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PART – A

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 - activity_visiting_card.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout    xmlns:android="http://schemas.android.com/apk/res/android"
   xmlns:tools="http://schemas.android.com/tools"
   xmlns:app="http://schemas.android.com/apk/res-auto"
   android:layout_width="match_parent"
   android:layout_height="match_parent"
   android:padding="10dp"
   android:background="#C5ABAB"
   tools:context=".visiting_card">

   <TextView
      android:id="@+id/textView"
      android:layout_width="283dp"
      android:layout_height="60dp"
      android:layout_alignParentTop="true"
      android:layout_alignParentBottom="true"
      android:layout_marginTop="25dp"
      android:layout_marginBottom="636dp"
      android:fontFamily="cursive"
      android:gravity="center"
      android:text="Android Manifestor"
      android:textSize="25dp"
      android:textStyle="bold" />

   <ImageView
      android:id="@+id/imageView3"
      android:layout_width="97dp"
      android:layout_height="76dp"
      android:layout_alignParentStart="true"
      android:layout_alignParentTop="true"
      android:layout_alignParentEnd="true"
      android:layout_alignParentBottom="true"
      android:layout_marginStart="304dp"
      android:layout_marginTop="16dp"
      android:layout_marginEnd="0dp"
      android:layout_marginBottom="629dp"
```

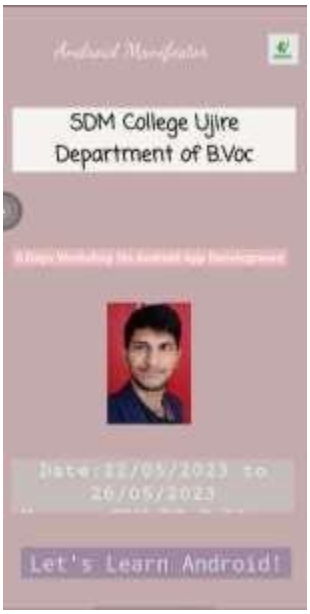
```
        app:srcCompat="@drawable/download" />

    <TextView
        android:textColor="@color/black"
        android:id="@+id/textView2"
        android:layout_width="397dp"
        android:layout_height="101dp"
        android:layout_alignParentStart="true"
        android:layout_alignParentTop="true"
        android:layout_alignParentEnd="true"
        android:layout_alignParentBottom="true"
        android:layout_marginStart="1dp"
        android:layout_marginTop="111dp"
        android:layout_marginEnd="3dp"
        android:layout_marginBottom="509dp"
        android:background="#F8F3F3"
        android:fontFamily="casual"
        android:gravity="center"
        android:text="SDM College Ujire\nDepartment of B.Voc"
        android:textSize="25dp"
        android:textStyle="bold" />

    <TextView
        android:id="@+id/textView3"
        android:layout_width="387dp"
        android:layout_height="85dp"
        android:layout_alignParentTop="true"
        android:layout_alignParentEnd="true"
        android:layout_alignParentBottom="true"
        android:layout_marginTop="278dp"
        android:layout_marginEnd="13dp"
        android:layout_marginBottom="397dp"
        android:background="#EAB8B8"
        android:fontFamily="sans-serif-black"
        android:gravity="center"
        android:text="6 Days Workshop On Android App Development\nBy Ranjith Kumar, IIT
Varanasi"
        android:textSize="15dp"
        android:textStyle="bold" />

    <ImageView
        android:id="@+id/imageView6"
        android:layout_width="217dp"
        android:layout_height="208dp"
        android:layout_alignParentStart="true"
        android:layout_alignParentTop="true"
```

```
        android:layout_alignParentEnd="true"
        android:layout_alignParentBottom="true"
        android:layout_marginStart="104dp"
        android:layout_marginTop="342dp"
        android:layout_marginEnd="118dp"
        android:layout_marginBottom="210dp"
        app:srcCompat="@drawable/profile" />

    <TextView
        android:id="@+id/textView4"
        android:layout_width="401dp"
        android:layout_height="108dp"
        android:layout_alignParentTop="true"
        android:layout_alignParentEnd="true"
        android:layout_alignParentBottom="true"
        android:layout_marginTop="527dp"
        android:layout_marginEnd="5dp"
        android:layout_marginBottom="105dp"
        android:background="#C6BCBC"
        android:fontFamily="serif-monospace"
        android:gravity="center"
        android:text="Date:22/05/2023 to 26/05/2023\nVenue: SDM PG College"
        android:textSize="25dp"
        android:textStyle="bold" />

    <TextView
        android:id="@+id/textView5"
        android:layout_width="402dp"
        android:layout_height="82dp"
        android:layout_alignParentStart="true"
        android:layout_alignParentTop="true"
        android:layout_alignParentEnd="true"
        android:layout_alignParentBottom="true"
        android:layout_marginStart="11dp"
        android:layout_marginTop="632dp"
        android:layout_marginEnd="8dp"
        android:layout_marginBottom="27dp"
        android:background="#9F89A3"
        android:fontFamily="monospace"
        android:gravity="center"
        android:text="Let's Learn Android!"
        android:textSize="25sp" />

</RelativeLayout>
```

Java Code – Visiting_card.java

```
package com.example.practice;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
public class visiting_card extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_visiting_card);
    }
}
```

OUTPUT:



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

XML Code – activity_calculator.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=".calculator">

   <TextView
      android:id="@+id/textView7"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:layout_marginTop="164dp"
      android:fontFamily="cursive"
      android:text="CALCULATOR"
      android:textAlignment="center"
      android:textColor="#673AB7"
      android:textSize="24sp"
      android:textStyle="bold"
      app:layout_constraintEnd_toEndOf="parent"
      app:layout_constraintStart_toStartOf="parent"
      app:layout_constraintTop_toTopOf="parent" />

   <EditText
      android:id="@+id/et1"
      android:layout_width="214dp"
      android:layout_height="44dp"
      android:ems="10"
      android:inputType="textPersonName"
      android:text=""
      android:hint="Enter the First Number"
      app:layout_constraintBottom_toBottomOf="parent"
      app:layout_constraintEnd_toEndOf="parent"
      app:layout_constraintHorizontal_bias="0.497"
      app:layout_constraintStart_toStartOf="parent"
      app:layout_constraintTop_toTopOf="parent"
      app:layout_constraintVertical_bias="0.338" />

   <EditText
      android:id="@+id/et2"
```

```
    android:layout_width="225dp"
    android:layout_height="43dp"
    android:ems="10"
    android:inputType="textPersonName"
    android:text=""
    android:hint="Enter the Second Number"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.497"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.441" />

<Button
    android:id="@+id/button"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="52dp"
    android:layout_marginBottom="260dp"
    android:text="+"
    android:onClick="doAdd"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintStart_toStartOf="parent" />

<Button
    android:id="@+id/button2"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginEnd="52dp"
    android:layout_marginBottom="260dp"
    android:text="-"
    android:onClick="doSub"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent" />

<Button
    android:id="@+id/button3"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="52dp"
    android:layout_marginBottom="160dp"
    android:text="*"
    android:onClick="doMul"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintStart_toStartOf="parent" />
```

```
<Button
    android:id="@+id/button4"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginEnd="52dp"
    android:layout_marginBottom="160dp"
    android:text="/"
    android:onClick="doDiv"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent" />

<TextView
    android:id="@+id/tv2"
    android:layout_width="250sp"
    android:layout_height="wrap_content"
    android:text="0"
    android:textAlignment="center"
    android:textSize="24sp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.422"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.519" />

<TextView
    android:id="@+id/textView9"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Answer:"
    android:textSize="20sp"
    android:textStyle="bold"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.047"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.515" />

<Button
    android:id="@+id/button5"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="clear"
    android:onClick="doClear"
    app:layout_constraintBottom_toBottomOf="parent"
```

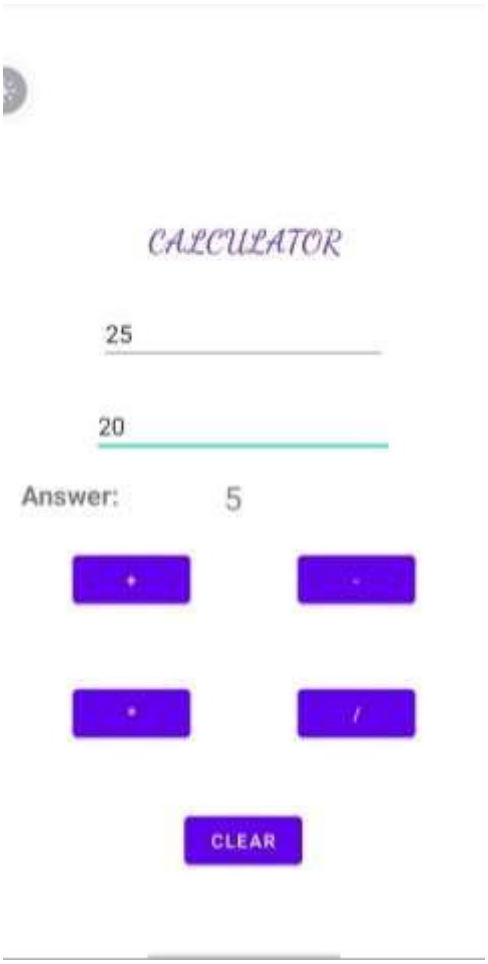
```
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.498"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.903" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

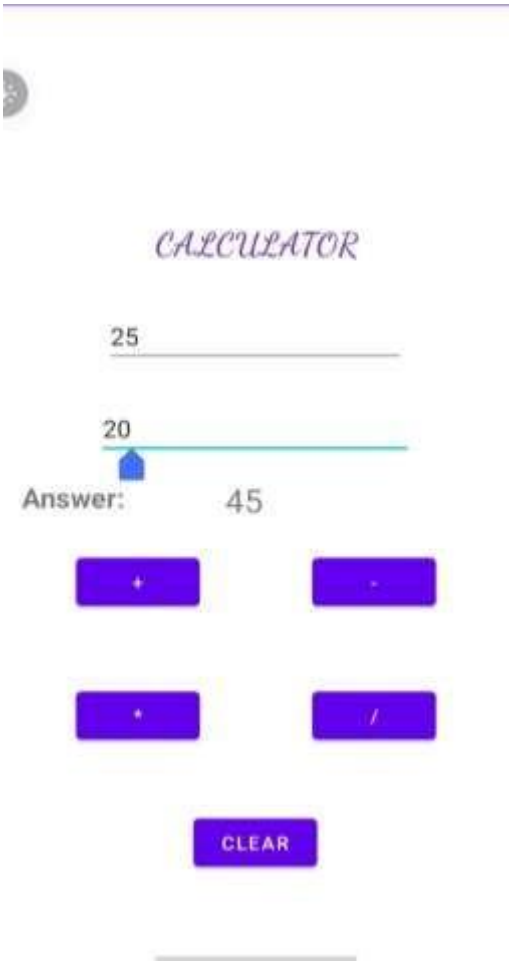
Java Code – Calculator.java

```
package com.example.visiting;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.EditText;
import android.widget.TextView;
public class calculator extends AppCompatActivity {
    EditText e1,e2;
    TextView t2;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_calculator);
        e1=(EditText)findViewById(R.id.et1);
        e2=(EditText)findViewById(R.id.et2);
        t2=(TextView)findViewById(R.id.tv2);
    }
    public void doAdd(View V)
    {
        int a1=Integer.parseInt(e1.getText().toString());
        int a2=Integer.parseInt(e2.getText().toString());
        int result=a1+a2;
        t2.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;
        t2.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;
        t2.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;
        t2.setText(""+result);
    }
    public void doClear(View V)
    {
        e1.setText(null);
        e2.setText(null);
        t2.setText("");

    }
}
```

OUTPUT:





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.**

XML Code – activity_signup.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=".Signup">

   <TextView
      android:id="@+id/textView8"
      android:layout_width="81dp"
      android:layout_height="28dp"
      android:shadowColor="@color/purple_500"
      android:shadowDx="0"
      android:shadowDy="0"
      android:shadowRadius="5"
      android:text="SignUp"
      android:textAlignment="center"
      android:textColor="#9C27B0"
      android:textSize="20sp"
      android:textStyle="bold"
      app:layout_constraintBottom_toBottomOf="parent"
      app:layout_constraintEnd_toEndOf="parent"
      app:layout_constraintHorizontal_bias="0.484"
      app:layout_constraintStart_toStartOf="parent"
      app:layout_constraintTop_toTopOf="parent"
      app:layout_constraintVertical_bias="0.224" />
```

```
    <EditText
        android:id="@+id/email"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:ems="10"
        android:hint="Enter Email"
        android:inputType="textEmailAddress"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.497"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/textView8"
        app:layout_constraintVertical_bias="0.126" />

    <EditText
        android:id="@+id/pass"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:ems="10"
        android:hint="Enter Password"
        android:inputType="textPassword"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.497"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/email"
        app:layout_constraintVertical_bias="0.086" />

    <Button
        android:id="@+id/signupb"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="SIGNUP"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.498"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/pass"
        app:layout_constraintVertical_bias="0.161" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

activity_signin.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=".Signin">

<TextView
   android:id="@+id/textView8"
   android:layout_width="81dp"
   android:layout_height="28dp"
   android:shadowColor="@color/purple_500"
   android:shadowDx="0"
   android:shadowDy="0"
   android:shadowRadius="5"
   android:text="Signin"
   android:textAlignment="center"
   android:textColor="#9C27B0"
   android:textSize="20sp"
   android:textStyle="bold"
   app:layout_constraintBottom_toBottomOf="parent"
   app:layout_constraintEnd_toEndOf="parent"
   app:layout_constraintHorizontal_bias="0.484"
   app:layout_constraintStart_toStartOf="parent"
   app:layout_constraintTop_toTopOf="parent"
   app:layout_constraintVertical_bias="0.224" />

<EditText
   android:id="@+id/email"
   android:layout_width="wrap_content"
   android:layout_height="wrap_content"
   android:ems="10"
   android:hint="Enter Email"
   android:inputType="textEmailAddress"
   app:layout_constraintBottom_toBottomOf="parent"
   app:layout_constraintEnd_toEndOf="parent"
   app:layout_constraintHorizontal_bias="0.497"
   app:layout_constraintStart_toStartOf="parent"
   app:layout_constraintTop_toBottomOf="@+id/textView8"
   app:layout_constraintVertical_bias="0.126" />

<EditText
   android:id="@+id/pass"
   android:layout_width="wrap_content"
   android:layout_height="wrap_content"
   android:ems="10"
   android:hint="Enter Password"
```

```
        android:inputType="textPassword"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.497"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/email"
        app:layout_constraintVertical_bias="0.086" />

    <Button
        android:id="@+id/signinb"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="SIGNIN"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.498"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/pass"
        app:layout_constraintVertical_bias="0.161" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

activity_signinsuccess.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=".signinsuccess">

    <TextView
        android:id="@+id/textView10"
        android:layout_width="342dp"
        android:layout_height="45dp"
        android:text="Login Successful"
        android:textAlignment="center"
        android:textSize="34sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.492"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.594" />
```

```
    <TextView
        android:id="@+id/textView11"
        android:layout_width="260dp"
        android:layout_height="58dp"
        android:text="WELCOME"
        android:textAlignment="center"
        android:textColor="#009688"
        android:textSize="34sp"
        android:textStyle="bold|italic"
        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="0.313" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

Java Code – Sign_up.java

```
package com.example.visiting;
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 Signup extends AppCompatActivity {
    EditText email,pass;
    Button signupb;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_signup);
        email=(EditText) findViewById(R.id.email);
        pass=(EditText) findViewById(R.id.pass);
        signupb =(Button) findViewById(R.id.signupb);
        signupb.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                String  emailid=email.getText().toString();
                String password=pass.getText().toString();
                if(!isValidPassword(password)){
                    Toast.makeText(Signup.this, "Password Does Not Match",
```

```
Toast.LENGTH_LONG).show();
                return;
            }
            Intent intent = new Intent(Signup.this,Signin.class);
            intent.putExtra("emailid",emailid);
            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){
    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;
  }
}
```

Signin.java

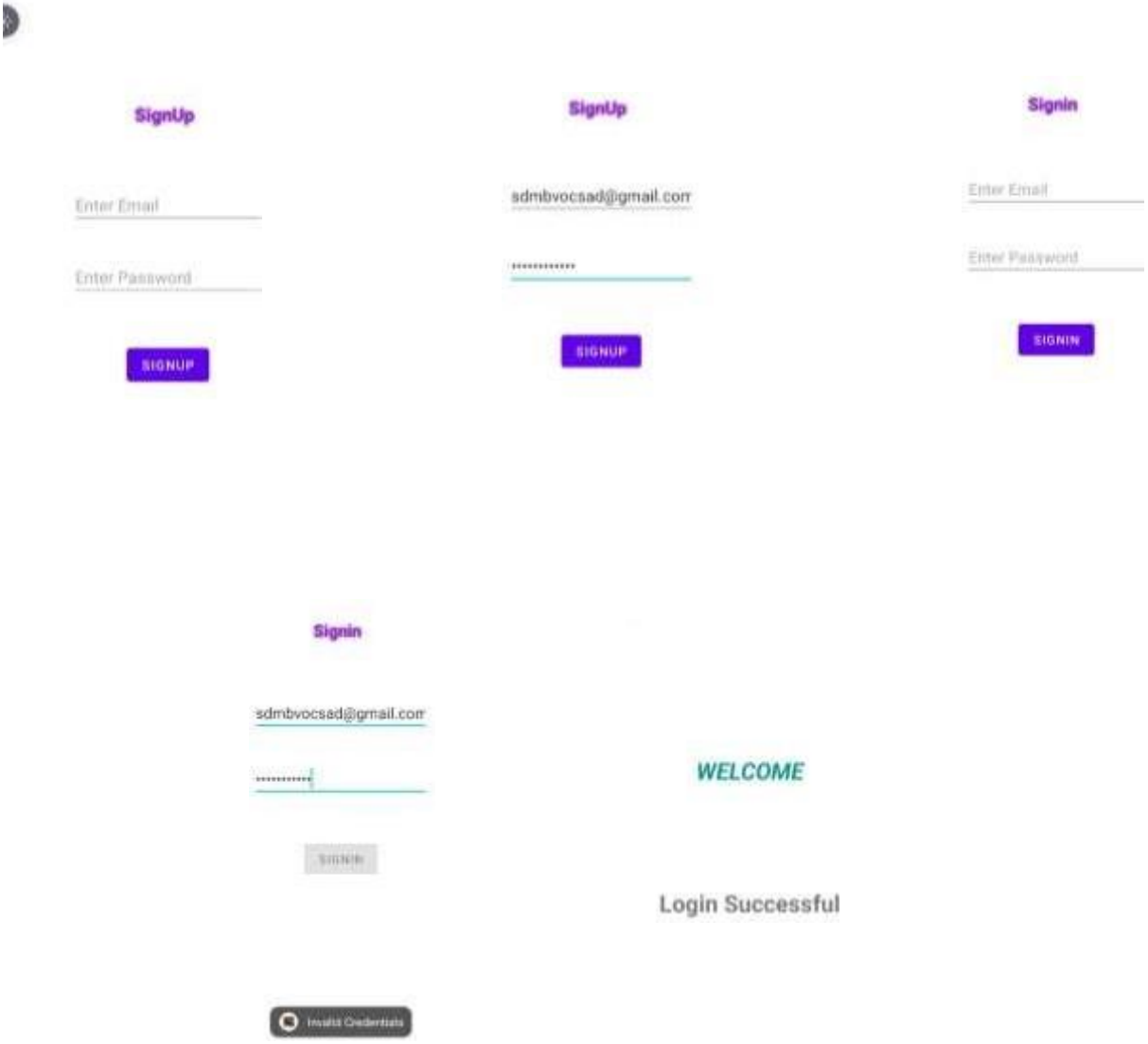
```
package com.example.visiting;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;
public class Signin extends AppCompatActivity {
  EditText email,pass;
```

```
   Button signinb;
   int counter = 2;
   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_signin);
      email=(EditText) findViewById(R.id.email);
      pass=(EditText) findViewById(R.id.pass);
      signinb=(Button) findViewById(R.id.signinb);
      String registeredEmail = getIntent().getStringExtra("emailid");
      String registeredPassword = getIntent().getStringExtra("password");
      signinb.setOnClickListener(new View.OnClickListener() {
         @Override
         public void onClick(View view) {
            String emailid = email.getText().toString();
            String password = pass.getText().toString();

            if(registeredEmail.equals(emailid) && registeredPassword.equals(password)){
               Intent intent = new Intent(Signin.this,signinsuccess.class);
               startActivity(intent);
            }
            else{
               Toast.makeText(Signin.this, "Invalid Credentials",
Toast.LENGTH_LONG).show();
            }
            counter--;
            if (counter==0){
               Toast.makeText(getBaseContext(), "FAILED LOGIN ATTEMPTS",
Toast.LENGTH_LONG).show();
               signinb.setEnabled(false);
            }
         }
      });
   }}
```

signinsuccess.java

```
package com.example.visiting;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
public class signinsuccess extends AppCompatActivity {
   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_signinsuccess);
 }
}
```

OUTPUT:


SignUp
Enter Email
Enter Password
SIGNUP
SignUp
sdmbvocsad@gmail.com
SIGNUP
Signin
Enter Email
Enter Password
SIGNIN
Signin
sdmbvocsad@gmail.com
WELCOME
Login Successful
Invalid Credentials

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.

XML Code – activity_wallpaper.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=".wallpaper">

   <Button
      android:id="@+id/button6"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="CLICK HERE TO CHANGE WALLPAPER"
      app:layout_constraintBottom_toBottomOf="parent"
      app:layout_constraintEnd_toEndOf="parent"
      app:layout_constraintStart_toStartOf="parent"
      app:layout_constraintTop_toTopOf="parent" />

   <TextView
      android:id="@+id/textView12"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="Wallpaper changer"
      android:textColor="#050505"
      android:textSize="34sp"
      app:layout_constraintBottom_toBottomOf="parent"
      app:layout_constraintEnd_toEndOf="parent"
      app:layout_constraintStart_toStartOf="parent"
      app:layout_constraintTop_toTopOf="parent"
      app:layout_constraintVertical_bias="0.289" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

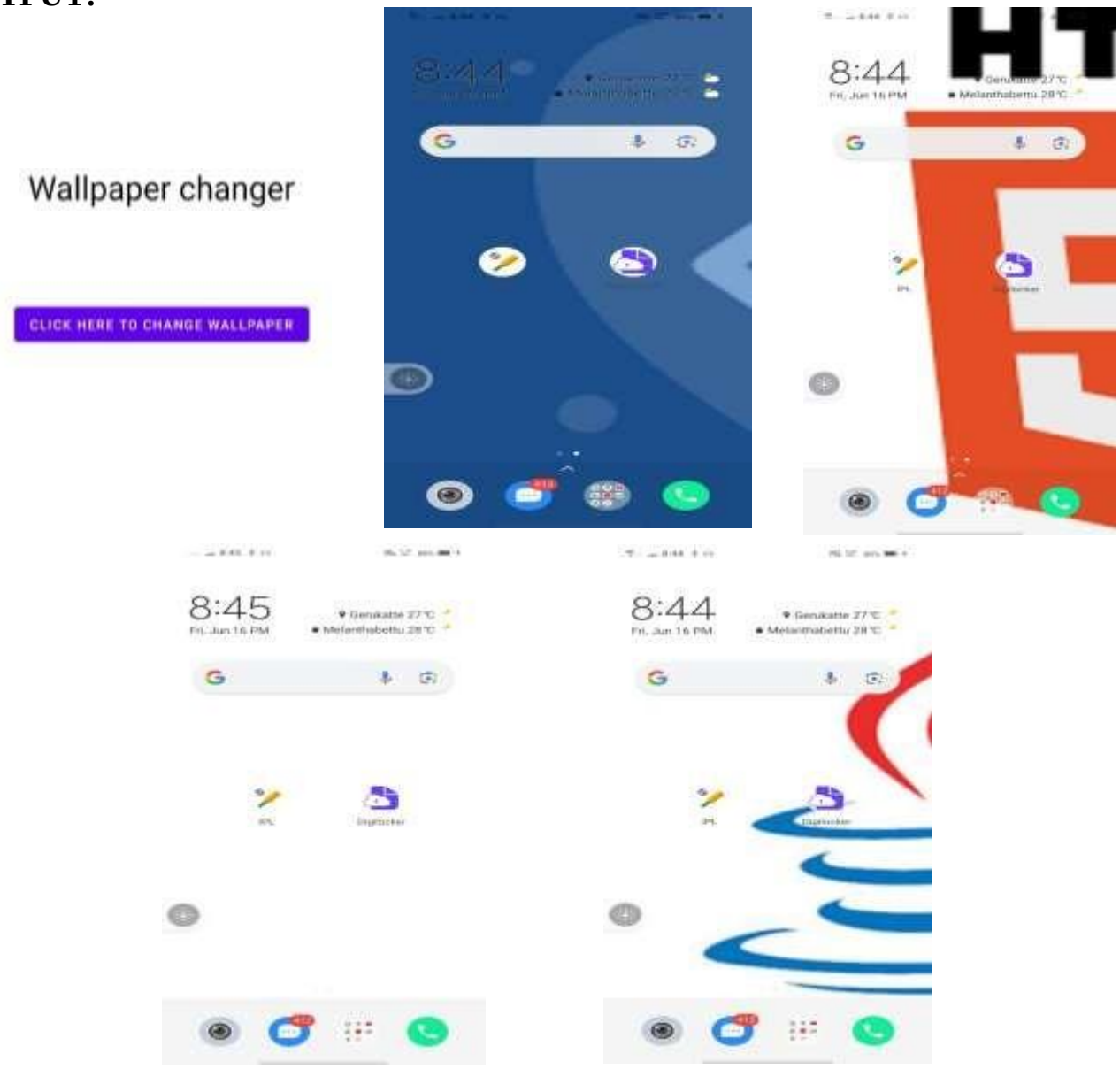
Java Code – wallpaper.java

```
package com.example.visiting;
import androidx.appcompat.app.AppCompatActivity;
import android.app.WallpaperManager;
import android.graphics.Bitmap;
import android.graphics.drawable.BitmapDrawable;
```

```
import android.graphics.drawable.Drawable;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import java.io.IOException;
import java.util.BitSet;
import java.util.Timer;
import java.util.TimerTask;
public class wallpaper 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_wallpaper);
        mytimer = new Timer();
        wpm = WallpaperManager.getInstance(this);
        changewallpaper = findViewById(R.id.button6);
        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.c);prev=2;
                }else if(prev==2){
                        drawable=getResources().getDrawable(R.drawable.cpp);prev=3;
                }
                else if(prev==3){
                    drawable=getResources().getDrawable(R.drawable.python);prev=4;

                }
                else if(prev==4){
                    drawable=getResources().getDrawable(R.drawable.java);prev=5;

                }
                else if(prev==5){
```

```
                drawable=getResources().getDrawable(R.drawable.html);prev=1;

            }
            Bitmap wallpaper = ((BitmapDrawable)drawable).getBitmap();
            try{
                wpm.setBitmap(wallpaper);
            }catch(IOException e){
                e.printStackTrace();
            }
        }
    },0,3000);
  }
}
```

OUTPUT:



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.

XML Code – activity_counter.xml

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

    <TextView
        android:id="@+id/textView13"
        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="606dp"
        android:text="Counter Application"
        android:textAlignment="center"
        android:textColor="#102695"
        android:textSize="24sp"
        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="0.181" />

    <TextView
        android:id="@+id/txtcounter"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="154dp"
        android:layout_marginBottom="477dp"
        android:text="Counter Value"
        android:textColor="#121010"
        android:textSize="20sp"
```

```
        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="0.397" />

    <Button
        android:id="@+id/btnstart"
        android:layout_width="140dp"
        android:layout_height="63dp"
        android:layout_alignParentStart="true"
        android:layout_alignParentEnd="true"
        android:layout_alignParentBottom="true"
        android:layout_marginStart="108dp"
        android:layout_marginEnd="145dp"
        android:layout_marginBottom="367dp"
        android:text="Start"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.167"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.619" />

    <Button
        android:id="@+id/btnstop"
        android:layout_width="170dp"
        android:layout_height="68dp"
        android:layout_alignParentEnd="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="124dp"
        android:layout_marginBottom="273dp"
        android:text="Stop"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.845"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.619" />
</RelativeLayout>
```

Java Code – Counter.java

```
package com.example.visiting;
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 counter 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_counter);
        btnstart=findViewById(R.id.btnstart);
        btnstop=findViewById(R.id.btnstop);
        txtcounter=findViewById(R.id.txtcounter);
        txtcounter.setText("0");
        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:


Counter Application
0
START
STOP


Counter Application
4
START
STOP


Counter Application
5
START
STOP

6. 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.

XML Code – activity_text_to_speech.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"
   android:background="#EADDB7"
   tools:context=".text_to_speech">

   <TextView
      android:id="@+id/textView14"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:background="#EFEDEB"
      android:text="Text to Speech"
      android:textAppearance="@style/TextAppearance.AppCompat.Body1"
      android:textSize="20sp"
      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="0.147" />

   <EditText
      android:id="@+id/textforspeech"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:ems="10"
      android:hint="Enter the text here"
      android:inputType="textPersonName"
      app:layout_constraintBottom_toBottomOf="parent"
      app:layout_constraintEnd_toEndOf="parent"
      app:layout_constraintHorizontal_bias="0.497"
      app:layout_constraintStart_toStartOf="parent"
      app:layout_constraintTop_toTopOf="parent"
      app:layout_constraintVertical_bias="0.31" />

   <Button
      android:id="@+id/convert"
```

```
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Covert and Speak"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.553"
        android:onClick="convert"/>
</androidx.constraintlayout.widget.ConstraintLayout>
```

Java Code – text_to_speech.java

```
package com.example.visiting;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.speech.tts.TextToSpeech;
import android.text.Editable;
import android.view.View;
import android.widget.EditText;
import android.widget.Toast;
import org.w3c.dom.Text;
import java.util.Locale;
public class text_to_speech extends AppCompatActivity {
        TextToSpeech t1;
        EditText e1;
        Editable voiceOut;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_text_to_speech);
        e1=findViewById(R.id.textforspeech);
        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){
        voiceOut = e1.getText();
```

```
        String tospeak = e1.getText().toString();
        Toast.makeText(text_to_speech.this, voiceOut, Toast.LENGTH_LONG).show();
        t1.speak(String.valueOf(voiceOut),TextToSpeech.QUEUE_FLUSH,null);
    }
}
```

OUTPUT:

7. 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 – activity_call.xml

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

    <TextView
        android:layout_width="405dp"
        android:layout_height="50dp"
        android:layout_alignParentTop="true"
        android:layout_alignParentBottom="true"
        android:layout_marginTop="90dp"
        android:layout_marginBottom="711dp"
        android:text="Call Application"
        android:textAlignment="center"
        android:textSize="24sp" />

    <EditText
        android:id="@+id/phoneNumberEditText"
        android:layout_width="276dp"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentBottom="true"
        android:layout_marginTop="196dp"
        android:layout_marginEnd="106dp"
        android:layout_marginBottom="541dp"
        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="10dp"
        android:layout_marginBottom="542dp"
```

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

<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="279dp"
    android:layout_marginBottom="437dp"
    android:onClick="inputNumber"
    android:text="1"
    android:textAlignment="center"
    android:textSize="20sp" />

<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="169dp"
    android:layout_marginBottom="437dp"
    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="48dp"
    android:layout_marginBottom="435dp"
    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="281dp"
    android:layout_marginBottom="370dp"
    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="167dp"
    android:layout_marginBottom="378dp"
    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="45dp"
    android:layout_marginBottom="380dp"
    android:onClick="inputNumber"
    android:text="6" />

<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="278dp"
    android:layout_marginBottom="299dp"
    android:onClick="inputNumber"
    android:text="7" />

<Button
    android:id="@+id/button9"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignParentEnd="true"
    android:layout_alignParentBottom="true"
    android:layout_marginTop="512dp"
    android:layout_marginEnd="162dp"
    android:layout_marginBottom="303dp"
    android:onClick="inputNumber"
    android:text="8" />
```

```
<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="44dp"
    android:layout_marginBottom="305dp"
    android:onClick="inputNumber"
    android:text="9" />

<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="279dp"
    android:layout_marginBottom="224dp"
    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="163dp"
    android:layout_marginBottom="222dp"
    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="33dp"
    android:layout_marginBottom="224dp"
    android:onClick="inputNumber"
    android:text="*" />

<Button
```

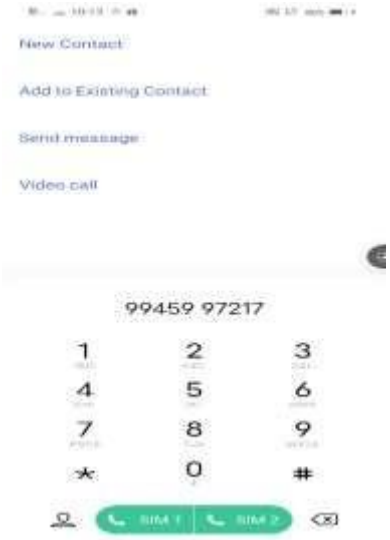
```
        android:id="@+id/callBtn"
        android:layout_width="76dp"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="80dp"
        android:layout_marginBottom="113dp"
        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="238dp"
        android:layout_marginBottom="117dp"
        android:text="Save" />
</RelativeLayout>
```

Java Code – call.java

```
package com.example.visiting;

import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.net.Uri;
import android.provider.ContactsContract;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.os.Bundle;
public class call extends AppCompatActivity {
    EditText phoneNumberEditText; Button
            clearBtn,callBtn,saveBtn;
    @Override protected void onCreate(Bundle savedInstanceState)
    {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_call);
        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:



PART – B

8. Write a program to enter Medicine Name, Date and Time of the Day as input from the user and store it in the SQLite database. Input for Time of the Day should be either Morning or Afternoon or Evening or Night.

XML Code – activity_medicine_simple.xml

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

    <TextView
        android:id="@+id/textView29"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Medicine DB"
        android:gravity="center"/>

    <EditText
        android:id="@+id/editTextText"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:ems="10"
        android:inputType="text"
        android:hint="Medicine Name" />

    <EditText
        android:id="@+id/editTextDate"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:ems="10"
        android:inputType="date"
        android:hint="Date" />
    <EditText
        android:id="@+id/editTextTime"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:ems="10"
        android:hint="Time" />
```

```
    <Button
        android:id="@+id/button19"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="save"
        android:onClick="save_m"/>
    <Button
        android:id="@+id/button20"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="show"
        android:onClick="show_m"/>

    <TextView
        android:id="@+id/textView30"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        />
</LinearLayout>
```

Java Code – medicine_simple.java

```
package com.example.day_3;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;

public class medicine_simple extends AppCompatActivity {

    EditText name,date,time;
    Button save,show;
    TextView tv;
    med_data md;
    String mname,mdate,mtime;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_medicine_simple);
        name=findViewById(R.id.editTextText);
        date=findViewById(R.id.editTextDate);
        time=findViewById(R.id.editTextTime);
        save=findViewById(R.id.button19);
        show=findViewById(R.id.button20);
```

```
        tv=findViewById(R.id.textView30);
        md=new med_data(medicine_simple.this);
    }

    public void save_m(View view) {
        mname=name.getText().toString();
        mdate=date.getText().toString();
        mtime=time.getText().toString();
        md.save(mname,mdate,mtime);
    }

    public void show_m(View view) {
        String s2 = md.show();
        tv.setText(s2);
    }
}
```

Java DB Code – med_data.java

```
package com.example.day_3;
import android.content.ContentValues;
import android.content.Context;
import android.database.Cursor;
import android.database.sqlite.SQLiteDatabase;
import android.database.sqlite.SQLiteOpenHelper;
import androidx.annotation.Nullable;

public class med_data extends SQLiteOpenHelper {
    SQLiteDatabase sq;

    public med_data(@Nullable Context context) {
        super(context, "med.db", null, 1);
        sq = getReadableDatabase();
    }

    @Override
    public void onCreate(SQLiteDatabase db) {
        db.execSQL("create table medicine (Name text, MDate text, Time text)");
    }
    @Override
    public void onUpgrade(SQLiteDatabase db, int oldVersion, int newVersion) {

    }

    public void save(String mname, String mdate, String mtime) {
        ContentValues cv = new ContentValues();
```

```
        cv.put("Name", mname);
        cv.put("MDate", mdate);
        cv.put("Time", mtime);
        sq.insert("medicine", null, cv);
    }

    public String show() {
        Cursor c;
        c = sq.query("medicine",new String[]{"Name","MDate","Time"}, null, null, null, null,
null);
        c.moveToFirst();
        if (c.getCount() < 1) {
            return "No Details";
        }
        String name = c.getString(c.getColumnIndex("Name"));
        String date = c.getString(c.getColumnIndex("MDate")); // Corrected column name
        String time = c.getString(c.getColumnIndex("Time"));
        String data1 = name + "\t\t" + date + "\t\t" + time + "\n";
        c.close(); // Close the Cursor after use
        return data1;
    }
}
```

OUTPUT:

9. 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 Date Picker 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".

XML Code – activity_meeting_schedule.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=".meeting_schedule">

    <TextView
        android:id="@+id/textView23"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:fontFamily="cursive"
        android:text="Schedule Meeting"
        android:textColor="#050505"
        android:textSize="24sp" />

    <EditText
        android:id="@+id/schedule_date"
        android:layout_width="272dp"
        android:layout_height="53dp"
        android:ems="10"
        android:inputType="date" />

    <TextView
        android:id="@+id/textView24"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:fontFamily="cursive"
        android:text="Date"
        android:textColor="#0E0C0C"
        android:textSize="20sp" />

    <TextView
        android:id="@+id/textView25"
```

```
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:fontFamily="cursive"
    android:text="Time"
    android:textColor="#100C0C"
    android:textSize="20dp" />

<EditText
    android:id="@+id/schedule_time"
    android:layout_width="281dp"
    android:layout_height="53dp"
    android:ems="10"
    android:inputType="time"/>

<TextView
    android:id="@+id/textView26"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:fontFamily="cursive"
    android:text="Agenda"
    android:textColor="#0E0B0B"
    android:textSize="20dp"/>

<EditText
    android:id="@+id/schedule_ag"
    android:layout_width="294dp"
    android:layout_height="49dp"
    android:ems="10"/>


<Button
    android:id="@+id/schedule_save"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:fontFamily="cursive"
    android:text="Save"
    android:textSize="16sp" />

<Button
    android:id="@+id/schedule_view"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:fontFamily="cursive"
    android:text="View"
    android:textSize="16sp"
    app:layout_constraintEnd_toEndOf="parent"/>
```

```
    <CalendarView
        android:id="@+id/calendarViewschedule"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"/>

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

XML Code – activity_meeting_info.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=".Meeting_info">

    <TextView
        android:id="@+id/zx"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:fontFamily="cursive"
        android:text="Meeting Info"
        android:textSize="24sp"/>


    <TextView
        android:id="@+id/abcd"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:fontFamily="cursive"
        android:text="Date"
        android:textColor="#0E0C0C"
        android:textSize="34sp" />

    <EditText
        android:id="@+id/info_date"
        android:layout_width="272dp"
        android:layout_height="53dp"
        android:ems="10"
        android:inputType="date" />

    <Button
        android:id="@+id/info_show"
```

```
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:fontFamily="cursive"
        android:text="Search for Meeting Details"
        android:textSize="16sp"/>

    <CalendarView
        android:id="@+id/calendarViewinfo"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"/>

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

Java Code – meeting_schedule.java

```
package com.example.visiting;
import androidx.annotation.NonNull;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Context;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.view.inputmethod.InputMethodManager;
import android.widget.Button;
import android.widget.CalendarView;
import android.widget.EditText;
import android.widget.Toast;
public class meeting_schedule extends AppCompatActivity {
    EditText date,time,agenda;
    Database1 dbc;
    CalendarView c_view;
    Button save,a_view;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_meeting_schedule);
        date=(EditText) findViewById(R.id.schedule_date);
        time=(EditText) findViewById(R.id.schedule_time);
        agenda=(EditText) findViewById(R.id.schedule_ag);
        save=(Button) findViewById(R.id.schedule_save);
        a_view=(Button) findViewById(R.id.schedule_view);
        c_view=findViewById(R.id.calendarViewschedule);
        dbc=new Database1(getApplicationContext());
        c_view.setVisibility(View.INVISIBLE);
        date.setOnClickListener(new View.OnClickListener() {
            @Override
```

```
        public void onClick(View v) {
            closeKeyBoard();
            c_view.setVisibility(View.VISIBLE);
            c_view.setOnDateChangeListener(new CalendarView.OnDateChangeListener() {
                @Override
                public void onSelectedDayChange(@NonNull CalendarView view, int year, int
month, int dayOfMonth) {
                    String d=dayOfMonth+"/"+(month+1)+"/"+year;
                    date.setText(d);
                    c_view.setVisibility(View.INVISIBLE);
                }
            });
        }});

            save.setOnClickListener(new View.OnClickListener() {
                @Override
                public void onClick(View v) {
                    String mdate,mtime,magenda;
                    mdate=date.getText().toString();
                    mtime=time.getText().toString();
                    magenda=agenda.getText().toString();
                    Boolean insert=dbc.insertvalues(mdate,mtime,magenda);
                    if(insert==true){
                        Toast.makeText(getApplicationContext(), "Data Inserted",
Toast.LENGTH_LONG).show();
                    }
                    else{
                        Toast.makeText(getApplicationContext(), "Data Not Inserted",
Toast.LENGTH_LONG).show();
                    }
                }
            });
            a_view.setOnClickListener(new View.OnClickListener() {
                @Override
                public void onClick(View v) {
                    Intent intent = new Intent(meeting_schedule.this,Meeting_info.class);
                    startActivity(intent);
                }
            });
        }
        private void closeKeyBoard(){
            View view = this.getCurrentFocus();
            if(view!=null){
                InputMethodManager imm=(InputMethodManager)
this.getSystemService(Context.INPUT_METHOD_SERVICE);
                imm.hideSoftInputFromWindow(view.getWindowToken(),0);
```

```
        }
    }
}
```

Java Code – meeting_info.java

```
package com.example.visiting;
import androidx.annotation.NonNull;
import androidx.appcompat.app.AppCompatActivity;
import android.annotation.SuppressLint;
import android.database.Cursor;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.CalendarView;
import android.widget.EditText;
import android.widget.TextView;
import android.widget.Toast;
public class Meeting_info extends AppCompatActivity {
    EditText date;
    CalendarView c_view;
    Button s_date;
    Database1 dbc;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_meeting_info);
        date=(EditText) findViewById(R.id.info_date);
        c_view=findViewById(R.id.calendarViewinfo);
        s_date=(Button) findViewById(R.id.info_show);
        dbc=new Database1(getApplicationContext());
        c_view.setOnDateChangeListener(new CalendarView.OnDateChangeListener() {
            @Override
            public void onSelectedDayChange(@NonNull CalendarView view, int year, int
month, int dayOfMonth) {
                String d=dayOfMonth+"/"+(month+1)+"/"+year;
                date.setText(d);
            }
        });
        s_date.setOnClickListener(new View.OnClickListener() {
            @SuppressLint("Range")
            @Override
            public void onClick(View v) {
                String d1=date.getText().toString();
                StringBuffer res=new StringBuffer();
                Cursor c=dbc.fetch(d1);
```

```
            int count=c.getCount();
            c.moveToNext();
            if(count>0) {
               do {
                  res.append(c.getString(c.getColumnIndex("agenda")) + "\t" + "at" + "\t" +
c.getString(c.getColumnIndex("time")));
                  res.append("\n");
               } while (c.moveToNext());
               Toast.makeText(getApplicationContext(), res, Toast.LENGTH_LONG).show();
            }
            else{
               Toast.makeText(getApplicationContext(), "NO meeting on this day...",
Toast.LENGTH_LONG).show();
            }
         }
      });
   }
}
```

OUTPUT:

10. 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.

XML Code – activity_sms.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"
   android:background="@drawable/muddu"
   tools:context=".SMS">

   <TextView
      android:id="@+id/textView20"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:layout_marginTop="8dp"
      android:text="SMS Sender"
      android:textColor="#9C27B0"
      android:textSize="20sp"/>

   <EditText
      android:id="@+id/phone"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:layout_marginStart="122dp"
      android:ems="10"
      android:hint="Enter Phone No. Here"
      android:inputType="phone" />

   <TextView
      android:id="@+id/textView21"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="Phone No:"
      android:textSize="20sp"/>

   <EditText
      android:id="@+id/message"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:ems="10"
```

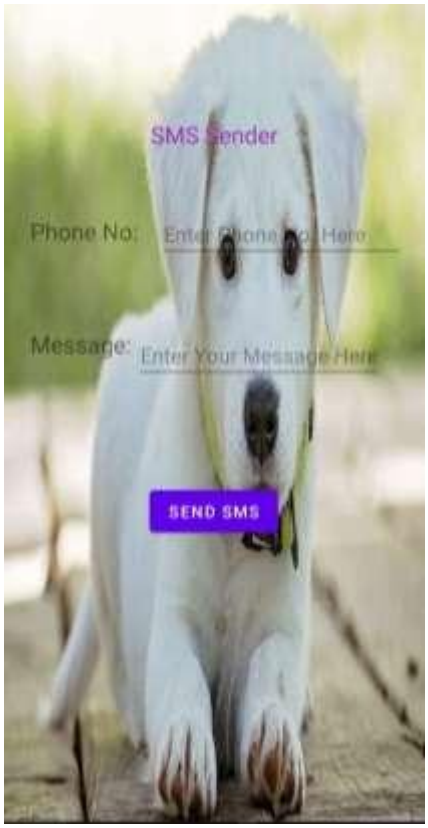
```
        android:hint="Enter Your Message Here"
        android:inputType="textPersonName"/>

    <TextView
        android:id="@+id/textView22"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Message:"
        android:textSize="20sp" />

    <Button
        android:id="@+id/button14"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Send SMS"/>
</androidx.constraintlayout.widget.ConstraintLayout>
```

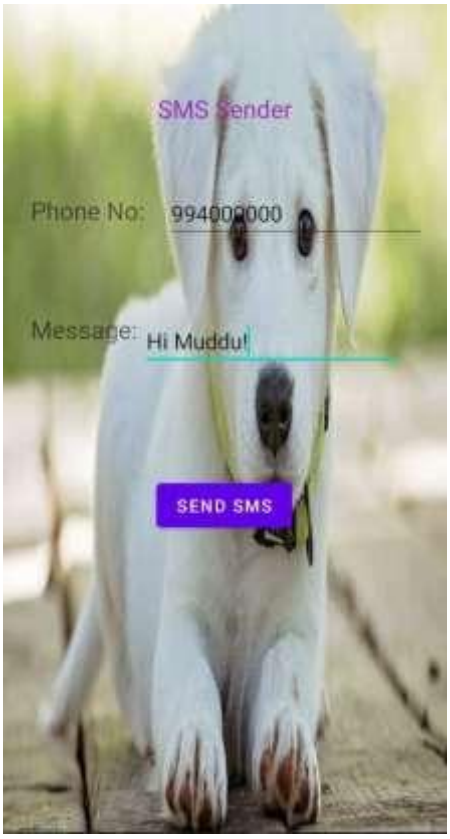
Java Code – SMS.java

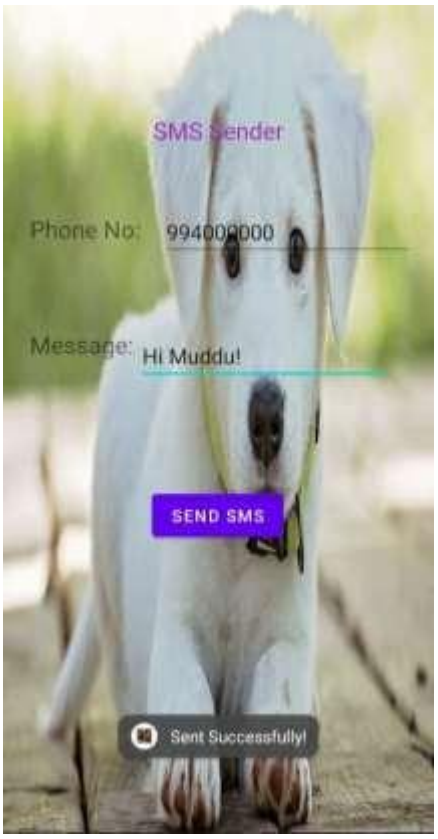
```
package com.example.visiting;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.telephony.SmsManager;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;
public class SMS extends AppCompatActivity {
    EditText phone,message;
    Button send;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_sms);
        phone=findViewById(R.id.phone);
        message=findViewById(R.id.message);
        send=findViewById(R.id.button14);
        send.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                String ph = phone.getText().toString();
                String mes = message.getText().toString();
                SmsManager sms = SmsManager.getDefault();
                sms.sendTextMessage(ph,null,mes,null,null);
                Toast.makeText(SMS.this, "Sent Successfully!", Toast.LENGTH_SHORT).show();
            }
```

```
        });
    }
}
```

OUTPUT:


SMS Sender
Phone No:
Message:
Enter Your Message Here
SEND SMS


SMS Sender
Phone No:
994000000
Message:
Hi Muddu!
SEND SMS


SMS Sender
Phone No:
994000000
Message:
Hi Muddu!
SEND SMS
Sent Successfully!

11. 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 SDcard. 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".

XML Code – activity_text_save.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=".text_save">

   <TextView
      android:id="@+id/textView27"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="Text Box"
      android:textSize="36dp"
      android:textStyle="bold"/>

   <Button
      android:id="@+id/create_txt"
      android:layout_width="250dp"
      android:layout_height="75dp"
      android:text="CREATE"
      android:textSize="36dp"/>

   <EditText
      android:id="@+id/text_field"
      android:layout_width="250dp"
      android:layout_height="90dp"
      android:ems="10"
      android:inputType="textPersonName"
      android:text=""/>

   <Button
      android:id="@+id/save_txt"
```

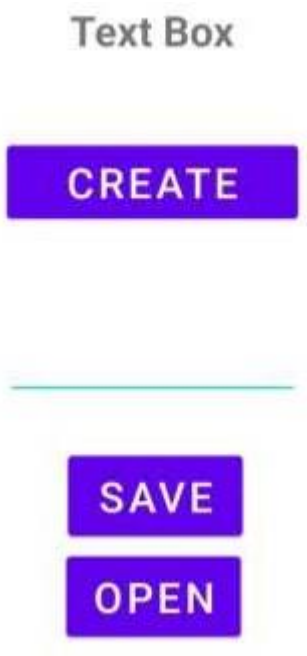
```
        android:layout_width="150dp"
        android:layout_height="81dp"
        android:text="SAVE"
        android:textSize="36dp"/>

    <Button
        android:id="@+id/open_txt"
        android:layout_width="150dp"
        android:layout_height="81dp"
        android:text="OPEN"
        android:textSize="36dp" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

Java Code – text_save.java

```
package com.example.visiting;
import androidx.appcompat.app.AppCompatActivity;
import android.content.SharedPreferences;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;

public class text_save extends AppCompatActivity implements View.OnClickListener {

    EditText text_field;
    Button create,open,save;
    SharedPreferences spref;
    final String SAVED_TEXT = "saved text";
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_text_save);
        text_field=(EditText) findViewById(R.id.text_field);
        create=(Button) findViewById(R.id.create_txt);
        save=(Button) findViewById(R.id.save_txt);
        open=(Button) findViewById(R.id.open_txt);
        create.setOnClickListener(this);
        save.setOnClickListener(this);
        open.setOnClickListener(this);
        loadtext();
    }


    @Override
```

```
    public void onClick(View v) {
        switch (v.getId()){
            case R.id.save_txt:
                savetext();
                break;
            case R.id.create_txt:
                createtext();
                break;
            case R.id.open_txt:
                loadtext();
                break;
        }
    }

    void createtext(){
        spref=getPreferences(MODE_PRIVATE);
        SharedPreferences.Editor ed =spref.edit();
        ed.putString(SAVED_TEXT, text_field.getText().toString());
        ed.commit();
        Toast.makeText(this, "Text Created", Toast.LENGTH_SHORT).show();
    }

    void savetext(){
        if(text_field!=null){
            spref=getPreferences(MODE_PRIVATE);
            SharedPreferences.Editor ed =spref.edit();
            ed.putString(SAVED_TEXT, text_field.getText().toString());
            ed.commit();
            Toast.makeText(this, "Text Created", Toast.LENGTH_SHORT).show();
        }
        else{
            Toast.makeText(this, "no file exist! create the file", Toast.LENGTH_SHORT).show();
        }
    }
    void loadtext() {
        spref = getPreferences(MODE_PRIVATE);
        String savedText = spref.getString(SAVED_TEXT, "");
        text_field.setText(savedText);
        Toast.makeText(this, "Text Opened", Toast.LENGTH_SHORT).show();
    }
    @Override
    protected void onDestroy() {
        super.onDestroy();
        savetext();
    }
}
```

OUTPUT:


Text Box
CREATE
SAVE
OPEN


Text Box
CREATE
Bvoc
SAVE
OPEN
Text Opened

12. 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.

XML Code – activity_music_player.xml

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

    <TextView
        android:id="@+id/textview"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Music Palyer"
        android:textColor="@color/black"
        android:textSize="35dp" />

    <ImageView
        android:id="@+id/imageView"
        android:layout_width="wrap_content"
        android:layout_height="140dp"
        android:src="@drawable/muddu" />

    <Button
        android:id="@+id/button"
        android:layout_width="136dp"
        android:layout_height="wrap_content"
        android:text="forward" />

    <Button
        android:id="@+id/button2"
        android:layout_width="143dp"
        android:layout_height="wrap_content"
        android:text="pause" />

    <Button
        android:id="@+id/button3"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="back" />
```

```
    <Button
        android:id="@+id/button4"
        android:layout_width="110dp"
        android:layout_height="wrap_content"
        android:layout_alignParentStart="true"
        android:text="rewind" />

    <SeekBar
        android:id="@+id/seekBar"
        android:layout_width="300dp"
        android:layout_height="33dp"/>

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

        android:text="Small Text"
        android:textAppearance="?android:attr/textAppearanceSmall" />

    <TextView
        android:id="@+id/textView3"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_above="@+id/seekBar"
        android:text="Small Text"
        android:textAppearance="?android:attr/textAppearanceSmall" />

    <TextView
        android:id="@+id/textView4"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Medium Text"
        android:textAppearance="?android:attr/textAppearanceMedium" />
</RelativeLayout>
```

Java Code – music_player.java

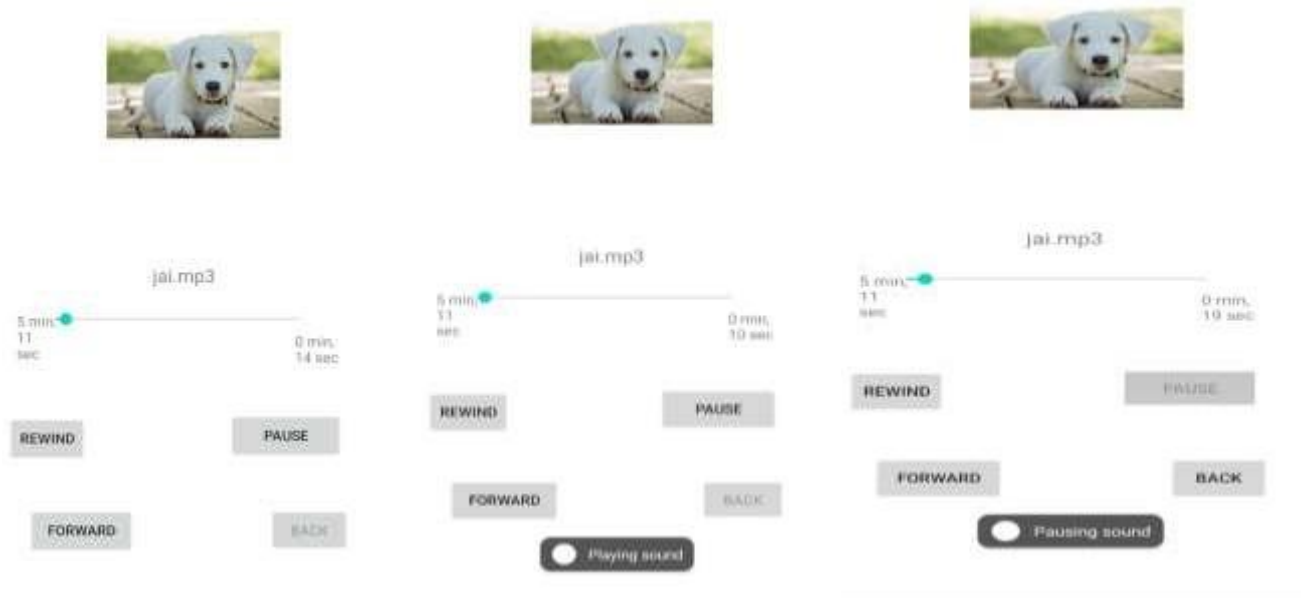
```
package com.example.visiting;
import  android.app.Activity;
import android.media.MediaPlayer;
import android.os.Bundle;
import android.os.Handler;
import android.view.View;
import android.widget.Button;
import android.widget.ImageView;
```

```
import android.widget.SeekBar;
import android.widget.TextView;
import android.widget.Toast;
import java.util.concurrent.TimeUnit;
public class music_player extends Activity {
    private Button b1,b2,b3,b4;
    private ImageView iv;
    private MediaPlayer mediaPlayer;
    private double startTime = 0;
    private double finalTime = 0;
    private Handler myHandler = new Handler();;
    private int forwardTime = 5000;
    private int backwardTime = 5000;
    private SeekBar seekbar;
    private TextView tx1,tx2,tx3;
    public static int oneTimeOnly = 0;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_music_player);
        b1 = (Button) findViewById(R.id.button);
        b2 = (Button) findViewById(R.id.button2);
        b3 =  (Button)findViewById(R.id.button3);
        b4 = (Button)findViewById(R.id.button4);
        iv = (ImageView)findViewById(R.id.imageView);
        tx1 = (TextView)findViewById(R.id.textView2);
        tx2 = (TextView)findViewById(R.id.textView3);
        tx3 = (TextView)findViewById(R.id.textView4);
        tx3.setText("jai.mp3");
        mediaPlayer = MediaPlayer.create(this, R.raw.jai);
        seekbar = (SeekBar)findViewById(R.id.seekBar);
        seekbar.setClickable(false);
        b2.setEnabled(false);
        b3.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Toast.makeText(getApplicationContext(), "Playing
sound",Toast.LENGTH_SHORT).show();
                    mediaPlayer.start();
                finalTime = mediaPlayer.getDuration();
                startTime = mediaPlayer.getCurrentPosition();
                if (oneTimeOnly == 0) {
                    seekbar.setMax((int) finalTime);
                    oneTimeOnly = 1;
                }
                tx2.setText(String.format("%d min, %d sec",
```

```
                TimeUnit.MILLISECONDS.toMinutes((long) finalTime),
                TimeUnit.MILLISECONDS.toSeconds((long) finalTime) -

TimeUnit.MINUTES.toSeconds(TimeUnit.MILLISECONDS.toMinutes((long)
                        finalTime)))
            );
            tx1.setText(String.format("%d min, %d sec",
                TimeUnit.MILLISECONDS.toMinutes((long) startTime),
                TimeUnit.MILLISECONDS.toSeconds((long) startTime) -

TimeUnit.MINUTES.toSeconds(TimeUnit.MILLISECONDS.toMinutes((long)
                        startTime)))
            );
            seekbar.setProgress((int)startTime);
            myHandler.postDelayed(UpdateSongTime,100);
            b2.setEnabled(true);
            b3.setEnabled(false);
        }
    });
    b2.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            Toast.makeText(getApplicationContext(), "Pausing
sound",Toast.LENGTH_SHORT).show();
                mediaPlayer.pause();
            b2.setEnabled(false);
            b3.setEnabled(true);
        }
    });
    b1.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            int temp = (int)startTime;
            if((temp+forwardTime)<=finalTime){
                startTime = startTime + forwardTime;
                mediaPlayer.seekTo((int) startTime);
                Toast.makeText(getApplicationContext(),"You have Jumped forward 5
seconds",Toast.LENGTH_SHORT).show();
            }else{
                Toast.makeText(getApplicationContext(),"Cannot jump forward 5
seconds",Toast.LENGTH_SHORT).show();
            }
        }
    });
    b4.setOnClickListener(new View.OnClickListener() {
        @Override
```

```
        public void onClick(View v) {
            int temp = (int)startTime;
            if((temp-backwardTime)>0){
                startTime = startTime - backwardTime;
                mediaPlayer.seekTo((int) startTime);
                Toast.makeText(getApplicationContext(),"You have Jumped backward 5
seconds",Toast.LENGTH_SHORT).show();
            }else{
                Toast.makeText(getApplicationContext(),"Cannot jump backward 5
seconds",Toast.LENGTH_SHORT).show();
            }
          }
       });
   }
   private Runnable UpdateSongTime = new Runnable() {
      public void run() {
         startTime = mediaPlayer.getCurrentPosition();
         tx1.setText(String.format("%d min, %d sec",
               TimeUnit.MILLISECONDS.toMinutes((long) startTime),
               TimeUnit.MILLISECONDS.toSeconds((long) startTime) -
                     TimeUnit.MINUTES.toSeconds(TimeUnit.MILLISECONDS.
                           toMinutes((long) startTime)))
         );
         seekbar.setProgress((int)startTime);
         myHandler.postDelayed(this, 100);
      }
   };
}
```

OUTPUT:



13. 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.

XML Code – activity_copy_paste.xml

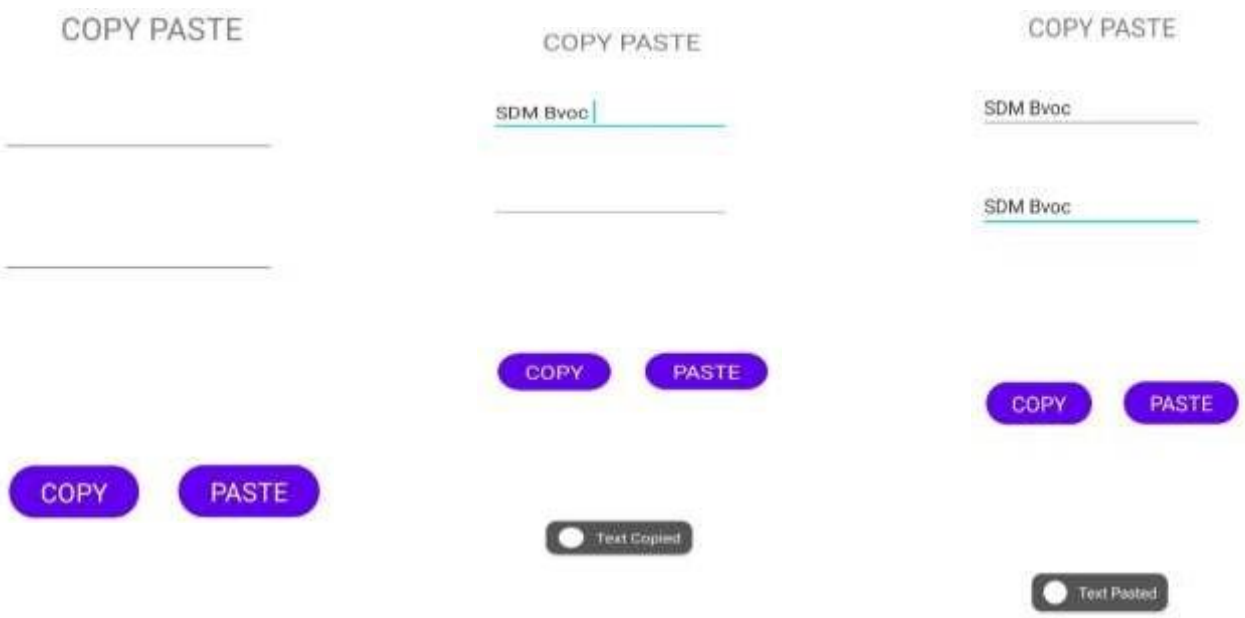
```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
xmlns:android="http://schemas.android.com/apk/res/android"
   xmlns:app="http://schemas.android.com/apk/res-auto"
   xmlns:tools="http://schemas.android.com/tools"
   android:layout_width="match_parent"
   android:layout_height="match_parent"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

   <EditText
      android:id="@+id/copy"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:ems="10"/>

   <EditText
      android:id="@+id/paste"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:ems="10"
      android:inputType="textPersonName"/>

   <Button
      android:id="@+id/copybtn"
      style="@style/Widget.Material3.Button"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="COPY"
      android:textSize="20sp"/>

   <Button
      android:id="@+id/pastebtn"
      style="@style/Widget.Material3.Button"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="PASTE"
      android:textSize="20sp"/>
</androidx.constraintlayout.widget.ConstraintLayout>
```

Java Code – Copy_paste.java

```
package com.example.visiting;

import androidx.appcompat.app.AppCompatActivity;

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

public class Copy_Paste extends AppCompatActivity {

    EditText copy,paste;
    Button copybtn,pastebtn;
    private ClipboardManager myClipboard;
    private ClipData myClip;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_copy_paste);
        copy=(EditText) findViewById(R.id.copy);
        paste=(EditText) findViewById(R.id.paste);
        copybtn=(Button) findViewById(R.id.copybtn);
        pastebtn=(Button) findViewById(R.id.pastebtn);
        myClipboard=(ClipboardManager) getSystemService(CLIPBOARD_SERVICE);
        copybtn.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                String text;
                text=copy.getText().toString();
                myClip=ClipData.newPlainText("text",text);
                myClipboard.setPrimaryClip(myClip);
                Toast.makeText(getApplicationContext(), "Text Copied",
Toast.LENGTH_LONG).show();
            }
        });
        pastebtn.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                ClipData abc=myClipboard.getPrimaryClip();
                ClipData.Item item=abc.getItemAt(0);
                String text=item.getText().toString();
                paste.setText(text);
```

```
            Toast.makeText(getApplicationContext(), "Text Pasted",
Toast.LENGTH_SHORT).show();
            }
        });
    }
}
```

OUTPUT:



14. Create an AIDL service that calculates Car Loan EMI. The formula to calculate EMI is E = P * (r(1+r)n)/((1+r)n -1) where E = The EMI payable on the car loan amount P = The Car loan Principal Amount r = The interest rate value computed on a monthly basis n = The loan tenure in the form of months The down payment amount has to be deducted from the principal amount paid towards buying the Car. Develop an application that makes use of this AIDL service to calculate the EMI. This application should have four EditText to read the Principal Amount, Down Payment, Interest Rate, Loan Term (in months) and a button named as "Calculate Monthly EMI". On click of this button, the result should be shown in a TextView. Also, calculate the EMI by varying the Loan Term and Interest Rate values.

XML Code – activity_emi_calculator.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout
   xmlns:android="http://schemas.android.com/apk/res/android"
   android:layout_width="match_parent"
   xmlns:tools="http://schemas.android.com/tools"
   xmlns:app="http://schemas.android.com/apk/res-auto"
   tools:context=".EmiCalculator"
   android:layout_height="match_parent">
   <androidx.appcompat.widget.LinearLayoutCompat
      android:layout_width="match_parent"
      android:layout_height="match_parent"
      app:layout_behavior="@string/appbar_scrolling_view_behavior">
      <LinearLayout
         android:layout_width="fill_parent"
         android:layout_height="match_parent"
         android:layout_marginTop="?attr/actionBarSize"
         android:orientation="vertical"
         android:paddingLeft="20dp"
         android:paddingRight="20dp"
         android:paddingTop="10dp">
         <androidx.appcompat.widget.LinearLayoutCompat
            android:id="@+id/input_layout_principal"
            android:layout_width="match_parent"
            android:layout_height="wrap_content">
            <EditText
               android:id="@+id/principal"
               android:layout_width="match_parent"
               android:layout_height="wrap_content"
               android:singleLine="true"
               android:inputType="number"
```

```
        android:digits="0123456789."
        android:hint="principal" />
    </androidx.appcompat.widget.LinearLayoutCompat>
    <androidx.appcompat.widget.LinearLayoutCompat
      android:id="@+id/input_layout_interest"
      android:layout_width="match_parent"
      android:layout_height="wrap_content">
      <EditText
        android:id="@+id/interest"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:singleLine="true"
        android:inputType="number"
        android:digits="0123456789."
        android:hint="interest" />
    </androidx.appcompat.widget.LinearLayoutCompat>
    <androidx.appcompat.widget.LinearLayoutCompat
      android:id="@+id/input_layout_tenure"
      android:layout_width="match_parent"
      android:layout_height="wrap_content">
      <EditText
        android:id="@+id/years"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:inputType="number"
        android:digits="0123456789."
        android:hint="years" />
    </androidx.appcompat.widget.LinearLayoutCompat>
    <Button android:id="@+id/btn_calculate2"
      android:layout_width="fill_parent"
      android:layout_height="wrap_content"
      android:text="Calculate"
      android:layout_marginTop="40dp"
      android:textColor="@android:color/white"/>
    <androidx.appcompat.widget.LinearLayoutCompat
      android:id="@+id/input_layout_emi"
      android:layout_width="match_parent"
      android:layout_height="wrap_content"
      android:layout_marginTop="40dp">
      <EditText
        android:id="@+id/emi"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:maxEms="0"
        android:inputType="number"
        android:hint="emi" />
```

```
        </androidx.appcompat.widget.LinearLayoutCompat>
        <androidx.appcompat.widget.LinearLayoutCompat
            android:id="@+id/input_layout_total_Interest"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:layout_marginTop="10dp">
            <EditText
                android:id="@+id/interest_total"
                android:layout_width="match_parent"
                android:layout_height="wrap_content"
                android:inputType="number"
                android:hint="interest_total" />
        </androidx.appcompat.widget.LinearLayoutCompat>
    </LinearLayout>
  </androidx.appcompat.widget.LinearLayoutCompat>
</RelativeLayout>
```

Java Code – EmiCalculator.java

```
package com.example.visiting;

import androidx.appcompat.app.AppCompatActivity;
import android.text.TextUtils;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.os.Bundle;
public class EmiCalculator extends AppCompatActivity {
   Button emiCalcBtn;
   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_emi_calculator);
      final EditText P = (EditText) findViewById(R.id.principal);
      final EditText I = (EditText) findViewById(R.id.interest);
      final EditText Y = (EditText) findViewById(R.id.years);
      final EditText TI = (EditText) findViewById(R.id.interest_total);
      final EditText result = (EditText) findViewById(R.id.emi);
      emiCalcBtn = (Button) findViewById(R.id.btn_calculate2);
      emiCalcBtn.setOnClickListener(new View.OnClickListener() {
         @Override
         public void onClick(View v) {
            String st1 = P.getText().toString();
            String st2 = I.getText().toString();
            String st3 = Y.getText().toString();
            if (TextUtils.isEmpty(st1)) {
```

```
            P.setError("Enter Prncipal Amount");
            P.requestFocus();
            return;
        }
        if (TextUtils.isEmpty(st2)) {
            I.setError("Enter Interest Rate");
            I.requestFocus();
            return;
        }
        if (TextUtils.isEmpty(st3)) {
            Y.setError("Enter Years");
            Y.requestFocus();
            return;
        }
        float p = Float.parseFloat(st1);
        float i = Float.parseFloat(st2);
        float y = Float.parseFloat(st3);
        float Principal = calPric(p);
        float Rate = calInt(i);
        float Months = calMonth(y);
        float Dvdnt = calDvdnt(Rate, Months);
        float FD = calFinalDvdnt(Principal, Rate, Dvdnt);
        float D = calDivider(Dvdnt);
        float emi = calEmi(FD, D);
        float TA = calTa(emi, Months);
        float ti = calTotalInt(TA, Principal);
        result.setText(String.valueOf(emi));
        TI.setText(String.valueOf(ti));
      }
    });
}

public float calPric(float p) {
    return (float)(p);
}
public float calInt(float i) {
    return (float)(i / 12 / 100);
}
public float calMonth(float y) {
    return (float)(y * 12);
}
public float calDvdnt(float Rate, float Months) {
    return (float)(Math.pow(1 + Rate, Months));
}
public float calFinalDvdnt(float Principal, float Rate, float Dvdnt) {
    return (float)(Principal * Rate * Dvdnt);
}
```

```
    public float calDivider(float Dvdnt) {
        return (float)(Dvdnt - 1);
    }
    public float calEmi(float FD, Float D) {
        return (float)(FD / D);
    }
    public float calTa(float emi, Float Months) {
        return (float)(emi * Months);
    }
    public float calTotalInt(float TA, float Principal) {
        return (float)(TA - Principal);
    }
}
```

OUTPUT: