



CAMBRIDGE INSTITUTE OF TECHNOLOGY
DEPARTMENT OF INFORMATION SCIENCE AND ENGINEERING



SUBJECT CODE: 18CSMP68

YEAR OF STUDY: 2021-2022

COURSE NAME: MOBILE APPLICATION DEVELOPMENT

COURSE CODE: 368

Program 2: calculator

```
<?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/editText"
        android:layout_width="389dp"
        android:layout_height="63dp"
        android:layout_marginStart="4dp"
        android:layout_marginTop="96dp"
        android:text=""
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <TableLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="@id/editText"
        app:layout_constraintStart_toStartOf="parent"
```

```
app:layout_constraintTop_toBottomOf="@+id/editText">
```

```
<TableRow
```

```
    android:layout_width="match_parent"
```

```
    android:layout_height="87dp">
```

```
    <Button
```

```
        android:id="@+id/button"
```

```
        android:layout_width="wrap_content"
```

```
        android:layout_height="wrap_content"
```

```
        android:onClick="onButtonClick"
```

```
        android:text="7" />
```

```
    <Button
```

```
        android:id="@+id/button2"
```

```
        android:layout_width="wrap_content"
```

```
        android:layout_height="wrap_content"
```

```
        android:onClick="onButtonClick"
```

```
        android:text="8" />
```

```
    <Button
```

```
        android:id="@+id/button3"
```

```
        android:layout_width="wrap_content"
```

```
        android:layout_height="wrap_content"
```

```
        android:onClick="onButtonClick"
```

```
        android:text="9" />
```

```
    <Button
```

```
        android:id="@+id/button4"
```

```
        android:layout_width="wrap_content"
```

```
        android:layout_height="wrap_content"
```

```
        android:onClick="onButtonClick"
```

```
        android:text="/" />
```

```
</TableRow>
```

```
<TableRow
```

```
    android:layout_width="match_parent"
```

```
    android:layout_height="match_parent">
```

```
    <Button
```

```
    android:id="@+id/button5"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:onClick="onButtonClick"
    android:text="4" />
```

```
<Button
    android:id="@+id/button6"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:onClick="onButtonClick"
    android:text="5" />
```

```
<Button
    android:id="@+id/button7"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:onClick="onButtonClick"
    android:text="6" />
```

```
<Button
    android:id="@+id/button8"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:onClick="onButtonClick"
    android:text="*" />
```

```
</TableRow>
```

```
<TableRow
    android:layout_width="match_parent"
    android:layout_height="match_parent" >
```

```
<Button
    android:id="@+id/button9"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:onClick="onButtonClick"
    android:text="1" />
```

```
<Button
    android:id="@+id/button10"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:onClick="onButtonClick"
    android:text="2" />

<Button
    android:id="@+id/button11"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:onClick="onButtonClick"
    android:text="3" />

<Button
    android:id="@+id/button12"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:onClick="onButtonClick"
    android:text="-" />
</TableRow>

<TableRow
    android:layout_width="match_parent"
    android:layout_height="132dp" >

    <Button
        android:id="@+id/button13"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:onClick="onButtonClick"
        android:text="." />

    <Button
        android:id="@+id/button14"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:onClick="onButtonClick"
        android:text="0" />
```

```
<Button
    android:id="@+id/button15"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:onClick="onButtonClick"
    android:text="" />

<Button
    android:id="@+id/button16"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:onClick="onButtonClick"
    android:text="+" />
</TableRow>
<TableRow
    android:layout_width="match_parent"
    android:layout_height="87dp">

    <Button
        android:id="@+id/button17"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:onClick="onButtonClick"
        android:text="C" />
</TableRow>
</TableLayout>
</androidx.constraintlayout.widget.ConstraintLayout>
```

Source Code

```
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;
import android.os.Bundle;

public class MainActivity extends AppCompatActivity {
    EditText resultTxt;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        resultTxt = findViewById(R.id.editText);
    }
}
```

```
public void onButtonClick(View v) {  
    Button b = (Button) v;  
    String currTxt = b.getText().toString();  
    String oldTxt = resultTxt.getText().toString();  
    if (currTxt.equals("C"))  
        resultTxt.setText("");  
    else if (!currTxt.equals("="))  
        resultTxt.setText(oldTxt + currTxt);  
  
    else if (currTxt.equals("=")) {  
        try {  
            String data = resultTxt.getText().toString();  
            if (data.contains("+")) {  
                String[] operands = data.split("\\+");  
                if (operands.length == 2) {  
                    double operand1 = Double.parseDouble(operands[0]);  
                    double operand2 = Double.parseDouble(operands[1]);  
                    double result = operand1 + operand2;  
                    resultTxt.setText(String.valueOf(result));  
                } else  
                    Toast.makeText(MainActivity.this, "invalid operation", Toast.LENGTH_LONG).show();  
            }  
        }  
    }  
}
```

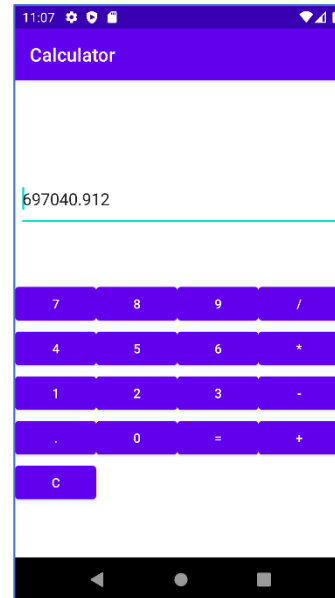
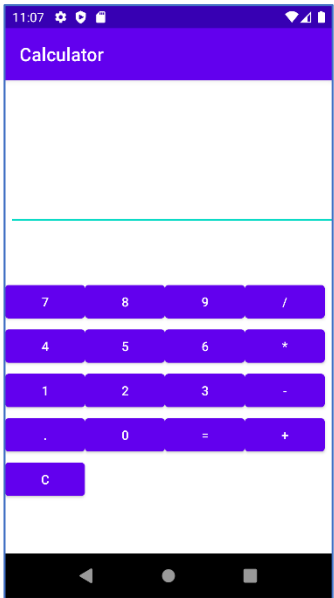
```
if (data.contains("-")) {  
    String[] operands = data.split("\\-");  
    if (operands.length == 2) {  
        double operand1 = Double.parseDouble(operands[0]);  
        double operand2 = Double.parseDouble(operands[1]);  
        double result = operand1 - operand2;  
        resultTxt.setText(String.valueOf(result));  
    } else  
        Toast.makeText(MainActivity.this, "invalid operation", Toast.LENGTH_LONG).show();  
}
```

```
if (data.contains("*")) {  
    String[] operands = data.split("\\*");  
    if (operands.length == 2) {  
        double operand1 = Double.parseDouble(operands[0]);  
        double operand2 = Double.parseDouble(operands[1]);  
        double result = operand1 * operand2;  
        resultTxt.setText(String.valueOf(result));  
    } else  
        Toast.makeText(MainActivity.this, "invalid operation", Toast.LENGTH_LONG).show();  
}
```



```
if (data.contains("/")) {
    String[] operands = data.split("\\");
    if (operands.length == 2) {
        double operand1 = Double.parseDouble(operands[0]);
        double operand2 = Double.parseDouble(operands[1]);
        double result = operand1 / operand2;
        resultTxt.setText(String.valueOf(result));
    } else
        Toast.makeText(MainActivity.this, "invalid operation", Toast.LENGTH_LONG).show();
}

} //end of try
catch (Exception e) {
    Toast.makeText(getBaseContext(), "Invalid Input", Toast.LENGTH_LONG).show();
} //end of catch
} //end of if "="
} // end of onClick method
} //end of class
```



PROGRAM 3: signup and signin

```
<?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/editText"
        android:layout_width="281dp"
        android:layout_height="63dp"
        android:layout_marginStart="128dp"
        android:layout_marginTop="164dp"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <EditText
        android:id="@+id/editText2"
        android:layout_width="269dp"
        android:layout_height="65dp"
        android:layout_marginStart="140dp"
        android:layout_marginTop="272dp"
        android:inputType="textPassword"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <Button
        android:id="@+id/button"
        android:layout_width="192dp"
        android:layout_height="71dp"
        android:layout_marginStart="140dp"
        android:layout_marginTop="380dp"
        android:text="SIGN UP"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />
```

```
<TextView
    android:id="@+id/textView3"
    android:layout_width="105dp"
    android:layout_height="29dp"
    android:layout_marginTop="196dp"
    android:layout_marginEnd="4dp"
    android:text="Username"
    app:layout_constraintEnd_toStartOf="@+id/editText"
    app:layout_constraintTop_toTopOf="parent" />

<TextView
    android:id="@+id/textView4"
    android:layout_width="113dp"
    android:layout_height="38dp"
    android:layout_marginStart="24dp"
    android:layout_marginTop="288dp"
    android:text="Password"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java

```
package com.example.signup;

import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;
import java.util.regex.Matcher;
import java.util.regex.Pattern;

public class MainActivity extends AppCompatActivity implements View.OnClickListener{
    Button signupBtn;
    EditText unameTxt,passTxt;
    Intent srcIntent;
    final Pattern p1 = Pattern.compile("[^a-zA-Z0-9]"); //For only special characters
    final Pattern p2 = Pattern.compile("(?=.*[a-z])"); //For atleast 1 small case letter
    final Pattern p3 = Pattern.compile("(?=.*[A-Z])"); //For atleast 1 Uppercase letter
    final Pattern p4 = Pattern.compile("(?=.*[0-9])");
```

@Override

```
protected void onCreate(Bundle savedInstanceState) {  
    super.onCreate(savedInstanceState);  
    setContentView(R.layout.activity_main);  
    unameTxt = findViewById(R.id.editText);  
    passTxt = findViewById(R.id.editText2);  
    signupBtn = findViewById(R.id.button);  
    signupBtn.setOnClickListener(this);  
  
}  
  
public void onClick(View v) {  
    String uname = unameTxt.getText().toString();  
    String pass = passTxt.getText().toString();  
    Matcher matcher1 = p1.matcher(pass);    // pass is holding input string  
    Matcher matcher2 = p2.matcher(pass);  
    Matcher matcher3 = p3.matcher(pass);  
    Matcher matcher4 = p4.matcher(pass);  
  
    boolean isStringContainsSpecialCharacter = matcher1.find();// use the find() method to perform pattern matching  
    boolean isStringLower = matcher2.find();  
    boolean isStringUpper = matcher3.find();  
    boolean isStringDigit = matcher4.find();
```

```
int passwordLen = pass.length();
```

```
if(isStringContainsSpecialCharacter && isStringUpper && isStringLower && isStringDigit && passwordLen >= 8)
```

```
{
```

```
    Intent srcIntent = new Intent(MainActivity.this,MainActivity2.class);
```

```
    Bundle data = new Bundle();
```

```
    data.putString("username",uname);
```

```
    data.putString("password",pass);
```

```
    srcIntent.putExtras(data);
```

```
    startActivity(srcIntent);
```

```
}
```

```
else
```

```
    Toast.makeText(MainActivity.this,"Invalid Password",Toast.LENGTH_SHORT).show();
```

```
}
```

```
}
```

LOGIN

activity_main2.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=".MainActivity2">

    <EditText
        android:id="@+id/editText"
        android:layout_width="281dp"
        android:layout_height="63dp"
        android:layout_marginStart="128dp"
        android:layout_marginTop="164dp"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <EditText
        android:id="@+id/editText2"
        android:layout_width="269dp"
        android:layout_height="65dp"
        android:layout_marginStart="140dp"
        android:layout_marginTop="272dp"
        android:inputType="textPassword"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <Button
        android:id="@+id/button2"
        android:layout_width="193dp"
        android:layout_height="59dp"
        android:layout_marginStart="140dp"
        android:layout_marginTop="388dp"
        android:text="Log In"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

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



```
<TextView
    android:id="@+id/textView"
    android:layout_width="105dp"
    android:layout_height="29dp"
    android:layout_marginTop="196dp"
    android:layout_marginEnd="4dp"
    android:text="Username"
    app:layout_constraintEnd_toStartOf="@+id/editText"
    app:layout_constraintTop_toTopOf="parent" />

<TextView
    android:id="@+id/textView2"
    android:layout_width="113dp"
    android:layout_height="38dp"
    android:layout_marginStart="24dp"
    android:layout_marginTop="296dp"
    android:text="Password"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity2.java

```
package com.example.signup;
```

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

```
import android.content.Intent;
```

```
import android.os.Bundle;
```

```
import android.view.View;
```

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

```
import android.widget.EditText;
```

```
import android.widget.Toast;
```

```
public class MainActivity2 extends AppCompatActivity implements View.OnClickListener {
```

```
    EditText loguserTxt,logpassTxt;
```

```
    Button signInBtn;
```

```
    String user,pass;
```

```
    Bundle bundle;
```

```
    int count=0;
```

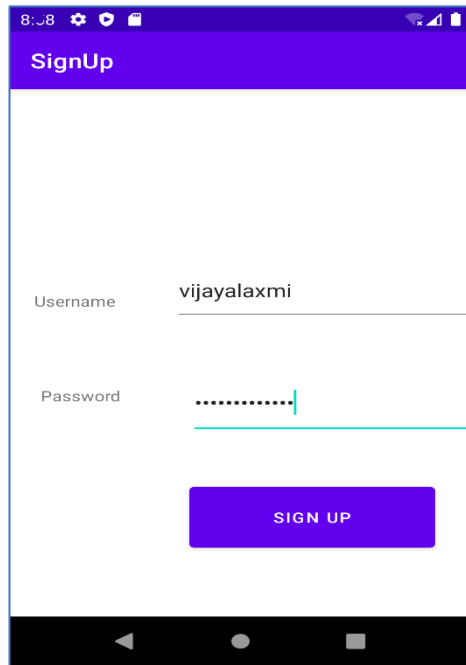
@Override

```
protected void onCreate(Bundle savedInstanceState) {  
    super.onCreate(savedInstanceState);  
    setContentView(R.layout.activity_main2);  
    Intent i = getIntent();  
    bundle=i.getExtras();  
    loguserTxt = findViewById(R.id.editText);  
    logpassTxt = findViewById(R.id.editText2);  
    signInBtn=findViewById(R.id.button2);  
    signInBtn.setOnClickListener(this);  
    if(bundle!=null) {  
        user = bundle.getString("username");  
        pass = bundle.getString("password");  
    }  
    else  
        Toast.makeText(getApplicationContext(),"data pass error",Toast.LENGTH_SHORT).show();  
}
```

```
public void onClick(View v) {  
    String user1=loguserTxt.getText().toString();  
    String pass1=logpassTxt.getText().toString();  
    if(user.equals(user1) && pass.equals(pass1))  
        Toast.makeText(this,"Login Successful",Toast.LENGTH_LONG).show();  
    else  
    {  
        count++;  
        if(count==3)  
        {  
            signInBtn.setEnabled(false);  
            Toast.makeText(this, "Failed Login Attempts",Toast.LENGTH_LONG).show();  
        }  
    }  
    else  
        Toast.makeText(this,"Login Failed, Try Again "+count ,Toast.LENGTH_LONG).show();  
}  
} //end of on click  
} //end of class
```

OUTPUT

Sign up case



8:08

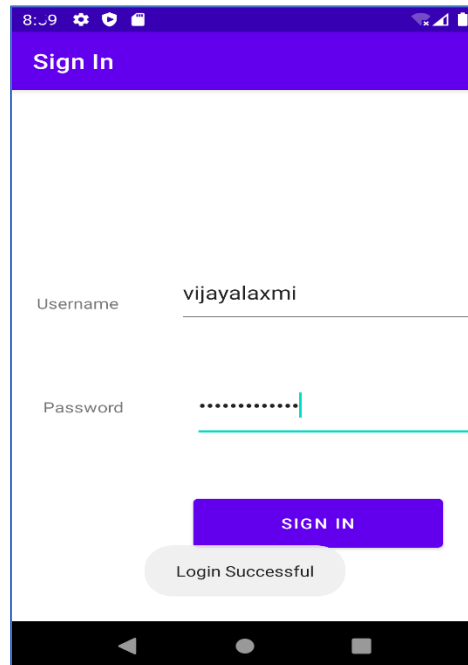
SignUp

Username vijayalaxmi

Password

SIGN UP

This screenshot shows the initial state of the 'SignUp' screen. The title bar is blue with the text 'SignUp'. The form has two input fields: 'Username' with the value 'vijayalaxmi' and 'Password' with masked characters '.....'. A blue 'SIGN UP' button is at the bottom. The status bar at the top shows the time 8:08 and various icons.



8:09

Sign In

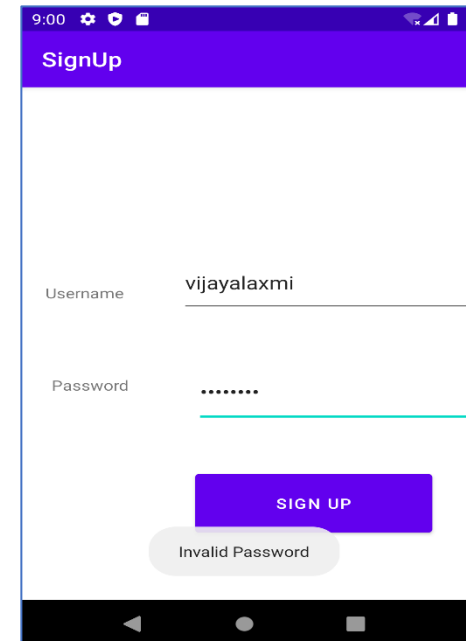
Username vijayalaxmi

Password

SIGN IN

Login Successful

This screenshot shows the 'Sign In' screen. The title bar is blue with the text 'Sign In'. The form has two input fields: 'Username' with the value 'vijayalaxmi' and 'Password' with masked characters '.....'. A blue 'SIGN IN' button is at the bottom. A grey toast message 'Login Successful' is displayed below the button. The status bar at the top shows the time 8:09.



9:00

SignUp

Username vijayalaxmi

Password

SIGN UP

Invalid Password

This screenshot shows the 'SignUp' screen. The title bar is blue with the text 'SignUp'. The form has two input fields: 'Username' with the value 'vijayalaxmi' and 'Password' with masked characters '.....'. A blue 'SIGN UP' button is at the bottom. A grey toast message 'Invalid Password' is displayed below the button. The status bar at the top shows the time 9:00.

sign in case:

8:09

Sign In

Username

vijayalaxmi

Password

.....

SIGN IN

Login Failed, Try Again 2

8:09

Sign In

Username

vijayalaxmi

Password

.....

SIGN IN

Failed Login Attempts

Program 4- Wall paper change

```
<?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">

    <Button
        android:id="@+id/button"
        android:layout_width="209dp"
        android:layout_height="59dp"
        android:layout_marginStart="116dp"
        android:layout_marginBottom="120dp"
        android:text="Click here to change Wallpaper"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintStart_toStartOf="parent" />

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

AndroidManifest.xml:

```
<uses-permission android:name="android.permission.SET_WALLPAPER"/>
<application
```

MainActivity.java

```
package com.example.wallpaperapp;

import androidx.appcompat.app.AppCompatActivity;
import android.app.WallpaperManager;
import android.graphics.BitmapFactory;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import java.io.IOException;
import java.util.Random;
import java.util.Timer;
import java.util.TimerTask;

public class MainActivity extends AppCompatActivity implements View.OnClickListener{
    int[] imageArray = {R.drawable.image1, R.drawable.image2, R.drawable.image3, R.drawable.image4, R.drawable.image5};
    Button startBtn;
    int i = 0;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        startBtn = findViewById(R.id.button);
        startBtn.setOnClickListener(this);
    }
}
```



```
public void onClick(View v) {  
    Timer timer = new Timer();  
    timer.schedule(new MyTask(), 0, 3000);  
  
}
```

```
class MyTask extends TimerTask {  
    @Override  
    public void run() {  
        WallpaperManager wpmng = WallpaperManager.getInstance((getBaseContext()));  
        try {  
            wpmng.setBitmap(BitmapFactory.decodeResource(getResources(), imageArray[i]));  
            i++;  
            if(i==5) i=0;  
        }  
        catch (IOException e) {  
            e.printStackTrace();  
        }  
    }  
}
```

Program 5 – Counter Application

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="200dp"
        android:layout_height="69dp"
        android:text="0"
        android:textAlignment="center"
        android:textAppearance="@style/TextAppearance.AppCompat.Large"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintHorizontal_bias="0.496"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.188" />

    <Button
        android:id="@+id/button"
        android:layout_width="140dp"
        android:layout_height="54dp"
        android:layout_marginStart="60dp"
        android:layout_marginTop="340dp"
        android:onClick="startCounter"
        android:text="Start"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />
```

```
<Button
    android:id="@+id/button2"
    android:layout_width="144dp"
    android:layout_height="51dp"
    android:layout_marginEnd="48dp"
    android:layout_marginBottom="340dp"
    android:onClick="stopCounter"
    android:text="Stop"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent" />

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

MainActivity.java

```
package com.example.counterapp;

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

public class MainActivity extends AppCompatActivity {
    Button startBtn, stopBtn;
    TextView counterTxt;
    Handler handler;
    Runnable runnable;
    int counter = 0;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        startBtn = findViewById(R.id.button);
        stopBtn = findViewById(R.id.button2);
        counterTxt = findViewById(R.id.textView);

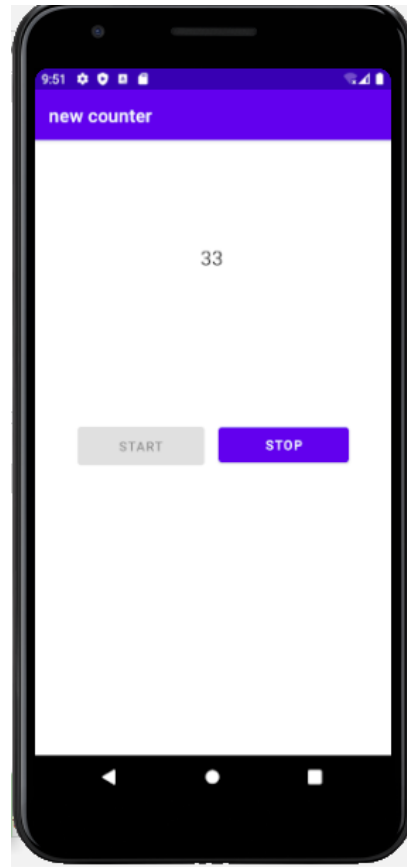
        handler = new Handler();
        runnable = new Runnable() {
            @Override
            public void run() {
```

```
        counterTxt.setText(Integer.toString(counter));
        counter++;
        handler.postDelayed(this,1000);
    }
};
}

public void startCounter(View v) {
    startBtn.setEnabled(false);
    handler.post(runnable);
}

public void stopCounter(View v) {
    startBtn.setEnabled(true);
    handler.removeCallbacks(runnable);
}
}
```

Output screen



Program 6 – Parser Application

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:layout_width="276dp"
        android:layout_height="50dp"
        android:text="XML and JSON Parser App"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintHorizontal_bias="0.288"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.052" />

    <Button
        android:id="@+id/button"
        android:layout_width="135dp"
        android:layout_height="73dp"
```

```
android:onClick='xmlParser'  
android:text="Parse XML data"  
app:layout_constraintBottom_toBottomOf="parent"  
app:layout_constraintEnd_toEndOf="parent"  
app:layout_constraintHorizontal_bias="0.108"  
app:layout_constraintStart_toStartOf="parent"  
app:layout_constraintTop_toTopOf="parent"  
app:layout_constraintVertical_bias="0.188" />
```

<Button

```
android:id="@+id/button2"  
android:layout_width="140dp"  
android:layout_height="63dp"  
android:onClick="jsonParser"  
android:text="Parse JSON Data"  
app:layout_constraintBottom_toBottomOf="parent"  
app:layout_constraintEnd_toEndOf="parent"  
app:layout_constraintHorizontal_bias="0.845"  
app:layout_constraintStart_toStartOf="parent"  
app:layout_constraintTop_toTopOf="parent"  
app:layout_constraintVertical_bias="0.2" />
```

<TextView

```
android:id="@+id/textView"  
android:layout_width="271dp"  
android:layout_height="368dp"
```



```
    android:scrollbarSize="6dp"
    android:scrollbarStyle="outsideInset"
    android:scrollbars="vertical"
    android:text="Data...."
    android:verticalScrollbarPosition="defaultPosition"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.314"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.716" />
```

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

MainActivity.java

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

import android.os.Build;
import android.os.Bundle;
import android.text.method.ScrollingMovementMethod;
import android.view.View;
import android.widget.Button;
```

```
import android.widget.TextView;
```

```
import org.json.JSONArray;
```

```
import org.json.JSONException;
```

```
import org.json.JSONObject;
```

```
import org.w3c.dom.Document;
```

```
import org.w3c.dom.Element;
```

```
import org.w3c.dom.Node;
```

```
import org.w3c.dom.NodeList;
```

```
import java.io.BufferedReader;
```

```
import java.io.IOException;
```

```
import java.io.InputStream;
```

```
import java.io.InputStreamReader;
```

```
import java.nio.charset.StandardCharsets;
```

```
import java.util.HashMap;
```

```
import javax.xml.parsers.DocumentBuilder;
```

```
import javax.xml.parsers.DocumentBuilderFactory;
```

```
public class MainActivity extends AppCompatActivity {
```

```
    Button xmlBtn, jsonBtn;
```

```
    TextView display;
```

```
    @Override
```

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

```
super.onCreate(savedInstanceState);  
setContentView(R.layout.activity_main);  
xmlBtn = findViewById(R.id.button);  
jsonBtn = findViewById(R.id.button2);  
display = findViewById(R.id.textView);  
}
```

```
public void xmlParser(View v) {  
    display.setText("");  
    display.setMovementMethod(new ScrollingMovementMethod());  
    display.setText("XML data..."+"\\n\\n");  
    try {  
        InputStream is = getAssets().open("place.xml");  
        DocumentBuilderFactory factory = DocumentBuilderFactory.newInstance();  
        DocumentBuilder builder = factory.newDocumentBuilder();  
        Document document = builder.parse(is);  
  
        Element root = document.getDocumentElement();  
        document.getDocumentElement().normalize();  
  
        NodeList nList = document.getElementsByTagName("place");  
        for (int i = 0; i < nList.getLength(); i++) {  
            Node node = nList.item(i);  
            if (node.getNodeType() == Node.ELEMENT_NODE) {  
                //Print each place details  
                Element eElement = (Element) node;
```

```

        display.append("\n" + "Place : " + eElement.getElementsByTagName("city_name").item(0).getTextContent() + "\n");
        display.append("Latitude : " + eElement.getElementsByTagName("Latitude").item(0).getTextContent() + "\n");
        display.append("Longitude : " + eElement.getElementsByTagName("Longitude").item(0).getTextContent() + "\n");
    }
}
} catch (Exception e) {
    e.getMessage();

}
}

```

```

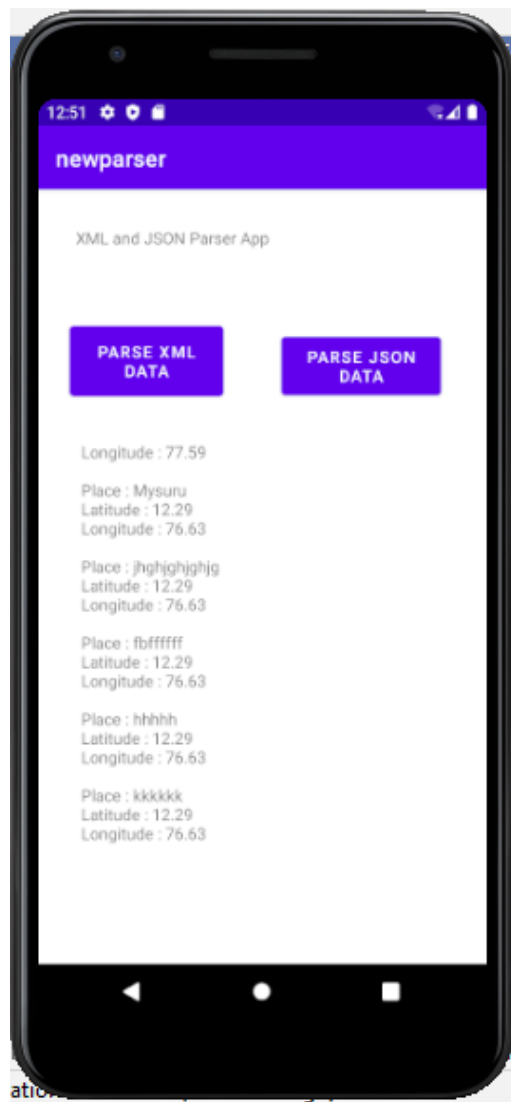
@RequiresApi(api = Build.VERSION_CODES.KITKAT)
public void jsonParser(View v) {
    display.setText("");
    display.setText("JSON data..."+"\n\n");
    display.setMovementMethod(new ScrollingMovementMethod());
    InputStream in = null;
    try {
        in = getApplicationContext().getAssets().open("places.json");
        byte[] data = new byte[in.available()];
        in.read(data);
        String jsondata = new String(data, StandardCharsets.UTF_8);
        JSONArray jsonlist = new JSONArray(jsondata);
        display.setMovementMethod(new ScrollingMovementMethod());

        for (int i = 0; i < jsonlist.length(); i++) {

```

```
JSONObject cityObj = jsonlist.getJSONObject(i);  
display.append("name: " + cityObj.getString("name") + "\n");  
display.append("Latitude: " + cityObj.getString("Latitude") + "\n");  
display.append("Longitude: " + cityObj.getString("Longitude") + "\n");  
}  
} catch (Exception e) {  
    e.getMessage();  
}  
}  
}
```

output:



Program 7 – Text To Speech Application

```
<?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/editText"
```

```
    android:layout_width="307dp"
```

```
    android:layout_height="42dp"
```

```
    android:text="Hello World!"
```

```
    app:layout_constraintBottom_toBottomOf="parent"
```

```
    app:layout_constraintHorizontal_bias="0.496"
```

```
    app:layout_constraintLeft_toLeftOf="parent"
```

```
    app:layout_constraintRight_toRightOf="parent"
```

```
    app:layout_constraintTop_toTopOf="parent"
```

```
    app:layout_constraintVertical_bias="0.421" />
```

```
<Button
```

```
    android:id="@+id/button"
```

```
    android:layout_width="142dp"
```

```
    android:layout_height="50dp"
```

```
android:layout_marginStart="148dp"
android:layout_marginBottom="244dp"
android:onClick="convertTxttoSpeech"
android:text="Convert"
app:layout_constraintBottom_toBottomOf="parent"
app:layout_constraintStart_toStartOf="parent" />
```

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

MainActivity.java

```
package com.example.texttospeech;
```

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

```
import android.os.Bundle;
```

```
import android.speech.tts.TextToSpeech;
```

```
import android.view.View;
```

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

```
import android.widget.EditText;
```

```
import android.widget.SeekBar;
```

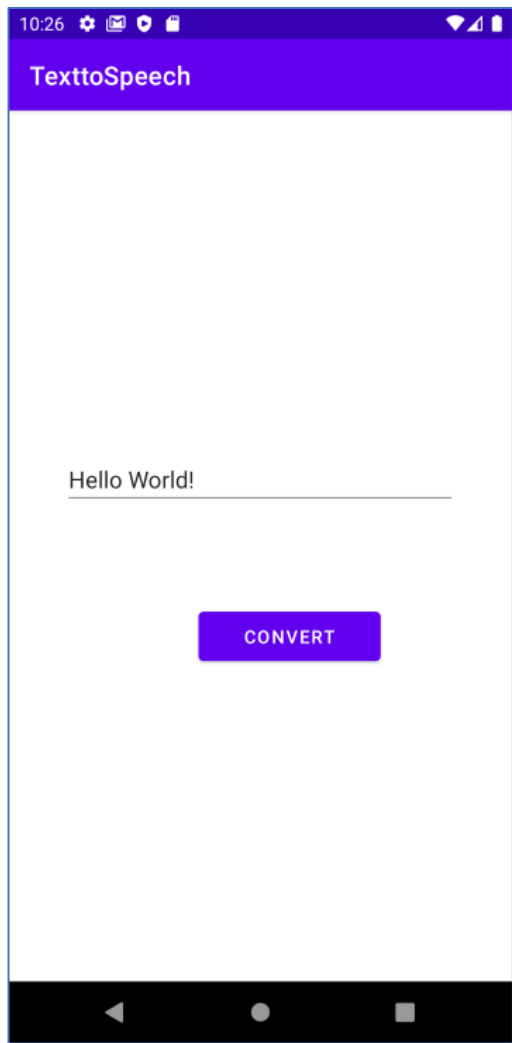
```
import android.widget.Toast;
```

```
import java.util.Locale;
```



```
public class MainActivity extends AppCompatActivity {  
    EditText textdata;  
    TextToSpeech tts;  
    Button speakBtn;  
  
    @Override  
    protected void onCreate(Bundle savedInstanceState) {  
        super.onCreate(savedInstanceState);  
        setContentView(R.layout.activity_main);  
        textdata = findViewById(R.id.editText);  
        speakBtn = findViewById(R.id.button);  
        tts = new TextToSpeech(MainActivity.this, new TextToSpeech.OnInitListener() {  
            @Override  
            public void onInit(int status) {  
                if(status==0)  
                    tts.setLanguage(Locale.ENGLISH);  
                else  
                    Toast.makeText(MainActivity.this, "Engine Not Initialized", Toast.LENGTH_LONG).show();  
            }  
        });  
    }  
    public void convertTxttoSpeech(View v) {  
        String text = textdata.getText().toString();  
        tts.speak(text, TextToSpeech.QUEUE_FLUSH, null);  
    }  
}
```

Output



Program 8- Call and Save Application

```
<?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">
```

```
<Button
```

```
    android:id="@+id/button11"
```

```
    android:layout_width="80dp"
```

```
    android:layout_height="53dp"
```

```
    android:layout_marginStart="48dp"
```

```
    android:layout_marginTop="232dp"
```

```
    android:text="1"
```

```
    app:layout_constraintStart_toStartOf="parent"
```

```
    app:layout_constraintTop_toTopOf="parent" />
```

```
<Button
```

```
    android:id="@+id/button12"
```

```
    android:layout_width="80dp"
```

```
    android:layout_height="53dp"
```

```
    android:layout_marginStart="48dp"
```

```
    android:layout_marginTop="232dp"
```

```
android:onClick="editNumber"
android:text="1"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent" />
```

<Button

```
android:id="@+id/button13"
android:layout_width="80dp"
android:layout_height="53dp"
android:layout_marginStart="268dp"
android:layout_marginTop="456dp"
android:onClick="editNumber"
android:text="#"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent" />
```

<Button

```
android:id="@+id/button7"
android:layout_width="80dp"
android:layout_height="53dp"
android:layout_marginStart="56dp"
android:layout_marginTop="464dp"
android:onClick="editNumber"
android:text="*"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent" />
```

<Button

```
    android:id="@+id/button8"  
    android:layout_width="80dp"  
    android:layout_height="53dp"  
    android:layout_marginStart="56dp"  
    android:layout_marginTop="384dp"  
    android:onClick="editNumber"  
    android:text="7"  
    app:layout_constraintStart_toStartOf="parent"  
    app:layout_constraintTop_toTopOf="parent" />
```

<Button

```
    android:id="@+id/button9"  
    android:layout_width="80dp"  
    android:layout_height="53dp"  
    android:layout_marginStart="164dp"  
    android:layout_marginTop="380dp"  
    android:onClick="editNumber"  
    android:text="8"  
    app:layout_constraintStart_toStartOf="parent"  
    app:layout_constraintTop_toTopOf="parent" />
```

<Button

```
    android:id="@+id/button10"  
    android:layout_width="80dp"  
    android:layout_height="53dp"
```

```
android:layout_marginStart="268dp"
android:layout_marginTop="380dp"
android:onClick="editNumber"
android:text="9"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent" />
```

<TextView

```
android:layout_width="301dp"
android:layout_height="35dp"
android:text="Call and Save Application"
android:textAlignment="center"
android:textAllCaps="true"
android:textSize="20sp"
app:layout_constraintBottom_toBottomOf="parent"
app:layout_constraintHorizontal_bias="0.4"
app:layout_constraintLeft_toLeftOf="parent"
app:layout_constraintRight_toRightOf="parent"
app:layout_constraintTop_toTopOf="parent"
app:layout_constraintVertical_bias="0.005" />
```

<EditText

```
android:id="@+id/editText"
android:layout_width="241dp"
android:layout_height="43dp"
android:layout_marginTop="148dp"
```

```
android:layout_marginEnd="124dp"
android:inputType="number"
android:text=""
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintTop_toTopOf="parent" />
```

<Button

```
android:id="@+id/button"
android:layout_width="80dp"
android:layout_height="53dp"
android:layout_marginStart="164dp"
android:layout_marginTop="456dp"
android:onClick="editNumber"
android:text="0"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent" />
```

<Button

```
android:id="@+id/button2"
android:layout_width="80dp"
android:layout_height="53dp"
android:layout_marginStart="152dp"
android:layout_marginTop="232dp"
android:onClick="editNumber"
android:text="2"
app:layout_constraintStart_toStartOf="parent"
```

```
app:layout_constraintTop_toTopOf="parent" />
```

```
<Button
```

```
    android:id="@+id/button4"
```

```
    android:layout_width="80dp"
```

```
    android:layout_height="53dp"
```

```
    android:layout_marginStart="260dp"
```

```
    android:layout_marginTop="232dp"
```

```
    android:onClick="editNumber"
```

```
    android:text="3"
```

```
    app:layout_constraintStart_toStartOf="parent"
```

```
    app:layout_constraintTop_toTopOf="parent" />
```

```
<Button
```

```
    android:id="@+id/button5"
```

```
    android:layout_width="80dp"
```

```
    android:layout_height="53dp"
```

```
    android:layout_marginStart="56dp"
```

```
    android:layout_marginTop="308dp"
```

```
    android:onClick="editNumber"
```

```
    android:text="4"
```

```
    app:layout_constraintStart_toStartOf="parent"
```

```
    app:layout_constraintTop_toTopOf="parent" />
```

```
<Button
```

```
    android:id="@+id/button6"
```



```
android:layout_width="80dp"
android:layout_height="53dp"
android:layout_marginStart="164dp"
android:layout_marginTop="308dp"
android:onClick="editNumber"
android:text="5"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent" />
```

<Button

```
android:id="@+id/button3"
android:layout_width="80dp"
android:layout_height="53dp"
android:layout_marginStart="268dp"
android:layout_marginTop="308dp"
android:onClick="editNumber"
android:text="6"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent" />
```

<Button

```
android:id="@+id/button14"
android:layout_width="137dp"
android:layout_height="52dp"
android:layout_marginStart="56dp"
android:layout_marginBottom="120dp"
```

```
    android:onClick="callAndSave"
    android:text="CALL"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintStart_toStartOf="parent" />
```

<Button

```
    android:id="@+id/button15"
    android:layout_width="123dp"
    android:layout_height="58dp"
    android:layout_marginEnd="60dp"
    android:layout_marginBottom="120dp"
    android:onClick="callAndSave"
    android:text="SAVE"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent" />
```

<Button

```
    android:id="@+id/button16"
    android:layout_width="70dp"
    android:layout_height="52dp"
    android:layout_marginStart="324dp"
    android:layout_marginTop="136dp"
    android:onClick="editNumber"
    android:text="Del"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent" />
```

</androidx.constraintlayout.widget.ConstraintLayout>

Manifest.xml

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.callapp">
    <uses-permission android:name="android.permission.CALL_PHONE"/>
    <uses-permission android:name="android.permission.READ_CONTACTS"/>
</application>
```

MainActivity.java

```
package com.example.callapp;

import androidx.appcompat.app.AppCompatActivity;
import androidx.core.app.ActivityCompat;
import android.Manifest;
import android.content.Intent;
import android.content.pm.PackageManager;
import android.net.Uri;
import android.os.Bundle;
import android.provider.ContactsContract;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
```

```
public class MainActivity extends AppCompatActivity {  
    EditText numberTxt;  
    Button callBtn,saveBtn,delBtn;  
    @Override  
    protected void onCreate(Bundle savedInstanceState) {  
        super.onCreate(savedInstanceState);  
        setContentView(R.layout.activity_main);  
        numberTxt = findViewById(R.id.editText);  
        callBtn = findViewById(R.id.button14);  
        saveBtn = findViewById(R.id.button15);  
        delBtn = findViewById(R.id.button16);  
        if(ActivityCompat.checkSelfPermission(MainActivity.this, Manifest.permission.CALL_PHONE) != PackageManager.PERMISSION_GRANTED){  
            ActivityCompat.requestPermissions(MainActivity.this,new String[]{Manifest.permission.CALL_PHONE},1);  
        }  
    }  
  
    public void editNumber(View v) {  
        Button button = (Button) v;  
        String currTxt = button.getText().toString();  
        String oldTxt = numberTxt.getText().toString();  
        if(v.equals(delBtn)) {  
            if(oldTxt.length() > 0)  
                numberTxt.setText(oldTxt.substring(0,oldTxt.length()-1));  
            else  
                numberTxt.setText("");  
        }  
    }  
}
```

```
else if((!currTxt.equals("*") && !currTxt.equals("#"))) {
    numberTxt.setText(oldTxt + currTxt);
}
}

public void callAndSave(View v) {
    String phno = numberTxt.getText().toString();
    if(v.equals(callBtn)){
        Intent callIntent = new Intent(Intent.ACTION_CALL);
        callIntent.setData(Uri.parse("tel:" + phno));
        startActivity(callIntent);
    }
    else if(v.equals(saveBtn)) {
        Intent saveIntent = new Intent(Intent.ACTION_INSERT);
        saveIntent.setType(ContactsContract.RawContacts.CONTENT_TYPE);
        saveIntent.putExtra(ContactsContract.Intents.Insert.PHONE,phno);
        startActivity(saveIntent);
    }

}
}
```

Output:

