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.

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="VVCE"
        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" />
```

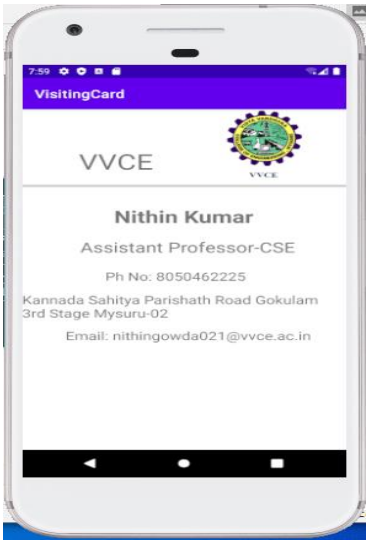
```
<TextView
    android:id="@+id/textView2"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignParentEnd="true"
    android:layout_alignParentRight="true"
    android:layout_alignParentBottom="true"
    android:layout_marginEnd="117dp"
    android:layout_marginRight="117dp"
    android:layout_marginBottom="394dp"
    android:text="Nithin Kumar"
    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: 8050462225"
    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="Kannada Sahitya Parishath Road Gokulam 3rd Stage Mysuru-02"
```

```
        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: nithingowda021@vvce.ac.in"
        android:textSize="20dp" />

</RelativeLayout>
```

JAVA-CODE(No Change Required)

```
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:


VisitingCard
VVCE
Nithin Kumar
Assistant Professor-CSE
Ph No: 8050462225
Kannada Sahitya Parishath Road Gokulam
3rd Stage Mysuru-02
Email: nithingowda021@vvce.ac.in

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

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="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="98dp"
        android:layout_marginBottom="653dp"
        android:text="SIMPLE CALCI"
        android:textSize="38dp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintHorizontal_bias="0.498"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.042" />

<EditText
        android:id="@+id/editText1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="115dp"
        android:layout_marginBottom="547dp"
        android:ems="10"
        android:hint="Enter the First Number"
        android:inputType="textPersonName"
        android:text="" />

<EditText
        android:id="@+id/editText2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="111dp"
```

```
    android:layout_marginBottom="455dp"
    android:ems="10"
    android:inputType="textPersonName"
    android:hint="Enter the Second Number"
    android:text="" />

<TextView
    android:id="@+id/textView1"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignParentEnd="true"
    android:layout_alignParentBottom="true"
    android:layout_marginEnd="203dp"
    android:layout_marginBottom="350dp"
    android:text="0"
    android:textSize="40dp" />

<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="274dp"
    android:layout_marginBottom="237dp"
    android:onClick="doAdd"
    android:text="ADD" />

<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="68dp"
    android:layout_marginBottom="233dp"
    android:onClick="doSub"
    android:text="SUB" />

<Button
    android:id="@+id/button3"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignParentEnd="true"
    android:layout_alignParentBottom="true"
    android:layout_marginEnd="277dp"
    android:layout_marginBottom="115dp"
    android:onClick="doMul"
    android:text="MUL" />
```

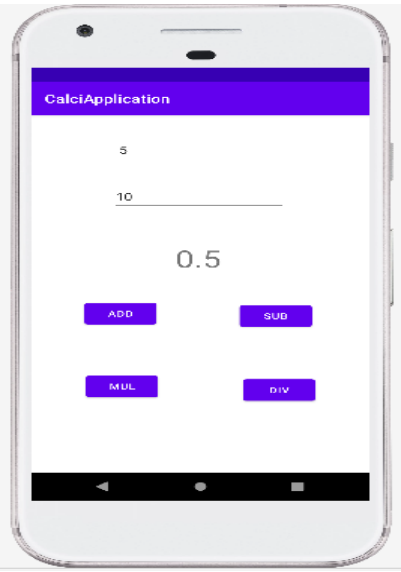
```
<Button
        android:id="@+id/button4"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="63dp"
        android:layout_marginBottom="104dp"
        android:onClick="doDiv"
        android:text="DIV" />

</RelativeLayout>
```

JAVA-CODE:

```
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.EditText;
import android.widget.TextView;
public class MainActivity extends AppCompatActivity
{
   EditText e1,e2;
   TextView tv1;
   @Override
   protected void onCreate(Bundle savedInstanceState)
 {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        e1 = (EditText)findViewById(R.id.editText1);
        e2 = (EditText)findViewById(R.id.editText2);
        tv1 = (TextView)findViewById(R.id.textView1);
   }

public void doAdd(View V)
{
        int a1 = Integer.parseInt(e1.getText().toString());
        int a2 = Integer.parseInt(e2.getText().toString());
        int result= a1+a2;
        tv1.setText(""+result);
   }
   public void doSub(View V)
{
        int a1 = Integer.parseInt(e1.getText().toString());
        int a2 = Integer.parseInt(e2.getText().toString());
        int result= a1-a2;
        tv1.setText(""+result);
   }
   public void doMul(View V)
{
        int a1 = Integer.parseInt(e1.getText().toString());
        int a2 = Integer.parseInt(e2.getText().toString());
```

```
    int result= a1*a2;
    tv1.setText(""+result);
  }
  public void doDiv(View V)
{
    int a1 = Integer.parseInt(e1.getText().toString());
    int a2 = Integer.parseInt(e2.getText().toString());
    float result= a1/a2;
    tv1.setText(""+result);
  }
}
```

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.
activity_signup.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout android="http://schemas.android.com/apk/res/android"
app="http://schemas.android.com/apk/res-auto"
tools="http://schemas.android.com/tools"
layout_width="match_parent"
layout_height="match_parent"
orientation="vertical"
context=".SignUpActivity">
<TextView
layout_width="match_parent"
layout_height="wrap_content"
textSize="48sp"
textAlignment="center"
text="Sign Up" />
<EditText
id="@+id/emailEditText"
layout_width="match_parent"
layout_height="wrap_content"
xmlns:layout_margin="4dp"
textSize="24sp"
hint="Email ID"
/>
<EditText
id="@+id/passwordEditText"
layout_width="match_parent"
layout_height="wrap_content"
layout_margin="4dp"
layout_marginTop="32dp"
textSize="24sp"
inputType="textPassword"
hint="Password"
/>
<Button
id="@+id/signUpBtn"

layout_width="match_parent"
```

```
layout_height="wrap_content"
layout_margin="4dp"
text="Sign Up"
/>
</LinearLayout>
```

SignUpActivity.java

```
import .AppCompatActivity;
import .Intent;
import .Bundle;
import .View;
import .Button;
import .EditText;
import .Toast;
import .Pattern;
public class SignUpActivity extends AppCompatActivity {
EditText emailEditText, passwordEditText;
Button signUpBtn;
@Override
protected void onCreate(Bundle savedInstanceState) {
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_signup);
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(SignUpActivity.this, "Password doesn't match rules"
, Toast.LENGTH_SHORT).show();
return;
}
Intent intent = new Intent(SignUpActivity.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].*$");
Pattern specialCharacter = Pattern.compile("^.*[^a-zA-Z0-9].*$");
private Boolean isValidPassword(String password) {
// Checks if password length is less than 8
if (password.length() < 8) {
return false;
}
// Returns false if password doesn't contain a lower case character
if (!lowerCase.matcher(password).matches()) {
```

```
return false;
}
// Returns false if password doesn't contain an upper case character
if (!upperCase.matcher(password).matches()) {
return false;
}
// Returns false if password doesn't contain a number
if (!number.matcher(password).matches()) {
return false;
}
// Returns false if password doesn't contain a special character
if (!specialCharacter.matcher(password).matches()) {
return false;
}
return true;
}
}
```

activity_login.xml

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

<TextView
layout_width="match_parent"
layout_height="wrap_content"
textSize="48sp"
textAlignment="center"
text="Login" />

<EditText
id="@+id/emailEditText"
layout_width="match_parent"
layout_height="wrap_content"
layout_margin="4dp"
textSize="24sp"
hint="Email ID"
/>
<EditText
id="@+id/passwordEditText"
layout_width="match_parent"
layout_height="wrap_content"
layout_margin="4dp"
layout_marginTop="32dp"

textSize="24sp"
inputType="textPassword"
hint="Password"
```

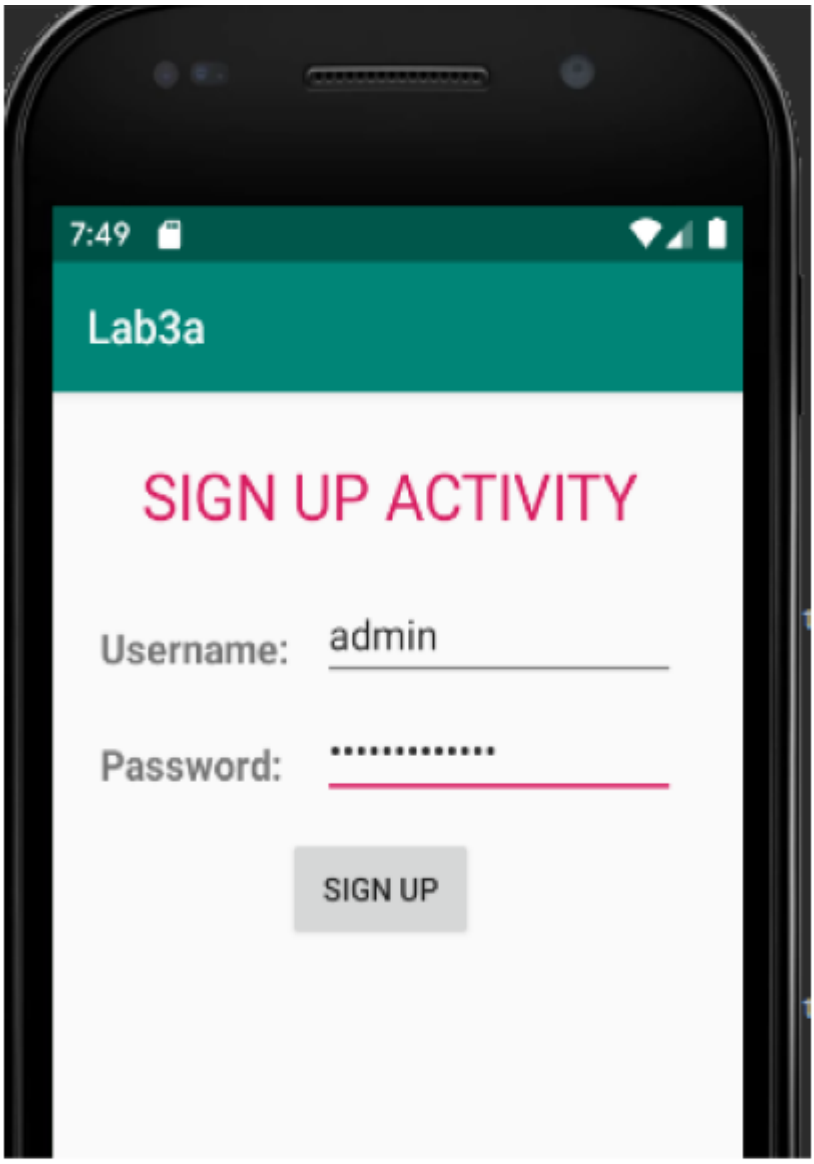
```
/>

<Button
id="@+id/loginBtn"
layout_width="match_parent"
layout_height="wrap_content"
layout_margin="4dp"
text="Login"
/>

</LinearLayout
LoginActivity.java
import .AppCompatActivity;
import .Intent;
import .Bundle;
import .View;
import .Button;
import .EditText;
import .Toast;
public class LoginActivity extends AppCompatActivity {
EditText emailEditText, passwordEditText;
Button loginBtn;
@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, LoginSuccessActivit
y.class);
startActivity(intent);
} else {
Toast.makeText(LoginActivity.this, "Invalid Credentials", Toast.LENGTH_SHORT).show();
}
}
});
}
}
activity_login_success.xml
<?xml version="1.0" encoding="utf-8"?>

<LinearLayout android="http://schemas.android.com/apk/res/android"
```

```
app="http://schemas.android.com/apk/res-auto"
tools="http://schemas.android.com/tools"
layout_width="match_parent"
layout_height="match_parent"
orientation="vertical"
context=".LoginSuccessActivity">
<TextView
layout_width="match_parent"
layout_height="wrap_content"
text="Login Successful"
textAlignment="center"
textSize="36sp"/>
</LinearLayout>
```

LoginSuccessActivity.java

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

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.

First, create the android application as discussed in "Create your First Android Application". Copy the images and save the images in the drawable folder. Following is the content of the modified res/layout/activity_main.xml.
activity_main.xml

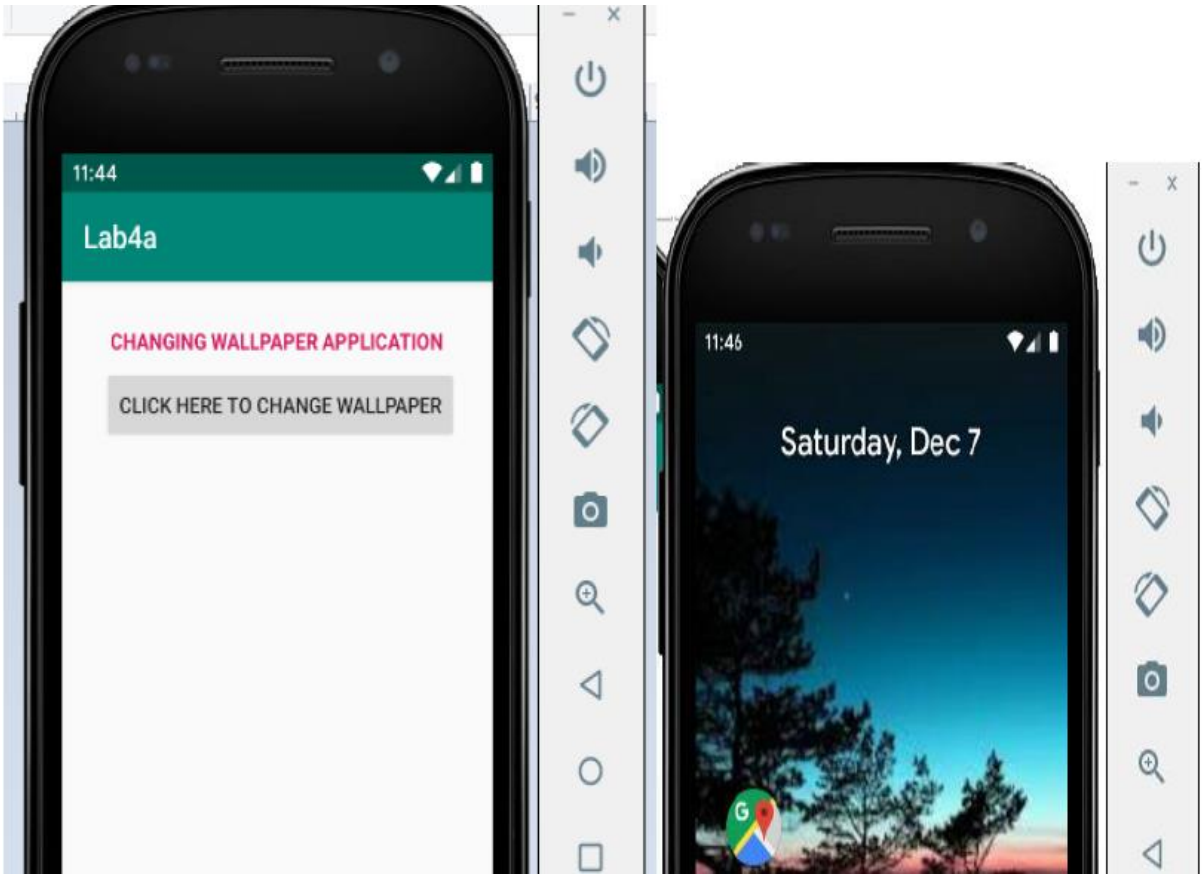
```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
xmlns:android="http://schemas.android.com/apk/res/android" xmlns:app="http://schemas.android.com/apk/res-auto" xmlns:tools=http://schemas.android.com/tools android:layout_width="match_parent"
android:layout_height="match_parent" tools:context=".MainActivity">
<TextViewandroid:layout_width="wrap_content" android:layout_height="wrap_content"
android:text="CHANGING WALLPAPER APPLICATION" android:textColor="@color/colorAccent"
android:textStyle="bold" app:layout_constraintBottom_toBottomOf="parent"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintHorizontal_bias="0.496"app:layout_constraintLeft_toLeftOf="parent"
app:layout_constraintRight_toRightOf="parent"app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent" app:layout_constraintVertical_bias="0.063" />
<Button android:id="@+id/button"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_marginStart="72dp"
android:layout_marginTop="53dp"
android:layout_marginEnd="35dp"
android:layout_marginBottom="590dp"
android:text="CLICK HERE TO CHANGE WALLPAPER"
app:layout_constraintBottom_toBottomOf="parent" app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintHorizontal_bias="0.820" app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent" app:layout_constraintVertical_bias="0.0" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

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.
MainActivity.java package com.example.lab4a;

```
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:


11:44
Lab4a
CHANGING WALLPAPER APPLICATION
CLICK HERE TO CHANGE WALLPAPER
11:46
Saturday, Dec 7

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 TextView control.

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="wrap_content"
android:layout_height="wrap_content"
android:text="COUNTER APPLICATION"
android:textColor="@color/design_default_color_primary_dark"
android:textSize="18sp"
app:layout_constraintBottom_toBottomOf="parent"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintHorizontal_bias="0.498"
app:layout_constraintLeft_toLeftOf="parent"
app:layout_constraintRight_toRightOf="parent"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent"
app:layout_constraintVertical_bias="0.071" />

<TextView
android:id="@+id/textView1"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_marginStart="60dp"
android:layout_marginTop="90dp"
android:layout_marginEnd="79dp"
android:layout_marginBottom="596dp"
android:text="Counter Value"
app:layout_constraintBottom_toBottomOf="parent"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintHorizontal_bias="0.498"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent"
app:layout_constraintVertical_bias="0.071" />

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

```
android:layout_marginStart="152dp"
android:layout_marginTop="129dp"
android:layout_marginEnd="171dp"
android:layout_marginBottom="542dp"
android:text="START"
app:layout_constraintHorizontal_bias="0.498"
app:layout_constraintBottom_toBottomOf="parent"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent"
app:layout_constraintVertical_bias="0.071"/>

<Button
android:id="@+id/btn_stop"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_marginStart="152dp"
android:layout_marginTop="191dp"
android:layout_marginEnd="171dp"
android:layout_marginBottom="542dp"
android:text="STOP"
app:layout_constraintHorizontal_bias="0.498"
app:layout_constraintBottom_toBottomOf="parent"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent"
app:layout_constraintVertical_bias="0.071"/>
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java

```
package com.example.a5a;
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);
txtcounter = findViewById(R.id.textView1);
btnstart = findViewById(R.id.btn_start);
btnstop = findViewById(R.id.btn_stop);
```

```
btnstart.setOnClickListener(new View.OnClickListener() {
@Override
public void onClick(View view) {
customHandler.postDelayed(updateTimerThread,0);
}
});
btnstop.setOnClickListener(new View.OnClickListener()
 {
@Override
public void onClick(View view)
 {
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

XML-CODE:

```
<?xml version="1.0" encoding="UTF-8"?>
<LinearLayout tools:context=".MainActivity"
android:orientation="vertical"
android:layout_height="match_parent"
android:layout_width="match_parent"
xmlns:tools="http://schemas.android.com/tools"xmlns:app="http://schemas.android.com/apk/res-auto"
xmlns:android="http://schemas.android.com/apk/res/android">
<TextView android:layout_height="wrap_content"
android:layout_width="match_parent"
android:textColor="#E91E63"
android:textStyle="italic"
android:textSize="30dp"
android:text="Well Come to KLE College of Engg. and Tech, Chikdoi" android:id="@+id/textView2"/>
<ScrollView android:layout_height="wrap_content"
android:layout_width="wrap_content">
<TextView android:layout_height="wrap_content"
 android:layout_width="match_parent"
 android:textSize="16sp" android:text=""
 android:id="@+id/resultTextView"
 android:textAlignment="center"/>
 </ScrollView>
 <Button android:layout_height="wrap_content"
 android:layout_width="match_parent"
 android:text="Parse XML"
 android:id="@+id/button1"/>
<Button android:layout_height="wrap_content"
android:layout_width="match_parent"
android:text="Parase JSON"
android:id="@+id/button2"/>
<Button android:layout_height="wrap_content"
android:layout_width="match_parent"
android:text="Sample Button"
android:id="@+id/sampleBtn"/>
</LinearLayout>
```

JAVA-CODE:

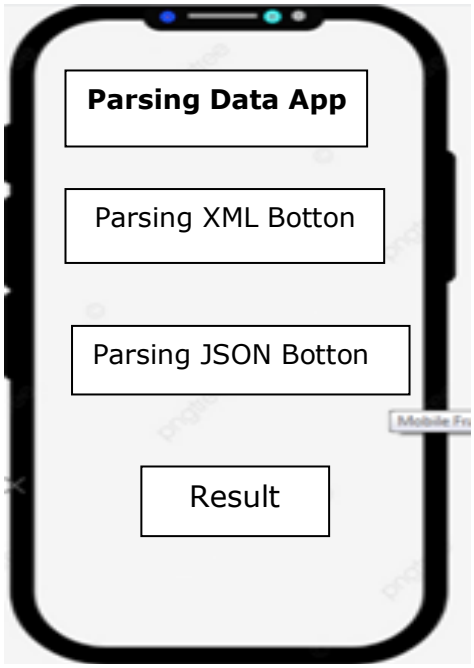
```
package com.example.parsingdataapplication;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.text.style.AlignmentSpan;
import android.text.style.LineBackgroundSpan;
import android.text.style.TabStopSpan;
```

```
import android.view.View;
import android.widget.Button;
import android.widget.TextView;
import android.widget.Toast;

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.IOException;
import java.io.InputStream;
import java.nio.charset.StandardCharsets;
import javax.xml.parsers.DocumentBuilder;
import javax.xml.parsers.DocumentBuilderFactory;

public class MainActivity extends AppCompatActivity
{
   Button parseXmlBtn,parseJsonBtn;
   TextView resultTextView;
   @Override
   protected void onCreate(Bundle savedInstanceState)
{
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);
      parseXmlBtn = findViewById(R.id.button1);
      parseJsonBtn = findViewById(R.id.button2);
      resultTextView = findViewById(R.id.resultTextView);

      parseXmlBtn.setOnClickListener(new View.OnClickListener()
{
         @Override
         public void onClick(View v) {
            try {
               InputStream  inputStream = getAssets().open( "city.xml");
               DocumentBuilderFactory documentBuilderFactory = DocumentBuilderFactory.newInstance();
               DocumentBuilder documentBuilder = documentBuilderFactory.newDocumentBuilder();
               Document document = documentBuilder.parse(inputStream);
               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("\nTemparture:").append(getValue( "temperature", element));
stringBuilder.append("\nHumidity").append(getValue( "humidity", element));
stringBuilder.append("\n-------");
}
resultTextView.setText(stringBuilder.toString());
}
} catch (Exception e) {
e.printStackTrace();
Toast.makeText(MainActivity.this, "Error passing Xml"+e.getMessage(),
Toast.LENGTH_SHORT).show();
}
}
});
parseJsonBtn.setOnClickListener(new View.OnClickListener() {
@Override
public void onClick(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 array = new JSONArray(json);
stringBuilder.append("JSON DATA");
stringBuilder.append("\n----------");
for (int i = 0; i < array.length(); i++)
JSONObject object = array.getJSONObject(i);
stringBuilder.append("\n Name:   ").append(object.getString( "name"));
stringBuilder.append("\n Latitude:   ").append(object.getString( "lat"));
stringBuilder.append("\n :Logitude   ").append(object.getString( "long"));
stringBuilder.append("\n TemperatureName:   ").append(object.getString( "temperature"));
stringBuilder.append("\n Humidity:   ").append(object.getString( "humidity"));
stringBuilder.append("\n----------");
}
resultTextView.setText(stringBuilder.toString());
is.close();
}catch (IOException | JSONException e) {
e.printStackTrace();
}
}
});

Button sampleBtn =findViewById(R.id.sampleBtn);
sampleBtn.setOnClickListener(new View.OnClickListener() {
@Override
public void onClick(View v) {
resultTextView.setText(getString(R.string.sample_text));
}
});
}
```

```
 private  String getValue(String tag, Element element) {
return element.getElementsByTagName(tag).item(0).getChildNodes().item(0).getNodeValue();
}
}
```

OUTPUT:


Parsing Data App
Parsing XML Botton
Parsing JSON Botton
Result

Program-7: Develop a simple application with one Edit Text 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.

XML-CODE:

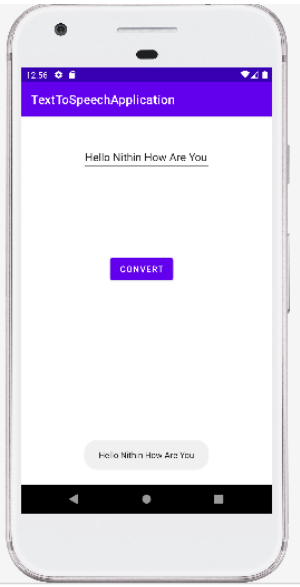
```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    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="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentRight="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="101dp"
        android:layout_marginRight="101dp"
        android:layout_marginBottom="514dp"
        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 = (EditText)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();
        Toast.makeText(getBaseContext(),tospeak,Toast.LENGTH_LONG).show();
        t1.speak(tospeak,TextToSpeech.QUEUE_FLUSH,null);
    }
}
```

OUTPUT:


12:56
TextToSpeechApplication
Hello Nithin How Are You
CONVERT
Hello Nithin How Are You

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.

XML-CODE:

```
<?xml version="1.0" encoding="UTF-8"?>
<RelativeLayout tools:context=".MainActivity"
android:layout_height="match_parent"
 android:layout_width="match_parent"
xmlns:tools="http://schemas.android.com/tools"
xmlns:app="http://schemas.android.com/apk/res-auto"
xmlns:android="http://schemas.android.com/apk/res/android">
<TextView android:layout_height="29dp"
android:layout_width="125dp" app:layout_constraintTop_toTopOf="parent"
app:layout_constraintRight_toRightOf="parent" app:layout_constraintLeft_toLeftOf="parent"
app:layout_constraintBottom_toBottomOf="parent" android:textSize="18sp"
android:textColorLink="#31E65324" android:textColorHighlight="#FFFFFF"
 android:text="Call Application" android:layout_marginBottom="623dp"
android:layout_marginEnd="149dp" android:layout_centerHorizontal="true"
android:layout_alignParentBottom="true" android:layout_alignParentEnd="true"/>
<EditText android:layout_height="wrap_content" android:layout_width="wrap_content"
android:layout_marginBottom="551dp" android:layout_marginEnd="136dp"
android:layout_centerHorizontal="true" android:layout_alignParentBottom="true"
android:layout_alignParentEnd="true" android:inputType="" android:hint="Enter Text"
 android:ems="10" android:id="@+id/PhoneNumbereditText"/><Button
android:layout_height="wrap_content" android:layout_width="wrap_content"
android:text="Clear" android:layout_marginBottom="547dp"
android:layout_marginEnd="29dp" android:layout_alignParentBottom="true"
android:layout_alignParentEnd="true" android:id="@+id/clearBtn"/>
<Button android:layout_height="wrap_content"
android:layout_width="wrap_content" android:text="1"
 android:layout_marginBottom="460dp"  android:layout_marginEnd="265dp"
android:layout_alignParentBottom="true" android:layout_alignParentEnd="true"
android:id="@+id/button2" android:onClick="inputNumber"/>
<Button android:layout_height="wrap_content"
android:layout_width="wrap_content" android:text="2"
 android:layout_marginBottom="457dp" android:layout_marginEnd="152dp"
android:layout_centerHorizontal="true" android:layout_alignParentBottom="true"
android:layout_alignParentEnd="true" android:id="@+id/button3"
 android:onClick="inputNumber"/>
<Button android:layout_height="wrap_content"
]android:layout_width="wrap_content" android:text="3" android:layout_marginBottom="459dp"
android:layout_marginEnd="37dp" android:layout_alignParentBottom="true"
android:layout_alignParentEnd="true" android:id="@+id/button4"
 android:onClick="inputNumber"/>
<Button android:layout_height="wrap_content"
android:layout_width="wrap_content"  android:text="4"
 android:layout_marginBottom="379dp" android:layout_marginEnd="267dp"
android:layout_alignParentBottom="true" android:layout_alignParentEnd="true"
 android:id="@+id/button5" android:onClick="inputNumber"/>
<Button android:layout_height="wrap_content" android:layout_width="wrap_content"
```

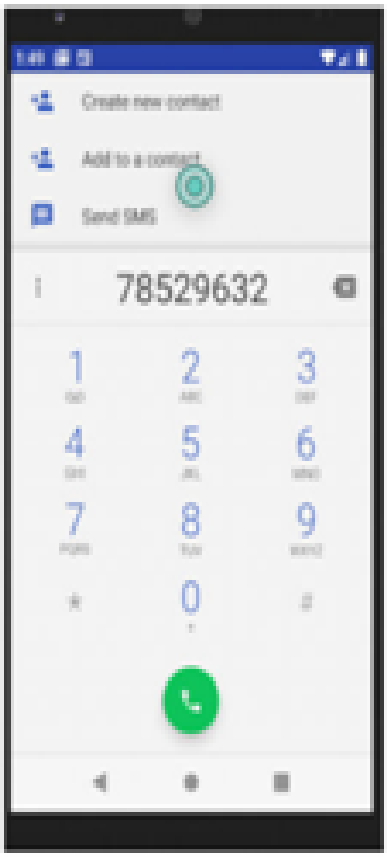
```
 android:text="5" android:layout_marginBottom="379dp"
android:layout_marginEnd="153dp" android:layout_centerHorizontal="true"
android:layout_alignParentBottom="true" android:layout_alignParentEnd="true"
 android:id="@+id/button6" android:onClick="inputNumber"/>
<Button android:layout_height="wrap_content"
android:layout_width="wrap_content" android:text="6"
 android:layout_marginBottom="381dp" android:layout_marginEnd="31dp"
android:layout_alignParentBottom="true" android:layout_alignParentEnd="true"
android:id="@+id/button7" android:onClick="inputNumber"/>
<Button android:layout_height="wrap_content"
 android:layout_width="wrap_content" android:text="7"
 android:layout_marginBottom="297dp" android:layout_marginEnd="263dp"
android:layout_alignParentBottom="true" android:layout_alignParentEnd="true"
android:id="@+id/button8" android:onClick="inputNumber"/>
<Button android:layout_height="wrap_content"
android:layout_width="wrap_content" android:text="8" android:layout_marginBottom="300dp"
android:layout_marginEnd="152dp" android:layout_centerHorizontal="true"
android:layout_alignParentBottom="true" android:layout_alignParentEnd="true"
android:id="@+id/button9" android:onClick="inputNumber"/>
<Button android:layout_height="wrap_content"
 android:layout_width="wrap_content" android:text="9" android:layout_marginBottom="301dp"
android:layout_marginEnd="33dp" android:layout_alignParentBottom="true"
android:layout_alignParentEnd="true" android:id="@+id/button10" android:onClick="inputNumber"/>
<Button android:layout_height="wrap_content"
 android:layout_width="wrap_content" android:text="*" android:layout_marginBottom="227dp"
android:layout_marginEnd="255dp" android:layout_alignParentBottom="true"
android:layout_alignParentEnd="true" android:id="@+id/button11" android:onClick="inputNumber"
android:layout_marginTop="456dp" android:layout_marginStart="63dp"
android:layout_alignParentTop="true" android:layout_alignParentStart="true"/>
<Button android:layout_height="wrap_content" android:layout_width="wrap_content" android:text="0"
android:layout_marginBottom="228dp" android:layout_marginEnd="149dp"
android:layout_alignParentBottom="true" android:layout_alignParentEnd="true"
 android:id="@+id/button12" android:onClick="inputNumber"/><Button
android:layout_height="wrap_content" android:layout_width="wrap_content" android:text="#"
android:layout_marginBottom="234dp" android:layout_marginEnd="32dp"
android:layout_alignParentBottom="true" android:layout_alignParentEnd="true"
 android:id="@+id/button13" android:onClick="inputNumber"/>
<Button android:layout_height="wrap_content" android:layout_width="wrap_content"
android:text="Call" android:layout_marginBottom="144dp"
android:layout_marginEnd="238dp" android:layout_alignParentBottom="true"
android:layout_alignParentEnd="true" android:id="@+id/button14" android:onClick="inputNumber"/>
<Button android:layout_height="wrap_content" android:layout_width="wrap_content"
android:text="Save" android:layout_marginBottom="146dp" android:layout_marginEnd="70dp"
android:layout_alignParentBottom="true" android:layout_alignParentEnd="true"
 android:id="@+id/button15" android:onClick="inputNumber"/></RelativeLayout>
```

JAVA-CODE

```
package com.example.callapplication;
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;
import static android.icu.lang.UCharacter.GraphemeClusterBreak.V;

public class MainActivity extends AppCompatActivity {

 EditText phoneNumerEditText;
Button clearBtn, saveBtn, callBtn;

@Override
protected void onCreate(Bundle savedInstanceState) {
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_main);
phoneNumerEditText = findViewById(R.id.PhoneNumbereditText);
clearBtn = findViewById(R.id.clearBtn);
callBtn = findViewById(R.id.button14);
saveBtn = findViewById(R.id.button15);
clearBtn.setOnClickListener(new View.OnClickListener() {
@Override
public void onClick(View v) {
phoneNumerEditText.setText("");
}
});

callBtn.setOnClickListener(new View.OnClickListener() {
@Override
  public void onClick(View v) {
     String phoneNumber = phoneNumerEditText.getText().toString();
     if(validate(phoneNumber)) {
        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 = phoneNumerEditText.getText().toString();
     if(validate(phoneNumber)) {
        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 = phoneNumerEditText.getText().toString();
 phoneNumerEditText.setText(phoneNumber + digit);
  }

public boolean validate(String phoneNum){
   if(phoneNum.length()==10)
   return true;
  else
  return false;
 }
}
```

OUTPUT:


Create new contact
Add to a contact
Send SMS
78529632
1
2
3
4
5
6
7
8
9
0

PART-B

Program-1: Write a program to enter Medicine Name, Date and Time of the Day as input from the user and store it in the SQL ite database. Input for Time of the Day should be either Morning or Afternoon or Evening or Night. Trigger an alarm based on the Date and Time of the Day and display the Medicine Name

Program-2: Develop a content provider application with an activity called "Meeting Schedule" which takes Date, Time and Meeting Agenda as input from the user and store this information into the SQLite database. Create another application with an activity called "Meeting Info" having DatePicker control, which on the selection of a date should display the Meeting Agenda information for that particular date, else it should display a toast message saying "No Meeting on this Date".

Program-3: Create an application to receive an incoming SMS which is notified to the user. On clicking this SMS notification, the message content and the number should be displayed on the screen. Use appropriate emulator control to send the SMS message to your application.

Program-4: Write a program to create an activity having a Text box, and also Save, Open and Create buttons. The user has to write some text in the Text box. On pressing the Create button the text should be saved as a text file in MkSD card. On subsequent changes to the text, the Save button should be pressed to store the latest content to the same file. On pressing the Open button, it should display the contents from the previously stored files in the Text box. If the user tries to save the contents in the Textbox to a file without creating it, then a toast message has to be displayed saying "First Create a File".

Program-5: Create an application to demonstrate a basic media player that allows the user to Forward, Backward, Play and Pause an audio. Also, make use of the indicator in the seek bar to move the audio forward or backward as required.

Program-6: Develop an application to demonstrate the use of Asynchronous tasks in android. The asynchronous task should implement the functionality of a simple moving banner. On pressing the Start Task button, the banner message should scrollfrom right to left. On pressing the Stop Task button, the banner message should stop.Let the banner message be "Demonstration of Asynchronous Task".

Program-7: Develop an application that makes use of the clipboard framework for copying and pasting of the text. The activity consists of two EditText controls and two Buttons to trigger the copy and paste functionality

Program-8: Create an AIDL service that calculates Car Loan EMI. The formula to calculate EMI is