1) GUI component, color, font

activity_main.xml

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

   <TextView
      android:layout_width="match_parent"
      android:layout_height="wrap_content"
      android:layout_alignParentBottom="true"
      android:layout_marginBottom="347dp"
      android:gravity="center"

      android:text="hello world"
      android:textSize="30dp"
      android:id="@+id/text"/>

   <Button
      android:id="@+id/button"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:layout_alignParentEnd="true"
      android:layout_alignParentBottom="true"
      android:layout_marginEnd="159dp"
      android:layout_marginBottom="210dp"
      android:text="color"
      />

   <Button
      android:id="@+id/button2"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:layout_alignParentEnd="true"
      android:layout_alignParentBottom="true"
      android:layout_marginEnd="159dp"
      android:layout_marginBottom="109dp"
      android:text="size" />


</RelativeLayout>
```

MainActivity.java

```
package com.example.t1;
```

```
import androidx.appcompat.app.AppCompatActivity;

import android.graphics.Color;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.TextView;

public class MainActivity extends AppCompatActivity {

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

    TextView t1 = (TextView) findViewById(R.id.text);

    Button b1 = (Button) findViewById(R.id.button);

    b1.setOnClickListener(new View.OnClickListener() {
      @Override
      public void onClick(View view) {
        t1.setTextColor(Color.RED);
      }
    });

    Button b2 = (Button) findViewById(R.id.button2);
    float s=40;
    b2.setOnClickListener(new View.OnClickListener() {
      @Override
      public void onClick(View view) {
        t1.setTextSize(s);
      }
    });


  }
}
```

2) Shapes

MainActivity.xml:

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

<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"

android:layout_width="match_parent"
```

```
android:layout_height="match_parent">
<ImageView
   android:layout_width="match_parent"
   android:layout_height="match_parent"
   android:id="@+id/imageView" />
</RelativeLayout>
```

MainActivity.java:

```
package com.example.exno4;
import android.app.Activity;
import android.graphics.Bitmap;
import android.graphics.Canvas;
import android.graphics.Color;
import android.graphics.Paint;
import android.graphics.drawable.BitmapDrawable;
import android.os.Bundle;
import android.widget.ImageView;

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

      //Creating a Bitmap
      Bitmap bg = Bitmap.createBitmap(720, 1280, Bitmap.Config.ARGB_8888);

      //Setting the Bitmap as background for the ImageView
      ImageView i = (ImageView) findViewById(R.id.imageView);
```

```
        i.setBackgroundDrawable(new BitmapDrawable(bg));

        //Creating the Canvas Object
        Canvas canvas = new Canvas(bg);

        //Creating the Paint Object and set its color & TextSize
        Paint paint = new Paint();
        paint.setColor(Color.BLUE);
        paint.setTextSize(50);
        //To draw a Rectangle
        canvas.drawText("Rectangle", 420, 150, paint);
        canvas.drawRect(400, 200, 650, 700, paint);

        //To draw a Circle
        canvas.drawText("Circle", 120, 150, paint);
        canvas.drawCircle(200, 350, 150, paint);

       //To draw a Square
        canvas.drawText("Square", 120, 800, paint);
        canvas.drawRect(50, 850, 350, 1150, paint);

        //To draw a Line
        canvas.drawText("Line", 480, 800, paint);
        canvas.drawLine(520, 850, 520, 1150, paint);
      }

    }
```

3) Layout and event listeners

Activity_main.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/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:gravity="center"
        android:text="Enter the Form details"
        android:textSize="24sp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.261" />

    <GridLayout
        android:layout_width="322dp"
        android:layout_height="123dp"
        android:columnCount="2"
        android:rowCount="3"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent">


        <TextView
            android:id="@+id/t1"
            android:layout_width="175dp"
            android:layout_height="wrap_content"
            android:layout_row="0"
            android:layout_column="0"
            android:text="Enter your name: "
            android:textSize="20sp" />

        <EditText
            android:id="@+id/e1"
            android:layout_width="146dp"
            android:layout_row="0"
            android:layout_column="1" />

        <TextView
            android:id="@+id/t2"
            android:layout_width="170dp"
            android:layout_height="wrap_content"
            android:layout_row="1"
            android:layout_column="0"
            android:text="Enter your Roll no:"
            android:textSize="20dp" />

        <EditText
            android:id="@+id/e2"
            android:layout_width="146dp"
            android:layout_row="1"
            android:layout_column="1" />

        <TextView
            android:id="@+id/t3"
```

```
            android:layout_width="175dp"
            android:layout_row="2"
            android:layout_column="0"
            android:text="choose dept:"
            android:textSize="20sp" />

        <Spinner
            android:id="@+id/s"
            android:layout_width="146dp"
            android:layout_height="wrap_content"
            android:layout_row="2"
            android:layout_column="1" />
    </GridLayout>

    <Button
        android:id="@+id/submit"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:gravity="center"
        android:text="SUBMIT"
        android:textSize="24sp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.569"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.817" />

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

Main activity.java

```
package com.example.layoutswitch;
import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.ArrayAdapter;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Spinner;
public class MainActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        EditText ee1=(EditText) findViewById(R.id.e1);
        EditText ee2=(EditText) findViewById(R.id.e2);
        Button b = (Button) findViewById(R.id.submit);
        Spinner s = (Spinner) findViewById(R.id.s);
        String[] dept = {"CSE","IT","EEE","ECE"};

        ArrayAdapter adapter = new ArrayAdapter(MainActivity.this,
android.R.layout.simple_spinner_item,dept);
        s.setAdapter(adapter);
```

```
        b.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                String name = ee1.getText().toString();
                String no = ee2.getText().toString();
                String dept = s.getSelectedItem().toString();

                Intent i = new
Intent(MainActivity.this,Secondactivity.class);

                i.putExtra("send_name",name);
                i.putExtra("send_no",no);
                i.putExtra("send_dept",dept);

                startActivity(i);
            }
        });

    }
}
```

activity_secondactivity.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=".Secondactivity">

    <TextView
        android:id="@+id/tt1"
        android:layout_width="204dp"
        android:layout_height="71dp"
        android:textSize="25dp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.404" />

    <TextView
        android:id="@+id/tt2"
        android:layout_width="205dp"
        android:layout_height="57dp"
        android:textSize="25dp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.517" />
    <TextView
        android:id="@+id/tt3"
        android:layout_width="203dp"
        android:layout_height="58dp"
        android:textSize="25dp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
```

```
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.615" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

Secondactivity.java

```
package com.example.layoutswitch;
import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;
import android.os.Bundle;
import android.widget.TextView;
public class Secondactivity extends AppCompatActivity {

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

        TextView ttt1 = (TextView) findViewById(R.id.tt1);
        TextView ttt2 = (TextView) findViewById(R.id.tt2);
        TextView ttt3 = (TextView) findViewById(R.id.tt3);

        Intent i = getIntent();

        String name = i.getStringExtra("send_name");
        String reg = i.getStringExtra("send_no");
        String dept = i.getStringExtra("send_dept");

        ttt1.setText(name);
        ttt2.setText(reg);
        ttt3.setText(dept);
    }
}
```

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

        EditText ee1=(EditText) findViewById(R.id.e1);
        EditText ee2=(EditText) findViewById(R.id.e2);
        Button b = (Button) findViewById(R.id.submit);
        Spinner s = (Spinner) findViewById(R.id.s);
        String[] dept = {"CSE","IT","EEE","ECE"};

        ArrayAdapter adapter = new ArrayAdapter( context: MainActivity.this, android.R.layout.simple_spinner_item,dept);
        s.setAdapter(adapter);

        b.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                String name = ee1.getText().toString();
                String no = ee2.getText().toString();
                String dept = s.getSelectedItem().toString();

                Intent i = new Intent( packageContext: MainActivity.this,Secondactivity.class);

                i.putExtra( name: "send_name",name);
                i.putExtra( name: "send_no",no);
                i.putExtra( name: "send_dept",dept);

                startActivity(i);
            }
        });
```

Secondactivity.java

```java
package com.example.layoutswitch;
import ...
public class Secondactivity extends AppCompatActivity {

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

        TextView ttt1 = (TextView) findViewById(R.id.tt1);
        TextView ttt2 = (TextView) findViewById(R.id.tt2);
        TextView ttt3 = (TextView) findViewById(R.id.tt3);

        Intent i = getIntent();

        String name = i.getStringExtra( name: "send_name");
        String reg = i.getStringExtra( name: "send_no");
        String dept = i.getStringExtra( name: "send_dept");

        ttt1.setText(name);
        ttt2.setText(reg);
        ttt3.setText(dept);
    }
}
```

4) Database

Activitymain.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"
    tools:layout_editor_absoluteX="0dp"
    tools:layout_editor_absoluteY="-16dp">

    <EditText
        android:id="@+id/name"
```

```
        android:layout_width="151dp"
        android:layout_height="49dp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.892"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.326" />

    <EditText
        android:id="@+id/mark"
        android:layout_width="159dp"
        android:layout_height="57dp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.935"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.435" />

    <EditText
        android:id="@+id/roll"
        android:layout_width="149dp"
        android:layout_height="50dp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.885"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.236" />

    <Button
        android:id="@+id/viewall"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="View All"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.498"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.814" />

    <Button
        android:id="@+id/View"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="View"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.684"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.695" />

    <Button
        android:id="@+id/Insert"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Insert"
        app:layout_constraintBottom_toBottomOf="parent"
```

```
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.266"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.581" />

    <Button
        android:id="@+id/update"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Update"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.27"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.695" />

    <TextView
        android:id="@+id/namee"
        android:layout_width="182dp"
        android:layout_height="59dp"
        android:gravity="center"
        android:text="Enter the Name: "
        android:textSize="20dp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.215"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.332" />

    <TextView
        android:id="@+id/t"
        android:layout_width="271dp"
        android:layout_height="60dp"
        android:text="Enter the student data"
        android:textSize="25dp"
        android:gravity="center"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.128" />

    <TextView
        android:id="@+id/rollno"
        android:layout_width="182dp"
        android:layout_height="42dp"
        android:gravity="center"
        android:text="Enter the rollno: "
        android:textSize="20dp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.215"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.245" />

    <TextView
        android:id="@+id/Marks"
```

```
        android:layout_width="183dp"
        android:layout_height="45dp"
        android:gravity="center"
        android:text="Enter the marks: "
        android:textSize="20dp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.215"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.442" />

    <Button
        android:id="@+id/Delete"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Delete"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.679"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.581" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

Mainactivity.java

```
package com.example.database;

import androidx.appcompat.app.AppCompatActivity;

import android.app.AlertDialog;
import android.content.Context;
import android.database.Cursor;
import android.database.sqlite.SQLiteDatabase;
import android.os.Bundle;
import android.view.View.OnClickListener;
import android.widget.Button;
import android.widget.EditText;

public class MainActivity extends AppCompatActivity implements
OnClickListener {

    EditText e1,e2,e3;
    Button insert,delete,update,View,viewall;
    SQLiteDatabase db;

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

        e1 = (EditText) findViewById(R.id.roll);
        e2 = (EditText) findViewById(R.id.name);
        e3 = (EditText) findViewById(R.id.mark);

        insert = (Button) findViewById(R.id.Insert);
        delete = (Button) findViewById(R.id.Delete);
        update = (Button) findViewById(R.id.update);
        View = (Button) findViewById(R.id.View);
```

```
        viewall = (Button) findViewById(R.id.viewall);

        insert.setOnClickListener(this);
        delete.setOnClickListener(this);
        update.setOnClickListener(this);
        View.setOnClickListener(this);
        viewall.setOnClickListener(this);

        db=openOrCreateDatabase("StudentDB", Context.MODE_PRIVATE,null);
        db.execSQL("CREATE TABLE IF NOT EXISTS student(rollno VARCHAR,Name
VARCHAR,Marks VARCHAR);");
    }

    public void onClick(android.view.View view){

        if(view == insert)
        {

if(e1.getText().toString().trim().length()==0||e2.getText().toString().trim
().length()==0||e3.getText().toString().trim().length()==0)
            {
                showMessage("Error","Enter all the values!!!");
                return;
            }

            db.execSQL("Insert into student values
('"+e1.getText()+"','"+e2.getText()+"','"+e3.getText()+"')");
            showMessage("SUCCESS!!","Record added successfully");
            cleartext();
        }

        if(view == delete)
        {
            if(e1.getText().toString().trim().length()==0)
            {
                showMessage("Error","Record not found");
                return;
            }

            Cursor c = db.rawQuery("Select * from student where rollno
='"+e1.getText()+"'",null);

            if(c.moveToFirst())
            {
                db.execSQL("delete from student where rollno =
'"+e1.getText()+"'");
                showMessage("SUCCESS","Record deleted!!");
            }

            cleartext();
        }

        if(view == update)
        {
            if(e1.getText().toString().trim().length()==0)
            {
                showMessage("Error","Please enter roll no:");
                return;
            }

            Cursor c = db.rawQuery("Select * from student where rollno
```

```
='"+e1.getText()+"'",null);
            if(c.moveToFirst())
            {
                db.execSQL("update student set Name =
'"+e2.getText()+"',Marks = '"+e3.getText()+"' where rollno =
'"+e1.getText()+"'");
                showMessage("SUCCESS","Record updated!!");
            }

            cleartext();
        }

        if(view == View)
        {
            if(e1.getText().toString().trim().length()==0)
            {
                showMessage("Error", "Please enter Rollno");
                return;
            }
            Cursor c=db.rawQuery("SELECT * FROM student WHERE
rollno='"+e1.getText()+"'", null);

            if(c.moveToFirst())
            {
                e2.setText(c.getString(1));
                e3.setText(c.getString(2));
            }
            else
            {
                showMessage("Error", "Invalid Rollno");
                cleartext();
            }
        }

        if(view == viewall)
        {
            Cursor c=db.rawQuery("SELECT * FROM student", null);

            if(c.getCount()==0)
            {
                showMessage("Error", "No records found"); return;
            }
            StringBuffer buffer=new StringBuffer();

            while(c.moveToNext())
            {
                buffer.append("Rollno: "+c.getString(0)+"\n");
                buffer.append("Name: "+c.getString(1)+"\n");
                buffer.append("Marks: "+c.getString(2)+"\n\n");
            }
            showMessage("Student Details", buffer.toString());
        }
    }

    public void showMessage(String title,String message)
    {
        AlertDialog.Builder builder = new AlertDialog.Builder(this);
        builder.setCancelable(true);
        builder.setTitle(title);
        builder.setMessage(message);
        builder.show();
```

```
    }

    public void cleartext()
    {
        e1.setText("");
        e2.setText("");
        e3.setText("");
        e1.requestFocus();
    }

}
```

5) Calculator

```
public class MainActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        EditText e1 = (EditText) findViewById(R.id.e1);
        EditText e2 = (EditText) findViewById(R.id.e2);
        Button add = (Button) findViewById(R.id.add);
        Button sub = (Button) findViewById(R.id.sub);
        Button mul = (Button) findViewById(R.id.mul);
        Button div = (Button) findViewById(R.id.div);
        TextView res = (TextView) findViewById(R.id.res);
        add.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                float num1 = Float.parseFloat(e1.getText().toString());
                float num2 = Float.parseFloat(e2.getText().toString());
                float rs = 0;
                rs = num1 + num2;
                res.setText(rs+"");
            }
        });
        sub.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                float num1 = Float.parseFloat(e1.getText().toString());
                float num2 = Float.parseFloat(e2.getText().toString());
                float rs = 0;
                rs = num1 - num2;
                res.setText(rs+"");
            }
```

6) RSS

Activity main.xml

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

    <ListView
        android:id="@+id/listView"
        android:layout_width="match_parent"
        android:layout_height="wrap_content" />

</LinearLayout>
```

Main activity.java

```
package com.example.rssfeed;
import android.app.ListActivity;
import android.content.Intent;
import android.net.Uri;
import android.os.AsyncTask;
import android.os.Bundle;
import android.view.View;
import android.widget.ArrayAdapter;

import android.widget.ListView;
import org.xmlpull.v1.XmlPullParser;
import org.xmlpull.v1.XmlPullParserException;
import org.xmlpull.v1.XmlPullParserFactory;
import java.io.IOException;
import java.io.InputStream;
import java.net.MalformedURLException;
import java.net.URL;
import java.util.ArrayList;
import java.util.List;
public class MainActivity extends ListActivity
{
    List headlines;
    List links;
    @Override
    protected void onCreate(Bundle savedInstanceState)
    {
        super.onCreate(savedInstanceState);
        new MyAsyncTask().execute();
    }
    class MyAsyncTask extends AsyncTask<Object,Void,ArrayAdapter>
    {
        @Override
        protected ArrayAdapter doInBackground(Object[] params)
        {
            headlines = new ArrayList();
            links = new ArrayList();
            try
            {
                URL url = new
URL("https://timesofindia.indiatimes.com/rssfeedmostrecent.cms");
                XmlPullParserFactory factory =
XmlPullParserFactory.newInstance();
                factory.setNamespaceAware(false);
                XmlPullParser xpp = factory.newPullParser();
                // We will get the XML from an input stream
```

```
                xpp.setInput(getInputStream(url), "UTF_8");
                boolean insideItem = false;
                // Returns the type of current event: START_TAG, END_TAG,
etc..
                int eventType = xpp.getEventType();
                while (eventType != XmlPullParser.END_DOCUMENT)
                {
                    if (eventType == XmlPullParser.START_TAG)
                    {
                        if (xpp.getName().equalsIgnoreCase("item"))
                        {
                            insideItem = true;
                        }
                        else if (xpp.getName().equalsIgnoreCase("title"))
                        {
                            if (insideItem)
                                headlines.add(xpp.nextText()); //extract
the headline
                        }
                        else if (xpp.getName().equalsIgnoreCase("link"))
                        {
                            if (insideItem)
                                links.add(xpp.nextText()); //extract the
link of article
                        }
                    }
                    else if(eventType==XmlPullParser.END_TAG &&
xpp.getName().equalsIgnoreCase("item"))
                    {
                        insideItem=false;
                    }
                    eventType = xpp.next(); //move to next element
                }

            }
            catch (MalformedURLException e)
            {
                e.printStackTrace();
            }
            catch (XmlPullParserException e)
            {
                e.printStackTrace();
            }
            catch (IOException e)
            {

                e.printStackTrace();
            }
            return null;
        }
        protected void onPostExecute(ArrayAdapter adapter)
        {
            adapter = new ArrayAdapter(MainActivity.this,
android.R.layout.simple_list_item_1, headlines);
            setListAdapter(adapter);
        }
    }


    @Override
    protected void onListItemClick(ListView l, View v, int position, long
```

```
id)
    {
        Uri uri = Uri.parse((links.get(position)).toString()); Intent
intent = new Intent(Intent.ACTION_VIEW, uri);
        startActivity(intent);
    }

    public InputStream getInputStream(URL url)
    {
        try
        {
            return url.openConnection().getInputStream();
        }
        catch (IOException e)
        {
            return null;
        }
    }
}
```

7) GPS

Activity_main.xml

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

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

</LinearLayout>
```

Activity_gpstracker.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=".GPSTracker">

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

Mainactivity.java

```
package com.example.gps;
import android.Manifest;
import android.app.Activity;
import android.os.Bundle;
import android.content.pm.PackageManager;
```

```
import android.view.View;
import android.widget.Button;
import android.widget.Toast;
import androidx.core.app.ActivityCompat;
public class MainActivity extends Activity {
    Button btnShowLocation;
    private static final int REQUEST_CODE_PERMISSION = 2;
    String mPermission = Manifest.permission.ACCESS_FINE_LOCATION;

    GPSTracker gps;
    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        try {
            if (ActivityCompat.checkSelfPermission(this, mPermission)
                    != PackageManager.PERMISSION_GRANTED) {
                ActivityCompat.requestPermissions(this, new
String[]{mPermission},
                        REQUEST_CODE_PERMISSION);
            }
        } catch (Exception e) {
            e.printStackTrace();
        }
        btnShowLocation = (Button) findViewById(R.id.button);
        btnShowLocation.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View arg0) {
                gps = new GPSTracker(MainActivity.this);
                if(gps.canGetLocation()){
                    double latitude = gps.getLatitude();
                    double longitude = gps.getLongitude();
                    Toast.makeText(getApplicationContext(), "Your Location
is - \nLat: "+ latitude + "\nLong: " + longitude,
Toast.LENGTH_LONG).show();
                }else{
                    gps.showSettingsAlert();
                }
            }
        });
    }
}
```

GPSTracker.java

```
package com.example.gps;

import android.annotation.SuppressLint;
import android.app.AlertDialog;
import android.app.Service;
import android.content.Context;
import android.content.DialogInterface;
import android.content.Intent;
import android.location.Location;
import android.location.LocationListener;
import android.location.LocationManager;
import android.os.Bundle;
import android.os.IBinder;
import android.provider.Settings;
import android.util.Log;
```

```
public class GPSTracker extends Service implements LocationListener {
    private final Context mContext;
    boolean isGPSEnabled = false;
    boolean isNetworkEnabled = false;
    boolean canGetLocation = false;
    Location location;
    double latitude;
    double longitude;
    private static final long MIN_DISTANCE_CHANGE_FOR_UPDATES = 10;
    private static final long MIN_TIME_BW_UPDATES = 1000 * 60 * 1;
    protected LocationManager locationManager;
    public GPSTracker(Context context) {
        this.mContext = context;
        getLocation();
    }
    @SuppressLint("MissingPermission")

    public Location getLocation() {
        try {
            locationManager = (LocationManager)
mContext.getSystemService(LOCATION_SERVICE);
            isGPSEnabled =
locationManager.isProviderEnabled(LocationManager.GPS_PROVIDER);
            isNetworkEnabled =
locationManager.isProviderEnabled(LocationManager.NETWORK_PROVIDER);
            if (!isGPSEnabled && !isNetworkEnabled) {
            } else {
                this.canGetLocation = true;
                if (isNetworkEnabled) {

locationManager.requestLocationUpdates(LocationManager.NETWORK_PROVIDER,
MIN_TIME_BW_UPDATES, MIN_DISTANCE_CHANGE_FOR_UPDATES, this);
                    Log.d("Network", "Network");
                    if (locationManager != null) {
                        location =
locationManager.getLastKnownLocation(LocationManager.NETWORK_PROVIDER);
                        if (location != null) {
                            latitude = location.getLatitude();
                            longitude = location.getLongitude();
                        }
                    }
                }
                if (isGPSEnabled) {
                    if (location == null) {

locationManager.requestLocationUpdates(LocationManager.GPS_PROVIDER,
MIN_TIME_BW_UPDATES, MIN_DISTANCE_CHANGE_FOR_UPDATES, this);
                        Log.d("GPS Enabled", "GPS Enabled");
                        if (locationManager != null) {
                            location =
locationManager.getLastKnownLocation(LocationManager.GPS_PROVIDER);
                            if (location != null) {
                                latitude = location.getLatitude();
                                longitude = location.getLongitude();
                            }
                        }
                    }
                }
            }
        } catch (Exception e) {
```

```
            e.printStackTrace();
        }
        return location;
    }
    public void stopUsingGPS(){
        if(locationManager != null){
            locationManager.removeUpdates(GPSTracker.this);
        }
    }
    public double getLatitude(){
        if(location != null){
            latitude = location.getLatitude();
        }
        // return latitude
        return latitude;
    }
    public double getLongitude(){
        if(location != null){
            longitude = location.getLongitude();
        }
        // return longitude
        return longitude;
    }
    public boolean canGetLocation() {
        return this.canGetLocation;
    }

    public void showSettingsAlert(){
        AlertDialog.Builder alertDialog = new
AlertDialog.Builder(mContext);
        alertDialog.setTitle("GPS is settings");
        alertDialog.setMessage("GPS is not enabled. Do you want to go to
settings menu?");
        alertDialog.setPositiveButton("Settings", new
DialogInterface.OnClickListener() {
            public void onClick(DialogInterface dialog,int which) {
                Intent intent = new
Intent(Settings.ACTION_LOCATION_SOURCE_SETTINGS);
                mContext.startActivity(intent);
            }
        });

        alertDialog.setNegativeButton("Cancel", new
DialogInterface.OnClickListener() {
            public void onClick(DialogInterface dialog, int which) {
                dialog.cancel();
            }
        });

        alertDialog.show();
    }
    @Override
    public void onLocationChanged(Location location) {    }
    @Override
    public void onProviderDisabled(String provider) {    }
    @Override
    public void onProviderEnabled(String provider) {    }
    @Override
    public void onStatusChanged(String provider, int status, Bundle extras)
{    }
    @Override
```

```
    public IBinder onBind(Intent arg0) {
        return null;
    }
}
```

8) Multithread

Activitymain.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="348dp"
        android:layout_height="462dp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.315"
        />

    <Button
        android:id="@+id/button"
        android:layout_width="124dp"
        android:layout_height="58dp"
        android:text="Button1"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.243"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.882" />

    <Button
        android:id="@+id/button2"
        android:layout_width="131dp"
        android:layout_height="58dp"
        android:text="Button2"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.803"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.882" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

```
package com.example.multithread;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
```

```
import android.widget.Button;
import android.widget.ImageView;

public class MainActivity extends AppCompatActivity {

    ImageView img;
    Button b1,b2;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        img = (ImageView) findViewById(R.id.imageView);
        b1 = (Button) findViewById(R.id.button);
        b2 = (Button) findViewById(R.id.button2);

        b1.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                new Thread(new Runnable() {
                    @Override
                    public void run() {
                        img.post(new Runnable() {
                            @Override
                            public void run() {
                                img.setImageResource(R.drawable.img);
                            }
                        });
                    }
                }).start();
            }
        });

        b2.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                new Thread(new Runnable() {
                    @Override
                    public void run() {
                        img.post(new Runnable() {
                            @Override
                            public void run() {
                                img.setImageResource(R.drawable.img_1);
                            }
                        });
                    }
                }).start();
            }
        });
    }
}
```

```
public class MainActivity extends AppCompatActivity {
    ImageView img;
    Button b1,b2;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        img = (ImageView) findViewById(R.id.imageView);
        b1 = (Button) findViewById(R.id.button);
        b2 = (Button) findViewById(R.id.button2);
        b1.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                new Thread(new Runnable() {
                    @Override
                    public void run() {
                        img.post(new Runnable() {
                            @Override
                            public void run() { img.setImageResource(R.drawable.img); }
                        });
                    }
                }).start();
            }
        });
```

```
        b2.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                new Thread(new Runnable() {
                    @Override
                    public void run() {
                        img.post(new Runnable() {
                            @Override
                            public void run() { img.setImageResource(R.drawable.img_1); }
                        });
                    }
                }).start();
            }
        });
    }
}
```

9) Alert on message

```java
public class MainActivity extends AppCompatActivity {
    EditText ee1;
    Button b;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        ee1 = (EditText) findViewById(R.id.e1);
        b = (Button) findViewById(R.id.b1);

        b.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {

                NotificationCompat.Builder builder = new NotificationCompat.Builder( context: MainActivity.this, channelId: "Hi");
                builder.setContentTitle("Phew New message!!");
                builder.setContentText(ee1.getText().toString());
                builder.setSmallIcon(R.drawable.ic_launcher_background);

                NotificationManagerCompat managerCompat = NotificationManagerCompat.from(MainActivity.this);
                managerCompat.notify( id: 1,builder.build());
            }
        });
    }
}
```

10) SD card

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">

    <EditText
        android:id="@+id/e1"
        android:layout_width="338dp"
        android:layout_height="73dp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.493"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.185" />

    <Button
        android:id="@+id/button"
        android:layout_width="320dp"
        android:layout_height="61dp"
```

```
        android:text="Write to SD card"
        android:textSize="20dp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.472"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.325" />

    <Button
        android:id="@+id/button2"
        android:layout_width="317dp"
        android:layout_height="61dp"
        android:text="Read from SD Card"
        android:textSize="20dp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.457"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.431" />

    <Button
        android:id="@+id/button3"
        android:layout_width="320dp"
        android:layout_height="59dp"
        android:text="Clear"
        android:textSize="20dp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.494"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.541" />

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

```
package com.example.sdcard;

import androidx.appcompat.app.AppCompatActivity;

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

import java.io.BufferedInputStream;
import java.io.BufferedReader;
import java.io.File;
import java.io.FileInputStream;
import java.io.FileOutputStream;
import java.io.InputStreamReader;
import java.nio.charset.StandardCharsets;

public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
```

```
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        String state = Environment.getExternalStorageState();

        EditText e1 = (EditText) findViewById(R.id.e1);
        Button write = (Button) findViewById(R.id.button);
        Button read = (Button) findViewById(R.id.button2);
        Button clear = (Button) findViewById(R.id.button3);

        write.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                String message = e1.getText().toString();
                try {
                    File f = new File("/sdcard/test.txt");
                    f.createNewFile();
                    FileOutputStream fout = new FileOutputStream(f);
                    fout.write(message.getBytes());
                    fout.close();
                    Toast.makeText(getBaseContext(),"Data written in SD
card",Toast.LENGTH_LONG).show();
                }
                catch (Exception e)
                {

Toast.makeText(getBaseContext(),e.getMessage(),Toast.LENGTH_LONG).show();
                }
            }
        });

        read.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                String message;
                String buf = "";
                try {
                    File f = new File("/sdcard/test.txt");
                    FileInputStream fin = new FileInputStream(f);
                    BufferedReader br = new BufferedReader(new
InputStreamReader(fin));
                    while ((message = br.readLine()) != null) {
                        buf += message;
                    }
                    e1.setText(buf);
                    br.close();
                    fin.close();
                    Toast.makeText(getBaseContext(), "Data Recived from
SDCARD", Toast.LENGTH_LONG).show();
                } catch (Exception e) {
                    Toast.makeText(getBaseContext(), e.getMessage(),
Toast.LENGTH_LONG).show();
                }
            }
        });

                clear.setOnClickListener(new View.OnClickListener()
                {
                    @Override
                    public void onClick(View v)
                    {
```

```
                        e1.setText("");
                    }
                });

    }
}
```

Manifest.xml

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

    <uses-permission
android:name="android.permission.WRITE_EXTERNAL_STORAGE" />
    <uses-permission
android:name="android.permission.READ_EXTERNAL_STORAGE"/>

    <application
        android:allowBackup="true"
        android:requestLegacyExternalStorage="true"
        android:dataExtractionRules="@xml/data_extraction_rules"
        android:fullBackupContent="@xml/backup_rules"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/Theme.SDcard"
        tools:targetApi="31">
        <activity
            android:name=".MainActivity"
            android:exported="true">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />

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

            <meta-data
                android:name="android.app.lib_name"
                android:value="" />
        </activity>
    </application>

</manifest>
```

```java
package com.example.sdcard;
import ...
public class MainActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        String state = Environment.getExternalStorageState();
        EditText e1 = (EditText) findViewById(R.id.e1);
        Button write = (Button) findViewById(R.id.button);
        Button read = (Button) findViewById(R.id.button2);
        Button clear = (Button) findViewById(R.id.button3);
        write.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                String message = e1.getText().toString();
                try {
                    File f = new File( pathname: "/sdcard/test.txt");
                    f.createNewFile();
                    FileOutputStream fout = new FileOutputStream(f);
                    fout.write(message.getBytes());
                    fout.close();
                    Toast.makeText(getBaseContext(), text: "Data written in SD card",Toast.LENGTH_LONG).show();
                }
                catch (Exception e)
                {
                    Toast.makeText(getBaseContext(),e.getMessage(),Toast.LENGTH_LONG).show();
                }
            }
        });
```

```java
        read.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                String message;
                String buf = "";
                try {
                    File f = new File( pathname: "/sdcard/test.txt");
                    FileInputStream fin = new FileInputStream(f);
                    BufferedReader br = new BufferedReader(new InputStreamReader(fin));
                    while ((message = br.readLine()) != null) {
                        buf += message;
                    }
                    e1.setText(buf);
                    br.close();
                    fin.close();
                    Toast.makeText(getBaseContext(), text: "Data Recived from SDCARD", Toast.LENGTH_LONG).show();
                } catch (Exception e) {
                    Toast.makeText(getBaseContext(), e.getMessage(), Toast.LENGTH_LONG).show();
                }
            }
        });

        clear.setOnClickListener(new View.OnClickListener()
        {
            @Override
            public void onClick(View v) { e1.setText(""); }
        });

    }
```

11) Gmail

Main activity.java

```
package com.example.email;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import androidx.appcompat.app.AppCompatActivity;
public class MainActivity extends AppCompatActivity {
    private EditText eTo;
    private EditText eSubject;
    private EditText eMsg;
    private Button btn;
    @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"));
            }
        });
    }
}
```

activitymain.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:paddingLeft="20dp"
    android:paddingRight="20dp"
    android:orientation="vertical" >
    <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:layout_weight="1"
        android:gravity="top"
        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>
```

Android manifest

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

    <application
        android:allowBackup="true"
        android:dataExtractionRules="@xml/data_extraction_rules"
        android:fullBackupContent="@xml/backup_rules"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/Theme.Email"
        tools:targetApi="31">
        <activity
            android:name=".MainActivity"
            android:exported="true">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />
                <category android:name="android.intent.category.LAUNCHER"
/>
                <action android:name="android.intent.action.SEND"/>
                <category android:name="android.intent.category.DEFAULT"/>
                <data android:mimeType="message/rfc822"/>
            </intent-filter>

            <meta-data
                android:name="android.app.lib_name"
                android:value="" />
        </activity>
    </application>

</manifest>
```

12) Alarm clock

AlarmReceiver.java

```
package com.example.alarmclock;
import android.content.BroadcastReceiver;
import android.content.Context;
```

```
import android.content.Intent;
import android.media.Ringtone;
import android.media.RingtoneManager;
import android.net.Uri;
import android.widget.Toast;
public class AlarmReceiver extends BroadcastReceiver
{
    @Override
    public void onReceive(Context context, Intent intent)
    {
       Toast.makeText(context, "Alarm! Wake up! Wake up!",
Toast.LENGTH_LONG).show(); Uri alarmUri =
RingtoneManager.getDefaultUri(RingtoneManager.TYPE_ALARM);
       if (alarmUri == null)
        {
            alarmUri =
RingtoneManager.getDefaultUri(RingtoneManager.TYPE_NOTIFICATION);
        }
        Ringtone ringtone = RingtoneManager.getRingtone(context, alarmUri);
ringtone.play();
   }
}
```

Mainactivity.java

```
package com.example.alarmclock;
import android.app.AlarmManager;
import android.app.PendingIntent;
import android.content.Intent;
import android.os.Bundle;
import androidx.appcompat.app.AppCompatActivity;
import android.view.View;
import android.widget.TimePicker;
import android.widget.Toast;
import android.widget.ToggleButton;

import com.example.alarmclock.AlarmReceiver;

import java.util.Calendar;

public class MainActivity extends AppCompatActivity
{
    TimePicker alarmTimePicker;
    PendingIntent pendingIntent;
    AlarmManager alarmManager;
    @Override
    protected void onCreate(Bundle savedInstanceState)
    {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        alarmTimePicker = (TimePicker) findViewById(R.id.timePicker);
        alarmManager = (AlarmManager) getSystemService(ALARM_SERVICE);
    }
    public void OnToggleClicked(View view)
    {
        long time;
        if (((ToggleButton) view).isChecked())
        {
            Toast.makeText(MainActivity.this, "ALARM ON",
Toast.LENGTH_SHORT).show();
            Calendar calendar = Calendar.getInstance();
```

```
            calendar.set(Calendar.HOUR_OF_DAY,
alarmTimePicker.getCurrentHour());
            calendar.set(Calendar.MINUTE,
alarmTimePicker.getCurrentMinute());
            Intent intent = new Intent(this, AlarmReceiver.class);
pendingIntent = PendingIntent.getBroadcast(this, 0, intent, 0);
time=(calendar.getTimeInMillis()-(calendar.getTimeInMillis()%60000));
if(System.currentTimeMillis()>time) {
            if (calendar.AM_PM == 0)
                time = time + (1000*60*60*12);
            else
                time = time + (1000*60*60*24);
        }
        alarmManager.setRepeating(AlarmManager.RTC_WAKEUP, time, 10000,
pendingIntent);
        }
        else
        {
            alarmManager.cancel(pendingIntent);
            Toast.makeText(MainActivity.this, "ALARM OFF",
Toast.LENGTH_SHORT).show();
        }
    }
}
```

activity_main.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">

    <TimePicker
        android:id="@+id/timePicker"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="center" />

    <ToggleButton
        android:id="@+id/toggleButton"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="center"
        android:layout_margin="20dp"
        android:checked="false"
        android:onClick="OnToggleClicked" />

</LinearLayout>
```