

**Program-1:** Create an application to design a Visiting Card. The Visiting card should have a company logo at the top right corner. The company name should be displayed in Capital letters, aligned to the center. Information like the name of the employee, job title, phone number, address, email, fax and the website address is to be displayed. Insert a horizontal line between the job title and the phone number.



1. Firstly Create an Application by Name “VisitingCardApp”
2. Go to xml code of design change the layout to “RelativeLayout”
3. Add TextView component change the following properties:
  - Size: 38dp
  - Text: MITT
  - Align left top
4. Add ImageView to design and in type choose “IC\_LAUNCHER\_FOREGROUND”
  - Download the logo & copy the same in res->drawable folder
  - In xml code of imageview change srcCompat=”@drawable/logo”
  - Align right top
5. Add View component & change the following properties:
  - Height: 4dp
  - Background: “#4444” (black color)
6. Add TextView component change the following properties:
  - Size: 20dp
  - Text: N N Naveen
  - Style: Bold
  - Align center

7. Add TextView component change the following properties:
  - Size: 20dp
  - Text: Assistant Professor-CSE
  - Align center
8. Add TextView component change the following properties:
  - Size: 20dp
  - Text: Address-#6273, Sri Krishna Dhama, 2<sup>nd</sup> Phase, 4<sup>th</sup> Stage Vijaya Nagar, Mysuru-17
  - Align: center
9. Add TextView component change the following properties:
  - Size: 20dp
  - Text: Email-nnnaveen.nag@gmail.com
  - Align: center
10. Add TextView component change the following properties:
  - Size: 20dp
  - Text: Phone-9036915739

#### **XML CODE**

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

    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentRight="true"
        android:layout_alignParentBottom="true"
        android:layout_marginStart="17dp"
        android:layout_marginLeft="17dp"
        android:layout_marginTop="17dp"
```

```
        android:layout_marginEnd="244dp"
        android:layout_marginRight="244dp"
        android:layout_marginBottom="486dp"
        android:text="MITT"
        android:textSize="38dp" />

<ImageView
    android:id="@+id/imageView"
    android:layout_width="231dp"
    android:layout_height="174dp"
    android:layout_alignParentEnd="true"
    android:layout_alignParentRight="true"
    android:layout_alignParentBottom="true"
    android:layout_marginEnd="-14dp"
    android:layout_marginRight="-14dp"
    android:layout_marginBottom="481dp"
    app:srcCompat="@drawable/logo" />

<View
    android:id="@+id/view"
    android:layout_width="wrap_content"
    android:layout_height="4dp"
    android:layout_alignParentBottom="true"
    android:background="#4444"
    android:layout_marginBottom="466dp" />

<TextView
    android:id="@+id/textView2"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignParentEnd="true"
    android:layout_alignParentRight="true"
    android:layout_alignParentBottom="true"
    android:layout_marginEnd="117dp"
    android:layout_marginRight="117dp"
    android:layout_marginBottom="394dp"
    android:text="N N Naveen"
    android:textSize="30dp"
    android:textStyle="bold" />
```

```
<TextView
    android:id="@+id/textView3"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignParentEnd="true"
    android:layout_alignParentRight="true"
    android:layout_alignParentBottom="true"
    android:layout_marginEnd="64dp"
    android:layout_marginRight="64dp"
    android:layout_marginBottom="343dp"
    android:text="Assistant Professor-CSE"
    android:textSize="25dp" />

<TextView
    android:id="@+id/textView4"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignParentEnd="true"
    android:layout_alignParentRight="true"
    android:layout_alignParentBottom="true"
    android:layout_marginEnd="127dp"
    android:layout_marginRight="127dp"
    android:layout_marginBottom="294dp"
    android:text="Ph No: 9036915739"
    android:textSize="20dp" />

<TextView
    android:id="@+id/textView5"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignParentEnd="true"
    android:layout_alignParentRight="true"
    android:layout_alignParentBottom="true"
    android:layout_marginEnd="10dp"
    android:layout_marginRight="10dp"
    android:layout_marginBottom="229dp"
    android:text="#6273, Sri Krishna Dhama, 2nd Phase, 4th Stage
Vijaya Nagar, Mysuru-17"
    android:textSize="20dp" />
```

```
<TextView  
    android:id="@+id/textView6"  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:layout_alignParentEnd="true"  
    android:layout_alignParentRight="true"  
    android:layout_alignParentBottom="true"  
    android:layout_marginEnd="44dp"  
    android:layout_marginRight="44dp"  
    android:layout_marginBottom="189dp"  
    android:text="Email: nnnaveen.nag@gmail.com"  
    android:textSize="20dp" />  
  
</RelativeLayout>
```

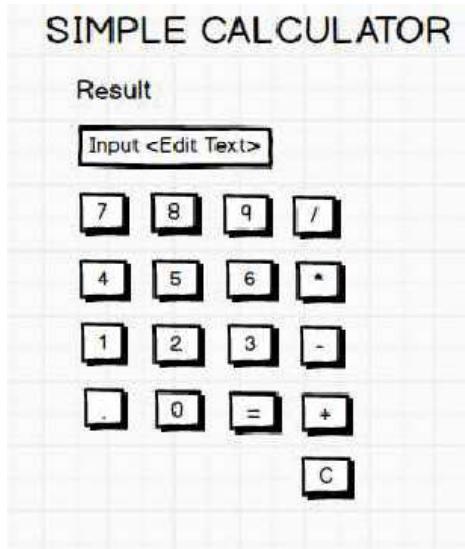
**JAVA-CODE**

```
import androidx.appcompat.app.AppCompatActivity;  
import android.os.Bundle;  
public class MainActivity extends AppCompatActivity {  
    protected void onCreate(Bundle savedInstanceState) {  
        super.onCreate(savedInstanceState);  
        setContentView(R.layout.activity_main);  
    }  
}
```

**OUTPUT**



**Program-2:** Develop an Android application using controls like Button, TextView, EditText for designing a calculator having basic functionality like Addition, Subtraction, Multiplication, and Division.



1. Firstly Create an Application by Name “SimpleCalculator”
2. Go to xml code of design change the layout to “RelativeLayout”
3. Add PlainText(EditText) component & change the following properties in XML  
Code:
  - Text: “”
  - Hint: “0”
  - id: “@+id/editText”
4. Add the buttons for the numbers: 0,1,2,3,4,5,6,7,8,9; Operators: +,-,\*,/ and for =, C clear)
5. Add the following properties for buttons,
  - onClick =“numberEvent” for all digits
  - onClick = “operationEvent” for all operators
  - onClick = “assignEvent” for =
  - onClick = “clearEvent” for C

### XML CODE

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

    <EditText
        android:id="@+id/editText"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="0dp"
        android:layout_marginBottom="477dp"
        android:ems="10"
        android:textSize="25dp"
        android:hint="0"
        android:inputType="textPersonName" />

    <Button
        android:id="@+id/b1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="308dp"
        android:layout_marginBottom="313dp"
        android:onClick="numberEvent"
        android:text="1" />

    <Button
        android:id="@+id/b2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="211dp"
        android:layout_marginBottom="314dp"
        android:onClick="numberEvent"
        android:text="2" />

    <Button
        android:id="@+id/b3"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
```

```
        android:layout_alignParentEnd="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="112dp"
        android:layout_marginBottom="314dp"
        android:onClick="numberEvent"
        android:text="3" />

<Button
    android:id="@+id/div"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignParentEnd="true"
    android:layout_alignParentBottom="true"
    android:layout_marginEnd="12dp"
    android:layout_marginBottom="314dp"
    android:onClick="operationEvent"
    android:text="/" />

<Button
    android:id="@+id/b4"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignParentEnd="true"
    android:layout_alignParentBottom="true"
    android:layout_marginEnd="308dp"
    android:layout_marginBottom="257dp"
    android:onClick="numberEvent"
    android:text="4" />

<Button
    android:id="@+id/b7"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignParentEnd="true"
    android:layout_alignParentBottom="true"
    android:layout_marginEnd="307dp"
    android:layout_marginBottom="210dp"
    android:onClick="numberEvent"
    android:text="7" />

<Button
    android:id="@+id/clear"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignParentEnd="true"
    android:layout_alignParentBottom="true"
    android:layout_marginEnd="307dp"
    android:layout_marginBottom="156dp"
    android:onClick="clearEvent"
```

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

    <Button
        android:id="@+id/b0"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="209dp"
        android:layout_marginBottom="157dp"
        android:onClick="numberEvent"
        android:text="0" />

    <Button
        android:id="@+id/assing"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="112dp"
        android:layout_marginBottom="155dp"
        android:onClick="assignEvent"
        android:text="=" />

    <Button
        android:id="@+id/add"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="10dp"
        android:layout_marginBottom="158dp"
        android:onClick="operationEvent"
        android:text "+" />

    <Button
        android:id="@+id/b8"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="211dp"
        android:layout_marginBottom="210dp"
        android:onClick="numberEvent"
        android:text="8" />
```

```
<Button
    android:id="@+id/b9"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignParentEnd="true"
    android:layout_alignParentBottom="true"
    android:layout_marginEnd="110dp"
    android:layout_marginBottom="210dp"
    android:onClick="numberEvent"
    android:text="9" />

<Button
    android:id="@+id/sub"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignParentEnd="true"
    android:layout_alignParentBottom="true"
    android:layout_marginEnd="10dp"
    android:layout_marginBottom="208dp"
    android:onClick="operationEvent"
    android:text="-" />

<Button
    android:id="@+id/b5"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignParentEnd="true"
    android:layout_alignParentBottom="true"
    android:layout_marginEnd="209dp"
    android:layout_marginBottom="258dp"
    android:onClick="numberEvent"
    android:text="5" />

<Button
    android:id="@+id/b6"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignParentEnd="true"
    android:layout_alignParentBottom="true"
    android:layout_marginEnd="113dp"
    android:layout_marginBottom="257dp"
    android:onClick="numberEvent"
    android:text="6" />

<Button
    android:id="@+id/mul"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignParentEnd="true"
```

```
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="11dp"
        android:layout_marginBottom="258dp"
        android:onClick="operationEvent"
        android:text="X" />

    </RelativeLayout>
```

### **JAVA CODE**

```
package mitt.cse.simplecalculator;

import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.EditText;

public class MainActivity extends AppCompatActivity {
    EditText ed;
    String op = "+";
    String oldNum = "";

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

        ed = findViewById(R.id.editText);
    }

    public void numberEvent(View view) {
        String num = ed.getText().toString();
        switch (view.getId()){
            case R.id.b0: num += "0";
                break;
            case R.id.b1: num += "1";
                break;
            case R.id.b2: num += "2";
                break;
            case R.id.b3: num += "3";
                break;
            case R.id.b4: num += "4";
                break;
            case R.id.b5: num += "5";
                break;
            case R.id.b6: num += "6";
                break;
            case R.id.b7: num += "7";
                break;
        }
    }
}
```

```
        case R.id.b8: num += "8";
                        break;
        case R.id.b9: num += "9";
                        break;

    }
    ed.setText(num);
}

public void operationEvent(View view) {
    oldNum = ed.getText().toString();
    switch (view.getId()){
        case R.id.div: op = "/"; break;
        case R.id.mul: op = "*"; break;
        case R.id.sub: op = "-"; break;
        case R.id.add: op = "+"; break;
    }
    ed.getText().clear();
}

public void assignEvent(View view) {
    String newNum = ed.getText().toString();
    double result = 0.0;
    switch (op){
        case "+": result = Double.parseDouble(oldNum) +
Double.parseDouble(newNum);
                    break;

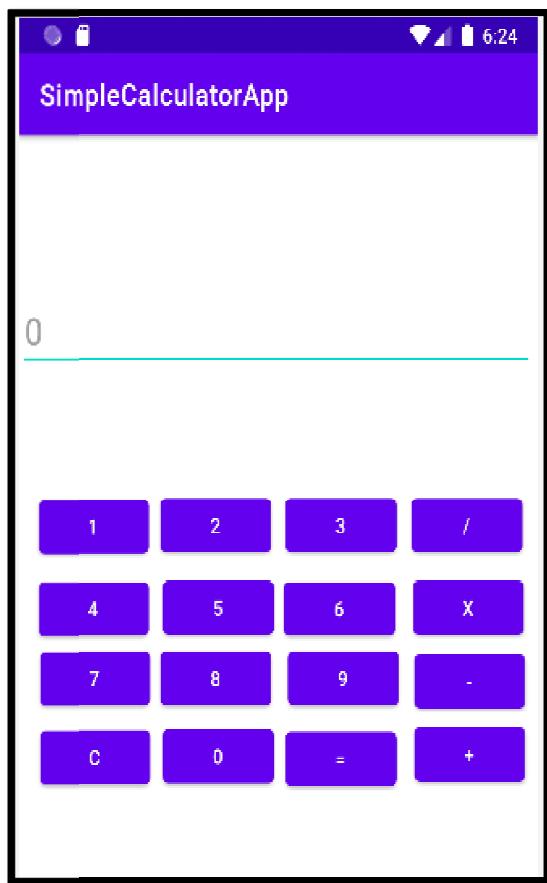
        case "-": result = Double.parseDouble(oldNum) -
Double.parseDouble(newNum);
                    break;

        case "*": result = Double.parseDouble(oldNum) *
Double.parseDouble(newNum);
                    break;

        case "/": result = Double.parseDouble(oldNum) /
Double.parseDouble(newNum);
                    break;
    }
    ed.setText(result+"");
}

public void clearEvent(View view) {
    ed.getText().clear();
}
}
```

**OUTPUT**



**Program-3:** Create a SIGN Up activity with Username and Password. Validation of password should happen based on the following rules:

- Password should contain uppercase and lowercase letters.
- Password should contain letters and numbers.
- Password should contain special characters.
- Minimum length of the password (the default value is 8).

On successful SIGN UP proceed to the next Login activity. Here the user should SIGN IN using the Username and Password created during signup activity. If the Username and Password are matched then navigate to the next activity which displays a message saying “Successful Login” or else display a toast message saying “Login Failed”. The user is given only two attempts and after that display a toast message saying “Failed Login Attempts” and disable the SIGN IN button. Use Bundle to transfer information from one activity to another.

1. Firstly Create an Application by Name “SignUpActivity”
2. Go to xml code of design change the layout to “RelativeLayout”
3. Add TextView component & change the following properties:
  - Size: 38dp
  - Text: “Sign Up”
  - Center-Align
4. Add Email (EditText) component & change the following properties in XML Code:
  - Hint: “Email ID”
  - id: “@+id/emailEditText”
5. Add Password (EditText) component & change the following properties in XML Code:
  - Hint: “Password”
  - id: “@+id/passwordEditText”
6. Add Button component & change the following properties in XML
  - Id: “@+id/signBtn”
  - Text: “Sign Up”

**XML CODE**

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

    <TextView
        android:layout_width="160dp"
        android:layout_height="42dp"
        android:layout_alignParentEnd="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="112dp"
        android:layout_marginBottom="573dp"
        android:text="Sign Up"
        android:textSize="28dp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <EditText
        android:id="@+id/emailEditText"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="29dp"
        android:layout_marginBottom="431dp"
        android:ems="10"
        android:hint="Email ID"
        android:inputType="textEmailAddress"
        android:textSize="28dp" />

    <EditText
        android:id="@+id/passwordEditText"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentBottom="true"
```

```
        android:layout_marginEnd="34dp"
        android:layout_marginBottom="345dp"
        android:ems="10"
        android:hint="Password"
        android:inputType="textPassword"
        android:textSize="28dp" />

    <Button
        android:id="@+id/signUpBtn"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="106dp"
        android:layout_marginBottom="226dp"
        android:text="Sign Up"
        android:textSize="28dp" />

</RelativeLayout>
```

### **JAVA CODE**

```
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.Pattern;
public class MainActivity extends AppCompatActivity {
    EditText emailEditText, passwordEditText;
    Button signUpBtn;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        emailEditText = findViewById(R.id.emailEditText);
        passwordEditText = findViewById(R.id.passwordEditText);
        signUpBtn = findViewById(R.id.signUpBtn);

        signUpBtn.setOnClickListener(new View.OnClickListener() {
            @Override
```

```
        public void onClick(View v) {
            String email = emailEditText.getText().toString();
            String password =
passwordEditText.getText().toString();
            if (!isValidPassword(password)) {
                Toast.makeText(MainActivity.this, "Password Does
not match the rules",
                    Toast.LENGTH_LONG).show();
                return;
            }
            Intent intent = new Intent(MainActivity.this,
LoginActivity.class);
            intent.putExtra("email", email);
            intent.putExtra("password", password);
            startActivity(intent);
        }
    });
}
Pattern lowercase = Pattern.compile("^.*[a-z].*$");
Pattern uppercase = Pattern.compile("^.*[A-Z].*$");
Pattern number = Pattern.compile("^.*[0-9].*$");
Pattern specialCharacter = Pattern.compile("^.*[!@#$%^&*()_+=_-]*$");
private Boolean isValidPassword(String password) {
    if (password.length() < 8) {
        return false;
    }
    if (!lowercase.matcher(password).matches()) {
        return false;
    }
    if (!uppercase.matcher(password).matches()) {
        return false;
    }
    if (!number.matcher(password).matches()) {
        return false;
    }
    if (!specialCharacter.matcher(password).matches()) {
        return false;
    }
    return true;
}
```

7. Right click on Java folder-> new-> activity->empty activity-> name it as “LoginActivity”
8. Go to xml code of design change the layout to “RelativeLayout”
9. Add TextView component & change the following properties:
  - Size: 38dp
  - Text: “Login”
  - Center-Align
10. Add Email (EditText) component & change the following properties in XML Code:
  - Hint: “Email ID”
  - id: “@+id/emailEditText”
11. Add Password (EditText) component & change the following properties in XML Code:
  - Hint: “Password”
  - id: “@+id/passwordEditText”
12. Add Button component & change the following properties in XML
  - Id: “@+id/loginBtn”
  - Text: “Login”

#### **XML CODE**

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

    <TextView
        android:id="@+id/textView"
        android:layout_width="210dp"
        android:layout_height="54dp"
        android:layout_alignParentEnd="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="120dp"
        android:layout_marginBottom="576dp"
        android:text="Login Activity"
        android:textSize="28dp" />
```

```
<EditText
    android:id="@+id/emailEditText"
    android:layout_width="363dp"
    android:layout_height="83dp"
    android:layout_alignParentEnd="true"
    android:layout_alignParentBottom="true"
    android:layout_marginEnd="27dp"
    android:layout_marginBottom="419dp"
    android:ems="10"
    android:hint="Email ID"
    android:inputType="textEmailAddress"
    android:textSize="28dp" />

<EditText
    android:id="@+id/passwordEditText"
    android:layout_width="354dp"
    android:layout_height="wrap_content"
    android:layout_alignParentEnd="true"
    android:layout_alignParentBottom="true"
    android:layout_marginEnd="40dp"
    android:layout_marginBottom="299dp"
    android:ems="10"
    android:hint="Password"
    android:inputType="textPassword"
    android:textSize="28dp" />

<Button
    android:id="@+id/loginBtn"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignParentEnd="true"
    android:layout_alignParentBottom="true"
    android:layout_marginEnd="173dp"
    android:layout_marginBottom="189dp"
    android:text="login"
    android:textSize="26dp" />

</RelativeLayout>
```

### **JAVA CODE**

```
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 LoginActivity extends AppCompatActivity {
    EditText emailEditText, passwordEditText;
    Button loginBtn;
    int counter=2;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_login);
        emailEditText=findViewById(R.id.emailEditText);
        passwordEditText=findViewById(R.id.passwordEditText);
        loginBtn=findViewById(R.id.LoginBtn);

        String registeredEmail=getIntent().getStringExtra("email");
        String
registeredPassword=getIntent().getStringExtra("password");

        loginBtn.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                String email=emailEditText.getText().toString();
                String
password=passwordEditText.getText().toString();
                if(registeredEmail.equals(email)&&
registeredPassword.equals(password))
                {
                    Intent intent=new
Intent(LoginActivity.this,LoginSuccessful.class);
                    startActivity(intent);
                }
                else{
                    Toast.makeText(LoginActivity.this,"InvalidCredentials",Toast.LENGTH_
LONG).show();
                }
                counter--;
            }
        });
    }
}
```

```
        if (counter==0)
        {
            Toast.makeText(getApplicationContext(),"FAILED LOGIN
ATTEMPTS",Toast.LENGTH_LONG).show();
            loginBtn.setEnabled(false);
        }
    });
}
}
```

13. Right click on Java folder-> new-> activity->empty activity-> name it as “LoginSuccessful”

14. Go to xml code of design change the layout to “RelativeLayout”

15. Add TextView component & change the following properties:

- Size: 38dp
- Text: “Login Successful”
- Center-Align

### **XML CODE**

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

    <TextView
        android:id="@+id/textView2"
        android:layout_width="297dp"
        android:layout_height="190dp"
        android:layout_alignParentEnd="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="42dp"
        android:layout_marginBottom="400dp"
        android:text="Login Successful"
        android:textSize="38dp" />

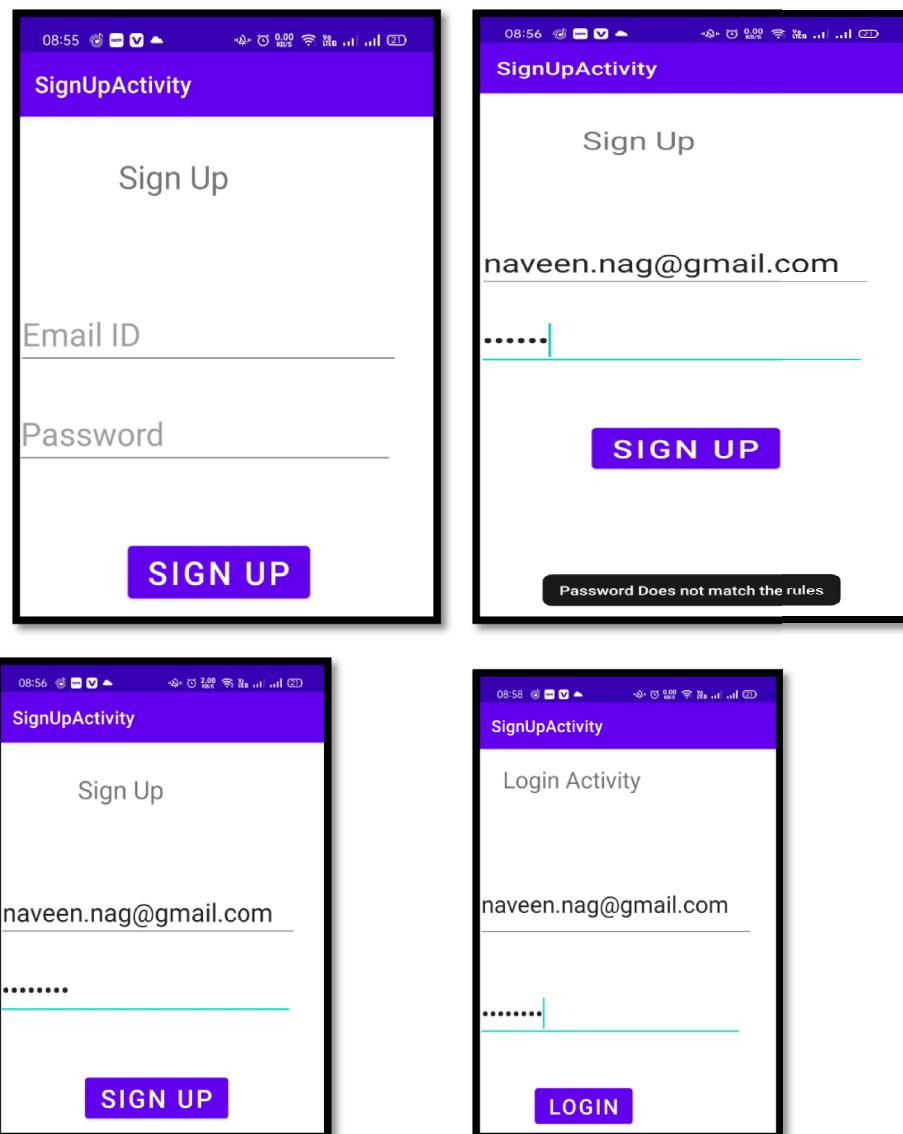
</RelativeLayout>
```

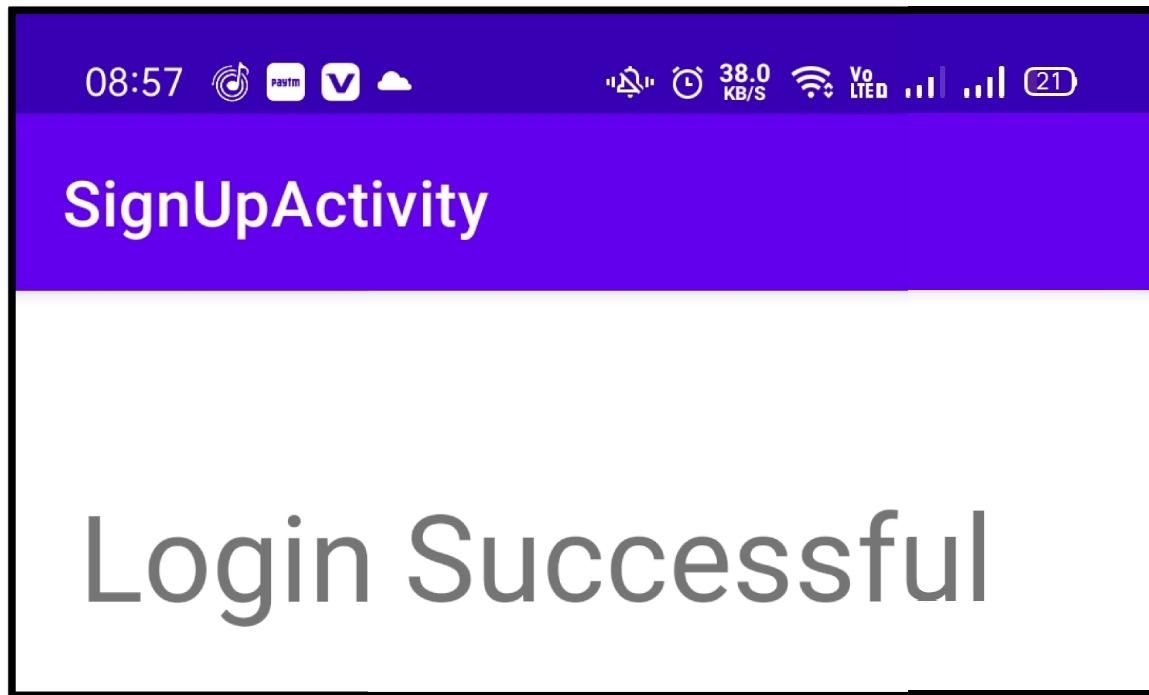
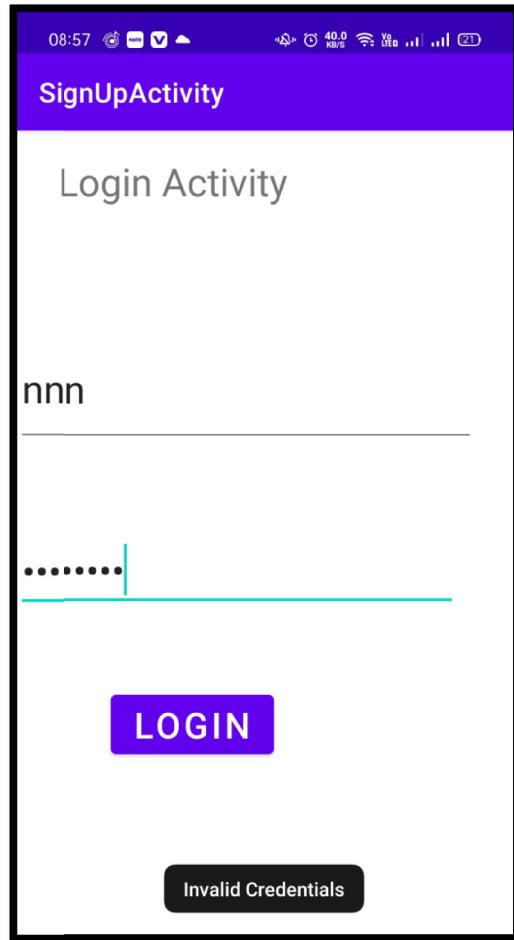
**JAVA CODE**

```
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;

public class LoginSuccessful extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_login_successful);
    }
}
```

**OUTPUT**





**Program-4:** Develop an application to set an image as wallpaper. On click of a button, the wallpaper image should start to change randomly every 30 seconds.

1. Firstly Create an Application by Name “WallpaperActivity”
2. Go to xml code of design change the layout to “RelativeLayout”
3. Add TextView component & change the following properties:
  - Size: 38dp
  - Text: Wall Paper Change Application
  - Center-Align
4. Add Button component & change the following properties:
  - Size: 38dp
  - Text: Click Here To Change Wall Paper
5. Save five images (jpg format) in the drawable folder. In this example one.jpg, two.jpg, three.jpg, four.jpg and five.jpg images are saved in drawable folder.

#### **XML CODE**

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

    <TextView
        android:id="@+id/textView"
        android:layout_width="243dp"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="73dp"
        android:layout_marginBottom="559dp"
        android:text="Wall Paper Change Application"
        android:textAlignment="center"
        android:textSize="28dp" />

    <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="-13dp"
        android:layout_marginBottom="177dp"
        android:text="Click Here To Change Wall Paper"
        android:textSize="26dp" />

    </RelativeLayout>
```

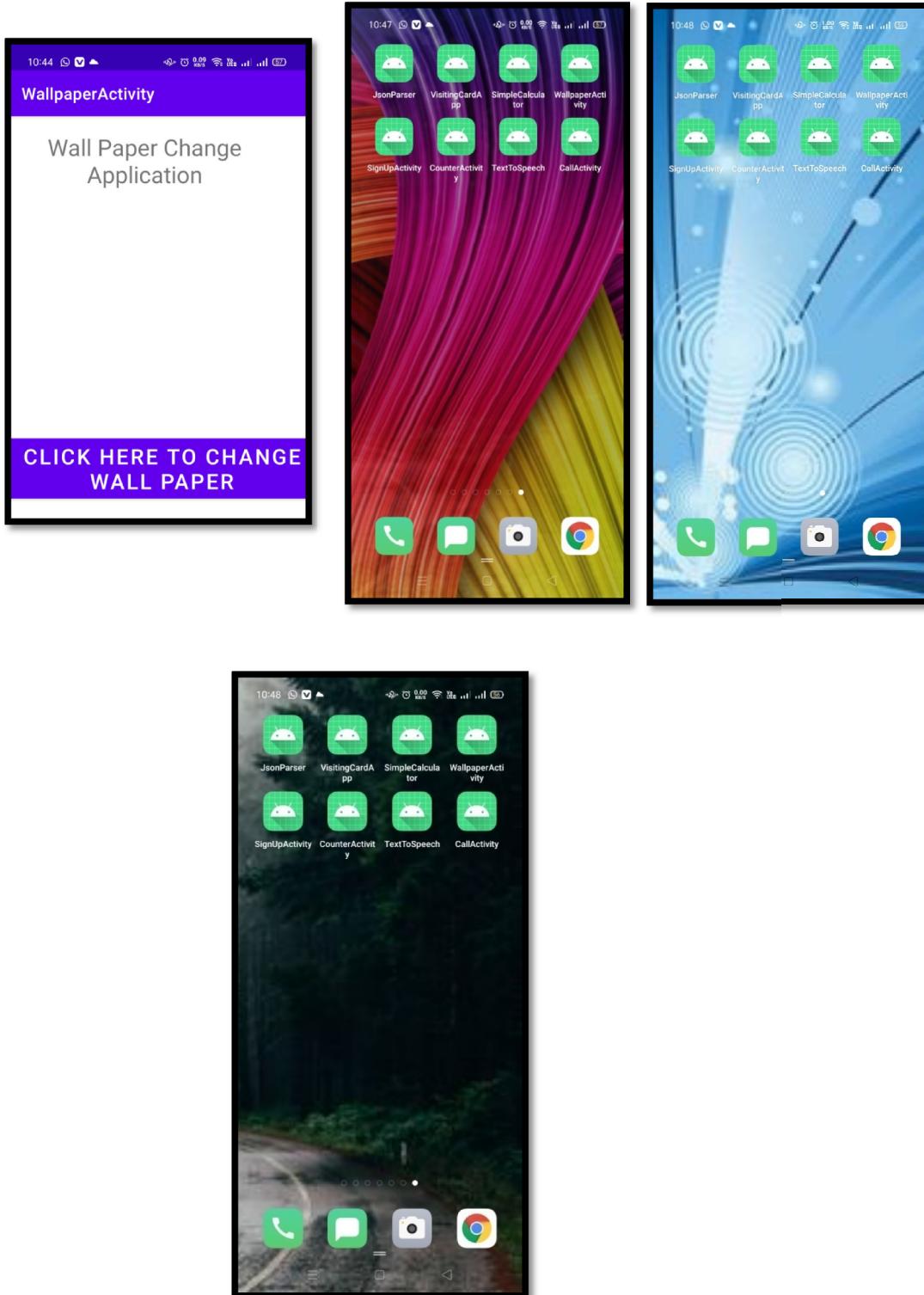
### **JAVA CODE**

```
import androidx.appcompat.app.AppCompatActivity;
import android.app.WallpaperManager;
import android.graphics.Bitmap;
import android.graphics.BitmapFactory;
import android.graphics.drawable.AnimationDrawable;
import android.graphics.drawable.BitmapDrawable;
import android.graphics.drawable.Drawable;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.Toast;
import java.io.IOException;
import java.util.Timer;
import java.util.TimerTask;

public class MainActivity extends AppCompatActivity {
    Button changewallpaper;
    Timer mytimer;
    Drawable drawable;
    WallpaperManager wpm;
    int prev=1;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        mytimer = new Timer();
        wpm = WallpaperManager.getInstance(this);
        changewallpaper = findViewById(R.id.button);
        changewallpaper.setOnClickListener(new
View.OnClickListener() {
            @Override public void onClick(View view) {
```

```
        setWallpaper();
    }
}
}
private void setWallpaper() {
    mytimer.schedule(new TimerTask() {
        @Override
        public void run() {
            if(prev==1) {
                drawable =
getResources().getDrawable(R.drawable.one);
                prev = 2;
            }
            else if(prev==2) {
                drawable =
getResources().getDrawable(R.drawable.two);
                prev=3;
            }
            else if(prev==3) {
                drawable =
getResources().getDrawable(R.drawable.three);
                prev=4;
            }
            else if(prev==4) {
                drawable =
getResources().getDrawable(R.drawable.four);
                prev=5;
            }
            else if(prev==5) {
                drawable =
getResources().getDrawable(R.drawable.five);
                prev=1;
            }
            Bitmap wallpaper =
((BitmapDrawable)drawable).getBitmap();
            try {
                wpm.setBitmap(wallpaper);
            } catch (IOException e) {
                e.printStackTrace();
            }
        }
    },0,30000); } }
```

**OUTPUT**



**Program-5:** Write a program to create an activity with two buttons START and STOP. On pressing of the START button, the activity must start the counter by displaying the numbers from One and the counter must keep on counting until the STOP button is pressed. Display the counter value in a TextViewcontrol.

1. Firstly Create an Application by Name “CounterActivity”
2. Go to xml code of design change the layout to “RelativeLayout”
3. Add TextView component & change the following properties:
  - Size: 38dp
  - Text: “Counter Application”
  - Center-Align
4. Add TextView component & change the following properties:
  - Text: “Counter Value”
5. Add Button components & change the following properties:
  - Size: 38dp
  - Text: Start
  - id: “@+id btn\_start”
6. Add Button components & change the following properties:
  - Size: 38dp
  - Text: Stop
  - id: “@+id btn\_stop”

### **XML CODE**

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

    <TextView
        android:layout_width="378dp"
        android:layout_height="68dp"
        android:layout_alignParentEnd="true"
```

```
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="18dp"
        android:layout_marginBottom="602dp"
        android:text="Counter Application"
        android:textSize="38dp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

<TextView
    android:id="@+id/textView"
    android:layout_width="121dp"
    android:layout_height="32dp"
    android:layout_alignParentEnd="true"
    android:layout_alignParentBottom="true"
    android:layout_marginEnd="145dp"
    android:layout_marginBottom="478dp"
    android:text="Counter Value" />

<Button
    android:id="@+id/btn_start"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignParentEnd="true"
    android:layout_alignParentBottom="true"
    android:layout_marginEnd="234dp"
    android:layout_marginBottom="296dp"
    android:text="Start" />

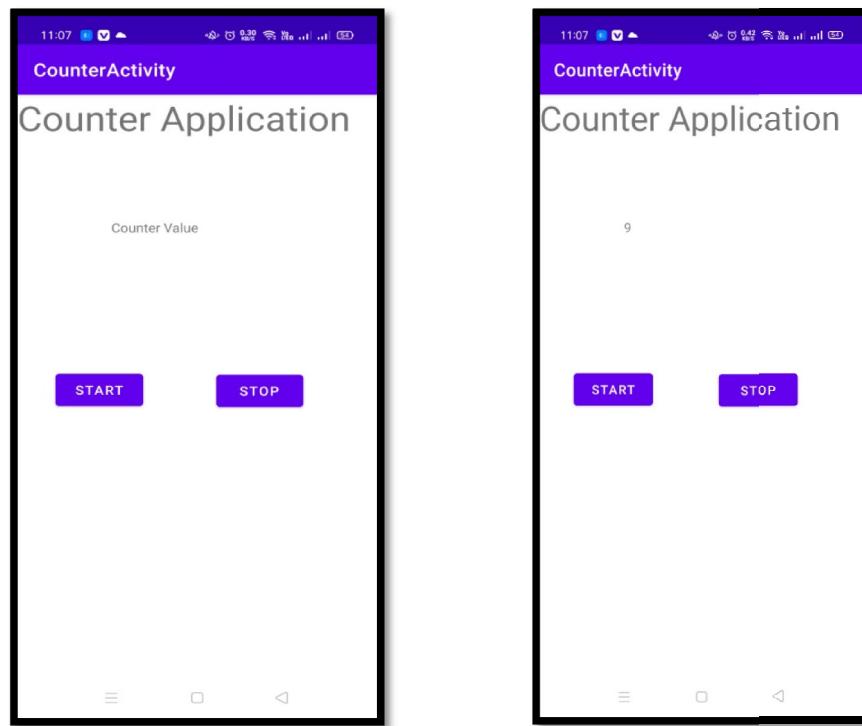
<Button
    android:id="@+id/btn_stop"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignParentEnd="true"
    android:layout_alignParentBottom="true"
    android:layout_marginEnd="73dp"
    android:layout_marginBottom="295dp"
    android:text="Stop" />

</RelativeLayout>
```

**JAVA CODE**

```
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 btnstart, btnstop;
    TextView txtcounter;
    int i=1;
    Handler customHandler=new Handler();
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        btnstart=findViewById(R.id.btn_start);
        btnstop=findViewById(R.id.btn_stop);
        txtcounter=findViewById(R.id.textView);
        btnstart.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                customHandler.postDelayed(updateTimerThread,0);
            }
        });
        btnstop.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                customHandler.removeCallbacks(updateTimerThread);
            }
        });
    }
    private final Runnable updateTimerThread=new Runnable() {
        @Override
        public void run() {
            txtcounter.setText(""+i);
            customHandler.postDelayed(this,1000);
            i++;
        }
    };
}
```

**OUTPUT**



**Program-6:** Create two files of XML and JSON type with values for City\_Name, Latitude, Longitude, Temperature, and Humidity. Develop an application to create an activity with two buttons to parse the XML and JSON files which when clicked should display the data in their respective layouts side by side.

1. Firstly Create an Application by Name “JsonParser”
2. Go to xml code of design change the layout to “RelativeLayout”
3. Add TextView component & change the following properties:
  - Size: 38dp
  - Text: XML and JSON Parser
  - Center-Align
4. Add Two Buttons to Design & change the name “ParseXml” & “ParseJson” with following onclick functions:
  - ParseXml-Button: parsexml
  - ParseJson-Button: parsejson
5. Add TextView component & change the following properties:
  - Id: display
  - Text: “”
  - Align: Center
6. Add Assets folder by following the given hierarchy:

App->new->folder->Assets folder
7. Inside the assets folder create new files of xml and json using the following hierarchy:

new->file->city.xml  
new->file->city.json

once created place the following details inside the “city.xml” and “city.json”

### **city.xml**

```
<?xml version="1.0"?>
<records>
    <place>
        <name>Mysore</name>
        <lat>12.295</lat>
        <long>76.639</long>
        <temperature>22</temperature>
        <humidity>90 %</humidity>
    </place>
```

```
<place>
    <name>Bangalore</name>
    <lat>12.97165</lat>
    <long>77.5946</long>
    <temperature>25</temperature>
    <humidity>74 %</humidity>
</place>
</records>
```

**city.json**

```
[  
{  
    "name": "HASSAN",  
    "lat": "12.295",  
    "long": "76.639",  
    "temperature": "22",  
    "humidity": "92 %"  
},  
{  
    "name": "MANDYA",  
    "lat": "12.97165",  
    "long": "77.5946",  

```

**XML CODE**

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

    <TextView
        android:id="@+id/textView"
        android:layout_width="292dp"
        android:layout_height="wrap_content"
```

```
        android:layout_alignParentEnd="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="57dp"
        android:layout_marginBottom="597dp"
        android:text="Parsing XML and JSON"
        android:textAlignment="center"
        android:textSize="26dp" />

<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="116dp"
    android:layout_marginBottom="486dp"
    android:onClick="parsexml"
    android:text="ParseXML" />

<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="116dp"
    android:layout_marginBottom="366dp"
    android:onClick="parsejson"
    android:text="ParseJSON" />

<TextView
    android:id="@+id/display"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_alignParentEnd="true"
    android:layout_alignParentBottom="true"
    android:layout_marginEnd="3dp"
    android:layout_marginBottom="68dp"
    android:text=""
    android:textAlignment="center" />

</RelativeLayout>
```

**JAVA CODE**

```
import android.os.Build;
import android.os.Bundle;
import android.text.style.TabStopSpan;
import android.view.View;
import android.widget.TextView;
import android.widget.Toast;
import androidx.annotation.RequiresApi;
import androidx.appcompat.app.AppCompatActivity;
import org.json.JSONArray;
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.InputStream;
import java.nio.charset.StandardCharsets;
import javax.xml.parsers.DocumentBuilder;
import javax.xml.parsers.DocumentBuilderFactory;

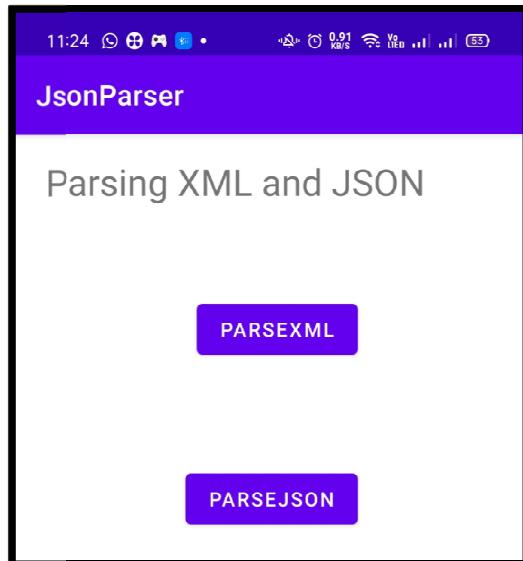
public class MainActivity extends AppCompatActivity {
    TextView display;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        display = (TextView) findViewById(R.id.display);
    }
    public void parsexml(View v)
    {
        try {
            InputStream is = getAssets().open("city.xml");
            DocumentBuilderFactory documentBuilderFactory =
DocumentBuilderFactory.newInstance();
            DocumentBuilder documentBuilder =
documentBuilderFactory.newDocumentBuilder();
            Document document = documentBuilder.parse(is);
            StringBuilder stringBuilder = new StringBuilder();
            stringBuilder.append("XML DATA");
            stringBuilder.append("\n-----");
            NodeList nodeList =
document.getElementsByTagName("place");

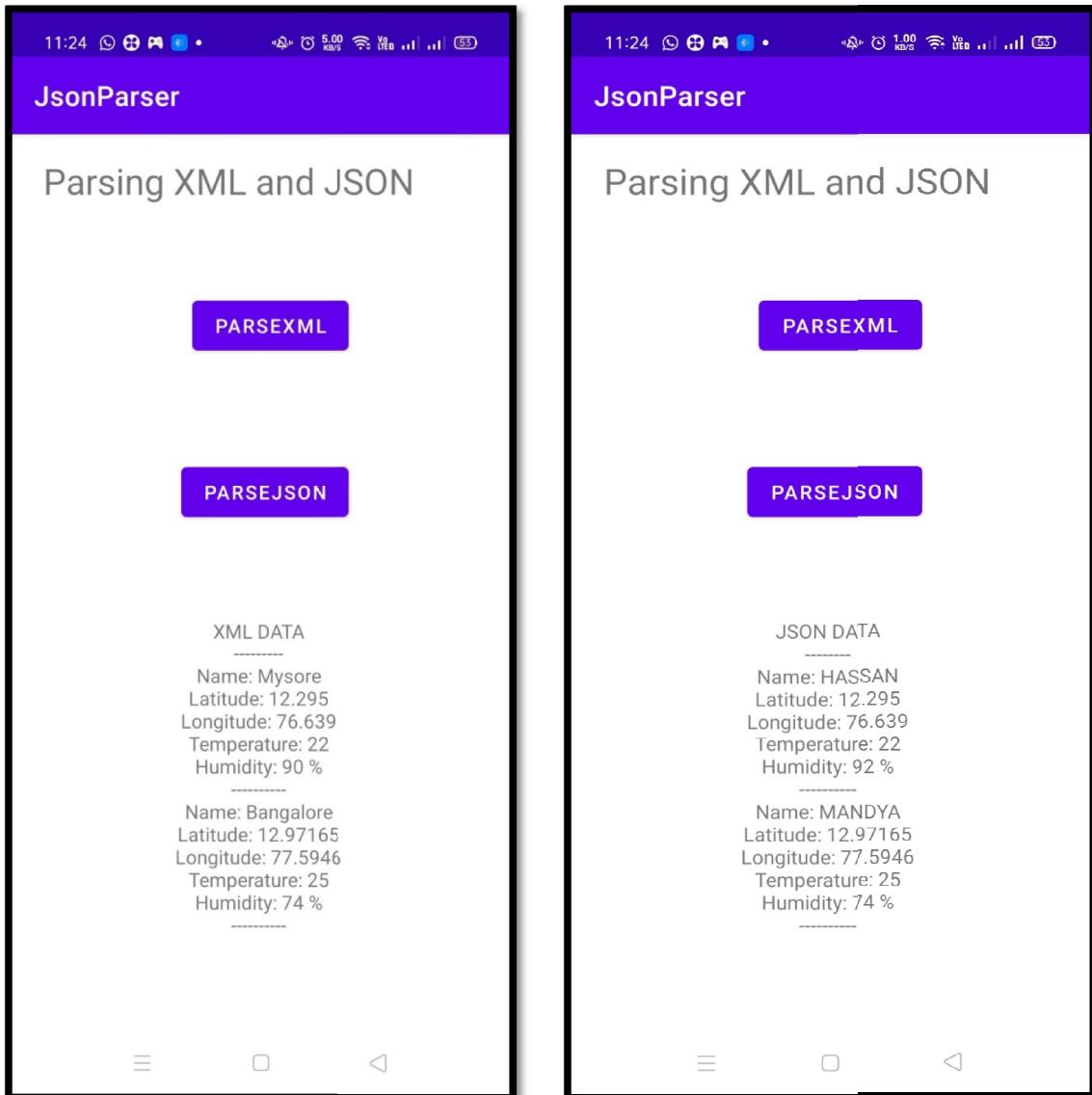
```

```
        for (int i = 0; i < nodeList.getLength(); i++)  
        {  
            Node node = nodeList.item(i);  
            if (node.getNodeType() == Node.ELEMENT_NODE) {  
                Element element = (Element) node;  
                stringBuilder.append("\nName:  
").append(getValue("name", element));  
                stringBuilder.append("\nLatitude:  
").append(getValue("lat", element));  
                stringBuilder.append("\nLongitude:  
").append(getValue("long", element));  
                stringBuilder.append("\nTemperature:  
").append(getValue("temperature", element));  
                stringBuilder.append("\nHumidity:  
").append(getValue("humidity", element));  
                stringBuilder.append("\n-----");  
            }  
        }  
        display.setText(stringBuilder.toString());  
    }catch (Exception e){  
        e.printStackTrace();  
        Toast.makeText(MainActivity.this,"Error Parsing  
XML",Toast.LENGTH_LONG).show();  
    }  
}  
@RequiresApi(api = Build.VERSION_CODES.KITKAT)  
public void parsejson(View V){  
    String json;  
    StringBuilder stringBuilder = new StringBuilder();  
    try {  
        InputStream is = getAssets().open("city.json");  
        int size = is.available();  
        byte[] buffer = new byte[size];  
        is.read(buffer);  
        json = new String(buffer, StandardCharsets.UTF_8);  
        JSONArray jsonArray = new JSONArray(json);  
        stringBuilder.append("JSON DATA");  
        stringBuilder.append("\n-----");  
        for (int i = 0; i < jsonArray.length(); i++) {  
            JSONObject jsonObject = jsonArray.getJSONObject(i);  
            stringBuilder.append("\nName:  
").append(jsonObject.getString("name"));  
            stringBuilder.append("\nLatitude:  
");  
    }
```

```
        ").append(jsonObject.getString("lat"));
                stringBuilder.append("\nLongitude:
").append(jsonObject.getString("long"));
                stringBuilder.append("\nTemperature:
").append(jsonObject.getString("temperature"));
                stringBuilder.append("\nHumidity:
").append(jsonObject.getString("humidity"));
                stringBuilder.append("\n-----");
            }
            display.setText(stringBuilder.toString());
            is.close();
        }
        catch (Exception e){
            e.printStackTrace();
            Toast.makeText(MainActivity.this,"Error in
reading",Toast.LENGTH_LONG).show();
        }
    }
    private String getValue(String tag, Element element)
{
    return
element.getElementsByTagName(tag).item(0).getchildNodes().item(0).ge
tNodeValue();
}
}
```

## **OUTPUT**





**Program-7:** Develop a simple application with one EditText so that the user can write some text in it. Create a button called “Convert Text to Speech” that converts the user input text into voice.

1. Firstly Create an Application by Name “TextToSpeech”
2. Go to xml code of design change the layout to “RelativeLayout”
3. Add TextView component & change the following properties:
  - Size: 38dp
  - Text: Text2Speech App
  - Center-Align
4. Add PlainText(EditText) component & change the following properties in XML Code:
  - Text: “”
  - Hint: “Enter the text to be converted”
  - id: “@+id/editText”
5. Add Button component & change the following properties in XML Code:
  - Name: Convert
  - onClick: convert

### **XML CODE**

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

    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentRight="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="59dp"
```

```
        android:layout_marginRight="59dp"
        android:layout_marginBottom="649dp"
        android:text="Text2SpeechApp"
        android:textSize="40dp" />

<EditText
    android:id="@+id/editText"
    android:layout_width="264dp"
    android:layout_height="wrap_content"
    android:layout_alignParentEnd="true"
    android:layout_alignParentRight="true"
    android:layout_alignParentBottom="true"
    android:layout_marginEnd="78dp"
    android:layout_marginRight="78dp"
    android:layout_marginBottom="505dp"
    android:ems="10"
    android:hint="Enter the text to be converted"
    android:inputType="textPersonName"
    android:text="" />

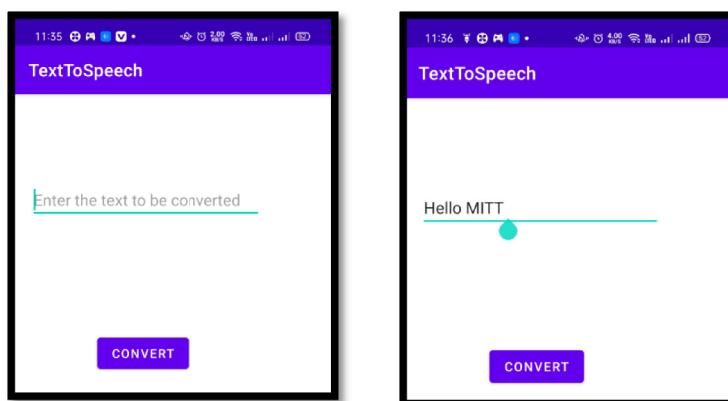
<Button
    android:id="@+id/button"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignParentEnd="true"
    android:layout_alignParentRight="true"
    android:layout_alignParentBottom="true"
    android:layout_marginEnd="162dp"
    android:onClick="convert"
    android:layout_marginRight="162dp"
    android:layout_marginBottom="329dp"
    android:text="Convert" />

</RelativeLayout>
```

### **JAVA CODE**

```
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.speech.tts.TextToSpeech;
import android.view.View;
import android.widget.EditText;
import android.widget.Toast;
import java.util.Locale;
public class MainActivity extends AppCompatActivity {
    TextToSpeech t1;
    EditText e1;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        e1 = findViewById(R.id.editText);
        t1 = new TextToSpeech(getApplicationContext(), new
            TextToSpeech.OnInitListener() {
                @Override
                public void OnInit(int status) {
                    if (status!=TextToSpeech.ERROR){
                        t1.setLanguage(Locale.UK);
                    }
                }
            });
    }
    public void convert(View view){
        String tospeak = e1.getText().toString();
        t1.speak(tospeak,TextToSpeech.QUEUE_FLUSH,null);
    }
}
```

### **OUTPUT**



**Program-8:** Create an activity like a phone dialer with CALL and SAVE buttons. On pressing the CALL button, it must call the phone number and on pressing the SAVE button it must save the number to the phone contacts.

1. Firstly Create an Application by Name “CallActivity”
2. Go to xml code of design change the layout to “RelativeLayout”
3. Add TextView component & change the following properties:
  - Size: 38dp
  - Text: Call Activity
  - Center-Align
4. Add EditText component & change the following properties in XML Code:
  - id: “@+id/phoneNumberEditText”
5. Add PlainText(EditText) component & change the following properties in XML Code:
  - Text: “”
  - Hint: “Copied Text”
  - id: “@+id/editText2”
6. Add three buttons to the design & change the text of the Buttons to “Clear”, “Call”, “Save” and change the id as follows:
  - id:”@+id/clearBtn”
  - id:”@+id/callBtn”
  - id:”@+id/saveBtn”
7. Add twelve buttons to the design & change the text of the Buttons as 1,2,3,4,5,6,7,8,9,0,\*,#

### **XML CODE**

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

```
<TextView
    android:layout_width="298dp"
    android:layout_height="wrap_content"
    android:layout_alignParentEnd="true"
    android:layout_alignParentBottom="true"
    android:layout_marginEnd="54dp"
    android:layout_marginBottom="575dp"
    android:text="Call Application"
    android:textSize="36dp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintLeft_toLeftOf="parent"
    app:layout_constraintRight_toRightOf="parent"
    app:layout_constraintTop_toTopOf="parent" />

<EditText
    android:id="@+id/phoneNumberEditText"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignParentEnd="true"
    android:layout_alignParentBottom="true"
    android:layout_marginEnd="176dp"
    android:layout_marginBottom="462dp"
    android:ems="10"
    android:inputType="phone" />

<Button
    android:id="@+id/clearBtn"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignParentEnd="true"
    android:layout_alignParentBottom="true"
    android:layout_marginEnd="52dp"
    android:layout_marginBottom="459dp"
    android:text="Clear" />

<Button
    android:id="@+id/button9"
    android:layout_width="76dp"
    android:layout_height="wrap_content"
    android:layout_alignParentEnd="true"
    android:layout_alignParentBottom="true"
    android:layout_marginEnd="137dp"
    android:layout_marginBottom="206dp"
```

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

<Button
    android:id="@+id/button3"
    android:layout_width="76dp"
    android:layout_height="wrap_content"
    android:layout_alignParentEnd="true"
    android:layout_alignParentBottom="true"
    android:layout_marginEnd="132dp"
    android:layout_marginBottom="341dp"
    android:onClick="inputNumber"
    android:text="2" />

<Button
    android:id="@+id/button4"
    android:layout_width="76dp"
    android:layout_height="wrap_content"
    android:layout_alignParentEnd="true"
    android:layout_alignParentBottom="true"
    android:layout_marginEnd="34dp"
    android:layout_marginBottom="337dp"
    android:onClick="inputNumber"
    android:text="3" />

<Button
    android:id="@+id/button5"
    android:layout_width="76dp"
    android:layout_height="wrap_content"
    android:layout_alignParentEnd="true"
    android:layout_alignParentBottom="true"
    android:layout_marginEnd="244dp"
    android:layout_marginBottom="272dp"
    android:onClick="inputNumber"
    android:text="4" />

<Button
    android:id="@+id/button6"
    android:layout_width="76dp"
    android:layout_height="wrap_content"
    android:layout_alignParentEnd="true"
    android:layout_alignParentBottom="true"
    android:layout_marginEnd="139dp"
```

```
        android:layout_marginBottom="272dp"
        android:onClick="inputNumber"
        android:text="5" />

<Button
    android:id="@+id/button7"
    android:layout_width="76dp"
    android:layout_height="wrap_content"
    android:layout_alignParentEnd="true"
    android:layout_alignParentBottom="true"
    android:layout_marginEnd="32dp"
    android:layout_marginBottom="269dp"
    android:onClick="inputNumber"
    android:text="6" />

<Button
    android:id="@+id/button2"
    android:layout_width="76dp"
    android:layout_height="wrap_content"
    android:layout_alignParentEnd="true"
    android:layout_alignParentBottom="true"
    android:layout_marginEnd="240dp"
    android:layout_marginBottom="341dp"
    android:onClick="inputNumber"
    android:text="1" />

<Button
    android:id="@+id/button8"
    android:layout_width="76dp"
    android:layout_height="wrap_content"
    android:layout_alignParentEnd="true"
    android:layout_alignParentBottom="true"
    android:layout_marginEnd="246dp"
    android:layout_marginBottom="206dp"
    android:onClick="inputNumber"
    android:text="7" />

<Button
    android:id="@+id/button11"
    android:layout_width="76dp"
    android:layout_height="wrap_content"
    android:layout_alignParentEnd="true"
    android:layout_alignParentBottom="true"
```

```
        android:layout_marginEnd="238dp"
        android:layout_marginBottom="142dp"
        android:onClick="inputNumber"
        android:text="#" />

<Button
    android:id="@+id/button12"
    android:layout_width="76dp"
    android:layout_height="wrap_content"
    android:layout_alignParentEnd="true"
    android:layout_alignParentBottom="true"
    android:layout_marginEnd="135dp"
    android:layout_marginBottom="136dp"
    android:onClick="inputNumber"
    android:text="0" />

<Button
    android:id="@+id/button13"
    android:layout_width="76dp"
    android:layout_height="wrap_content"
    android:layout_alignParentEnd="true"
    android:layout_alignParentBottom="true"
    android:layout_marginEnd="32dp"
    android:layout_marginBottom="142dp"
    android:onClick="inputNumber"
    android:text "*" />

<Button
    android:id="@+id/callBtn"
    android:layout_width="76dp"
    android:layout_height="wrap_content"
    android:layout_alignParentEnd="true"
    android:layout_alignParentBottom="true"
    android:layout_marginEnd="188dp"
    android:layout_marginBottom="65dp"
    android:text="Call" />

<Button
    android:id="@+id/saveBtn"
    android:layout_width="76dp"
    android:layout_height="wrap_content"
    android:layout_alignParentEnd="true"
    android:layout_alignParentBottom="true"
```

```
        android:layout_marginEnd="74dp"
        android:layout_marginBottom="68dp"
        android:text="Save" />

<Button
    android:id="@+id/button10"
    android:layout_width="76dp"
    android:layout_height="wrap_content"
    android:layout_alignParentEnd="true"
    android:layout_alignParentBottom="true"
    android:layout_marginEnd="32dp"
    android:layout_marginBottom="203dp"
    android:onClick="inputNumber"
    android:text="9" />

</RelativeLayout>
```

**JAVA CODE**

```
import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
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 phoneNumberEditText;
    Button clearBtn,callBtn,saveBtn;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        phoneNumberEditText=findViewById(R.id.phoneNumberEditText);
        callBtn=findViewById(R.id.callBtn);
        saveBtn=findViewById(R.id.saveBtn);
        clearBtn=findViewById(R.id.clearBtn);
        clearBtn.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                phoneNumberEditText.setText("");
            }
        });
    }
}
```

```
        }
    });
callBtn.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        String
phoneNumber=phoneNumberEditText.getText().toString();
        Intent intent=new Intent(Intent.ACTION_DIAL);
        intent.setData(Uri.parse("tel:"+phoneNumber));
        startActivity(intent);
    }
});
saveBtn.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        String
phoneNumber=phoneNumberEditText.getText().toString();
        Intent intent=new Intent(Intent.ACTION_INSERT);

intent.setType(ContactsContract.Contacts.CONTENT_TYPE);

intent.putExtra(ContactsContract.Intents.Insert.PHONE,phoneNumber);
        startActivity(intent);
    }
});
}
public void inputNumber(View V){
    Button btn=(Button)V;
    String digit=btn.getText().toString();
    String phoneNumber=phoneNumberEditText.getText().toString();
    phoneNumberEditText.setText(phoneNumber +digit);
}
}
```

**OUTPUT**

