VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"JNANASANGAMA",MACHHE ,BELAGAVI-590018

Lab manual

Mobile Application Development Laboratory

6th sem

Computer Science and Engineering

of

Visvesvaraya Technological University, Belagavi.

CAMBRIDGE
INSTITUTE OF TECHNOLOGY

Department of Computer Science and Engineering

CAMBRIDGEINSTITUTEOFTECHNOLOGY, BANGALORE-560036

2021-2022

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

Course Code	**18CSMP68**	**IA Marks**	40
Number of Contact Hours/Week	0:0:2	**Exam Marks**	60
Total Number of Contact Hours	3 Hours/Week	**Exam Hours**	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.

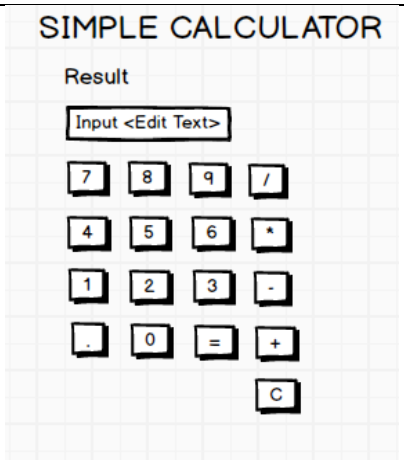
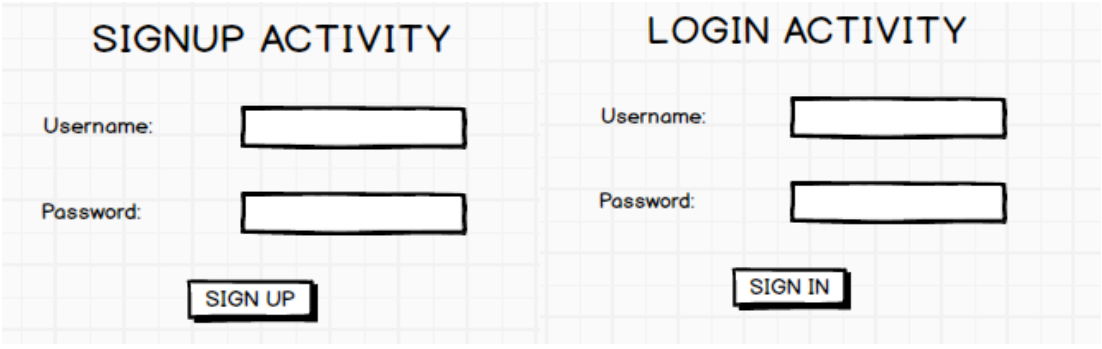
Descriptions (if any):

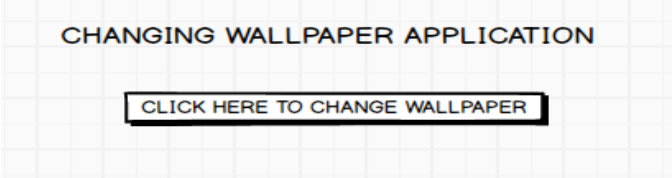
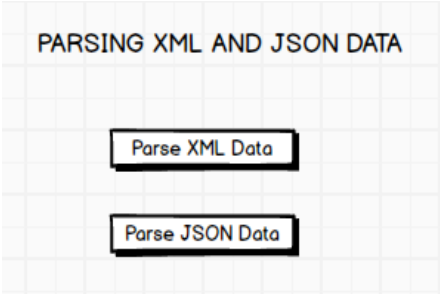
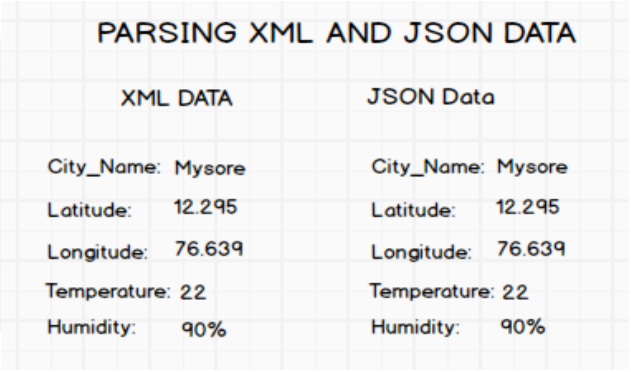
Installation procedure of the Android Studio/Java software must be demonstrated, carried out in groups.
Students should use the latest version of Android Studio/Java to execute these programs.
All of these diagrams are for representational purpose only. Students are expected to improvise on it.

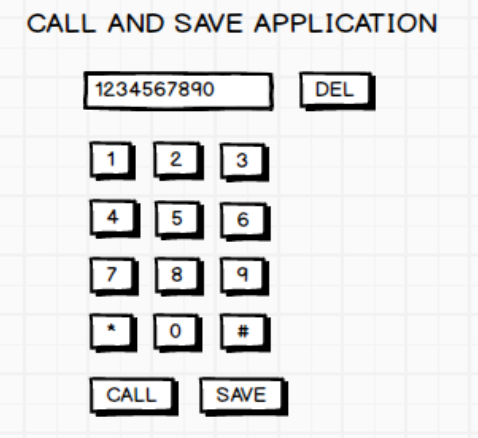
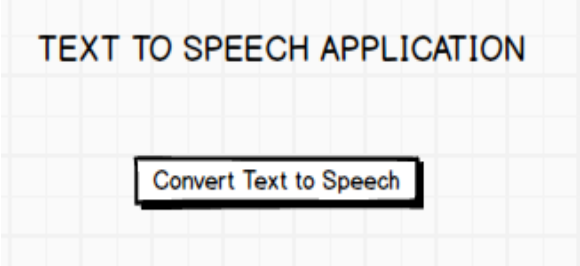
Programs List:

PART – A

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

	
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. 

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

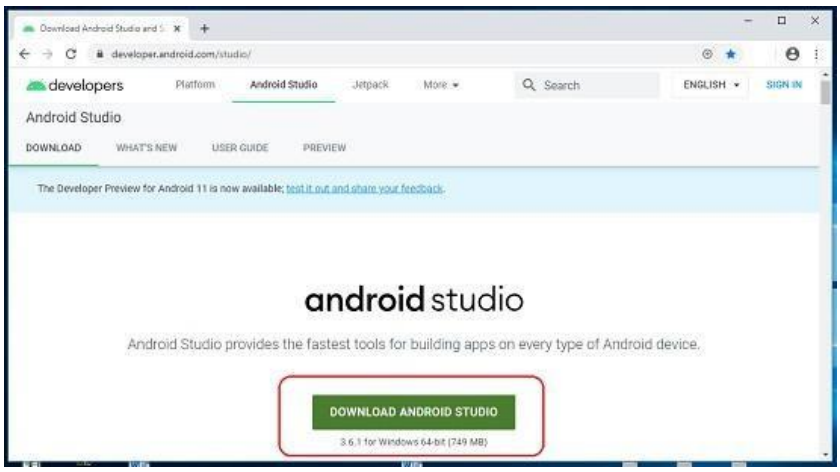
- Operating System Version - Microsoft Windows 7/8/10 (32-bit or 64-bit).
- Random Access Memory (RAM) - Minimum 4 GB RAM and 8 GB RAM
- recommended. Free Disk Space - Minimum 2 GB and 4 GB recommended.
- Minimum Required JDK Version - Java
- Development Kit(JDK) 8. Minimum Screen

  Resolution - 1280 * 800.resolution

Download and Install Android Studi

Step 1

To download the Android Studio, visit the official Android Studio website in your web browser.



Step 2

Step 3

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

Step 4

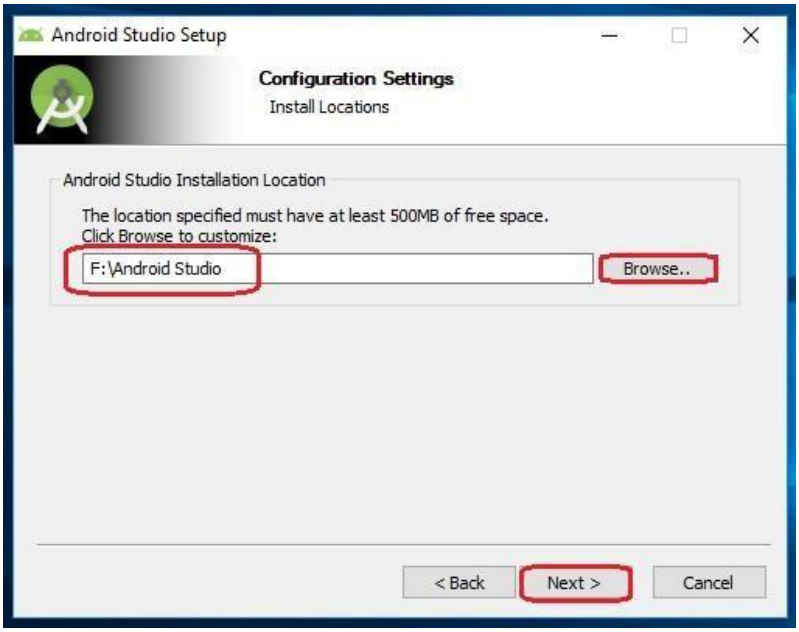
"Android Studio Setup" will appear on the screen and click "Next" to proceed.

Step 5

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

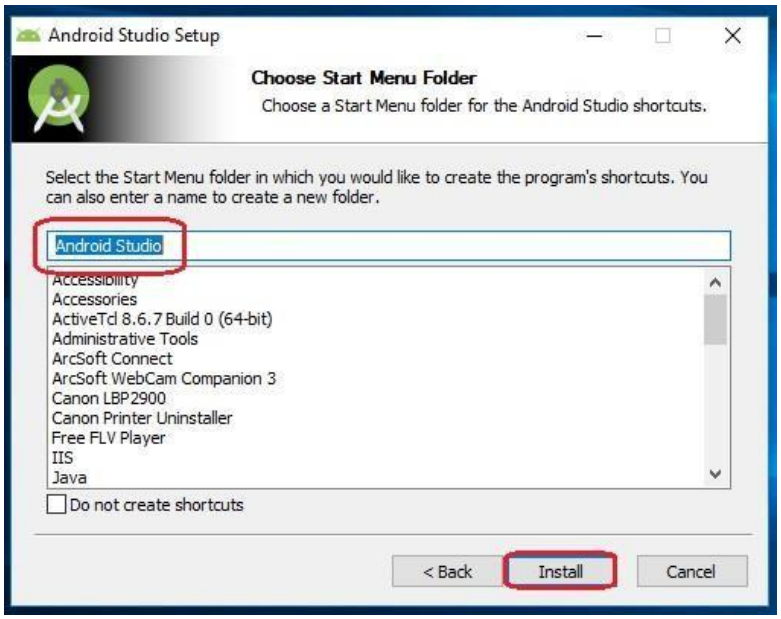
Step 6

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



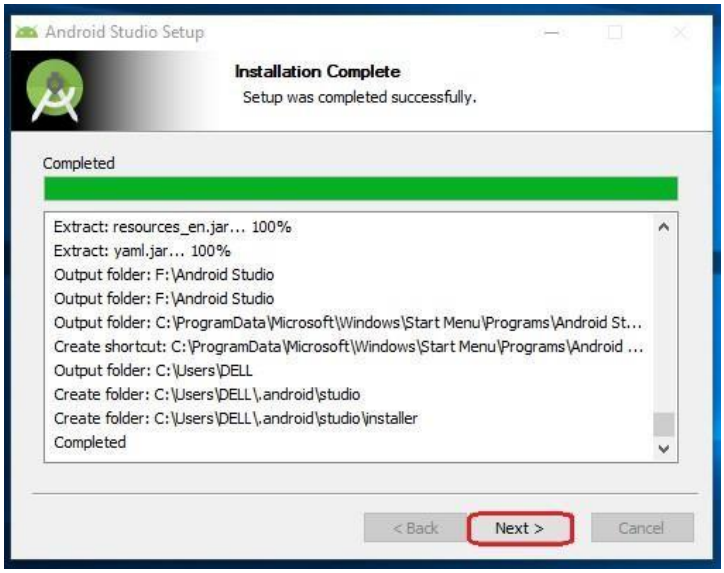
Step 7

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.

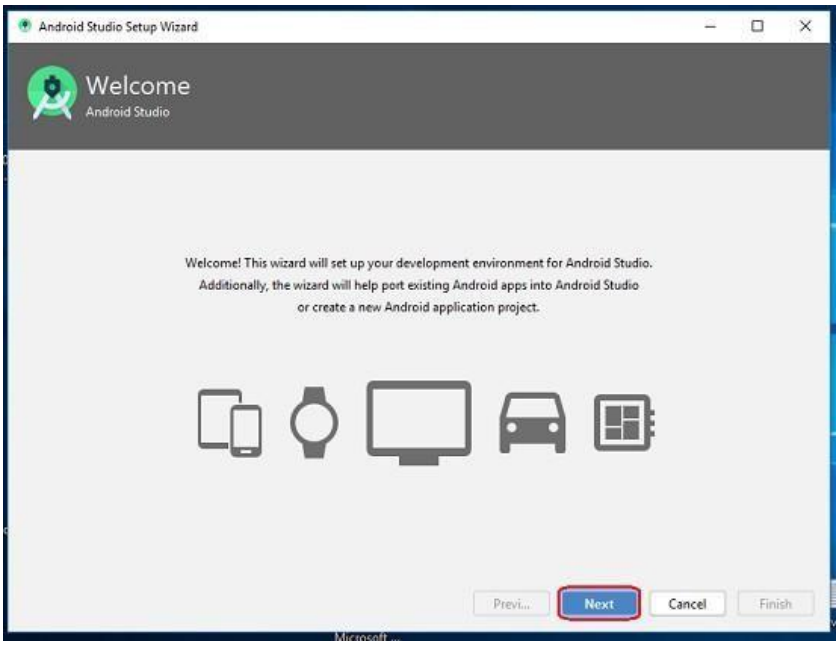
Now, your Android studio welcome screen will appear on the screen.

Android Studio Setup Configuration

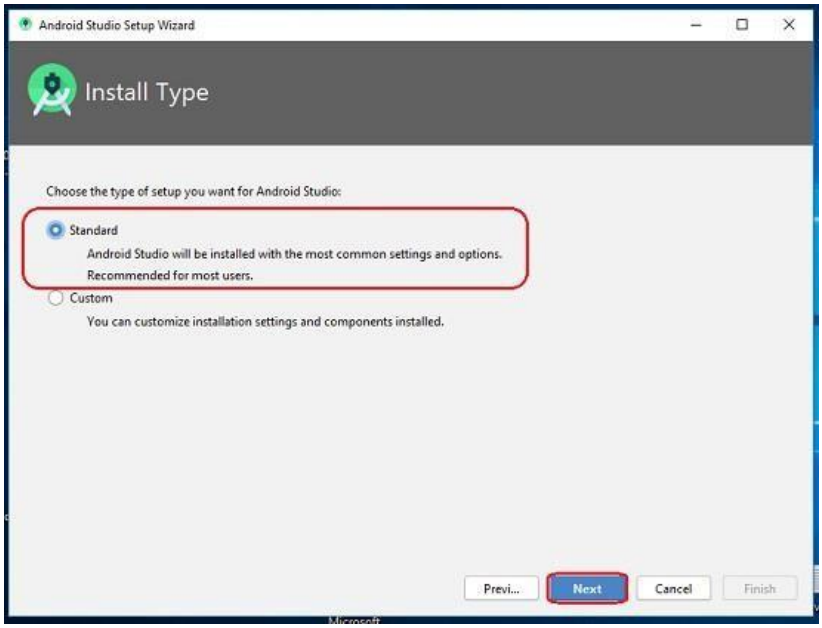
Step 10

"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

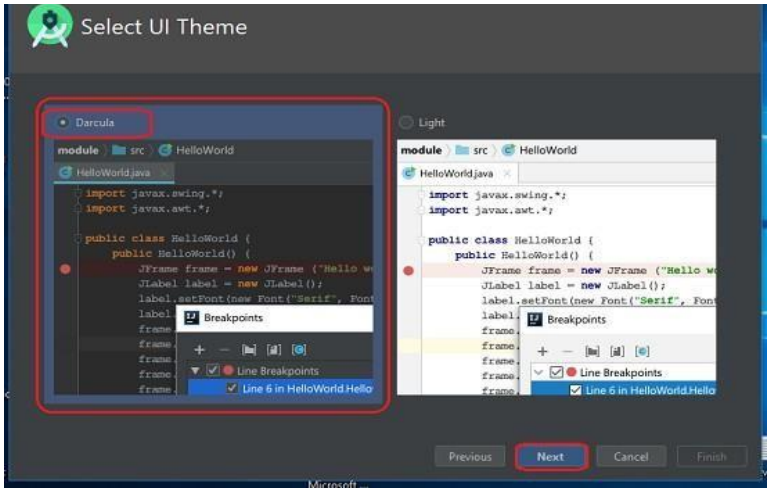


options for you. Click "Next" toproceed.



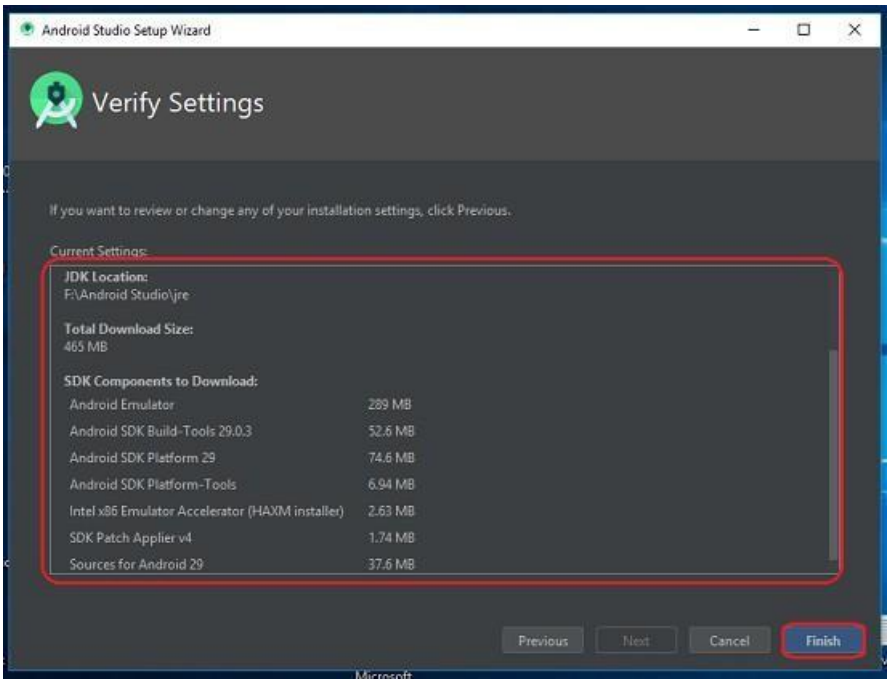
Step 12

Now, select the user interface theme as you want. (I prefer Dark theme (Dracula) that is mostliked by the coders). Then, click on the "Next" button.

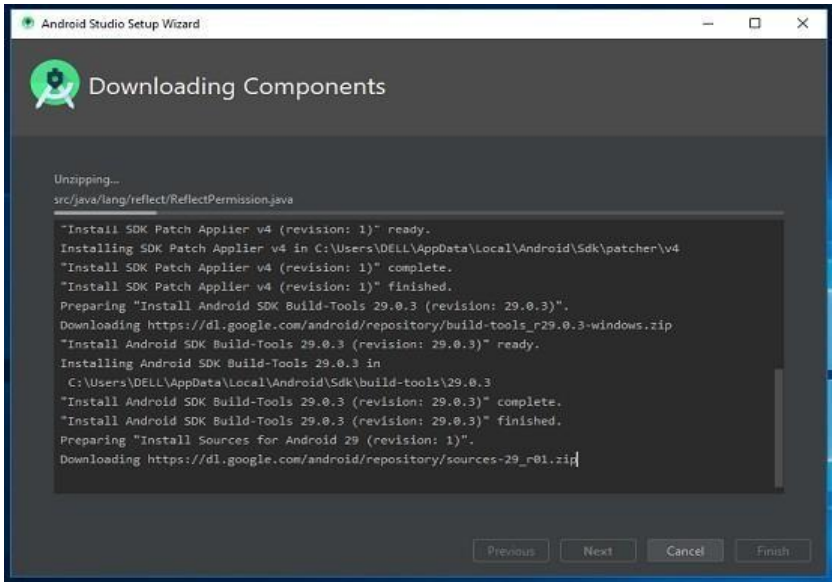


Step 13

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

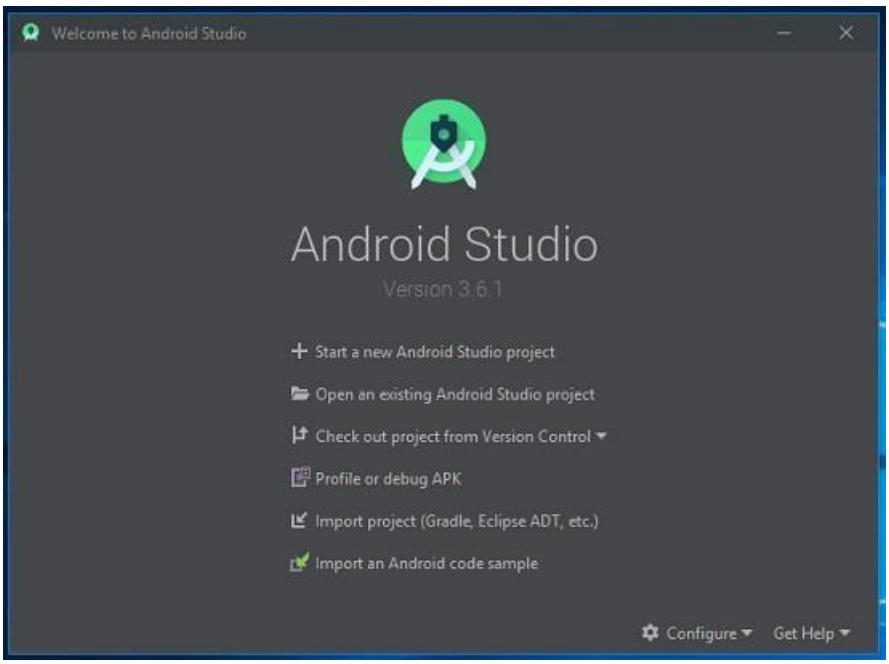


TABLE OF CONTENTS

ProgramNo.1–Visiting Card

Question

CreateanapplicationtodesignaVisitingCard.Thevisitingcardshouldhaveacomplete logo attached at the top right corner. The company name should be displayedin Capital letters, aligned to the center. Information like the name of the employee, jobtitle,phone number,address,email,fax andthe website addressistobedisplayed.Insert ahorizontallinebetweenthejobtitleandthephonenumber.

Code

Activitymain.xml{UIcode}

```
<?xmlversion="1.0"encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayoutxmlns:android="http://schema
s.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"android:background="#F3D1D1"tools:conte
    xt=".MainActivity">

    <TextViewandroid:id="@+id/textVi
        ew2"android:layout_width="199d
        p"android:layout_height="64dp"an
        droid:background="#BF8181"andr
        oid:gravity="center"android:text="
        CITECH"android:textColor="#700
        606"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_toTo
    pOf="parent"app:layout_constraintVertical_bias="0.071"/>

<View
    android:id="@+id/divider"android:layout_width="matc
    h_parent"android:layout_height="1dp"android:backgrou
    nd="?android:attr/listDivider"app:layout_constraintBott
    om_toBottomOf="parent"app:layout_constraintEnd_toE
    ndOf="parent"app:layout_constraintHorizontal_bias="0.
    0"app:layout_constraintStart_toStartOf="parent"app:lay
    out_constraintTop_toTopOf="parent"app:layout_constr
    aintVertical_bias="0.213"/>

<TextViewandroid:id="@+id/textView3
    "android:layout_width="380dp"androi
    d:layout_height="115dp"android:back
    ground="#D8ABAB"android:gravity=
    "center"android:text="SHUMAILA
    AFREEN"android:textColor="#7E323
    2"
    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="pare
    nt"app:layout_constraintVertical_bias="0.272"/>

<TextViewandroid:id="@+id/textVi
    ew4"android:layout_width="356d
    p"android:layout_height="119dp"a
    ndroid:background="#D8ABAB"a
    ndroid:gravity="center"android:tex
    t="9148897393"android:textColor
    ="#7E3232"
```

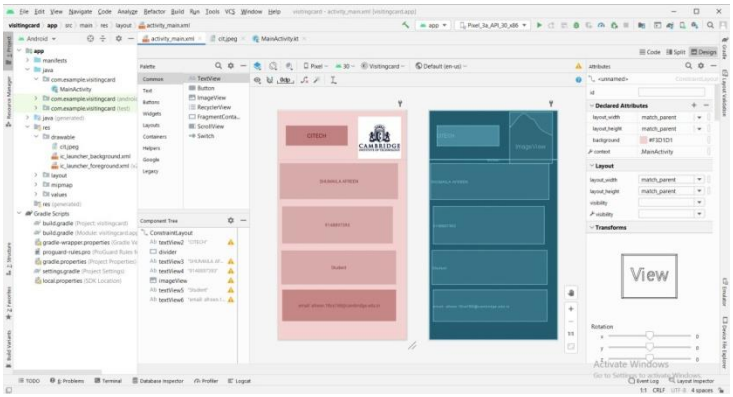
```
    app:layout_constraintBottom_toBottomOf="parent"app:la
    yout_constraintEnd_toEndOf="parent"app:layout_constra
    intHorizontal_bias="0.222"app:layout_constraintStart_to
    StartOf="parent"app:layout_constraintTop_toTopOf="par
    ent"app:layout_constraintVertical_bias="0.499"/>

     <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}

```
packagecom.example.visitingcard

importandroidx.appcompat.app.AppCompatActivityi
mport android.os.Bundle

classMainActivity:AppCompatActivity(){
    override fun onCreate(savedInstanceState: Bundle?)
        {super.onCreate(savedInstanceState)setContentVie
        w(R.layout.activity_main)
    }
}
```

UIDESIGN



OUTPUT

ProgramNo.2–

SimpleCalculatorQuestion

DevelopanAndroidapplicationusingcontrolslikeButton,TextView, EditTextfordesigningacalculatorhavingbasicfunctionalitylikeAddition,Subtraction,Multiplication andDivision.

```
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">
```

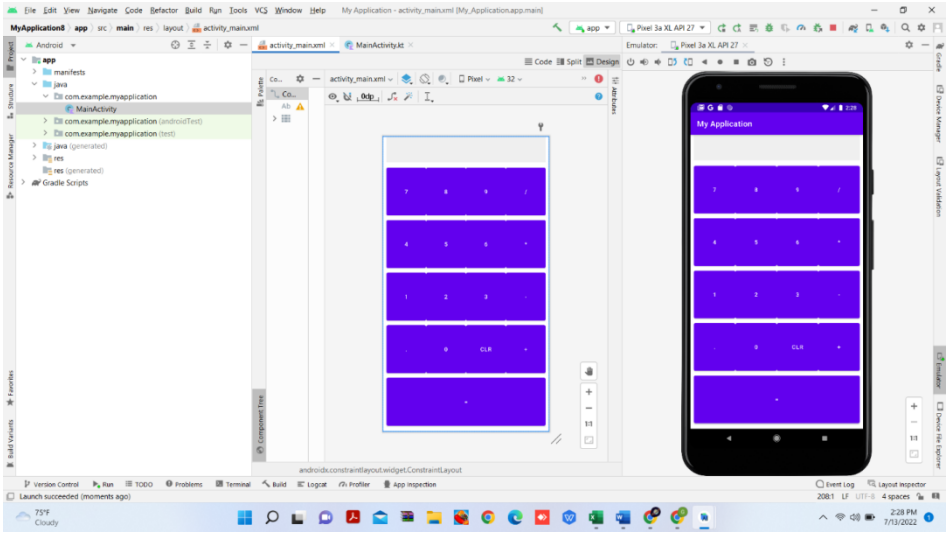
```
<Button
android:text="7"
android:layout_width="0dp"
android:layout_weight="1"
android:layout_height="match_parent"
android:onClick="onDigit"
android:id="@+id/btnSeven"/>

<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

CreateaSIGNUPactivitywithusernameandpassword.Validationofpasswordshouldhappenbasedonthe followingrules:

- Passwordshouldcontainuppercaseandlowercaseletters.
- Passwordshouldcontainlettersandnumbers.
- Passwordshouldcontainspecialcharacters.
- Minimumlengthofthepassword(thedefaultvalueis8).

On successful **SIGN UP** proceed to the next Login activity. Here the user should **SIGNIN** using the username and password created during sign up activity. If the usernameand password are matched then navigate to the next activity which displays a messagesaying "Successful Login" or else display a toast message saying "Login Failed". Theuser is given only two attempts and after that display a toast message saying "FailedLogin Attempts" and disable the SIGN IN button. Use Bundle to transfer informationfromone activitytoanother.

Step1:Creat Signup Activity

Edit signup_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=".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"/>
```

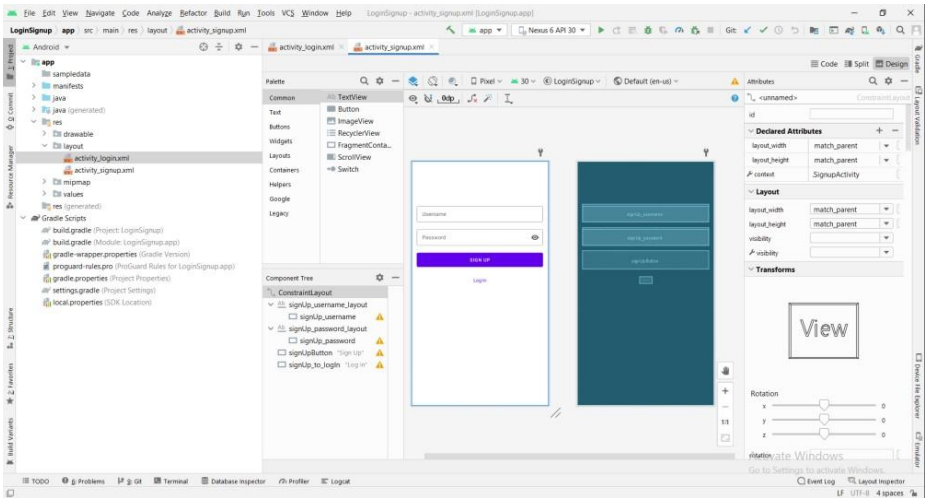
Step4: Edit login.kt file

```
importandroid.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
```

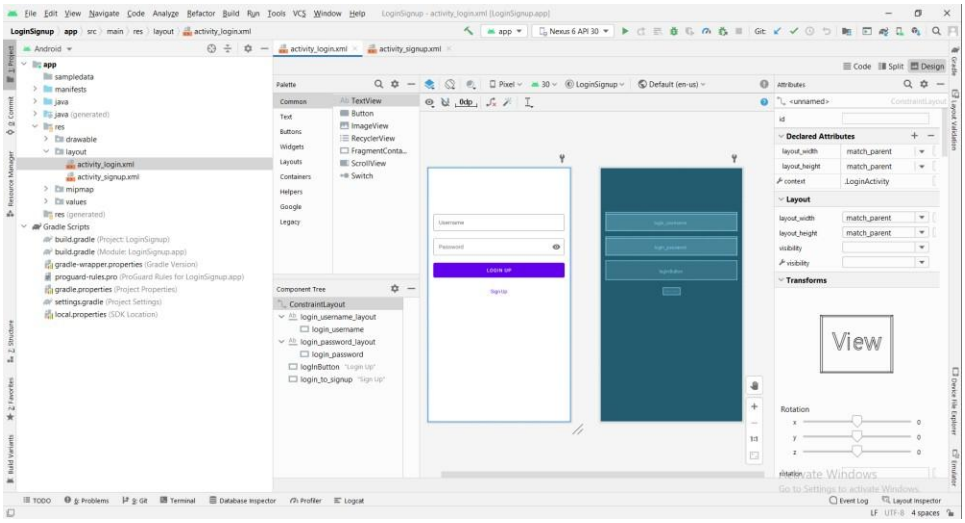
```
Toast.makeText(this, "Failed Login Attempts", Toast.LENGTH_LONG).show()
                } else Toast.makeText(this, "Login Failed, Try Again $count",
Toast.LENGTH_LONG)
                        .show()
            }
}
if (bundle != null) {
user = bundle!!.getString("username")
pass = bundle!!.getString("password")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

}
```

UIDESIGN

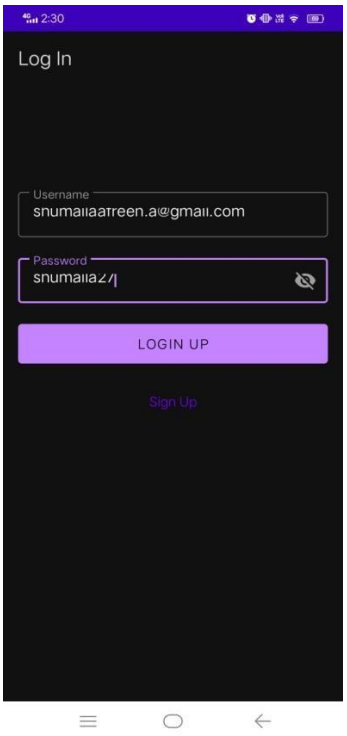
LOGINUI

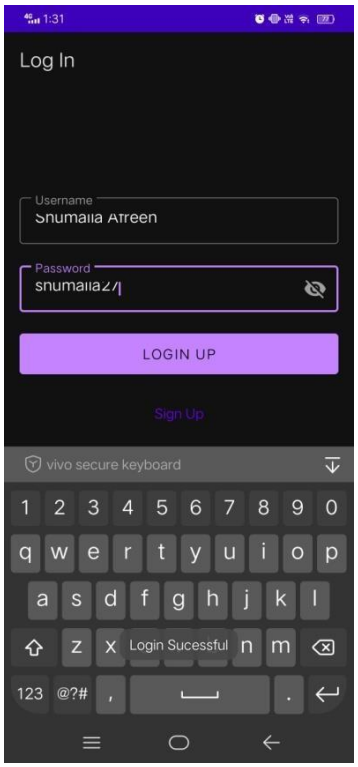


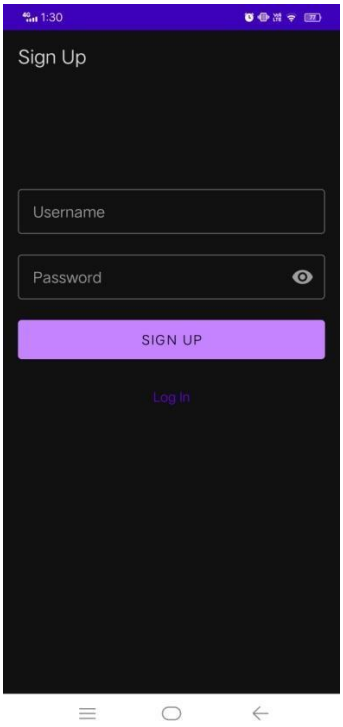
SIGNUPUI

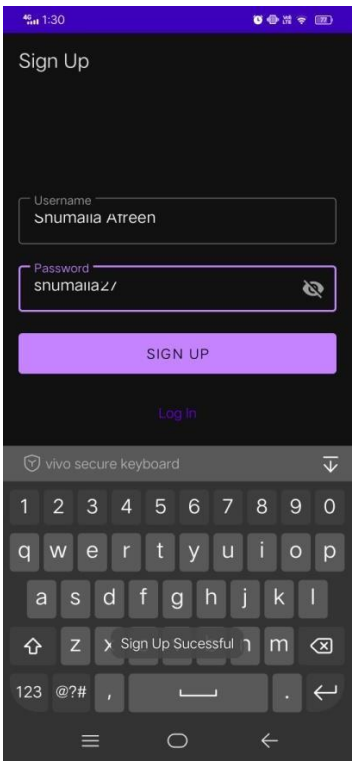


OUTPUT


2:30
Log In
Username
snumaiiaatreen.a@gmail.com
Password
snumaiia27
LOGIN UP
Sign Up


1:31
Log In
Username
Snumaiia Atreen
Password
snumaiia27
LOGIN UP
Sign Up
vivo secure keyboard
Login Sucessful


1:30
Sign Up
Username
Password
SIGN UP
Log In


1:30
Sign Up
Username
Snumaiia Atreen
Password
snumaiia27
SIGN UP
Log In
vivo secure keyboard
Sign Up Sucessful

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 { setWallpapper() }
}

fun setWallpapper() {
      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)
         }
}

}
}
```

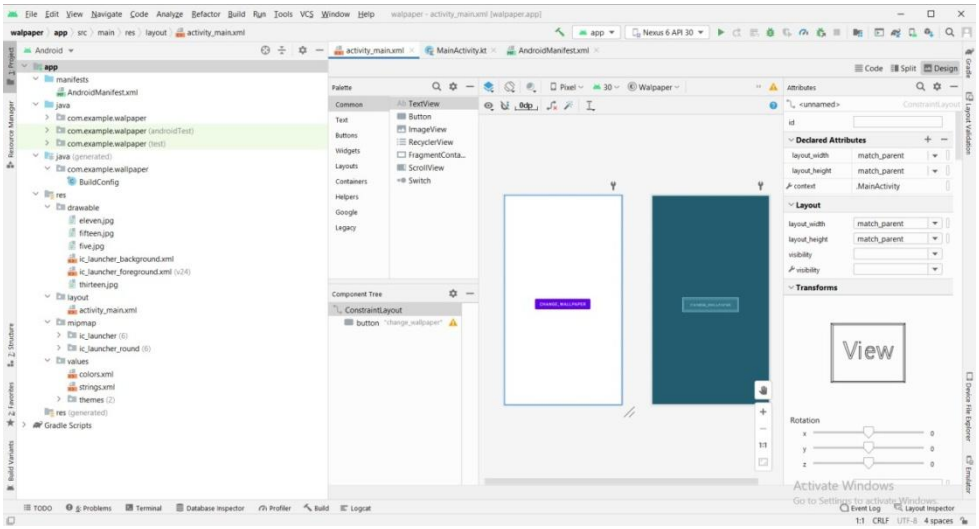
androidmanifest.xml

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

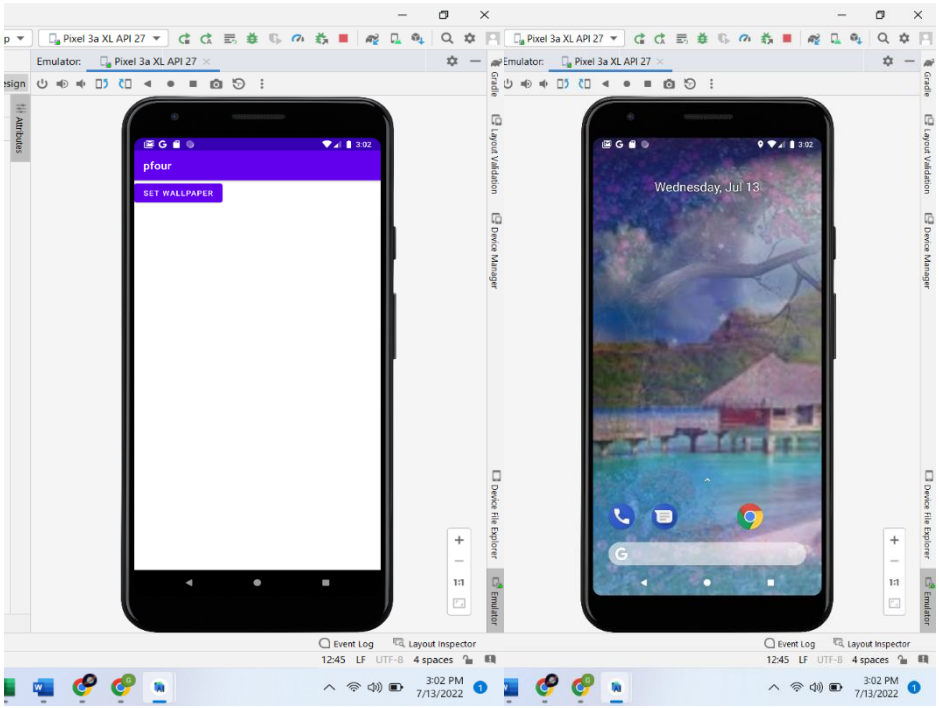
Actvitymain.xml

```
<?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 bydisplaying the numbers from One and the counter must keep on countinguntil the STOP button is pressed. Display the counter value in a Text Viewcontrol.

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"
```

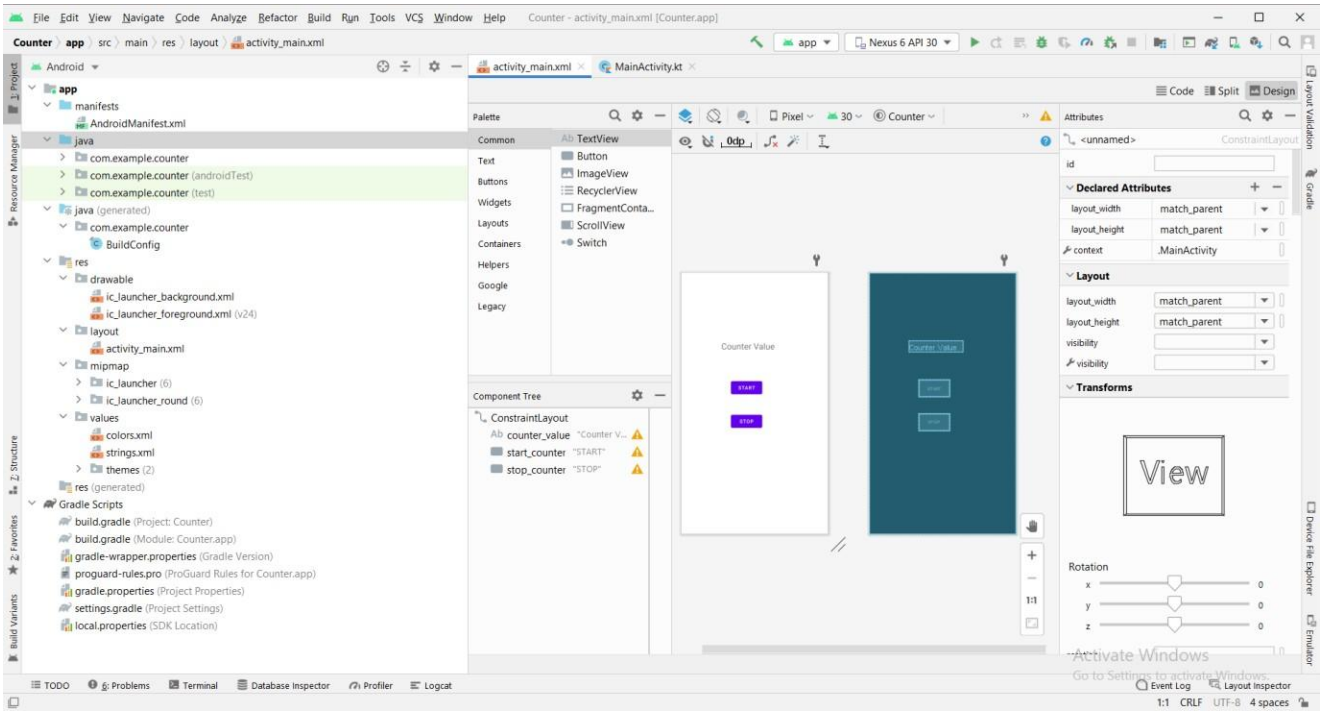
```
        android:layout_height="wrap_content"android:layout_
        marginTop="8dp"android:layout_marginBottom="8dp"
        android:text="START"app:layout_constraintBottom_to
        BottomOf="parent"app:layout_constraintEnd_toEndOf=
        "parent"app:layout_constraintHorizontal_bias="0.43"ap
        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

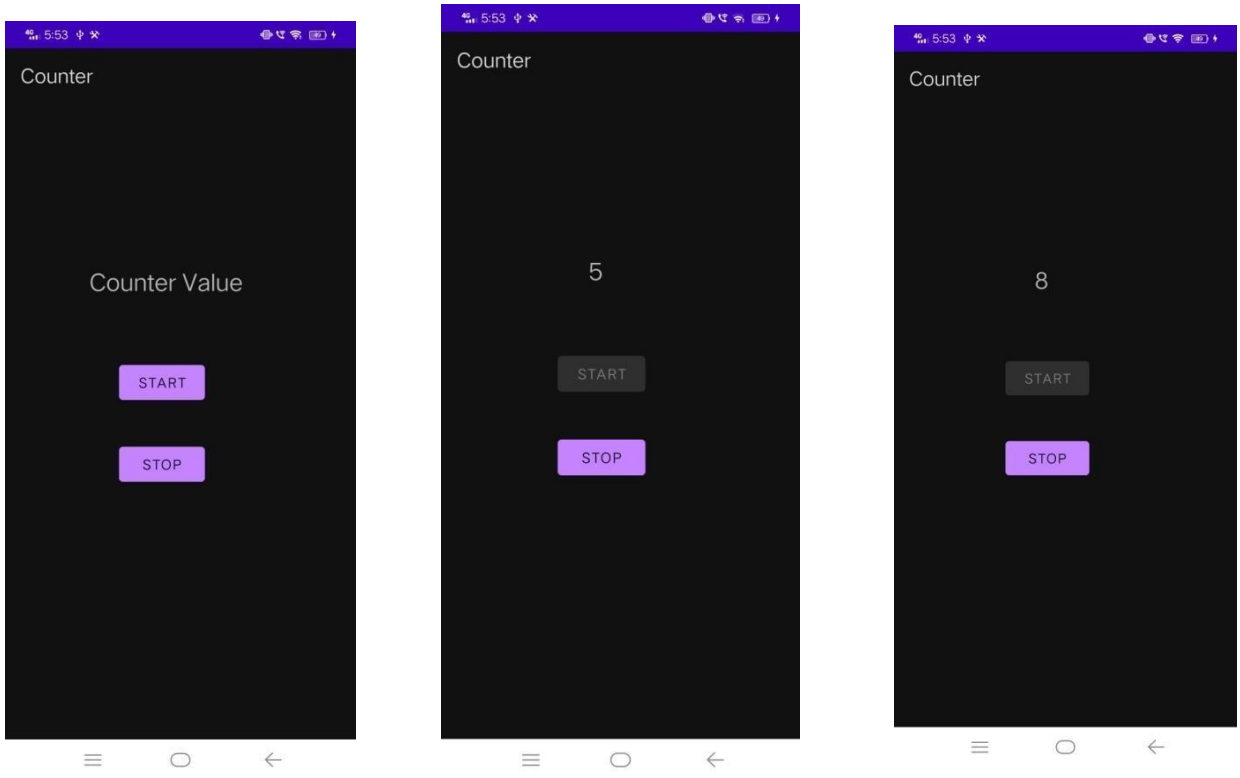
```
package com.example.counter

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 twobuttonstoparsetheXMLandJSONfileswhichwhenclickedshoulddisplaythedatainthe ir respectivelayoutssidebyside.

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/temprature" />


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

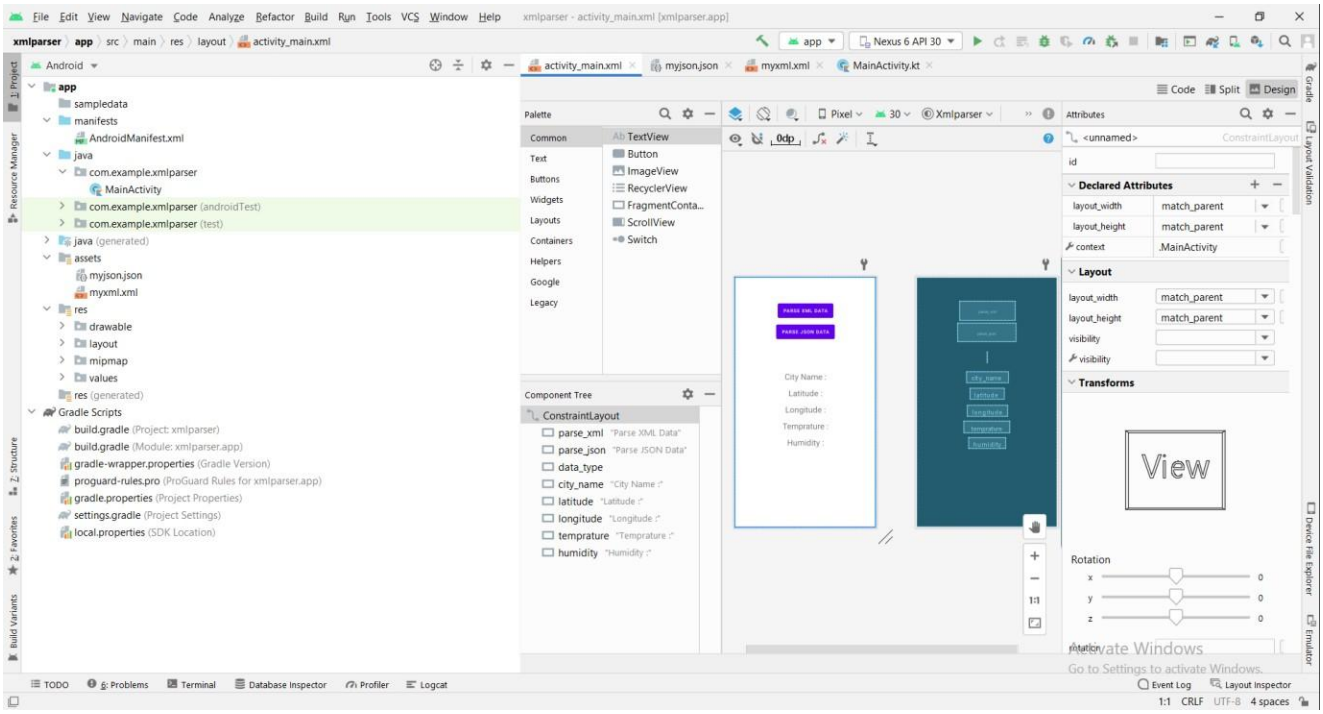
Step5:Edit*MainActivity.kt file*

```
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)
```

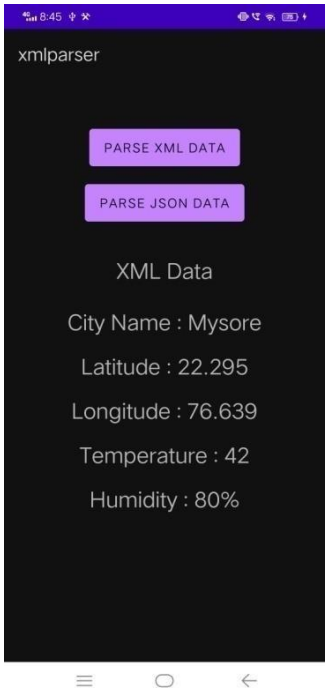
```
cityName = findViewById(R.id.city_name)
latitude = findViewById(R.id.latitude)
longitude = findViewById(R.id.longitude)
temprature = findViewById(R.id.temprature)
humidity = findViewById(R.id.humidity)


    }

@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.Createabuttoncalled“ConvertTexttoSpeech”thatconvertstheuserinputtextintovoice.

Activity_main.xml

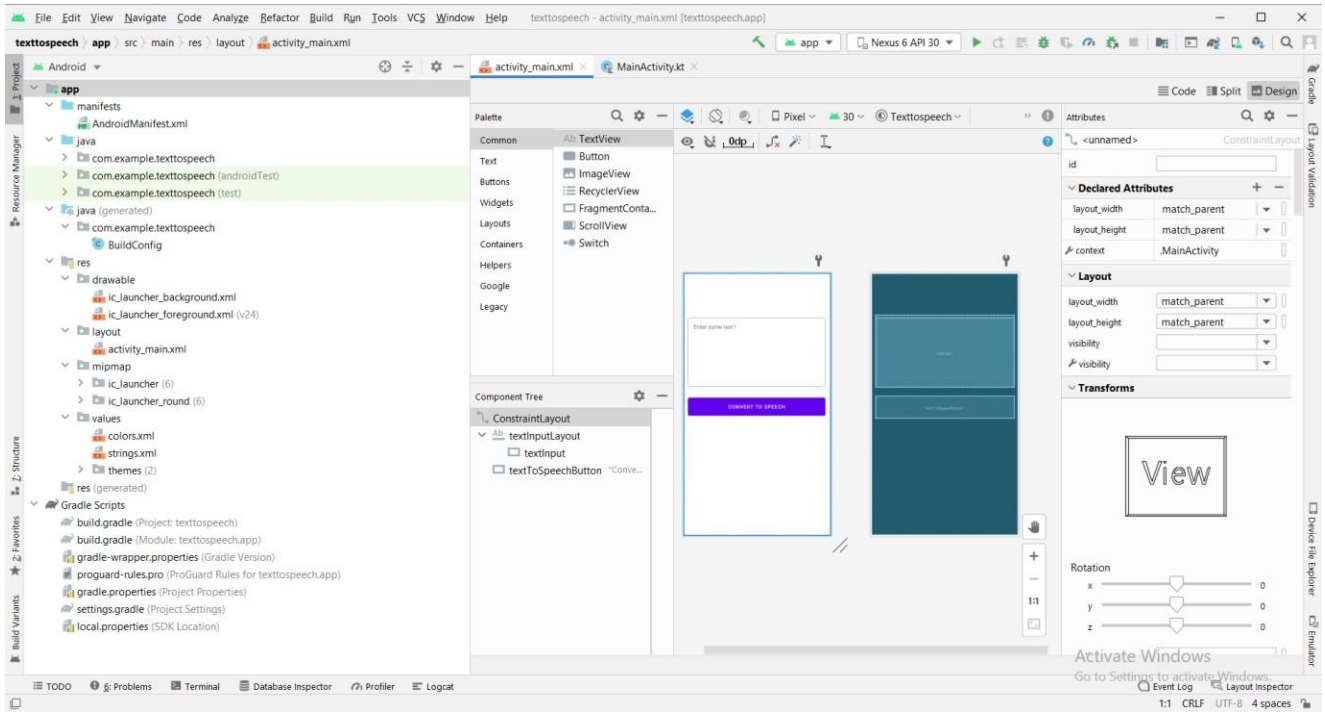
```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
xmlns:android="http://schemas.android.com/apk/res/android"
xmlns:app="http://schemas.android.com/apk/res-auto"
xmlns:tools="http://schemas.android.com/tools"

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

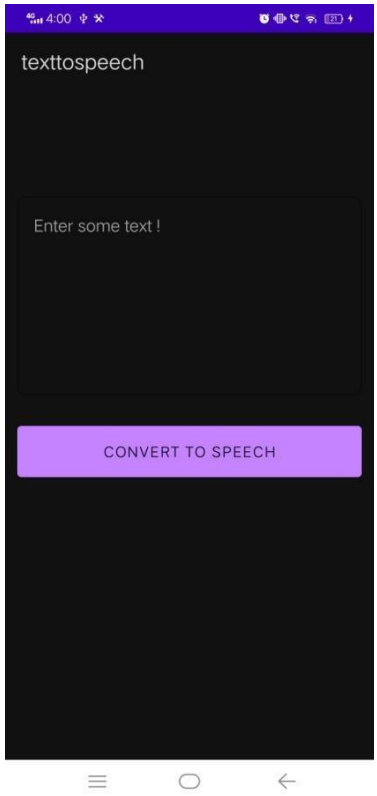
```
packagecom.example.tts
import androidx.appcompat.app.AppCompatActivity
import android.os.Bundle
import android.speech.tts.TextToSpeech
import android.util.Log
import android.widget.EditText
import com.google.android.material.button.MaterialButton
import java.util.*
```

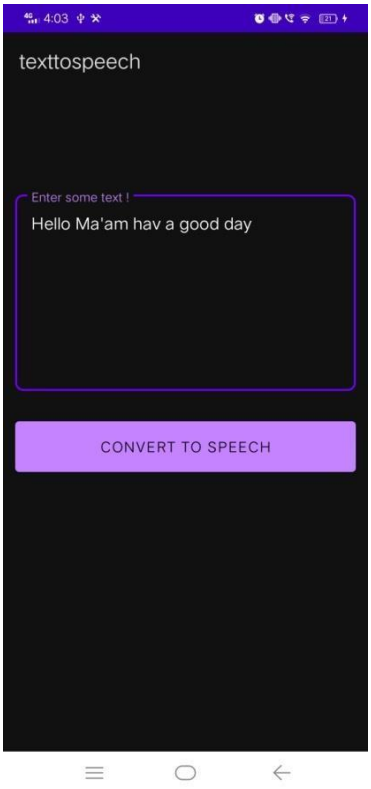
```
class MainActivity : AppCompatActivity(), TextToSpeech.OnInitListener{
private var textToSpeech: TextToSpeech? = null
    private lateinit var textToSpeechButton : MaterialButton
private lateinit var textInput : EditText
override fun onCreate(savedInstanceState: Bundle?) {
super.onCreate(savedInstanceState)
        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
```

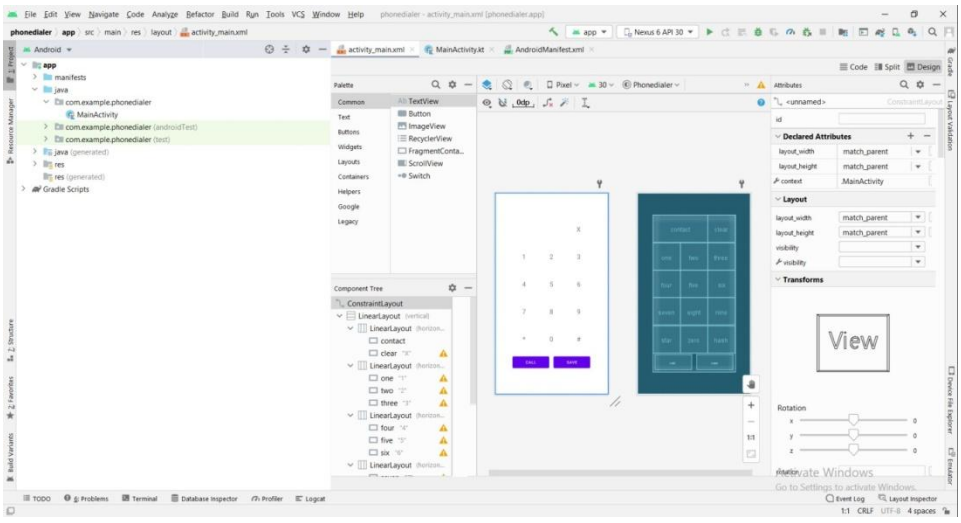
```
private lateinit var six: TextView
private lateinit var seven: TextView
private lateinit var eight: TextView
private lateinit var nine: TextView
private lateinit var star: TextView
private lateinit var hash: TextView
private lateinit var clear: TextView

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)
        }
    }

}
```

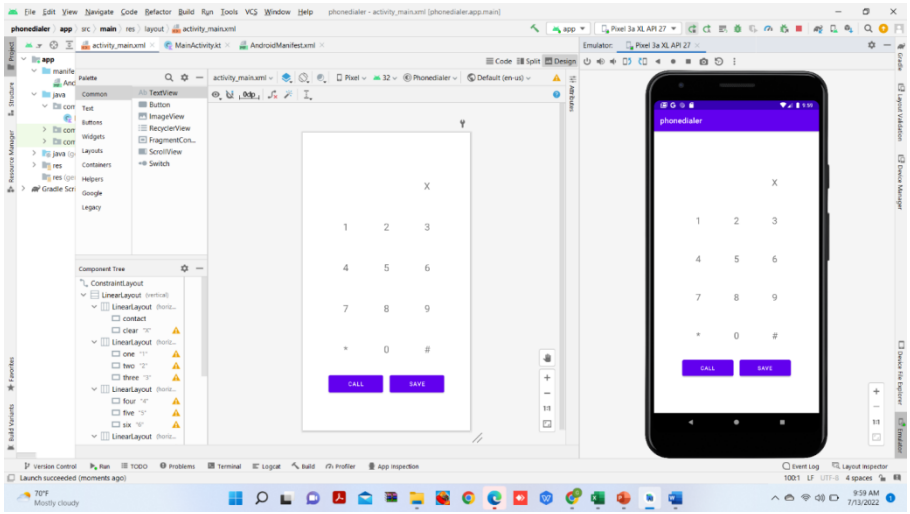
AndroidManifest.xml

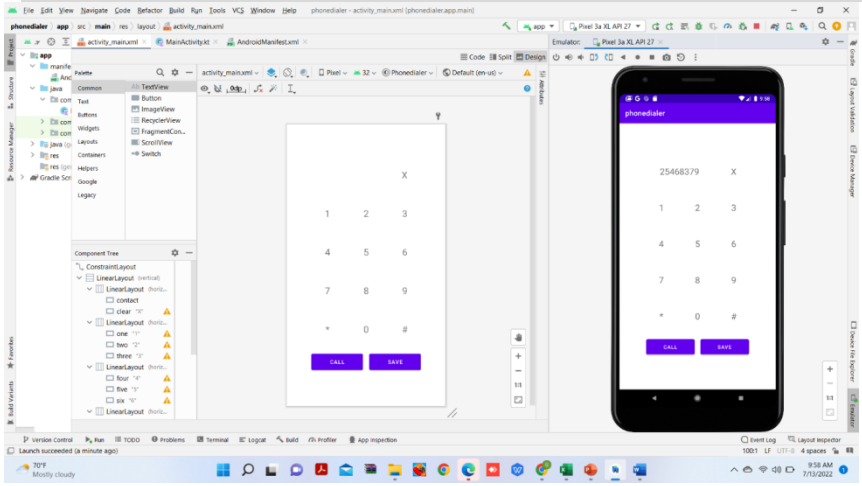
```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
xmlns:tools="http://schemas.android.com/tools"
package="com.example.phonedialer">

<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:supportsRtl="true"
android:theme="@style/Theme.Phonedialer"
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


phonedialer
X
1 2 3
4 5 6
7 8 9
* 0 #
CALL
SAVE


phonedialer
25468379
X
1 2 3
4 5 6
7 8 9
* 0 #
CALL
SAVE