xml
```
<RelativeLayout xmlns:androclass="http://schemas.android.com/apk/res/android"
xmlns:tools="http://schemas.android.com/tools"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        tools:context=".MainActivity" >
    <Button
        android:id="@+id/button1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Enable Wifi" />
    <Button
        android:id="@+id/button2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Disable Wifi" />
</RelativeLayout>
```
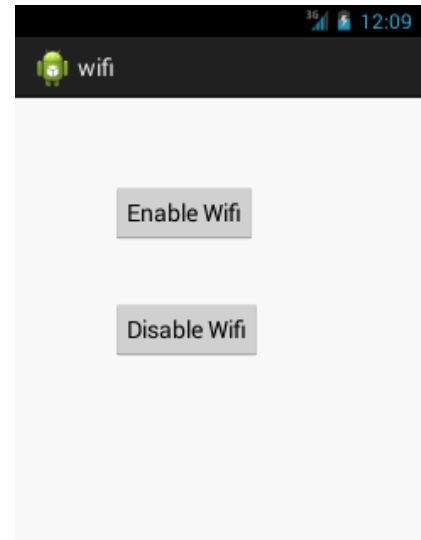
MainActivity.java
```
package com.example.wifi;
import android.net.wifi.WifiManager;
import android.os.Bundle;
import android.app.Activity;
import android.content.Context;
import android.view.Menu;
import android.view.View;
import android.view.View.OnClickListener;
import android.widget.Button;
 public class MainActivity extends Activity {
    Button enableButton,disableButton;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
         enableButton=(Button)findViewById(R.id.button1);
        disableButton=(Button)findViewById(R.id.button2);
       enableButton.setOnClickListener(new OnClickListener(){
           public void onClick(View v){
        WifiManager wifi = (WifiManager) getSystemService(Context.WIFI_SERVICE);
            wifi.setWifiEnabled(true);   }   });
        disableButton.setOnClickListener(new OnClickListener(){
           public void onClick(View v){
        WifiManager wifi = (WifiManager) getSystemService(Context.WIFI_SERVICE);
 wifi.setWifiEnabled(false);}); }
 @Override
    public boolean onCreateOptionsMenu(Menu menu) {
        // Inflate the menu; this adds items to the action bar if it is present.
        getMenuInflater().inflate(R.menu.activity_main, menu);
        return true;}}
```

Practical No 21

MainActivity.java

```java
import android.app.Activity;
import android.content.Intent;
import android.os.Bundle;
public class MainActivity extends Activity {
  @Override
  public void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
  }
  public void broadcastIntent(View view){
    Intent intent = new Intent();
    intent.setAction("com.tutorialspoint.CUSTOM_INTENT"); sendBroadcast(intent);
  }
}
```

MyReceiver.java

```java
package com.example.tutorialspoint7.myapplication;
public class MyReceiver extends BroadcastReceiver{
  @Override
  public void onReceive(Context context, Intent intent) {
    Toast.makeText(context, "Intent Detected.", Toast.LENGTH_LONG).show();
  }
}
```

AndroidManifest.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
  package="com.example.tutorialspoint7.myapplication">
  <application
    android:allowBackup="true"
    android:icon="@mipmap/ic_launcher"
    android:label="@string/app_name"
    android:supportsRtl="true"
    android:theme="@style/AppTheme">
    <activity android:name=".MainActivity">
      <intent-filter>
        <action android:name="android.intent.action.MAIN" />
        <category android:name="android.intent.category.LAUNCHER" />
      </intent-filter>
    </activity>
    <receiver android:name="MyReceiver">
      <intent-filter>
        <action android:name="com.tutorialspoint.CUSTOM_INTENT">
        </action>
      </intent-filter>
    </receiver>
  </application>
</manifest>
```

Activity_main.xml

```xml
<RelativeLayout
  xmlns:android="http://schemas.android.com/apk/res/android"
  xmlns:tools="http://schemas.android.com/tools"
  android:layout_width="match_parent"
  android:layout_height="match_parent"
  tools:context=".MainActivity">

  <TextView
    android:id="@+id/textView1"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Example of Broadcast"/>

  <TextView
    android:id="@+id/textView2"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Tutorials point "
/>

  <ImageButton
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:id="@+id/imageButton"
    android:src="@drawable/abc"
/>

  <Button
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:id="@+id/button2"
    android:text="Broadcast Intent"
    android:onClick="broadcastIntent"
/>

</RelativeLayout>
```

Output

‘
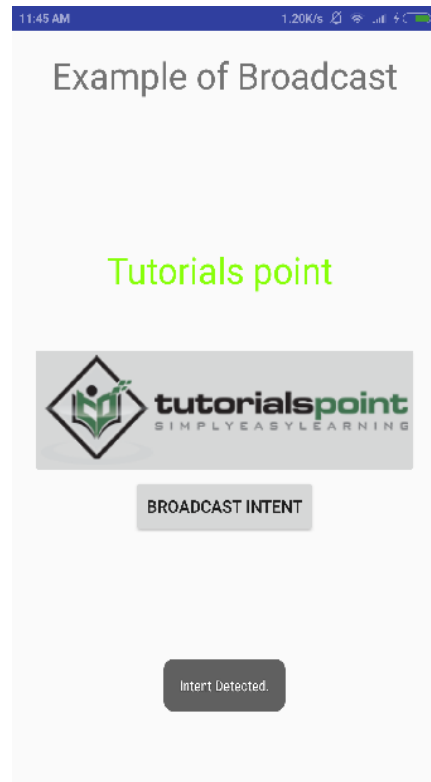
Practical No 22

1. Activity_main.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.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/layout"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity"
/>
```

Mainactivity.java

```java
package com.example.changebackgroundcolor;
import android.hardware.SensorEvent;
import android.hardware.SensorEventListener;
import android.hardware.SensorListener;
import android.hardware.SensorManager;
import android.os.Bundle;

public class MainActivity extends  AppCompatActivity implements
SensorEventListener {
    ConstraintLayout lay;
    SensorManager sm;
    Sensor mysenser;
    long lastUpdate;
    float x,y,z,last_x,last_y,last_z;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        lay = (ConstraintLayout)findViewById(R.id.layout);
        sm = (SensorManager)getSystemService(SENSOR_SERVICE);
        mysenser = sm.getDefaultSensor(Sensor.TYPE_ACCELEROMETER);
        sm.registerListener(this, mysenser, SensorManager.SENSOR_DELAY_GAME);
    }

    public void onSensorChanged(SensorEvent event) {
        long curTime = System.currentTimeMillis();
        if((curTime - lastUpdate) > 100){
            long diffTime = (curTime - lastUpdate);
            lastUpdate = curTime;

            x = event.values[0];
            y = event.values[1];
            z = event.values[2];

            float speed = Math.abs(x+y+z - last_x - last_y - last_z) / diffTime * 10000;
            if(speed > 1200){
                Random rnd = new Random();
                int color = Color.rgb(rnd.nextInt(256), rnd.nextInt(256), rnd.nextInt(256));
                lay.setBackgroundColor(color);
            }
            last_x = x;
            last_y = y;
            last_z = z;
        }
    }
    public void onAccuracyChanged(Sensor sensor, int accuracy) {
    }
}
```

2. 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"
    tools:context=".MainActivity">

    <TextView
        android:id="@+id/textview"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentTop="true"
        android:layout_centerHorizontal="true"
        android:text="Sensor "
        android:textSize="35dp" />


    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="New Text"
        android:id="@+id/textView2"
        android:layout_alignParentBottom="true"
        android:layout_alignParentRight="true"
        android:layout_alignParentEnd="true"
        android:layout_alignParentLeft="true"
        android:layout_alignParentStart="true" />

</RelativeLayout>
```

Strings.xml

```xml
<resources>
    <string name="app_name">Sensor</string>
    <string name="action_settings">Settings</string>
    <string name="hello_world">Hello world!</string>
</resources>
```

MainActivity.java

```java
package com.example.sensor;

import androidx.appcompat.app.AppCompatActivity;
import android.app.Activity;
import android.hardware.SensorManager;
import android.os.Bundle;
import android.util.Log;
import android.view.Menu;
import android.view.MenuItem;
import android.view.View;
import android.widget.TextView;
import java.util.List;
import android.hardware.Sensor;
import android.hardware.SensorManager;
import android.os.Bundle;

public class MainActivity extends AppCompatActivity {

    TextView tv1=null;
    private SensorManager mSensorManager;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        tv1 = (TextView) findViewById(R.id.textView2);
        tv1.setVisibility(View.GONE);

        mSensorManager = (SensorManager) getSystemService(SENSOR_SERVICE);
        List<Sensor> mList= mSensorManager.getSensorList(Sensor.TYPE_ALL);

        for (int i = 1; i < mList.size(); i++) {
            tv1.setVisibility(View.VISIBLE);
            tv1.append("\n" + mList.get(i).getName() + "\n" + mList.get(i).getVendor() + "\n" +
mList.get(i).getVersion());
        }
    }
    @Override
    public boolean onCreateOptionsMenu(Menu menu) {
        // Inflate the menu; this adds items to the action bar if it is present.
        getMenuInflater().inflate(R.menu.menu_main, menu);
        return true;
    }

    @Override
    public boolean onOptionsItemSelected(MenuItem item) {

        int id = item.getItemId();
        if (id == R.id.action_settings) {
            return true;
        }
        return super.onOptionsItemSelected(item);
    }
}
```

Practical No 23

1. Image Capture
Activity_main.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.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:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <ImageView
        android:id="@+id/imageView"
        android:layout_width="320dp"
        android:layout_height="382dp"/>

    <Button
        android:id="@+id/button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Capture"/>

</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java

```java
package com.example.cameracapture;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.graphics.Bitmap;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.ImageView;

public class MainActivity extends AppCompatActivity {
    Button btn;
    ImageView show;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        btn = (Button)findViewById(R.id.button);
        show = (ImageView)findViewById(R.id.imageView);

        btn.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Intent c = new Intent(MediaStore.ACTION_IMAGE_CAPTURE);
                startActivityForResult(c, 1);
            }
        });
    }

    @Override
    protected void onActivityResult(int requestCode, int resultCode, @Nullable Intent data) {
        if(requestCode == 1){
            Bitmap photo = (Bitmap)data.getExtras().get("data");
            show.setImageBitmap(photo);
        }
    }
}
```

Practical No 24

Bluetooth
Activity_main.xml

MainActivity.java

Practical No 25

Activity_main.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<AbsoluteLayout 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">

    <ImageView
        android:id="@+id/imageView"
        android:layout_width="286dp"
        android:layout_height="240dp"
        android:layout_x="63dp"
        android:layout_y="79dp"
        android:src="@drawable/bgimg" />

    <Button
        android:id="@+id/zoomin"
        android:layout_width="153dp"
        android:layout_height="wrap_content"
        android:layout_x="42dp"
        android:layout_y="454dp"
        android:text="Zoom In" />

    <Button
        android:id="@+id/zoomout"
        android:layout_width="158dp"
        android:layout_height="wrap_content"
        android:layout_x="218dp"
        android:layout_y="454dp"
        android:text="Zoom Out" />

    <Button
        android:id="@+id/rotateC"
        android:layout_width="153dp"
        android:layout_height="wrap_content"
        android:layout_x="43dp"
        android:layout_y="516dp"
        android:text="Clockvise" />

    <Button
        android:id="@+id/fadein"
        android:layout_width="153dp"
        android:layout_height="wrap_content"
        android:layout_x="45dp"
        android:layout_y="581dp"
        android:text="Fade In" />

    <Button
        android:id="@+id/fadeout"
        android:layout_width="153dp"
        android:layout_height="wrap_content"
        android:layout_x="221dp"
        android:layout_y="581dp"
        android:text="Fade OUt" />

    <Button
        android:id="@+id/rotateA"
        android:layout_width="153dp"
        android:layout_height="wrap_content"
        android:layout_x="222dp"
        android:layout_y="516dp"
        android:text="Anti clockvise" />

</AbsoluteLayout>
```

Fade_in.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<set
xmlns:android="http://schemas.android.com/apk/res/android">
    <alpha
        android:duration="2000"
        android:fromAlpha="0.1"
        android:toAlpha="1.0" />
</set>
```

Fade_out.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<set
xmlns:android="http://schemas.android.com/apk/res/android">
    <alpha
        android:duration="2000"
        android:fromAlpha="1.0"
        android:toAlpha="0.1" />
</set>
```

MainActivity.java

```java
import android.view.View;
import android.view.animation.Animation;
import android.view.animation.AnimationUtils;
import android.widget.Button;
import android.widget.ImageView;
public class MainActivity extends AppCompatActivity {
    Button zoomIn, zoomOut, fadeIn, fadeOut, rotateClock, rotateAnti;
    ImageView imageView;

    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        zoomIn = (Button)findViewById(R.id.zoomin);
        zoomOut = (Button)findViewById(R.id.zoomout);
        fadeIn = (Button)findViewById(R.id.fadein);
        fadeOut = (Button)findViewById(R.id.fadeout);
        rotateAnti = (Button)findViewById(R.id.rotateA);
        rotateClock = (Button)findViewById(R.id.rotateC);
        imageView = (ImageView)findViewById(R.id.imageView);
        zoomIn.setOnClickListener(new View.OnClickListener() {
            public void onClick(View v) {
                imageView.setScaleX(imageView.getScaleX() + (float)0.1);
                imageView.setScaleY(imageView.getScaleY() + (float)0.1);
            }
        });
        zoomOut.setOnClickListener(new View.OnClickListener() {
            public void onClick(View v) {
                imageView.setScaleX(imageView.getScaleX() - (float)0.1);
                imageView.setScaleY(imageView.getScaleY() - (float)0.1);
            }
        });
        rotateClock.setOnClickListener(new View.OnClickListener() {
            public void onClick(View v) {
                imageView.setRotation((float)imageView.getRotation() + 20);
            }
        });
        rotateAnti.setOnClickListener(new View.OnClickListener() {
            public void onClick(View v) {
                imageView.setRotation((float)imageView.getRotation() - 20);
            }
        });
        fadeIn.setOnClickListener(new View.OnClickListener() {
            public void onClick(View v) {
                Animation aniFadein =
                AnimationUtils.loadAnimation(getApplicationContext(),R.anim.fade_in);
                imageView.startAnimation(aniFadein);
            }
        });
        fadeOut.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Animation aniFadeout = AnimationUtils.loadAnimation(getApplicationContext(),
R.anim.fade_out);
                imageView.startAnimation(aniFadeout);
            }
        });
    }
}
```

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activity_main.xml

```
<RelativeLayout xmlns:android="https://schemas.android.com/apk/res/android"
    xmlns:tools="https://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity" >

    <TextView
        android:id="@+id/tv_time"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:textSize="10pt"
        android:textColor="#444444"
        android:layout_alignParentLeft="true"
        android:layout_marginRight="9dip"
        android:layout_marginTop="20dip"
        android:layout_marginLeft="10dip"
        android:text="Sleep time in Seconds:"/>
    <EditText
        android:id="@+id/in_time"
        android:layout_width="150dip"
        android:layout_height="wrap_content"
        android:background="@android:drawable/editbox_background"
        android:layout_toRightOf="@id/tv_time"
        android:layout_alignTop="@id/tv_time"
        android:inputType="number"
        />
    <Button
        android:id="@+id/btn_run"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Run Async task"
        android:layout_below="@+id/in_time"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="64dp" />
    <TextView
        android:id="@+id/tv_result"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:textSize="7pt"
        android:layout_below="@+id/btn_run"
        android:layout_centerHorizontal="true" />
</RelativeLayout>
```

MainActivity.java

```
package com.journaldev.asynctask;
import android.app.ProgressDialog;
import android.os.AsyncTask;
import android.support.v7.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {
    private Button button;
    private EditText time;
```

```java
    private TextView finalResult;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        time = (EditText) findViewById(R.id.in_time);
        button = (Button) findViewById(R.id.btn_run);
        button.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                AsyncTaskRunner runner = new AsyncTaskRunner();
                String sleepTime = time.getText().toString();
                runner.execute(sleepTime);
            }
        });
    }

    private class AsyncTaskRunner extends AsyncTask<String, String, String> {
        private String resp;
        ProgressDialog progressDialog;

        @Override
        protected String doInBackground(String... params) {
            publishProgress("Sleeping..."); // Calls onProgressUpdate()
            try {
                int time = Integer.parseInt(params[0])*1000;

                Thread.sleep(time);
                resp = "Slept for " + params[0] + " seconds";
            } catch (InterruptedException e) {
                e.printStackTrace();
                resp = e.getMessage();
            } catch (Exception e) {
                e.printStackTrace();
                resp = e.getMessage();
            }
            return resp;
        }


        @Override
        protected void onPostExecute(String result) {
            // execution of result of Long time consuming operation
            progressDialog.dismiss();
            finalResult.setText(result);      }

        @Override
        protected void onProgressUpdate(String... text) {
            finalResult.setText(text[0]);

        }
    }
}
```

Practical No 27

1.Login Form with Toast Message

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"
    tools:context=".MainActivity">

    <TextView
        android:id="@+id/textView1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Authentication Required"/>

    <TextView
        android:id="@+id/textView2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Username:" />

    <EditText
        android:id="@+id/usernameET"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content" />

    <TextView
        android:id="@+id/textView3"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Password:" />

    <EditText
        android:id="@+id/passwordET"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:hint="testpass"
        android:inputType="textPassword" />

    <Button
        android:id="@+id/loginBtn"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_below="@+id/passwordET"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="94dp"
        android:onClick="authenticateLogin"
        android:text="Login"
        tools:ignore="OnClick" />

</RelativeLayout>
```
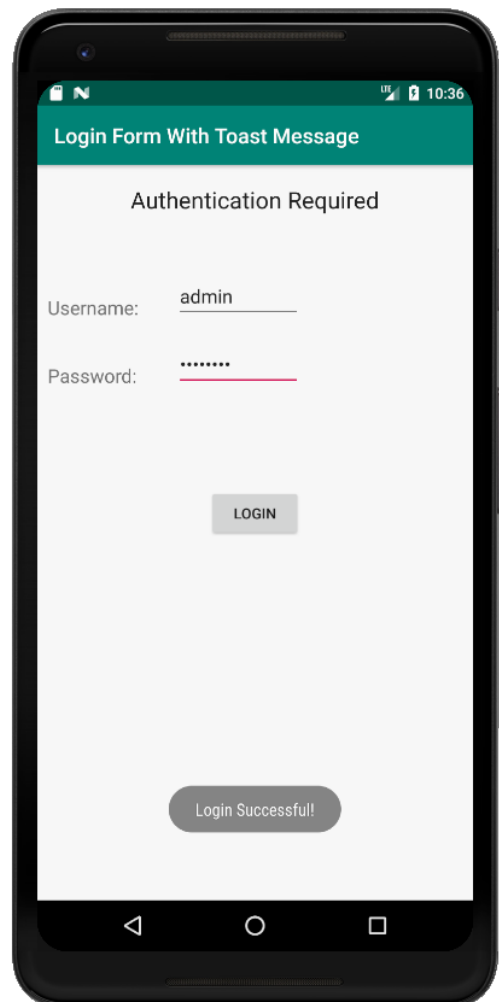
MainActivity.java

```java
package com.example.loginformwithtoastmessage;

import androidx.appcompat.app.AppCompatActivity;
import android.graphics.Color;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;
import android.widget.Toast;
import android.os.Bundle;

public class MainActivity extends AppCompatActivity {

    private EditText username;
    private EditText password;
    private Button login;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        setupVariables();
    }

    public void authenticateLogin(View view) {
        if (username.getText().toString().equals("admin") &&
                password.getText().toString().equals("admin123")) {
            Toast.makeText(getApplicationContext(), "Login Successful!",
                    Toast.LENGTH_SHORT).show();
        } else {
            Toast.makeText(getApplicationContext(), "Login Unsuccessful!",
                    Toast.LENGTH_SHORT).show();
        }
    }

    private void setupVariables() {
        username = (EditText) findViewById(R.id.usernameET);
        password = (EditText) findViewById(R.id.passwordET);
        login = (Button) findViewById(R.id.loginBtn);
    }

}
```

Practical No 28

Login form With Validation

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"
    tools:context=".MainActivity">
    <TextView
        android:id="@+id/textView1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Authentication Required"/>

    <TextView
        android:id="@+id/textView2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Username:" />

    <TextView
        android:id="@+id/textView3"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Password:" />

     <EditText
        android:id="@+id/passwordET"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:hint="testpass"
        android:inputType="textPassword" />

    <TextView
        android:id="@+id/attemptsLeftTV"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Attempts Left:" />

    <Button
        android:id="@+id/loginBtn"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:onClick="authenticateLogin"
        android:text="Login" />

    <TextView
        android:id="@+id/numberOfRemainingLoginAttemptsTV"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"/>

    <TextView
        android:id="@+id/loginLockedTV"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:visibility="invisible" />

</RelativeLayout>
```
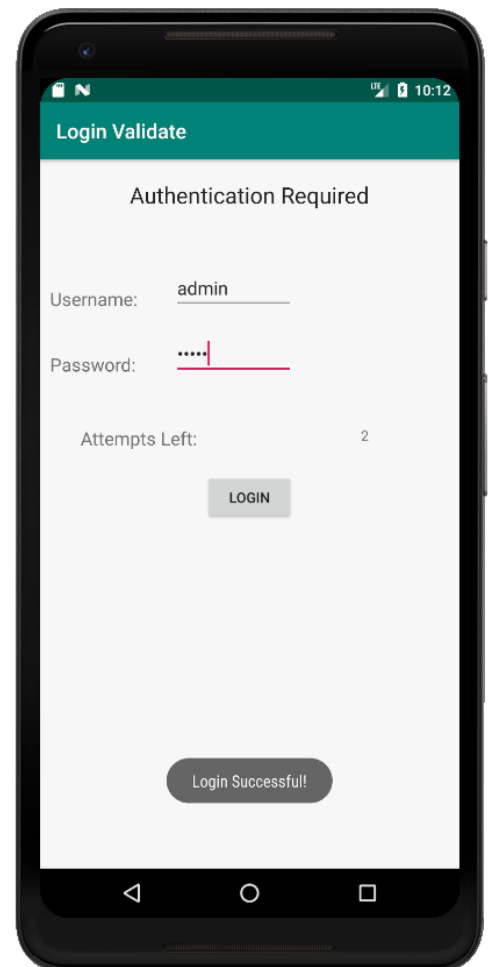
MainActivity.java

```java
package com.example.loginvalidate;
import android.widget.TextView;
import android.widget.Toast;
import android.os.Bundle;

public class MainActivity extends AppCompatActivity {

    private EditText username;
    private EditText password;
    private Button login;
    private TextView loginLockedTV;
    private TextView attemptsLeftTV;
    private TextView numberOfRemainingLoginAttemptsTV;
    int numberOfRemainingLoginAttempts = 3;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        username = (EditText) findViewById(R.id.usernameET);
        password = (EditText) findViewById(R.id.passwordET);
        login = (Button) findViewById(R.id.loginBtn);
        loginLockedTV = (TextView) findViewById(R.id.loginLockedTV);
        attemptsLeftTV = (TextView) findViewById(R.id.attemptsLeftTV);
        numberOfRemainingLoginAttemptsTV = (TextView)
findViewById(R.id.numberOfRemainingLoginAttemptsTV);
        numberOfRemainingLoginAttemptsTV.setText(Integer.toString(numberOfRemainingLoginAttempts));
    }

    public void authenticateLogin(View view) {
        if (username.getText().toString().equals("admin") &&
                password.getText().toString().equals("admin")) {
            Toast.makeText(getApplicationContext(), "Login Successful!",
                    Toast.LENGTH_SHORT).show();
        } else {
            Toast.makeText(getApplicationContext(), "Login Unsuccessful!",
                    Toast.LENGTH_SHORT).show();
            numberOfRemainingLoginAttempts--;
            attemptsLeftTV.setVisibility(View.VISIBLE);
            numberOfRemainingLoginAttemptsTV.setVisibility(View.VISIBLE);

numberOfRemainingLoginAttemptsTV.setText(Integer.toString(numberOfRemainingLoginAttempts));

            if (numberOfRemainingLoginAttempts == 0) {
                login.setEnabled(false);
                loginLockedTV.setVisibility(View.VISIBLE);
                loginLockedTV.setBackgroundColor(Color.RED);
                loginLockedTV.setText("LOGIN LOCKED!!!");
            }
        }
    }
}
```

Practical No 29

MainActivity.java.

```java
package com.example.tutorialspoint;

import android.Manifest;
import android.content.pm.PackageManager;
import android.os.Bundle;
import android.app.Activity;

public class MainActivity extends Activity {
    private static final int MY_PERMISSIONS_REQUEST_SEND_SMS =0 ;
    Button sendBtn;
    String phoneNo;
    String message;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        sendBtn = (Button) findViewById(R.id.btnSendSMS);
        txtphoneNo = (EditText) findViewById(R.id.editText);
        txtMessage = (EditText) findViewById(R.id.editText2);

        sendBtn.setOnClickListener(new View.OnClickListener() {
            public void onClick(View view) {
                sendSMSMessage();
            }
        });
    }

    protected void sendSMSMessage() {
        phoneNo = txtphoneNo.getText().toString();
        message = txtMessage.getText().toString();

        if (ContextCompat.checkSelfPermission(this,
            Manifest.permission.SEND_SMS)
            != PackageManager.PERMISSION_GRANTED) {
            if (ActivityCompat.shouldShowRequestPermissionRationale(this,
                Manifest.permission.SEND_SMS)) {
            } else {
                ActivityCompat.requestPermissions(this,
                    new String[]{Manifest.permission.SEND_SMS},
                    MY_PERMISSIONS_REQUEST_SEND_SMS);
            }
        }
    }

    @Override
    public void onRequestPermissionsResult(int requestCode,String permissions[], int[] grantResults) {
        switch (requestCode) {
            case MY_PERMISSIONS_REQUEST_SEND_SMS: {
```

```java
            if (grantResults.length > 0
                && grantResults[0] == PackageManager.PERMISSION_GRANTED) {
                SmsManager smsManager = SmsManager.getDefault();
                smsManager.sendTextMessage(phoneNo, null, message, null, null);
                Toast.makeText(getApplicationContext(), "SMS sent.",
                   Toast.LENGTH_LONG).show();
            } else {
                Toast.makeText(getApplicationContext(),
                   "SMS faild, please try again.", Toast.LENGTH_LONG).show();
                return;
            }
        }
    }
}
```

activity_main.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
   xmlns:tools="http://schemas.android.com/tools"
   android:layout_width="match_parent"
   android:layout_height="match_parent"
   android:paddingBottom="@dimen/activity_vertical_margin"
   android:paddingLeft="@dimen/activity_horizontal_margin"
   android:paddingRight="@dimen/activity_horizontal_margin"
   android:paddingTop="@dimen/activity_vertical_margin"
   tools:context="MainActivity">

<TextView
    android:id="@+id/textView1"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Sending SMS Example"
    android:layout_alignParentTop="true"
    android:layout_centerHorizontal="true"
    android:textSize="30dp" />

  <TextView
    android:id="@+id/textView2"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Tutorials point "
    android:textColor="#ff87ff09"
    android:textSize="30dp"
    android:layout_below="@+id/textView1"
    android:layout_alignRight="@+id/imageButton"
    android:layout_alignEnd="@+id/imageButton" />

  <ImageButton
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:id="@+id/imageButton"
    android:src="@drawable/abc"
    android:layout_below="@+id/textView2"
```

```xml
            android:layout_centerHorizontal="true" />

        <EditText
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:id="@+id/editText"
            android:hint="Enter Phone Number"
            android:phoneNumber="true"
            android:textColorHint="@color/abc_primary_text_material_dark"
            android:layout_below="@+id/imageButton"
            android:layout_centerHorizontal="true" />

        <EditText
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:id="@+id/editText2"
            android:layout_below="@+id/editText"
            android:layout_alignLeft="@+id/editText"
            android:layout_alignStart="@+id/editText"
            android:textColorHint="@color/abc_primary_text_material_dark"
            android:layout_alignRight="@+id/imageButton"
            android:layout_alignEnd="@+id/imageButton"
            android:hint="Enter SMS" />

        <Button
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Send Sms"
            android:id="@+id/btnSendSMS"
            android:layout_below="@+id/editText2"
            android:layout_centerHorizontal="true"
            android:layout_marginTop="48dp" />
</RelativeLayout>
```

AndroidManifest.xml –

```xml
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.tutorialspoint" >
    <uses-permission android:name="android.permission.SEND_SMS" />
    <application
        android:allowBackup="true"
        android:icon="@drawable/ic_launcher"
        android:label="@string/app_name"
        android:theme="@style/AppTheme" >
        <activity
            android:name="com.example.tutorialspoint.MainActivity"
            android:label="@string/app_name" >
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />
                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        </activity>
    </application>
</manifest>
```

Practical No 30

Send email

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"
    tools:context=".MainActivity">

    <EditText
        android:id="@+id/txtTo"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="To" />
    <EditText
        android:id="@+id/txtSub"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Subject"/>
    <EditText
        android:id="@+id/txtMsg"
        android:layout_width="match_parent"
        android:layout_height="0dp"
        android:hint="Message"/>
    <Button
        android:layout_width="100dp"
        android:layout_height="wrap_content"
        android:layout_gravity="right"
        android:text="Send"
        android:id="@+id/btnSend"/>

</LinearLayout>
```
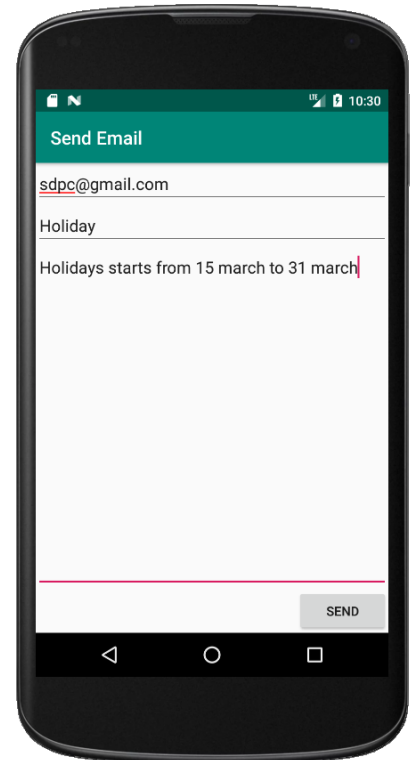
Mainactivity.java

```java
package com.example.sendemail;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.view.View;
import android.os.Bundle;

public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        eTo = (EditText)findViewById(R.id.txtTo);
        eSubject = (EditText)findViewById(R.id.txtSub);
        eMsg = (EditText)findViewById(R.id.txtMsg);
        btn = (Button)findViewById(R.id.btnSend);
        btn.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Intent it = new Intent(Intent.ACTION_SEND);
                it.putExtra(Intent.EXTRA_EMAIL, new String[]{eTo.getText().toString()});
                it.putExtra(Intent.EXTRA_SUBJECT,eSubject.getText().toString());
                it.putExtra(Intent.EXTRA_TEXT,eMsg.getText());
                it.setType("message/rfc822");
                startActivity(Intent.createChooser(it,"Choose Mail App"));
            }
        });
    }
}
```

Practical No 31

MapsActivity.java

```java
package example.com.mapexample;
import com.google.android.gms.common.api.GoogleApiClient;
import com.google.android.gms.location.LocationListener;
import com.google.android.gms.location.LocationRequest;
public class MapsActivity extends FragmentActivity implements OnMapReadyCallback,    Locati
onListener,GoogleApiClient.ConnectionCallbacks,
  GoogleApiClient.OnConnectionFailedListener{
  private GoogleMap mMap;
   Location mLastLocation;
   Marker mCurrLocationMarker;
   GoogleApiClient mGoogleApiClient;
   LocationRequest mLocationRequest;
 @Override
  protected void onCreate(Bundle savedInstanceState) {
     super.onCreate(savedInstanceState);
     setContentView(R.layout.activity_maps);
     SupportMapFragment mapFragment = (SupportMapFragment) getSupportFragmentManager(
)
        .findFragmentById(R.id.map);
     mapFragment.getMapAsync(this);
 }
 @Override
  public void onMapReady(GoogleMap googleMap) {
     mMap = googleMap;
 if (android.os.Build.VERSION.SDK_INT >= Build.VERSION_CODES.M) {
       if (ContextCompat.checkSelfPermission(this,
           Manifest.permission.ACCESS_FINE_LOCATION)
           == PackageManager.PERMISSION_GRANTED) {
         buildGoogleApiClient();
         mMap.setMyLocationEnabled(true);  }   }
     else {
        buildGoogleApiClient();
        mMap.setMyLocationEnabled(true);
     }  }
   protected synchronized void buildGoogleApiClient() {
      mGoogleApiClient = new GoogleApiClient.Builder(this)
          .addConnectionCallbacks(this)
          .addOnConnectionFailedListener(this)
          .addApi(LocationServices.API).build();
      mGoogleApiClient.connect();
   }
 @Override
  public void onConnected(Bundle bundle) {
  mLocationRequest = new LocationRequest();
     mLocationRequest.setInterval(1000);
     mLocationRequest.setFastestInterval(1000);
     mLocationRequest.setPriority(LocationRequest.PRIORITY_BALANCED_POWER_ACCUR
ACY);
     if (ContextCompat.checkSelfPermission(this,
         Manifest.permission.ACCESS_FINE_LOCATION)
         == PackageManager.PERMISSION_GRANTED) {
```

```java
        LocationServices.FusedLocationApi.requestLocationUpdates(mGoogleApiClient, mLocati
onRequest, this);
        }

    }
 @Override
  public void onConnectionSuspended(int i) {
  }
  @Override
    public void onLocationChanged(Location location) {
  mLastLocation = location;
      if (mCurrLocationMarker != null) {
        mCurrLocationMarker.remove();
      }
      //Place current location marker
      LatLng latLng = new LatLng(location.getLatitude(), location.getLongitude());
  MarkerOptions markerOptions = new MarkerOptions();
      markerOptions.position(latLng);
      markerOptions.title("Current Position");
      markerOptions.icon(BitmapDescriptorFactory.defaultMarker(BitmapDescriptorFactory.HUE
_GREEN));
      mCurrLocationMarker = mMap.addMarker(markerOptions);
   //move map camera
      mMap.moveCamera(CameraUpdateFactory.newLatLng(latLng));
      mMap.animateCamera(CameraUpdateFactory.zoomTo(11));
   //stop location updates
      if (mGoogleApiClient != null) {
        LocationServices.FusedLocationApi.removeLocationUpdates(mGoogleApiClient, this);
      } }
    @Override
    public void onConnectionFailed(ConnectionResult connectionResult) {
  }

    }
```

AndroidManifest.xml

```xml
      <?xml version="1.0" encoding="utf-8"?>
  <manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="example.com.mapexample">
    <!--
        The ACCESS_COARSE/FINE_LOCATION permissions are not required to use
        Google Maps Android API v2, but you must specify either coarse or fine
        location permissions for the 'MyLocation' functionality.
    -->
    <uses-permission android:name="android.permission.ACCESS_FINE_LOCATION" />
    <uses-p
ermission android:name="android.permission.ACCESS_COARSE_LOCATION" />
    <uses-permission android:name="android.permission.INTERNET" />
    <application
      android:allowBackup="true"
      android:icon="@mipmap/ic_launcher"
      android:label="@string/app_name"
      android:roundIcon="@mipmap/ic_launcher_round"
      android:supportsRtl="true"
      android:theme="@style/AppTheme">
```
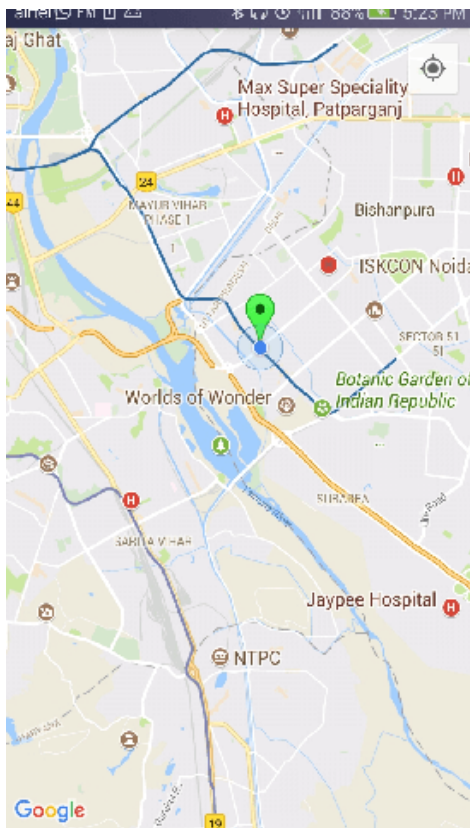
```xml
<!--
     The API key for Google Maps-based APIs is defined as a string resource.
     (See the file "res/values/google_maps_api.xml").
     Note that the API key is linked to the encryption key used to sign the APK.
     You need a different API key for each encryption key, including the release key that is use
d to
     sign the APK for publishing.
     You can define the keys for the debug and release targets in src/debug/ and src/release/.
-->
<meta-data
    android:name="com.google.android.geo.API_KEY"
    android:value="@string/google_maps_key" />
<activity
    android:name=".MapsActivity"
    android:label="@string/title_activity_maps">
    <intent-filter>
        <action android:name="android.intent.action.MAIN" />
<category android:name="android.intent.category.LAUNCHER" />
    </intent-filter>
</activity>
  </application>
 </manifest>
```

Output

Practical No 32

MainActivity.Java

```java
package com.example.mapdirectiondemo;

import android.graphics.Color;
import android.os.AsyncTask;
import android.os.Bundle;
import android.util.Log;
import com.google.android.gms.maps.model.MarkerOptions;
import com.google.android.gms.maps.model.PolylineOptions;
import org.json.JSONObject;
import java.io.BufferedReader;
import java.io.IOException;

public class MapsActivity extends FragmentActivity implements OnMapReadyCallback {
    private GoogleMap mMap;
    MarkerOptions origin, destination;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_maps);
        SupportMapFragment mapFragment = (SupportMapFragment) getSupportFragmentManager()
                .findFragmentById(R.id.map);
        destination = new MarkerOptions().position(new LatLng(12.9304,
77.6784)).title("Bellandur").snippet("destination");
        String url = getDirectionsUrl(origin.getPosition(), destination.getPosition());
        DownloadTask downloadTask = new DownloadTask();
        downloadTask.execute(url);
    }

    @Override
    public void onMapReady(GoogleMap googleMap) {
        mMap = googleMap;
        mMap.addMarker(origin);
        mMap.addMarker(destination);
        mMap.animateCamera(CameraUpdateFactory.newLatLngZoom(origin.getPosition(), 10));
    }

    private class DownloadTask extends AsyncTask<String, Void, String> {
        @Override
        protected String doInBackground(String... url) {
            String data = "";
            try {
                data = downloadUrl(url[0]);
            } catch (Exception e) {
                Log.d("Background Task", e.toString());
            }
            return data;
        }
        @Override
        protected void onPostExecute(String result) {
            super.onPostExecute(result);
            ParserTask parserTask = new ParserTask();
            parserTask.execute(result);
        }
    }
    private class ParserTask extends AsyncTask<String, Integer, List<List<HashMap<String, String>>>> {
```

```java
        @Override
        protected List<List<HashMap<String, String>>> doInBackground(String... jsonData) {
            JSONObject jObject;
            List<List<HashMap<String, String>>> routes = null;
            try {
                jObject = new JSONObject(jsonData[0]);
                DirectionsJSONParser parser = new DirectionsJSONParser();
                routes = parser.parse(jObject);
            } catch (Exception e) {
                e.printStackTrace();
            }
            return routes;
        }

        @Override
        protected void onPostExecute(List<List<HashMap<String,
String>>> result) {
            ArrayList points = new ArrayList();
            PolylineOptions lineOptions = new PolylineOptions();
            for (int i = 0; i < result.size(); i++) {
                List<HashMap<String, String>> path = result.get(i);
                for (int j = 0; j < path.size(); j++) {
                    HashMap<String, String> point = path.get(j);
                    double lat = Double.parseDouble(point.get("lat"));
                    double lng = Double.parseDouble(point.get("lng"));
                    LatLng position = new LatLng(lat, lng);
                    points.add(position);
                }
                lineOptions.addAll(points);
                lineOptions.width(12);
                lineOptions.color(Color.RED);
                lineOptions.geodesic(true);
            }
            if (points.size() != 0)
                mMap.addPolyline(lineOptions);
        }
    }

    private String getDirectionsUrl(LatLng origin, LatLng dest) {
        String str_origin = "origin=" + origin.latitude + "," + origin.longitude;
        String str_dest = "destination=" + dest.latitude + "," + dest.longitude;
        String mode = "mode=driving";
        String parameters = str_origin + "&" + str_dest + "&" + sensor + "&" + mode;
        String output = "json";
        String url = "https://maps.googleapis.com/maps/api/directions/" + output + "?" + parameters + "&key=" +
"AIzaSyD_L8g3AcwXBKnEjhvLJwBXwI3L51LjQUU";

        return url;
    }
    private String downloadUrl(String strUrl) throws IOException {
        String data = "";
        InputStream iStream = null;
        HttpURLConnection urlConnection = null;
        try {
            URL url = new URL(strUrl);
            urlConnection = (HttpURLConnection) url.openConnection();
            urlConnection.connect();
            iStream = urlConnection.getInputStream();
            BufferedReader br = new BufferedReader(new InputStreamReader(iStream));
            StringBuffer sb = new StringBuffer();
```
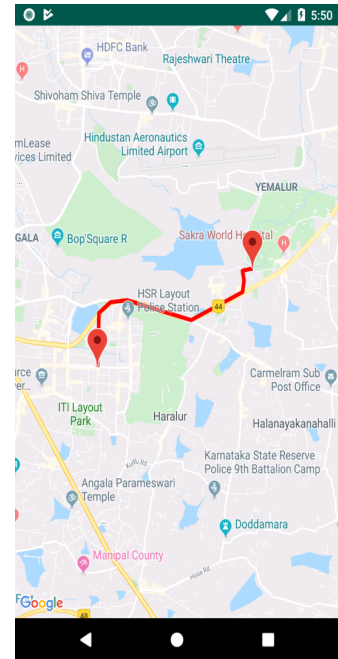
```java
            String line = "";
            while ((line = br.readLine()) != null) {
                sb.append(line);
            }
            data = sb.toString();
            br.close();
        } catch (Exception e) {
            Log.d("Exception", e.toString());
        } finally {
            iStream.close();
            urlConnection.disconnect();
        }
        return data;
    }

}
```

AndroidManifest.xml

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

    <uses-permission android:name="android.permission.INTERNET"/>
        <uses-permission android:name="android.permission.ACCESS_FINE_LOCATION"/>
        <uses-permission android:name="android.permission.ACCESS_COARSE_LOCATION"/>

    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/AppTheme">

        <activity
            android:name=".MapsActivity"
            android:label="@string/title_activity_maps">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />

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

        <meta-data
                android:name="com.google.android.geo.API_KEY"
                android:value="@string/google_maps_key" />
    </application>
</manifest>
```