



**VISVESVARAYA TECHNOLOGICAL UNIVERSITY**

"JNANASANGAMA",MACHHE ,BELAGAVI-590018

**Lab manual**

**Mobile Application Development Laboratory**

**6<sup>th</sup>sem**

**Computer Science and Engineering**

of

Visvesvaraya Technological University, Belagavi.



**Department of Computer Science and Engineering**  
**CAMBRIDGEINSTITUTE OF TECHNOLOGY, BANGALORE-560036**

**2022-2023**

**MOBILE APPLICATION  
DEVELOPMENT**  
(Effective from the academic year 2018 -  
2019) SEMESTER – VI

<b>Course Code</b>	<b>18CSMP68</b>	<b>IA Marks</b>	40
<b>Number of Contact Hours/Week</b>	0:0:2	<b>Exam Marks</b>	60
<b>Total Number of Contact Hours</b>	3 Hours/Week	<b>Exam Hours</b>	03

**CREDITS – 02**

**Laboratory Objectives:** This laboratory (18CSMP68) will enable students to

- Learn and acquire the art of Android Programming.
- Configure Android studio to run the applications.
- Understand and implement Android's User interface functions.
- Create, modify and query on SQLite database.
- Inspect different methods of sharing data using services.

**Descriptions (if any):**


**Installation procedure of the Android Studio/Java software must be demonstrated, carried out in groups.**

**Students should use the latest version of Android Studio/Java to execute these programs.**

**All of these diagrams are for representational purpose only. Students are expected to improvise on it.**

**Programs List:**

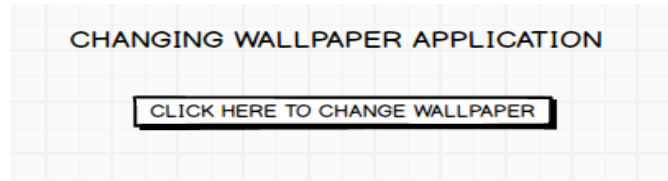
**PART – A**

<b>1</b>	<p>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.</p> <div style="text-align: center;">  </div>
<b>2</b>	<p>Develop an Android application using controls like Button, TextView, EditText for designing a calculator having basic functionality like Addition, Subtraction, Multiplication, and Division.</p>

	<div data-bbox="662 224 1055 680" data-label="Image"> </div>
3	<p>Create a <b>SIGN Up</b> activity with Username and Password. Validation of password should happen based on the following rules:</p> <ul style="list-style-type: none"> <li>• Password should contain uppercase and lowercase letters.</li> <li>• Password should contain letters and numbers.</li> <li>• Password should contain special characters.</li> <li>• Minimum length of the password (the default value is 8).</li> </ul> <p>On successful <b>SIGN UP</b> proceed to the next Login activity. Here the user should <b>SIGN IN</b> 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.</p> <div data-bbox="285 1354 1385 1696" data-label="Image"> </div>

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.



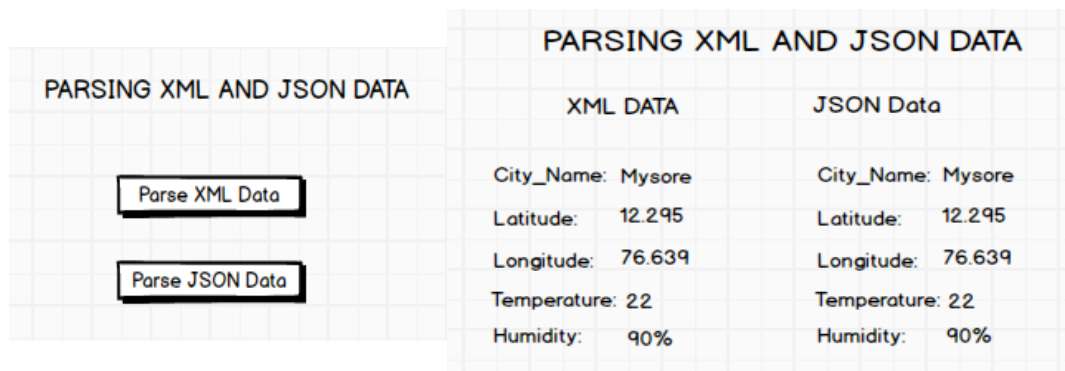
5

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 Text View control.



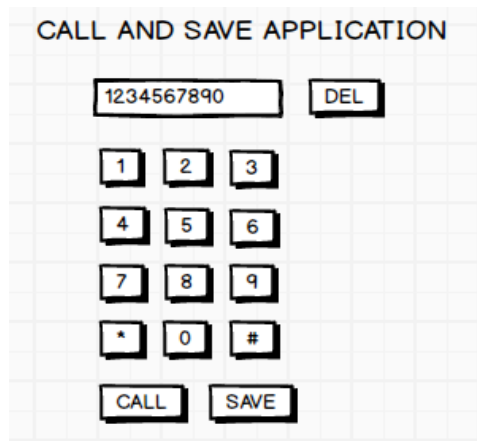
6

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.



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.



8

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.



# Android Studio Installation Procedure

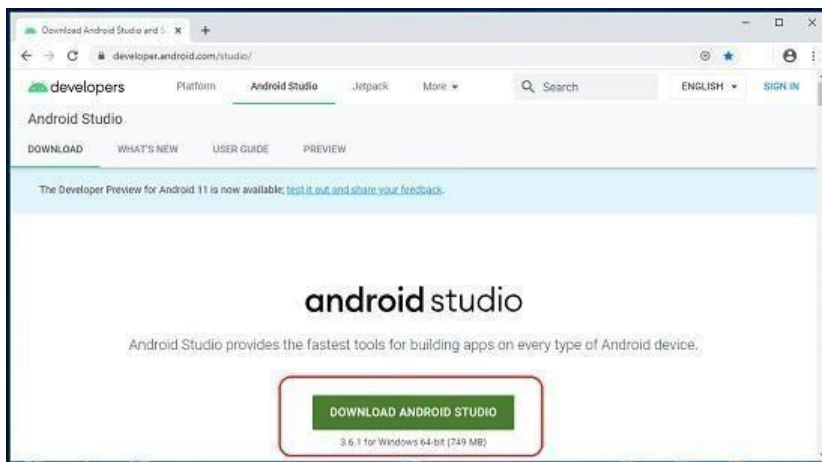
## System Requirements

- Operating System Version - Microsoft Windows 7/8/10 (32-bit or 64-bit).
- Random Access Memory (RAM) - Minimum 4 GB RAM and 8 GB RAM
- recommended.Free Disk Space - Minimum 2 GB and 4 GB recommended.
- Minimum Required JDK Version - Java
- Development Kit(JDK) 8. Minimum Screen Resolution - 1280 \* 800.resolution

## Download and Install Android Studi

### Step 1

To download the Android Studio, visit the official [Android Studio](https://developer.android.com/studio/) website in your web browser.



## Step 2



## Step 3

Double click on the downloaded "Android Studio-ide.exe" .

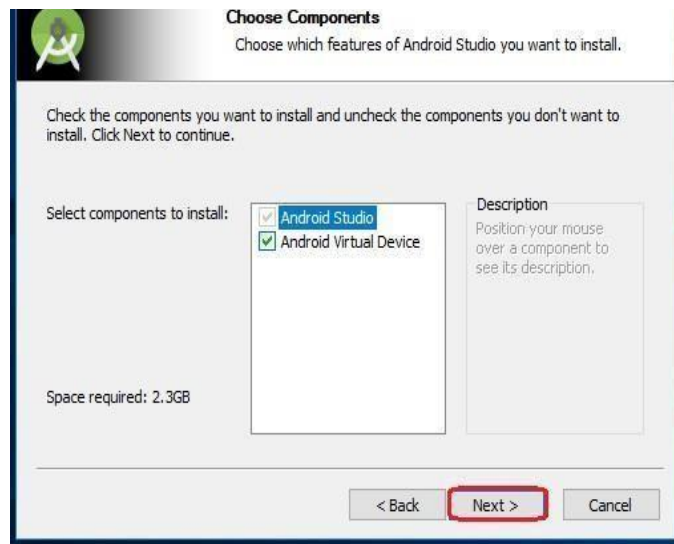
## Step 4

"Android Studio Setup" will appear on the screen and click "Next" to proceed.

## Step 5

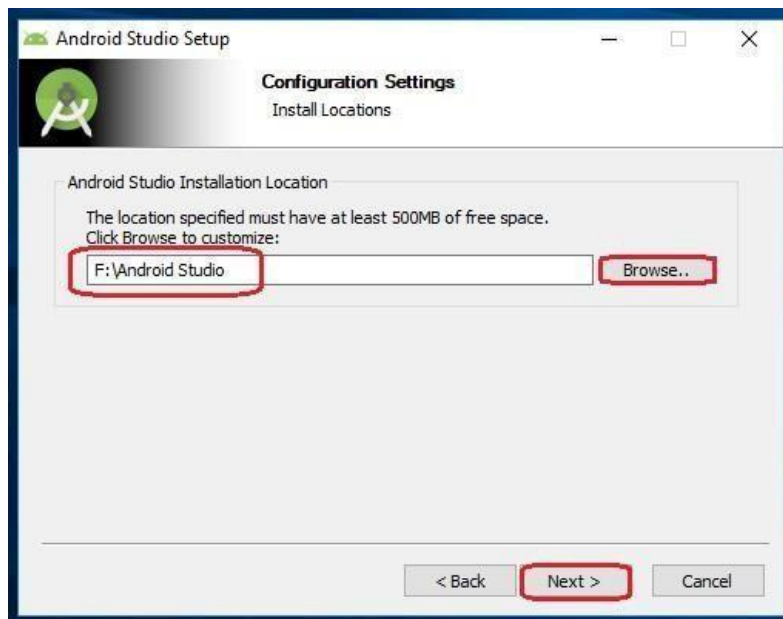
Select the components that you want to install and click on the "Next" button.





## Step 6

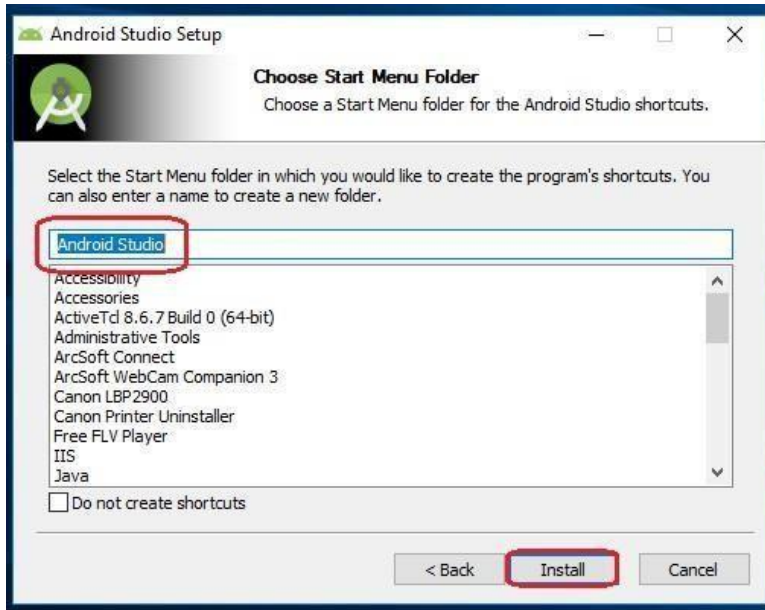
Now, browse the location where you want to install the Android Studio and click "Next" to proceed.





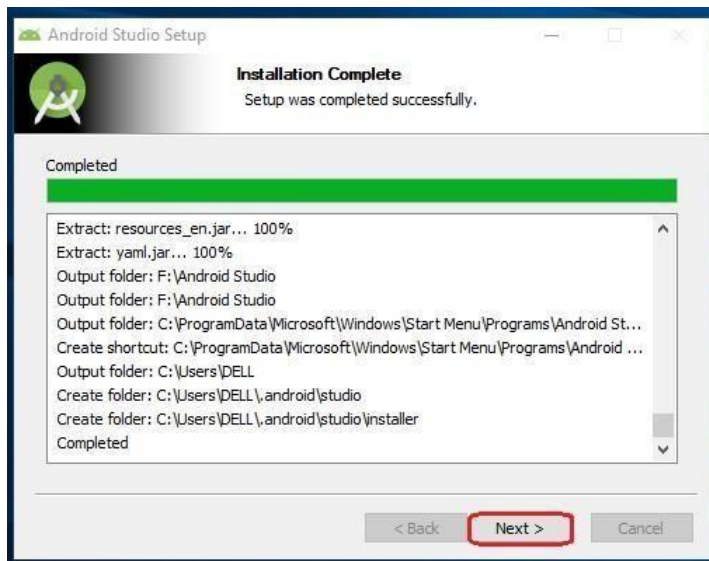
## Step 7

Choose a start menu folder for the "Android Studio" shortcut and click the proceed.



## Step 8

After the successful completion of the installation, click on the "Next" button.



## Step 9

Click on the "Finish" button to proceed.

Now, your Android studio welcome screen will appear on the screen.

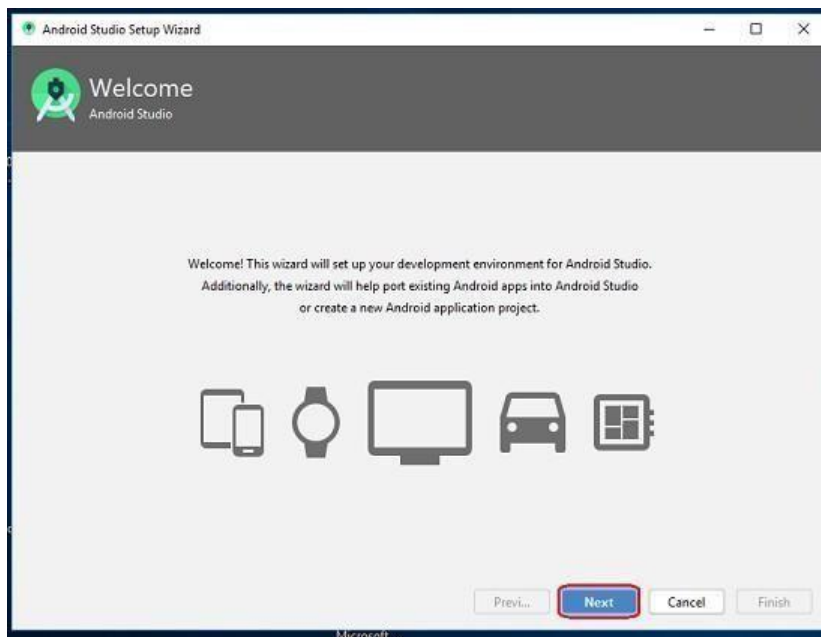


# Android Studio Setup Configuration

## Step 10

"Android Studio Setup Wizard" will appear on the screen with the welcome wizard. Click on the "Next" button.

Select (check) the "Standard" option if you are a beginner and do not have any idea about Android Studio. It will install the most common settings and

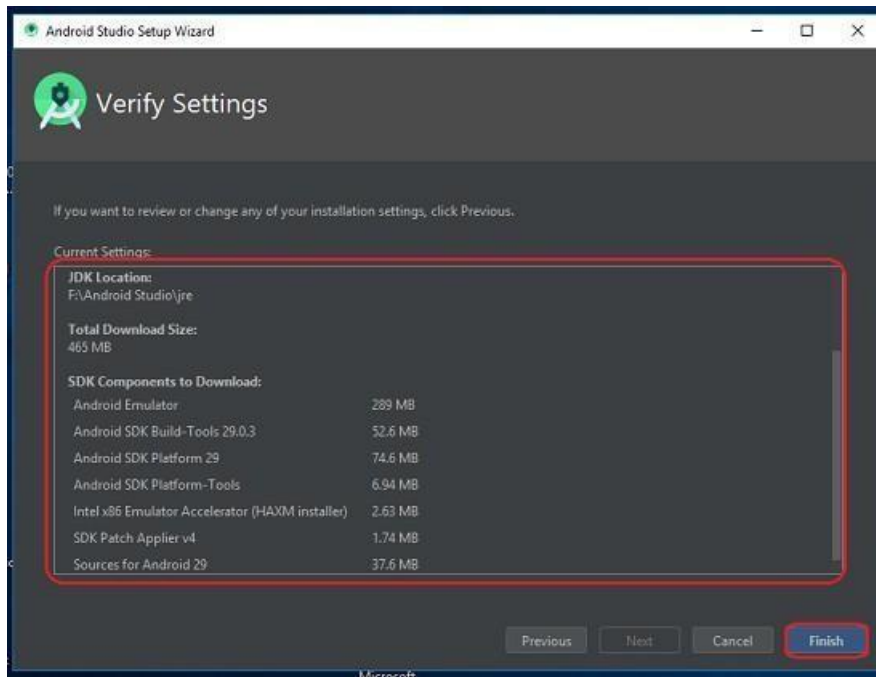


options for you. Click "Next" to proceed.

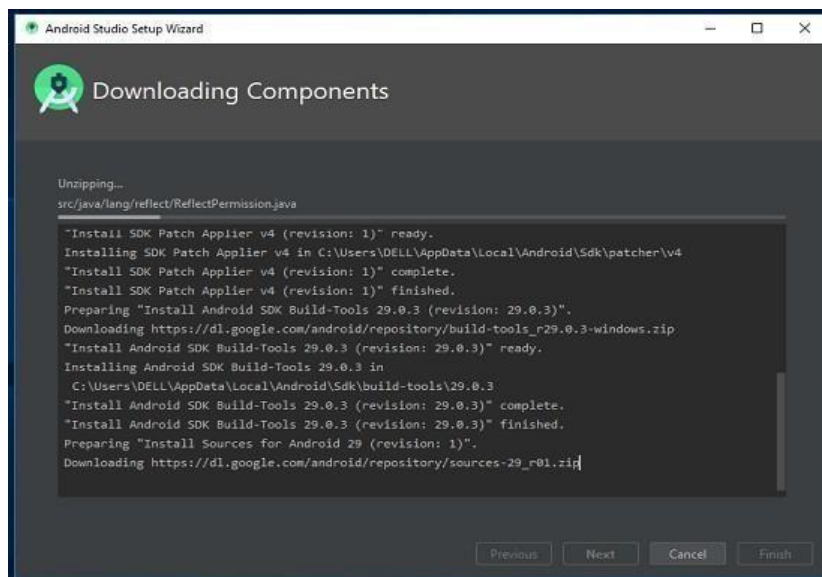


## Step 13

Now, click on the "Finish" button to download all the SDK components.

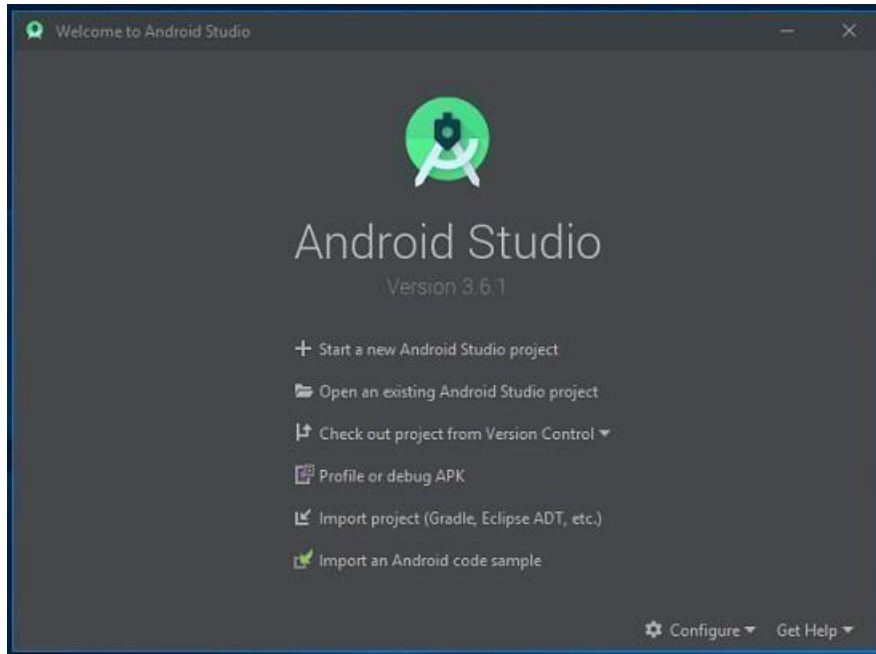


And, the downloading and installation process of



## Step 14

After downloading all the necessary components, click on the "Finish" but



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## ProgramNo.1–Visiting Card

### Question

Create an application to design a Visiting Card. The visiting card should have a complete logo attached 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.

### Code

#### Activitymain.xml{Unicode}

```
<?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="#F3D1D1"
    tools:context=".MainActivity">

    <TextView android:id="@+id/textView2" android:layout_width="199dp" android:layout_height="64dp"
        android:background="#BF8181" android:gravity="center" android:text="CITECH" android:textColor="#700606"
        android:textSize="18sp"
        app:layout_constraintBottom_toBottomOf="parent" app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.114"
```



```
app:layout_constraintStart_toStartOf="parent"app:layout_constraintTop_toTopOf="parent"app:layout_constraintVertical_bias="0.071"/>
```

<View

```
android:id="@+id/divider"android:layout_width="match_parent"android:layout_height="1dp"android:background="?android:attr/listDivider"app:layout_constraintBottom_toBottomOf="parent"app:layout_constraintEnd_toEndOf="parent"app:layout_constraintHorizontal_bias="0.0"app:layout_constraintStart_toStartOf="parent"app:layout_constraintTop_toTopOf="parent"app:layout_constraintVertical_bias="0.213"/>
```

<TextViewandroid:id="@+id/textView3

```
"android:layout_width="380dp"android:layout_height="115dp"android:background="#D8ABAB"android:gravity="center"android:text="SHUMAILA AFREEN"android:textColor="#7E3232"
```

```
app:layout_constraintBottom_toBottomOf="parent"app:layout_constraintEnd_toEndOf="parent"app:layout_constraintHorizontal_bias="0.155"app:layout_constraintStart_toStartOf="parent"app:layout_constraintTop_toTopOf="parent"app:layout_constraintVertical_bias="0.272"/>
```

<TextViewandroid:id="@+id/textView4

```
"android:layout_width="356dp"android:layout_height="119dp"android:background="#D8ABAB"android:gravity="center"android:text="9148897393"android:textColor="#7E3232"
```

---

```
app:layout_constraintBottom_toBottomOf="parent"app:la  
yout_constraintEnd_toEndOf="parent"app:layout_constra  
intHorizontal_bias="0.222"app:layout_constraintStart_to  
StartOf="parent"app:layout_constraintTop_toTopOf="par  
ent"app:layout_constraintVertical_bias="0.499"/>
```

```
<ImageViewandroid:id="@+id/ima  
geView"android:layout_width="13  
8dp"android:layout_height="164dp  
"
```

```
app:layout_constraintBottom_toBottomOf="parent"app:l  
ayout_constraintEnd_toEndOf="parent"app:layout_cons  
traintHorizontal_bias="0.939"app:layout_constraintStart  
_toStartOf="parent"app:layout_constraintTop_toTopOf  
="parent"app:layout_constraintVertical_bias="0.007"ap  
p:srcCompat="@drawable/cit"/>
```

```
<TextViewandroid:id="@+id/textVi  
ew5"android:layout_width="369d  
p"android:layout_height="109dp"a  
ndroid:background="#D8AAAA"a  
ndroid:gravity="center"android:tex  
t="Student"android:textColor="#8  
02F2F"
```

```
app:layout_constraintBottom_toBottomOf="parent"app:layout_constraintEnd  
_toEndOf="parent"app:layout_constraintHorizontal_bias="0.238"app:layout_  
constraintStart_toStartOf="parent"app:layout_constraintTop_toTopOf="pare  
nt"app:layout_constraintVertical_bias="0.717"/>
```

```
<TextViewandroid:id="@+id/textVi  
ew6"android:layout_width="366d  
p"android:layout_height="101dp"a  
ndroid:background="#C58686"
```

---

```

android:gravity="center"
android:text="email:
afreen.18cs168@cambridge.edu.in"android:textColor="#813535"app:layout_
constraintBottom_toBottomOf="parent"app:layout_constraintEnd_toEndOf=
"parent"app:layout_constraintHorizontal_bias="0.288"app:layout_constraintS
tart_toStartOf="parent"app:layout_constraintTop_toTopOf="parent"app:layo
ut_constraintVertical_bias="0.907"/>

```

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

## MainActivity.kt {KotlinCode}

```
package com.example.visitingcard
```

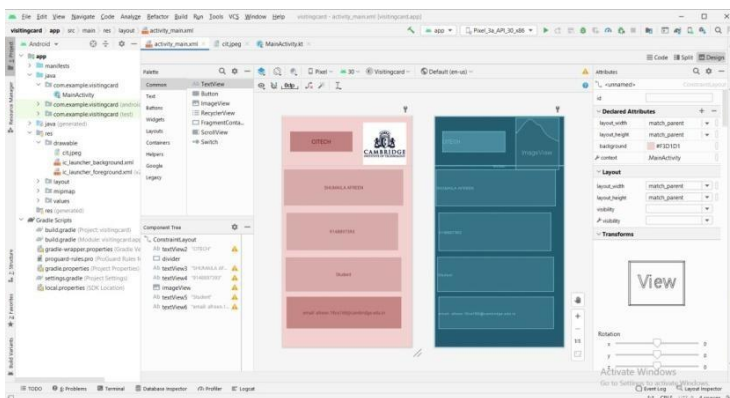
```
import androidx.appcompat.app.AppCompatActivity
import android.os.Bundle
```

```

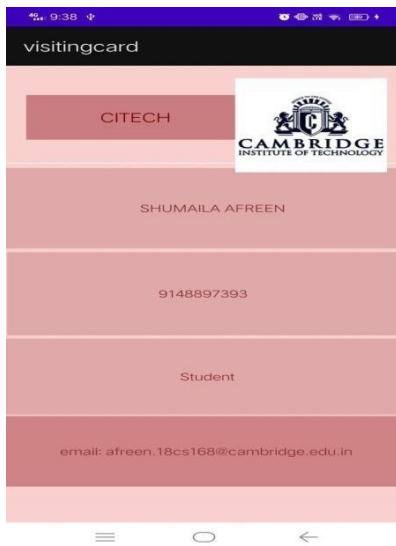
class MainActivity : AppCompatActivity() {
    override fun onCreate(savedInstanceState: Bundle?)
    {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.activity_main)
    }
}

```

## UIDESIGN



## OUTPUT



## ProgramNo.2–

### SimpleCalculatorQuestion

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

```
package com.example.p1

import androidx.appcompat.app.AppCompatActivity
import android.os.Bundle
import android.view.View
import android.widget.Button
import android.widget.TextView
import net.objecthunter.exp4j.ExpressionBuilder

class MainActivity : AppCompatActivity() {
    // TextView used to display the input and output
    lateinit var txtInput: TextView

    // Represent whether the lastly pressed key is numeric or not
    var lastNumeric: Boolean = false

    // Represent that current state is in error or not
    var stateError: Boolean = false

    // If true, do not allow to add another DOT
    var lastDot: Boolean = false
```

```

        override fun onCreate(savedInstanceState: Bundle?) {
            super.onCreate(savedInstanceState)
                setContentView(R.layout.activity_main)
                txtInput = findViewById(R.id.txtInput)
        }
        fun onDigit(view: View) {
            if (stateError) {
                // If current state is Error, replace the error message
                txtInput.text = (view as Button).text
                stateError = false
            } else {
                // If not, already there is a valid expression so append to it
                txtInput.append((view as Button).text)
            }
            // Set the flag
            lastNumeric = true
        }
        fun onDecimalPoint(view: View) {
            if (lastNumeric && !stateError && !lastDot) {
                txtInput.append(".")
                lastNumeric = false
            }
            lastDot = true
        }
        fun onOperator(view: View) {
            if (lastNumeric && !stateError) {
                txtInput.append((view as Button).text)
                lastNumeric = false
            }
            lastDot = false // Reset the DOT flag
        }
    }

    /**
     * Clear the TextView
     */
    fun onClear(view: View) {
        this.txtInput.text = ""
        lastNumeric = false
        stateError = false
        lastDot = false
    }
    fun onEqual(view: View) {
        // If the current state is error, nothing to do.
        // If the last input is a number only, solution can be found.
        if (lastNumeric && !stateError) {
            // Read the expression
            val txt = txtInput.text.toString()
            // Create an Expression (A class from exp4j Library)
            val expression = ExpressionBuilder(txt).build()
            try {
                // Calculate the result and display
                val result = expression.evaluate()
                txtInput.text = result.toString()
                lastDot = true // Result contains a dot
            } catch (ex: ArithmeticException) {

```

```

// Display an error message
txtInput.text = "Error"
stateError = true
lastNumeric = false
}
    }
}

```

## 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="match_parent"
android:layout_height="wrap_content"
android:ems="10"
android:textSize="48sp"
android:background="#efefef"
android:id="@+id/txtInput"
android:gravity="right|center_vertical"
android:maxLength="12"
android:layout_marginLeft="8dp"
android:layout_marginEnd="8dp"
android:layout_marginStart="8dp"
app:layout_constraintTop_toTopOf="parent"
android:layout_marginRight="8dp"/>

<TableLayout
android:layout_width="match_parent"
android:layout_height="0dp"
android:layout_marginTop="8dp"
app:layout_goneMarginTop="8dp"
android:layout_marginLeft="8dp"
android:layout_marginBottom="8dp"
android:layout_marginRight="8dp"
app:layout_constraintLeft_toLeftOf="parent"
app:layout_constraintRight_toRightOf="parent"
app:layout_constraintBottom_toBottomOf="parent"
app:layout_constraintTop_toBottomOf="@+id/txtInput"
android:gravity="fill">

<TableRow
android:layout_width="match_parent"
android:layout_height="0dp"
android:layout_weight="1"
android:gravity="center">

```

```
<Button
android:text="7"
android:layout_width="0dp"
android:layout_weight="1"
android:layout_height="match_parent"
android:onClick="onDigit"
android:id="@+id/btnSeven"/>
```

```
<Button
android:text="8"
android:layout_width="0dp"
android:layout_weight="1"
android:layout_height="match_parent"
android:onClick="onDigit"
android:id="@+id/btnEight"/>
```

```
<Button
android:text="9"
android:layout_width="0dp"
android:layout_weight="1"
android:layout_height="match_parent"
android:onClick="onDigit"
android:id="@+id/btnNine"/>
```

```
<Button
android:text="/"
android:layout_width="0dp"
android:layout_weight="1"
android:layout_height="match_parent"
android:onClick="onOperator"
android:id="@+id/btnDivide"/>
</TableRow>
```

```
<TableRow
android:layout_width="match_parent"
android:layout_height="0dp"
android:layout_weight="1"
android:gravity="center">
```

```
<Button
android:text="4"
android:layout_width="0dp"
android:layout_weight="1"
android:layout_height="match_parent"
android:onClick="onDigit"
android:id="@+id/btnFour"/>
```

```
<Button
android:text="5"
android:layout_width="0dp"
android:layout_weight="1"
android:layout_height="match_parent"
android:onClick="onDigit"
android:id="@+id/btnFive"/>
```

```
<Button
```

```
android:text="6"
android:layout_width="0dp"
android:layout_weight="1"
android:layout_height="match_parent"
android:onClick="onDigit"
android:id="@+id/btnSix"/>
```

```
<Button
android:text="*"
android:layout_width="0dp"
android:layout_weight="1"
android:layout_height="match_parent"
android:onClick="onOperator"
android:id="@+id/btnMultiply"/>
</TableRow>
```

```
<TableRow
android:layout_width="match_parent"
android:layout_height="0dp"
android:layout_weight="1"
android:gravity="center">
```

```
<Button
android:text="1"
android:layout_width="0dp"
android:layout_weight="1"
android:layout_height="match_parent"
android:onClick="onDigit"
android:id="@+id/btnOne"/>
```

```
<Button
android:text="2"
android:layout_width="0dp"
android:layout_weight="1"
android:layout_height="match_parent"
android:onClick="onDigit"
android:id="@+id/btnTwo"/>
```

```
<Button
android:text="3"
android:layout_width="0dp"
android:layout_weight="1"
android:layout_height="match_parent"
android:onClick="onDigit"
android:id="@+id/btnThree"/>
```

```
<Button
android:text="-"
android:layout_width="0dp"
android:layout_weight="1"
android:layout_height="match_parent"
android:onClick="onOperator"
android:id="@+id/btnSubtract"/>
</TableRow>
```

```
<TableRow
```



```
android:layout_width="match_parent"
android:layout_height="0dp"
android:layout_weight="1"
android:gravity="center">

<Button
android:text="."
android:layout_width="0dp"
android:layout_weight="1"
android:layout_height="match_parent"
android:onClick="onDecimalPoint"
android:id="@+id/btnDecimal"/>

<Button
android:text="0"
android:layout_width="0dp"
android:layout_weight="1"
android:layout_height="match_parent"
android:onClick="onDigit"
android:id="@+id/btnZero"/>

<Button
android:text="CLR"
android:layout_width="0dp"
android:layout_weight="1"
android:layout_height="match_parent"
android:onClick="onClear"
android:id="@+id/btnClear"/>

<Button
android:text="+"
android:layout_width="0dp"
android:layout_weight="1"
android:layout_height="match_parent"
android:onClick="onOperator"
android:id="@+id/btnAdd"/>
</TableRow>

<TableRow
android:layout_width="match_parent"
android:layout_height="0dp"
android:layout_weight="1">

<Button
android:text="="
android:layout_width="0dp"
android:layout_weight="1"
android:layout_height="match_parent"
android:onClick="onEqual"
android:id="@+id/btnEqual"/>
</TableRow>
</TableLayout>

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

## GRADLE

```
plugins {
    id 'com.android.application'
    id 'kotlin-android'
}

android {
    compileSdkVersion 31
    buildToolsVersion "30.0.3"

    defaultConfig {
        applicationId "com.example.p1"
        minSdkVersion 16
        targetSdkVersion 31
        versionCode 1
        versionName "1.0"
    }

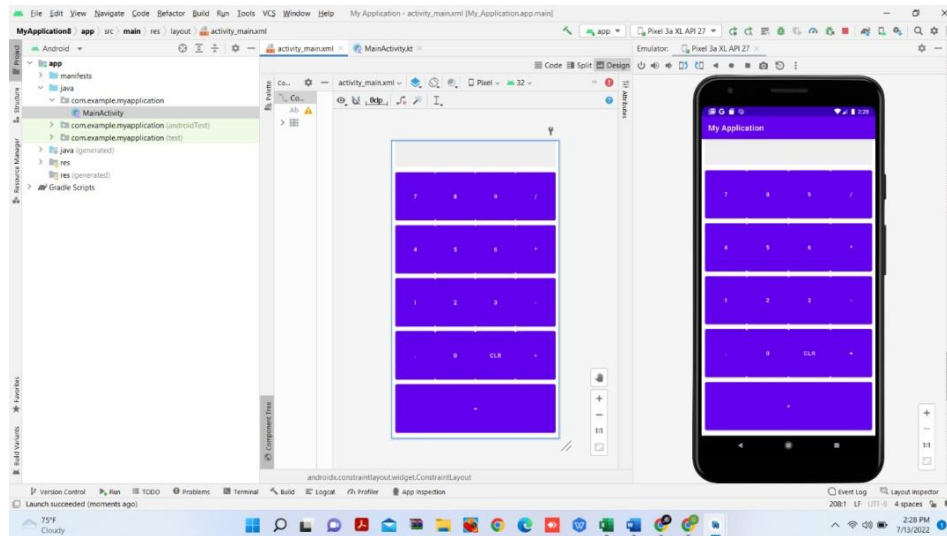
    testInstrumentationRunner "androidx.test.runner.AndroidJUnitRunner"
}

buildTypes {
    release {
        minifyEnabled false
        proguardFiles getDefaultProguardFile('proguard-android-optimize.txt'), 'proguard-rules.pro'
    }
}

compileOptions {
    sourceCompatibility JavaVersion.VERSION_1_8
    targetCompatibility JavaVersion.VERSION_1_8
}

kotlinOptions {
    jvmTarget = '1.8'
}

dependencies {
    implementation "org.jetbrains.kotlin:kotlin-stdlib:$kotlin_version"
    implementation 'androidx.core:core-ktx:1.7.0'
    implementation 'androidx.appcompat:appcompat:1.4.1'
    implementation 'com.google.android.material:material:1.5.0'
    implementation 'androidx.constraintlayout:constraintlayout:2.1.3'
    implementation 'net.objecthunter:exp4j:0.4.8'
    testImplementation 'junit:junit:4.+'
    androidTestImplementation 'androidx.test.ext:junit:1.1.3'
    androidTestImplementation 'androidx.test.espresso:espresso-core:3.4.0'
}
```



## Program No.3 – Login SignupQuestion

Create a **SIGNUP** activity with username and password. Validation of passwords 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 sign up 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.

### Step1: Create Signup Activity

#### Edit signup\_Activity xml code to design signup page

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

    <EditText android:id="@+id/editText" android:layout_width="281dp"
    android:layout_height="63dp" android:layout_marginStart="128dp"
```

```

android:layout_marginTop="164dp" app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent"/>
<EditText android:id="@+id/editText2" android:layout_width="269dp"
android:layout_height="65dp" android:layout_marginStart="140dp"
android:layout_marginTop="272dp" android:inputType="textPassword"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent"/>
<Button android:id="@+id/button" android:layout_width="192dp"
android:layout_height="71dp" android:layout_marginStart="140dp"
android:layout_marginTop="380dp" android:text="SIGN UP"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent"/>
<TextView android:id="@+id/textView3" android:layout_width="105dp"
android:layout_height="29dp" android:layout_marginTop="196dp"
android:layout_marginEnd="4dp" android:text="Username"
app:layout_constraintEnd_toStartOf="@+id/editText"
app:layout_constraintTop_toTopOf="parent"/>
<TextView android:id="@+id/textView4" android:layout_width="113dp"
android:layout_height="38dp" android:layout_marginStart="24dp"
android:layout_marginTop="288dp" android:text="Password"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent"/>

</androidx.constraintlayout.widget.ConstraintLayout>

```

### Step3: Edit signup.kt file

```

import android.content.Intent
import android.os.Bundle
import android.widget.Button
import android.widget.EditText
import android.widget.TextView
import android.widget.Toast
import androidx.appcompat.app.AppCompatActivity
import java.util.regex.Matcher

import java.util.regex.Pattern
class MainActivity : AppCompatActivity() {

    private lateinit var unameTxt: EditText
    private lateinit var passTxt: EditText
    private lateinit var signupBtn: Button
    private lateinit var srcIntent: Intent
    val p1 = Pattern.compile("[^a-zA-Z0-9]") //For only special characters

    val p2 = Pattern.compile("(?=.*[a-z])") //For atleast 1 small case letter

    val p3 = Pattern.compile("(?=.*[A-Z])") //For atleast 1 Uppercase letter

    val p4 = Pattern.compile("(?=.*[0-9])")
    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.activity_main)
    }
}

```

```

unameTxt = findViewById(R.id.editText)
passTxt = findViewById(R.id.editText2)
signupBtn = findViewById(R.id.button)
signupBtn.setOnClickListener {

    val uname = unameTxt.getText().toString()
    val pass = passTxt.getText().toString()
    val matcher1: Matcher = p1.matcher(pass) // pass is holding input string

    val matcher2: Matcher = p2.matcher(pass)
    val matcher3: Matcher = p3.matcher(pass)
    val matcher4: Matcher = p4.matcher(pass)

    val isStringContainsSpecialCharacter: Boolean =
        matcher1.find() // use the find() method to perform pattern matching

    val isStringLower: Boolean = matcher2.find()
    val isStringUpper: Boolean = matcher3.find()
    val isStringDigit: Boolean = matcher4.find()
    val passwordLen = pass.length

    if (isStringContainsSpecialCharacter && isStringUpper && isStringLower &&
        isStringDigit && passwordLen >= 8) {
        val srcIntent = Intent(this@MainActivity, MainActivity2::class.java)
        val data = Bundle()
            data.putString("username", uname)
            data.putString("password", pass)
            srcIntent.putExtras(data)
            startActivity(srcIntent)
        } else Toast.makeText(this@MainActivity, "Invalid Password",
Toast.LENGTH_SHORT).show()

    }

}
}
}

```

## Step3:Create login Activity

### Edit login\_Activty xml code to design signup page

```

<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
xmlns:android="http://schemas.android.com/apk/res/android"
xmlns:app="http://schemas.android.com/apk/res-auto"
xmlns:tools="http://schemas.android.com/tools"
android:layout_width="match_parent"
android:layout_height="match_parent"
tools:context=".MainActivity2">
    <EditText android:id="@+id/editText" android:layout_width="281dp"
    android:layout_height="63dp" android:layout_marginStart="128dp"
    android:layout_marginTop="164dp" app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"/>
    <EditText android:id="@+id/editText2" android:layout_width="269dp"
    android:layout_height="65dp" android:layout_marginStart="140dp"
    android:layout_marginTop="272dp" android:inputType="textPassword"
    app:layout_constraintStart_toStartOf="parent"

```

```

app:layout_constraintTop_toTopOf="parent"/>
<Button android:id="@+id/button2" android:layout_width="193dp"
android:layout_height="59dp" android:layout_marginStart="140dp"
android:layout_marginTop="388dp" android:text="Sign In"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent"/>
<TextView android:id="@+id/textView" android:layout_width="105dp"
android:layout_height="29dp" android:layout_marginTop="196dp"
android:layout_marginEnd="4dp" android:text="Username"
app:layout_constraintEnd_toStartOf="@+id/editText"
app:layout_constraintTop_toTopOf="parent"/>
<TextView android:id="@+id/textView2" android:layout_width="113dp"
android:layout_height="38dp" android:layout_marginStart="24dp"
android:layout_marginTop="296dp" android:text="Password"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent"/>

```

## Step4: Edit login.kt file

```

import android.os.Bundle
import android.widget.Button
import android.widget.EditText
import android.widget.Toast
import androidx.appcompat.app.AppCompatActivity

class MainActivity2 : AppCompatActivity() {
    private lateinit var loguserTxt: EditText
    private lateinit var logpassTxt: EditText
    private lateinit var signInBtn: Button

    var user: String? = null
    var pass: kotlin.String? = null
    var bundle: Bundle? = null
    var count = 0

    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.activity_main2)
        val i = intent
        bundle = i.extras
        loguserTxt = findViewById(R.id.editText)
        logpassTxt = findViewById(R.id.editText2)
        signInBtn = findViewById(R.id.button2)
        signInBtn.setOnClickListener{
            val user1 = loguserTxt.text.toString()
            val pass1 = logpassTxt.text.toString()
            if (user == user1 && pass == pass1) Toast.makeText(
                this,
                "Login Successful",
                Toast.LENGTH_LONG
            ).show() else {
                count++
                if (count == 3) {
                    signInBtn.isEnabled = false
                }
            }
        }
    }
}

```

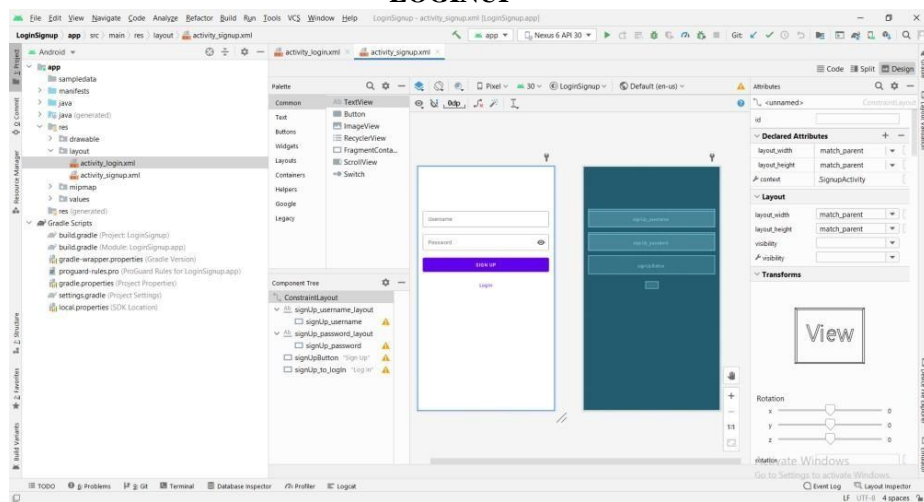
```

Toast.makeText(this, "Failed Login Attempts", Toast.LENGTH_LONG).show()
    } else Toast.makeText(this, "Login Failed, Try Again $count",
Toast.LENGTH_LONG)
        .show()
    }
}
if (bundle != null) {
user = bundle!!.getString("username")
pass = bundle!!.getString("password")
    } else Toast.makeText(applicationContext, "data pass error",
Toast.LENGTH_SHORT).show()
}
}

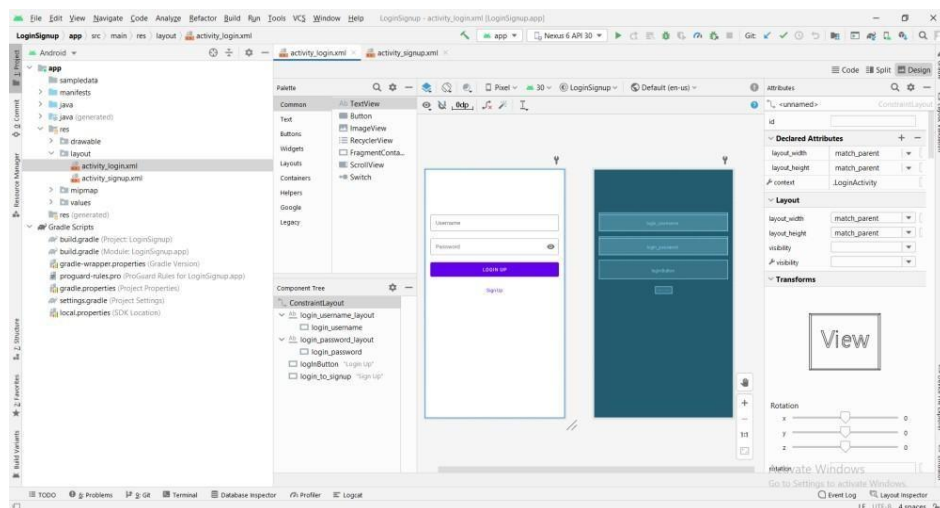
```

## UIDESIGN

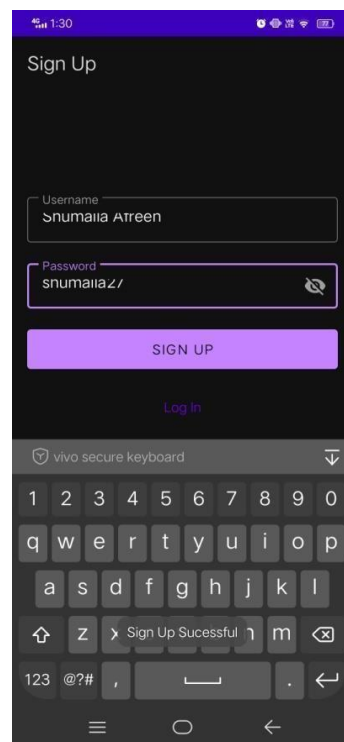
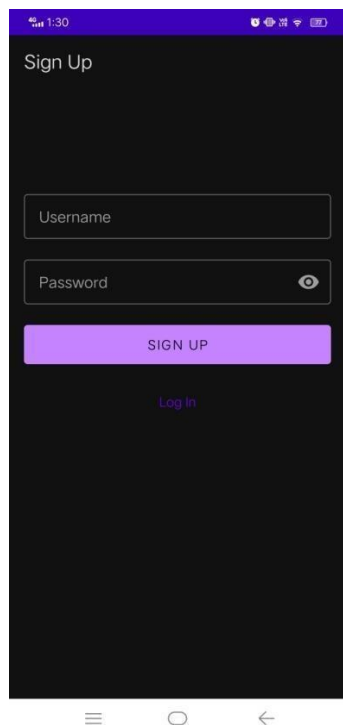
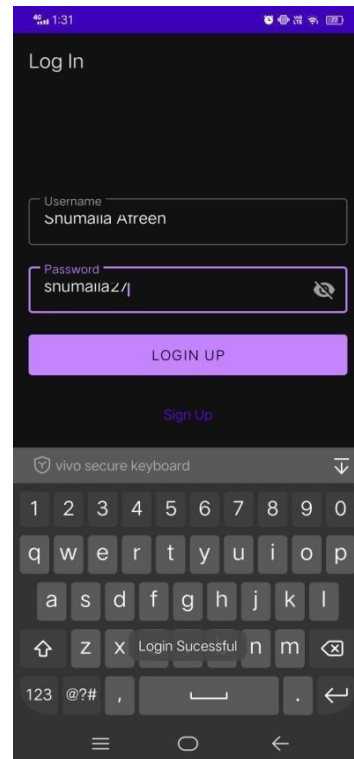
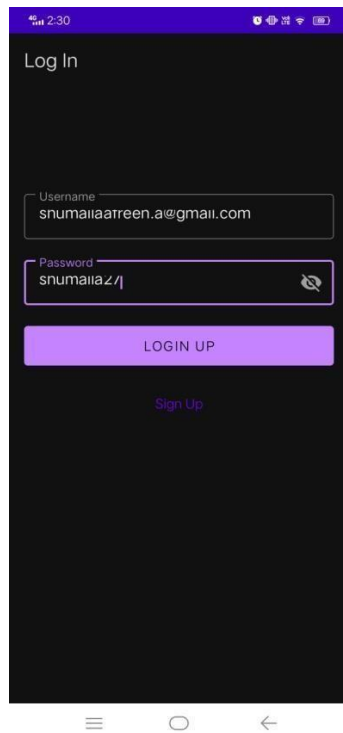
### LOGINUI



## SIGNUPUI



# OUTPUT





## ProgramNo.4–ChangingWallpaperQuestion

Developanapplicationtosetanimageaswallpaper.Onclickofabutton,thewallpaperimageshouldstart tochangerandomlyevery 30seconds.

```
package com.example.wallpaper
```

```
import android.graphics.Bitmap
import android.graphics.BitmapFactory
import androidx.appcompat.app.AppCompatActivity
import android.os.Bundle
import android.widget.Button
import android.widget.Toast
import java.util.*
import android.app.WallpaperManager
import kotlin.concurrent.schedule
import kotlin.concurrent.timerTask

class MainActivity : AppCompatActivity() {

    var myWallpaperlist = arrayOf( R.drawable.one,R.drawable.two, R.drawable.three, R.drawable.four)
    private lateinit var changeWallpaper: Button
    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
            setContentView(R.layout.activity_main)

        changeWallpaper = findViewById(R.id.set_wallpaper)
        changeWallpaper.setOnClickListener { setWallpaper() }
    }

    fun setWallpaper() {
        Toast.makeText(this, "Setting Wallpaper please wait", Toast.LENGTH_SHORT).show()
        Timer().schedule(200)
        {
            for (i in myWallpaperlist) {
                val Bitmap = BitmapFactory.decodeResource(resources, i)
                val wallpapermanager = WallpaperManager.getInstance(baseContext)
                wallpapermanager.setBitmap(Bitmap)
            }
        }
    }
}
```

```
androidmanifest.xml
```

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

```
Activitymain.xml
```

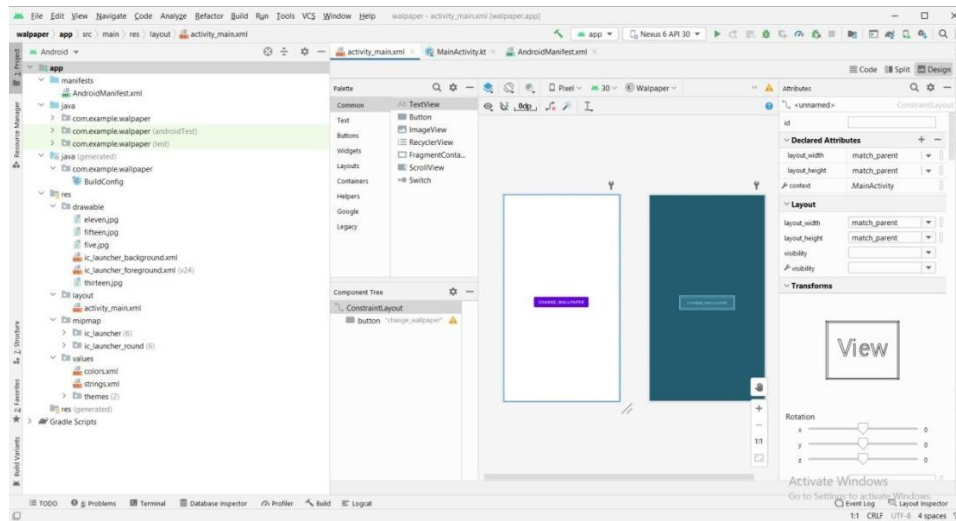
```

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

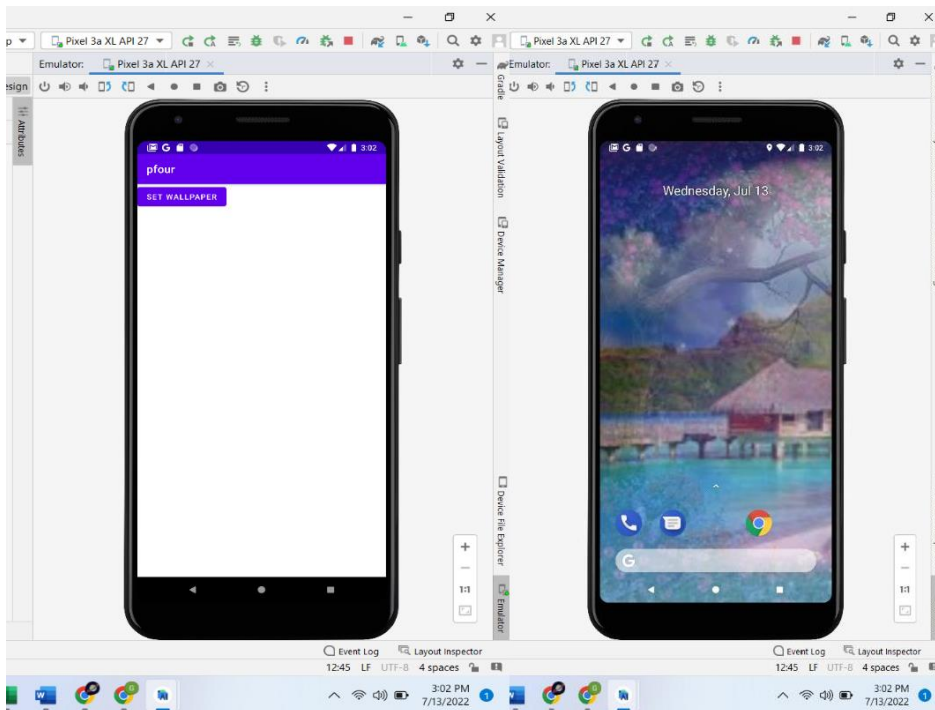
<Button
android:id="@+id/set_wallpaper"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="set wallpaper"
tools:layout_editor_absoluteX="141dp"
tools:layout_editor_absoluteY="310dp" />
</androidx.constraintlayout.widget.ConstraintLayout>

```

## UIDESIGN



## OUTPUT



## ProgramNo.5- CounterQuestion

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.

## Code

### Activitymain.xml{UIcode}

```
<?xmlversion="1.0"encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayoutxmlns:android="http://schemas.android.com/apk/res/android"
```

```
xmlns:app="http://schemas.android.com/apk/res-  
auto"xmlns:tools="http://schemas.android.com/tools"andro  
id:layout_width="match_parent"android:layout_height="  
match_parent"tools:context=".MainActivity">
```

```
<TextViewandroid:id="@+id/counter_va  
lue"android:layout_width="wrap_cont  
ent"android:layout_height="wrap_cont  
ent"android:gravity="center"android:te  
xt="Counter  
Value"android:textSize="24sp"  
app:layout_constraintBottom_toBottomOf="parent"app:layout_constraintEnd  
_toEndOf="parent"app:layout_constraintHorizontal_bias="0.427"app:layout_  
constraintStart_toStartOf="parent"app:layout_constraintTop_toTopOf="pare  
nt"app:layout_constraintVertical_bias="0.269"/>
```

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

---

```

        android:layout_height="wrap_content"android:layout_
        marginTop="8dp"android:layout_marginBottom="8dp"
        android:text="START"app:layout_constraintBottom_to
        BottomOf="parent"app:layout_constraintEnd_toEndOf=
        "parent"app:layout_constraintHorizontal_bias="0.43"ap
        p:layout_constraintStart_toStartOf="parent"app:layout_
        constraintTop_toTopOf="parent"app:layout_constraint
        Vertical_bias="0.433"/>

```

<Button

```

        android:id="@+id/stop_counter"android:layout_width=
        "wrap_content"android:layout_height="wrap_content"a
        ndroid:layout_marginTop="8dp"android:layout_margin
        Bottom="8dp"android:text="STOP"app:layout_constrai
        ntBottom_toBottomOf="parent"app:layout_constraintEn
        d_toEndOf="parent"app:layout_constraintHorizontal_bi
        as="0.43"app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"app:layout
        _constraintVertical_bias="0.575"/>

```

</androidx.constraintlayout.widget.ConstraintLayout>

## KOTLIN CODE

```
package com.example.counter
```

```

import androidx.appcompat.app.AppCompatActivity
import android.os.Bundle
import android.os.CountDownTimer
import android.widget.Button
import android.widget.TextView
class MainActivity : AppCompatActivity() {
    private lateinit var counterValue: TextView
    private lateinit var startCounter: Button
    private lateinit var stopCounter: Button
    val timer = MyCounter(10000000, 1000)
    var countervalue: Int = 0
    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.activity_main)
        counterValue = findViewById(R.id.txt_value)
        startCounter = findViewById(R.id.btn_start)
        startCounter.setOnClickListener {
            timer.start()
            startCounter.isEnabled = false
        }
        stopCounter = findViewById(R.id.btn_stop)
        stopCounter.setOnClickListener {
            timer.cancel()
            startCounter.isEnabled = true
        }
    }
}

```

```

}

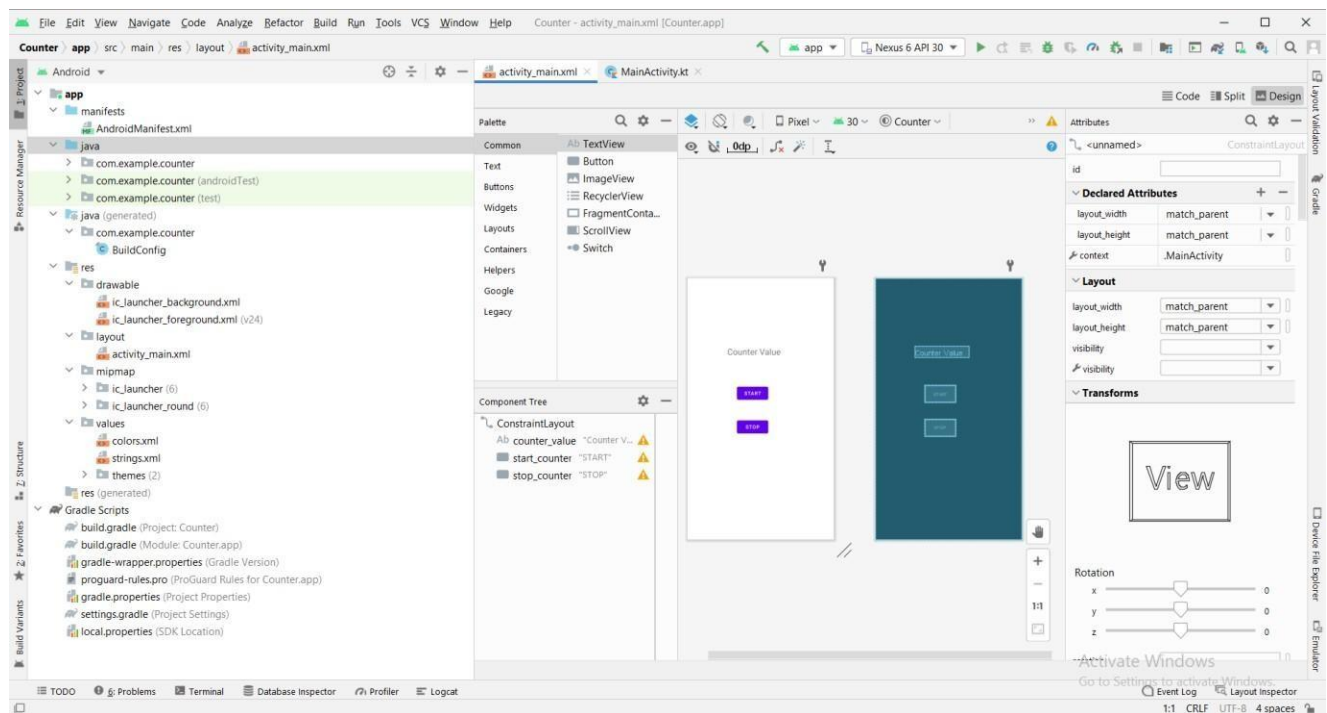
}

inner class MyCounter(millisInFuture: Long, countDownInterval: Long) :
    CountDownTimer(millisInFuture, countDownInterval) {
override fun onFinish() {
    }

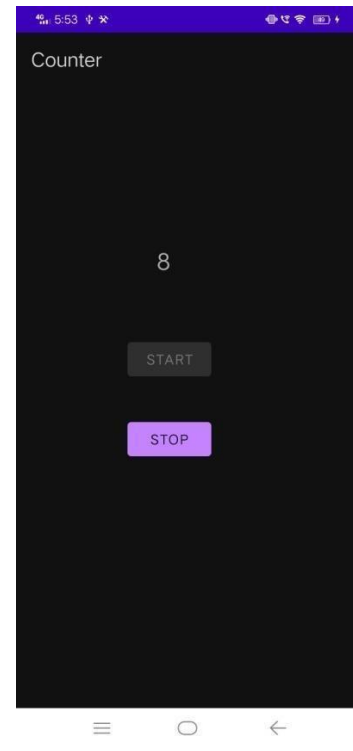
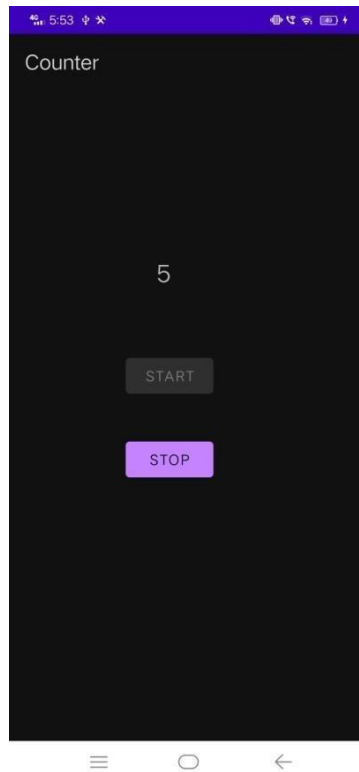
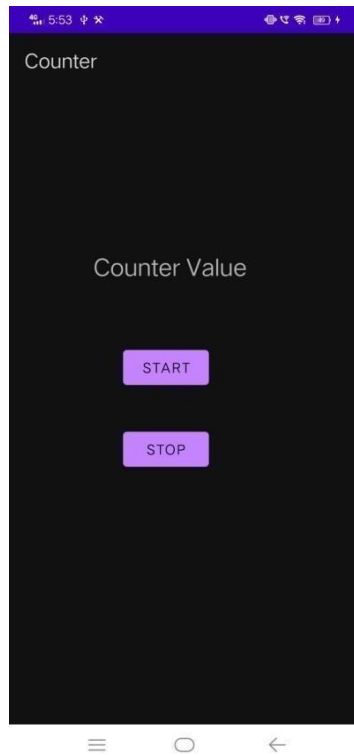
override fun onTick(millisUntilFinished: Long) {
    counterValue++
    counterValue.text = (counterValue).toString()
    }
}
}

```

## UIDESIGN



## OUTPUT



## ProgramNo.6- XML&JSONQuestion

Create two files of XML and JSON type with values for City Name, Latitude, 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.

**Step1:** create new project and add empty activity

Click next and Enter Name of Activity

**Step3:**  
Create xml and json files  
Myjson.json

```
{  
  "City Name": "Mysore",  
  "Latitude" : "12.295",  
  "Longitude" : "76.639",  
  "Temperature" : "22",  
  "Humidity" : "90%"  
}
```

Myxml.xml

```
<?xml version="1.0" encoding="utf-8"?>
<data>
<City_Name>Mysore</City_Name>
<Latitude>22.295</Latitude>
<Longitude>76.639</Longitude>
<Temperature>42</Temperature>
<Humidity>80%</Humidity>
</data>
```

Step4: Create Asset folder (new->folder->assets) and add json and xml files

Step5: Design User interface xml code 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">
```

```
<com.google.android.material.button.MaterialButton
android:id="@+id/parse_xml"
android:layout_width="wrap_content"
android:layout_height="54dp"
android:layout_marginBottom="8dp"
android:text="Parse XML Data"
app:layout_constraintBottom_toTopOf="@+id/parse_json"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintHorizontal_bias="0.5"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent"
app:layout_constraintVertical_bias="0.24000001"
app:layout_constraintVertical_chainStyle="packed" />
```

```
<com.google.android.material.button.MaterialButton
android:id="@+id/parse_json"
android:layout_width="wrap_content"
android:layout_height="54dp"
android:layout_marginBottom="8dp"
android:text="Parse JSON Data"
app:layout_constraintBottom_toTopOf="@+id/data_type"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintHorizontal_bias="0.5"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toBottomOf="@+id/parse_xml" />
```

```
<com.google.android.material.textview.MaterialTextView
android:id="@+id/data_type"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_marginTop="24dp"
android:layout_marginBottom="16dp"
android:text=""
android:textSize="24sp"
app:layout_constraintBottom_toTopOf="@+id/city_name"
```



```

app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintHorizontal_bias="0.5"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toBottomOf="@+id/parse_json" />

<com.google.android.material.textview.MaterialTextView
android:id="@+id/city_name"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_marginTop="8dp"
android:layout_marginBottom="8dp"
android:text="City Name :"
android:textSize="24sp"
app:layout_constraintBottom_toTopOf="@+id/latitude"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintHorizontal_bias="0.5"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toBottomOf="@+id/data_type" />

<com.google.android.material.textview.MaterialTextView
android:id="@+id/latitude"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_marginTop="8dp"
android:layout_marginBottom="8dp"
android:text="Latitude :"
android:textSize="24sp"
app:layout_constraintBottom_toTopOf="@+id/longitude"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintHorizontal_bias="0.5"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toBottomOf="@+id/city_name" />

<com.google.android.material.textview.MaterialTextView
android:id="@+id/longitude"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_marginTop="8dp"
android:layout_marginBottom="8dp"
android:text="Longitude :"
android:textSize="24sp"
app:layout_constraintBottom_toTopOf="@+id/temprature"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintHorizontal_bias="0.5"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toBottomOf="@+id/latitude" />

<com.google.android.material.textview.MaterialTextView
android:id="@+id/temprature"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_marginTop="8dp"
android:layout_marginBottom="8dp"
android:text="Temprature :"
android:textSize="24sp"
app:layout_constraintBottom_toTopOf="@+id/humidity"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintHorizontal_bias="0.5"

```

```

app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toBottomOf="@+id/longitude" />

<com.google.android.material.textview.MaterialTextView
    android:id="@+id/humidity"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginTop="8dp"
    android:layout_marginBottom="8dp"
    android:text="Humidity :"
    android:textSize="24sp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.5"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/temperature" />

</androidx.constraintlayout.widget.ConstraintLayout>

```

Step5: Edit *MainActivity.kt* file

```

import android.annotation.SuppressLint
import androidx.appcompat.app.AppCompatActivity
import android.os.Bundle
import android.widget.Button
import android.widget.TextView
import org.json.JSONObject
import java.io.IOException
import java.nio.charset.Charset
import javax.xml.parsers.DocumentBuilderFactory

class MainActivity : AppCompatActivity() {
    private lateinit var parseXMLBtn: Button
    private lateinit var parseJSONBtn: Button

    private lateinit var datatype : TextView
    private lateinit var cityName: TextView
    private lateinit var latitude: TextView
    private lateinit var longitude: TextView
    private lateinit var temprature: TextView
    private lateinit var humidity: TextView

    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.activity_main)

        parseXMLBtn = findViewById(R.id.parse_xml)
        parseXMLBtn.setOnClickListener { parseXML() }
        parseJSONBtn = findViewById(R.id.parse_json)
        parseJSONBtn.setOnClickListener { parseJSON() }
        parseXMLBtn.setOnClickListener { parseXML() }

        datatype = findViewById(R.id.data_type)
    }
}

```

```

cityName = findViewById(R.id.city_name)
latitude = findViewById(R.id.latitude)
longitude = findViewById(R.id.longitude)
temprature = findViewById(R.id.temprature)
humidity = findViewById(R.id.humidity)

    }

@SuppressLint("SetTextI18n")
fun parseXML() {
    datatype.text = "XML Data"
    try {
        val iStream = assets.open("myxml.xml")
        val builderFactory = DocumentBuilderFactory.newInstance()
        var docBuilder = builderFactory.newDocumentBuilder()
        var doc = docBuilder.parse(iStream)
        cityName.text = "City Name : " +
            doc.getElementsByTagName("City_Name").item(0).getFirstChild().getNodeValue()
        latitude.text = "Latitude : " +
            doc.getElementsByTagName("Latitude").item(0).getFirstChild().getNodeValue()
        longitude.text = "Longitude : " +
            doc.getElementsByTagName("Longitude").item(0).getFirstChild().getNodeValue()
        temprature.text = "Temperature : " +
            doc.getElementsByTagName("Temperature").item(0).getFirstChild().getNodeValue()
        humidity.text = "Humidity : " +
            doc.getElementsByTagName("Humidity").item(0).getFirstChild().getNodeValue()
    }
    catch (ex: IOException) {

    }
}

@SuppressLint("SetTextI18n")
fun parseJSON() {
    datatype.text = "JSON Data"
    val obj = JSONObject(loadJSONFromAsset())
    cityName.text = "City Name : " + obj.getString("City Name")
    latitude.text = "Latitude : " + obj.getString("Latitude")
    longitude.text = "Longitude : " + obj.getString("Longitude")
    temprature.text = "Temperature : " + obj.getString("Temperature")
    humidity.text = "Humidity : " + obj.getString("Humidity")
}

private fun loadJSONFromAsset(): String {
    val json: String?
    try {
        val inputStream = assets.open("myjson.json")
        val size = inputStream.available()
        val buffer = ByteArray(size)
        val charset: Charset = Charsets.UTF_8
        inputStream.read(buffer)
        inputStream.close()
        json = String(buffer, charset)
    }
    catch (ex: IOException) {
        ex.printStackTrace()
    }
    return ""
}

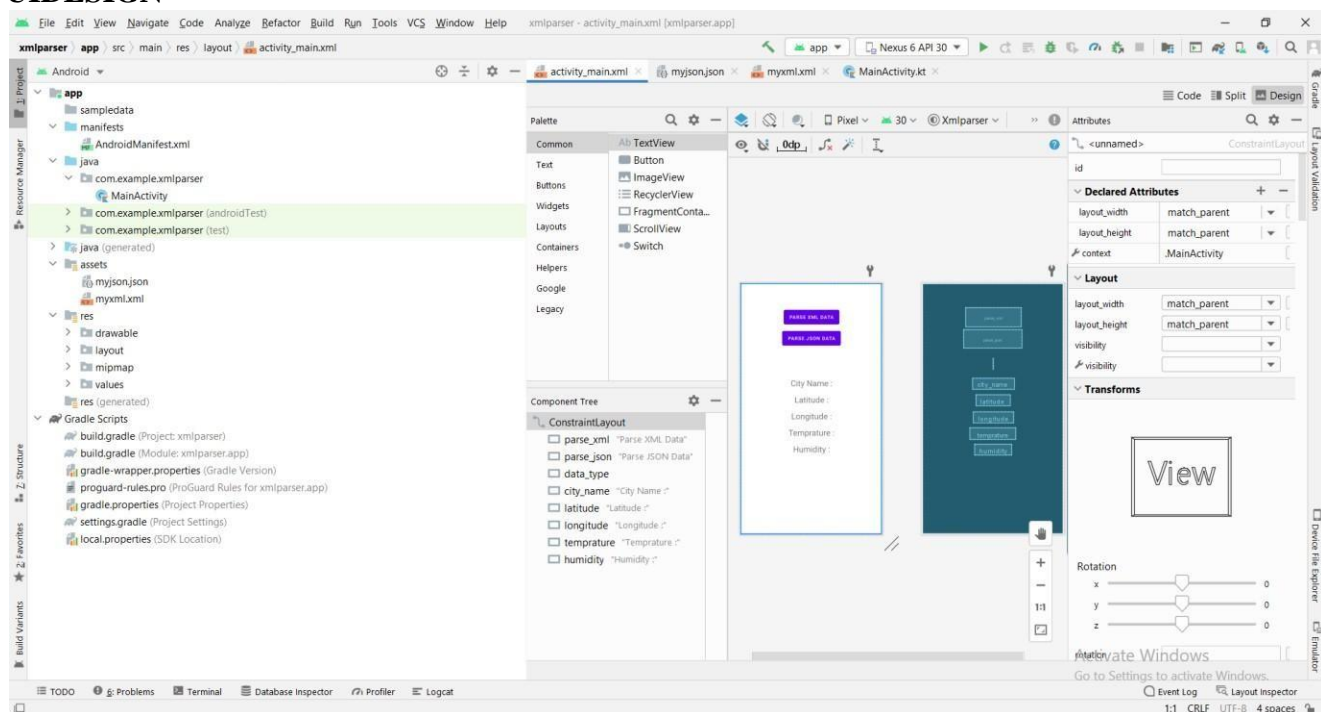
```

```

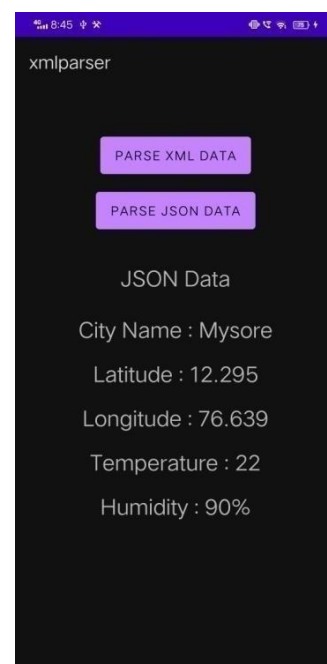
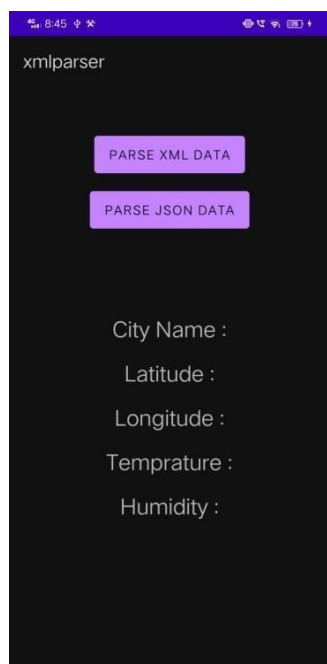
    }
    return json
  }
}

```

## UIDESIGN



## OUTPUT



## ProgramNo.7- TexttoSpeechQuestion

Develop a simple application with one edit Text so that the user can write some text  
init. Create a button called "ConvertTexttoSpeech" that converts the user input text into voice.

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">

    <EditText
    android:id="@+id/editText"
    android:layout_width="312dp"
    android:layout_height="146dp"
    android:ems="10"
    android:inputType="textPersonName"
    android:text=" text"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.646"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.305" />

    <Button
    android:id="@+id/textToSpeechButton"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text=" textToSpeechButton"
    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="0.576" />

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

MainActivity.kt

```
package com.example.tts
import androidx.appcompat.app.AppCompatActivity
import android.os.Bundle
import android.speech.tts.TextToSpeech
import android.util.Log
import android.widget.EditText
import com.google.android.material.button.MaterialButton
import java.util.*
```

```

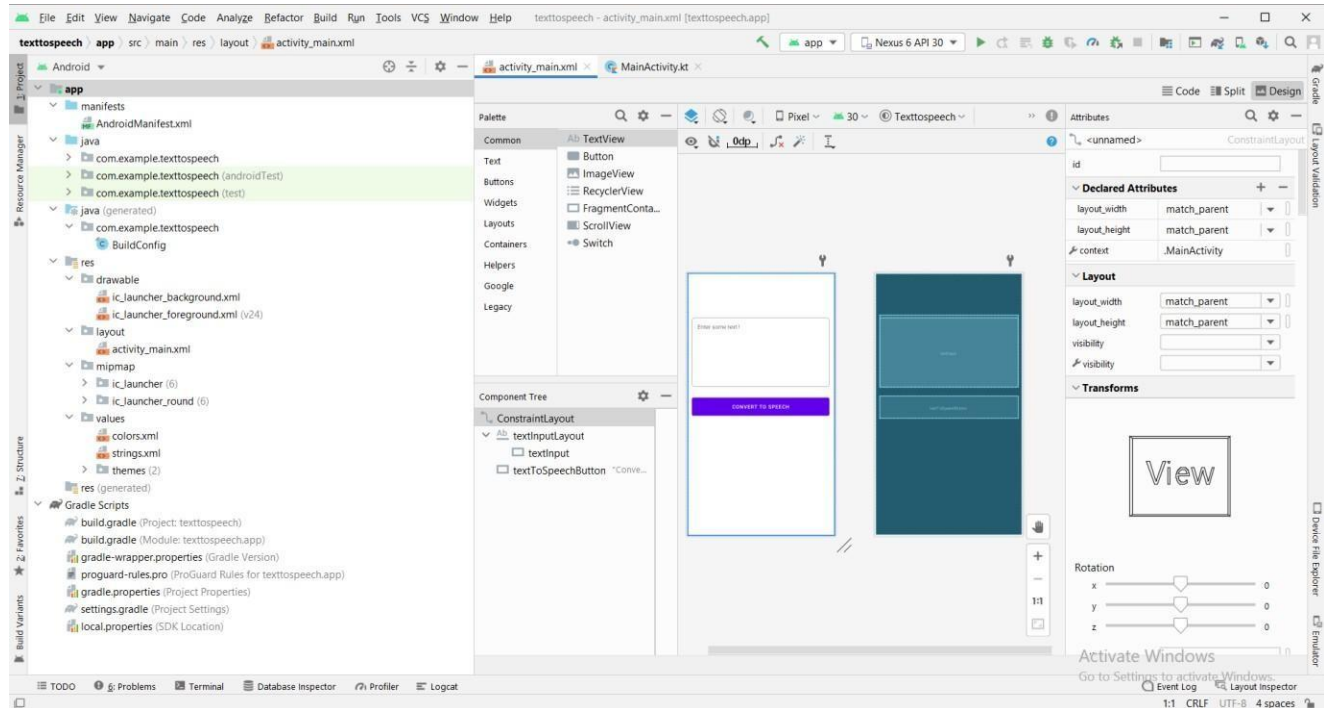
class MainActivity : AppCompatActivity(), TextToSpeech.OnInitListener{
private var textToSpeech: TextToSpeech? = null
    private lateinit var textToSpeechButton : MaterialButton
private lateinit var textInput : EditText
override fun onCreate(savedInstanceState: Bundle?) {
super.onCreate(savedInstanceState)
    setContentView(R.layout.activity_main)
textToSpeechButton = findViewById(R.id.textToSpeechButton)
textInput = findViewById(R.id.editText)
textToSpeechButton!!.isEnabled= false
textToSpeech = TextToSpeech(this, this)
textToSpeechButton!!.setOnClickListener{convertToSpeech()}

}
override fun onInit(status: Int) {
if(status == TextToSpeech.SUCCESS){
val result = textToSpeech!!.setLanguage(Locale.US)
if(result == TextToSpeech.LANG_MISSING_DATA || result ==
    TextToSpeech.LANG_NOT_SUPPORTED){
        Log.e("TTS", "Language specified NOT SUPPORTED")
    }
else{
textToSpeechButton!!.isEnabled = true
    }
else{
        Log.e("TTS", "Initialization Failed")
    }
}
private fun convertToSpeech(){
val text = textInput!!.text.toString()
textToSpeech!!.speak(text, TextToSpeech.QUEUE_FLUSH, null, "")
}
public override fun onDestroy()
{
if (textToSpeech != null)
{
textToSpeech!!.stop()
textToSpeech!!.shutdown()
}
super.onDestroy()
}}}

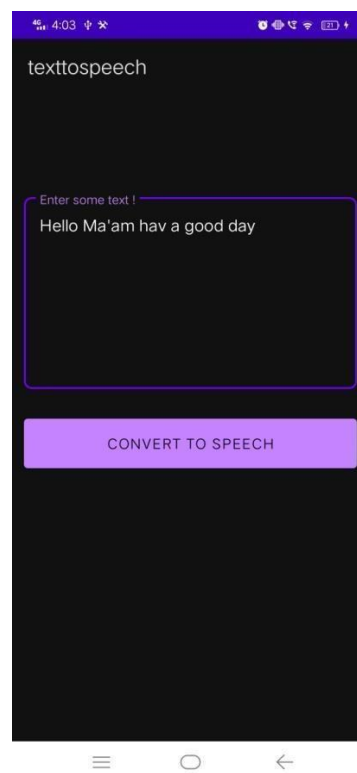
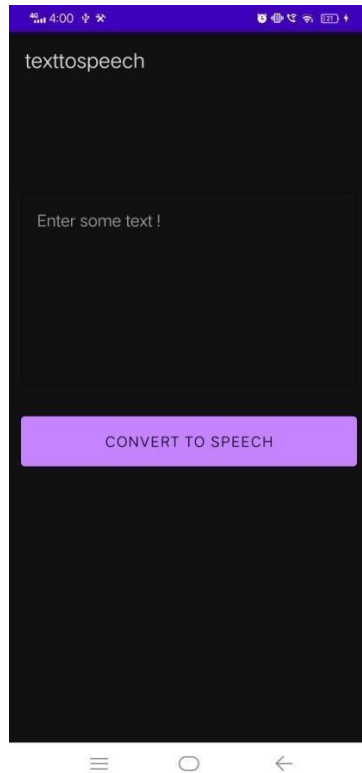
```

---

## UIDESIGN



## OUTPUT



## ProgramNo8- PhoneDailerQuestion

Create an activity like a phone dialer with Call and SAVE buttons. On pressing theCALLbutton,itmustcallthephonenumberandonpressingtheSAVEbuttonitmustsavethe numbertothe phone contacts.

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">

    <LinearLayout
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:orientation="vertical"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.5"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent">

        <LinearLayout
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:orientation="horizontal">

            <com.google.android.material.textview.MaterialTextView
                android:id="@+id/contact"
                android:layout_width="200dp"
                android:layout_height="100dp"
                android:gravity="center"
                android:textSize="24sp"/>

            <com.google.android.material.textview.MaterialTextView
                android:id="@+id/clear"
                android:layout_width="100dp"
                android:layout_height="100dp"
                android:gravity="center"
                android:text="X"
                android:textSize="24sp" />

        </LinearLayout>

    <LinearLayout
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
```



```
android:orientation="horizontal">

<com.google.android.material.textview.MaterialTextView
android:id="@+id/one"
android:layout_width="100dp"
android:layout_height="100dp"
android:gravity="center"
android:text="1"
android:textSize="24sp" />

<com.google.android.material.textview.MaterialTextView
android:id="@+id/two"
android:layout_width="100dp"
android:layout_height="100dp"
android:gravity="center"
android:text="2"
android:textSize="24sp" />

<com.google.android.material.textview.MaterialTextView
android:id="@+id/three"
android:layout_width="100dp"
android:layout_height="100dp"
android:gravity="center"
android:text="3"
android:textSize="24sp" />

</LinearLayout>

<LinearLayout
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:orientation="horizontal">

<com.google.android.material.textview.MaterialTextView
android:id="@+id/four"
android:layout_width="100dp"
android:layout_height="100dp"
android:gravity="center"
android:text="4"
android:textSize="24sp" />

<com.google.android.material.textview.MaterialTextView
android:id="@+id/five"
android:layout_width="100dp"
android:layout_height="100dp"
android:gravity="center"
android:text="5"
android:textSize="24sp" />

<com.google.android.material.textview.MaterialTextView
android:id="@+id/six"
android:layout_width="100dp"
android:layout_height="100dp"
android:gravity="center"
android:text="6"
android:textSize="24sp" />

</LinearLayout>
```

```
<LinearLayout
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:orientation="horizontal">

<com.google.android.material.textview.MaterialTextView
android:id="@+id/seven"
android:layout_width="100dp"
android:layout_height="100dp"
android:gravity="center"
android:text="7"
android:textSize="24sp" />

<com.google.android.material.textview.MaterialTextView
android:id="@+id/eight"
android:layout_width="100dp"
android:layout_height="100dp"
android:gravity="center"
android:text="8"
android:textSize="24sp" />

<com.google.android.material.textview.MaterialTextView
android:id="@+id/nine"
android:layout_width="100dp"
android:layout_height="100dp"
android:gravity="center"
android:text="9"
android:textSize="24sp" />

</LinearLayout>

<LinearLayout
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:orientation="horizontal">

<com.google.android.material.textview.MaterialTextView
android:id="@+id/star"
android:layout_width="100dp"
android:layout_height="100dp"
android:gravity="center"
android:text="*"
android:textSize="24sp" />

<com.google.android.material.textview.MaterialTextView
android:id="@+id/zero"
android:layout_width="100dp"
android:layout_height="100dp"
android:gravity="center"
android:text="0"
android:textSize="24sp" />

<com.google.android.material.textview.MaterialTextView
android:id="@+id/hash"
android:layout_width="100dp"
android:layout_height="100dp"
android:gravity="center"
```

```

        android:text="#"
        android:textSize="24sp" />

    </LinearLayout>

    <LinearLayout
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:orientation="horizontal">
        <com.google.android.material.button.MaterialButton
            android:id="@+id/call"
            android:layout_width="134dp"
            android:layout_height="54dp"
            android:layout_margin="8dp"
            android:text="Call"/>

        <com.google.android.material.button.MaterialButton
            android:id="@+id/save"
            android:layout_width="134dp"
            android:layout_height="54dp"
            android:layout_margin="8dp"
            android:text="Save"/>

    </LinearLayout>

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

```

## MainActivity.kt

```

package com.example.phonedialer
import android.R.attr.phoneNumber
import android.content.Intent
import android.net.Uri
import android.os.Bundle
import android.provider.ContactsContract
import android.widget.Button
import android.widget.TextView
import androidx.appcompat.app.AppCompatActivity
class MainActivity : AppCompatActivity() {
    private lateinit var saveBtn: Button
    private lateinit var callBtn: Button

    private lateinit var zero: TextView
    private lateinit var one: TextView
    private lateinit var two: TextView
    private lateinit var three: TextView
    private lateinit var four: TextView

    private lateinit var five: TextView

```

```
private lateinit var six: TextView
private lateinit var seven: TextView
private lateinit var eight: TextView
private lateinit var nine: TextView
private lateinit var star: TextView
private lateinit var hash: TextView
private lateinit var clear: TextView

private lateinit var contact: TextView

override fun onCreate(savedInstanceState: Bundle?) {
    super.onCreate(savedInstanceState)
        setContentView(R.layout.activity_main)

    saveBtn = findViewById(R.id.save)
    callBtn = findViewById(R.id.call)

    zero = findViewById(R.id.zero)
    one = findViewById(R.id.one)
    two = findViewById(R.id.two)
    three = findViewById(R.id.three)
    four = findViewById(R.id.four)
    five = findViewById(R.id.five)
    six = findViewById(R.id.six)
    seven = findViewById(R.id.seven)
    eight = findViewById(R.id.eight)
    nine = findViewById(R.id.nine)
    star = findViewById(R.id.star)
    hash = findViewById(R.id.hash)
    clear = findViewById(R.id.clear)

    contact = findViewById(R.id.contact)

    zero.setOnClickListener {
        pressButton("0", true)
    }

    one.setOnClickListener {
        pressButton("1", true)
    }

    two.setOnClickListener {
        pressButton("2", true)
    }

    three.setOnClickListener {
        pressButton("3", true)
    }

    four.setOnClickListener {
        pressButton("4", true)
    }

    five.setOnClickListener {
        pressButton("5", true)
    }
}
```

```

six.setOnClickListener {
    pressButton("6", true)
}

seven.setOnClickListener {
    pressButton("7", true)
}

eight.setOnClickListener {
    pressButton("8", true)
}

nine.setOnClickListener {
    pressButton("9", true)
}

star.setOnClickListener {
    pressButton("*", true)
}

hash.setOnClickListener {
    pressButton("#", true)
}

clear.setOnClickListener {
    contact.text = ""
}

callBtn.setOnClickListener {
    val intent = Intent(Intent.ACTION_CALL, Uri.parse("tel:" + "${contact.text}"))
    startActivity(intent)
}

saveBtn.setOnClickListener {
    val intent = Intent(
        ContactsContract.Intents.SHOW_OR_CREATE_CONTACT,
        Uri.parse("tel:" + contact.text))
    intent.putExtra(ContactsContract.Intents.EXTRA_FORCE_CREATE, true)
    startActivity(intent)
}

}

fun pressButton(string: String, clear: Boolean) {
    if (!clear) {
        contact.text = ""
    } else {
        contact.append(string)
    }
}

```

## AndroidManifest.xml

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

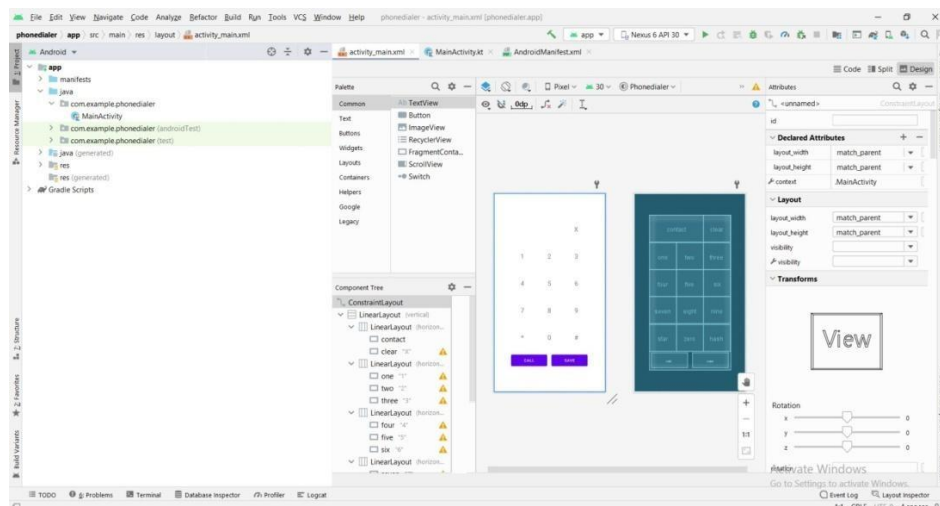
    <uses-permission android:name="android.permission.CALL_PHONE" />
    <uses-permission android:name="android.permission.MANAGE_OWN_CALLS" />
    <uses-permission android:name="android.permission.MANAGE_OUTGOING_CALLS" />
    <uses-permission android:name="android.permission.WRITE_CONTACTS" />
    <uses-permission android:name="android.permission.READ_CONTACTS" />

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

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

</manifest>
```

## UIDESIGN



OUTPUT

