

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

BELAGAVI



LAB Manual

Mobile Application Development Lab

18CSMP68



DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

ACCREDITED BY NATIONAL BOARD OF ACCREDITATION

RAO BAHADUR Y MAHABALESWARAPPA ENGINEERING COLLEGE

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Important Notice	
1	<p>It is assumed that, the user of this manual have a proficiency in JAVA programming Language.</p> <p>All the below given examples are written and tested on Android Studio 4.1.1 Powered by IntelliJ Platform.</p>
2	
3	<p>Minimum System Requirements:</p> <p>Windows</p> <ul style="list-style-type: none"> • 64-bit Microsoft® Windows® 8/10 • x86_64 CPU architecture; 2nd generation Intel Core or newer, or AMD CPU with support for a Windows Hypervisor • 8 GB RAM or more • 8 GB of available disk space minimum (IDE + Android SDK + Android Emulator) • 1280 x 800 minimum screen resolution <p>Linux</p> <ul style="list-style-type: none"> • Any 64-bit Linux distribution that supports Gnome, KDE, or Unity DE; GNU C Library (glibc) 2.31 or later. • x86_64 CPU architecture; 2nd generation Intel Core or newer, or AMD processor with support for AMD Virtualization (AMD-V) and SSE3 • 8 GB RAM or more

	<ul style="list-style-type: none">8 GB of available disk space minimum (IDE + Android SDK + Android Emulator)1280 x 800 minimum screen resolution

Program 1

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

**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">

    <ImageView
        android:id="@+id/imageViewLogo"
        android:layout_width="174dp"
        android:layout_height="174dp"
        android:layout_alignParentEnd="true"
        android:layout_alignParentRight="true"
        android:layout_alignParentBottom="true"
        android:layout_marginStart="28dp"
        android:layout_marginTop="16dp"
        app:layout_constraintStart_toEndOf="@+id/tvCompany"
        app:layout_constraintTop_toTopOf="parent"
        app:srcCompat="@drawable/rymec_logo" />

    <TextView
        android:id="@+id/tvCompany"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentRight="true"
        android:layout_alignParentBottom="true"
```

```
android:layout_marginStart="28dp"
android:layout_marginTop="68dp"
android:text="RYMEC"
android:textSize="38dp"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent" />
```

<View

```
android:id="@+id/viewLine"
android:layout_width="match_parent"
android:layout_height="2dp"
android:layout_marginTop="36dp"
android:background="@android:color/darker_gray"
app:layout_constraintTop_toBottomOf="@+id/imageViewLogo"
tools:layout_editor_absoluteX="0dp" />
```

<TextView

```
android:id="@+id/tvName"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_alignParentEnd="true"
android:layout_alignParentRight="true"
android:layout_alignParentBottom="true"
android:layout_marginStart="136dp"
android:layout_marginTop="44dp"
android:layout_gravity="center"
android:text="H. Girisha"
android:textSize="35dp"
android:textStyle="bold"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toBottomOf="@+id/viewLine" />
```

<TextView

```
android:id="@+id/tvDesignation"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_alignParentEnd="true"
android:layout_alignParentRight="true"
android:layout_alignParentBottom="true"
android:layout_marginStart="144dp"
android:layout_marginTop="24dp"
android:layout_gravity="center"
android:text="HOD CSE"
android:textSize="25dp"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toBottomOf="@+id/tvName" />
```

<TextView

```
        android:id="@+id/tvPhone"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentRight="true"
        android:layout_alignParentBottom="true"
        android:layout_gravity="right|center_vertical"
        android:layout_marginStart="120dp"
        android:layout_marginTop="28dp"
        android:text="Ph No: 9988776655"
        android:textSize="20dp"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/tvAddress" />

<TextView
    android:id="@+id/tvAddress"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignParentEnd="true"
    android:layout_alignParentRight="true"
    android:layout_alignParentBottom="true"
    android:layout_gravity="center"
    android:layout_marginStart="16dp"
    android:layout_marginTop="60dp"
    android:text="Rao Bahaddur Engineering College, Ballari."
    android:textSize="20dp"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/tvDesignation" />

<TextView
    android:id="@+id/tvEmail"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignParentEnd="true"
    android:layout_alignParentRight="true"
    android:layout_alignParentBottom="true"
    android:layout_gravity="right|center_vertical"
    android:layout_marginStart="100dp"
    android:layout_marginTop="32dp"
    android:text="Email: hodcse@rymec.in"
    android:textSize="20dp"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/tvPhone" />

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

MainActivity.java



```
package com.rymec.visitingcard;

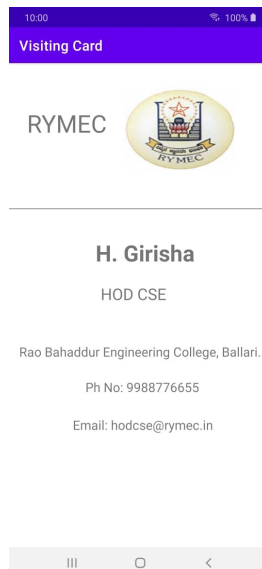
import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

public class MainActivity extends AppCompatActivity {

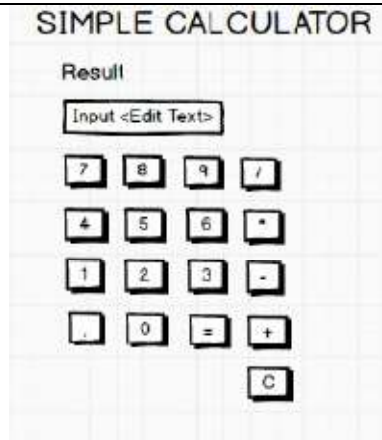
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }
}
```

Output:



Program 2:

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

**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"
    android:layout_gravity="center_horizontal"
    android:backgroundTint="#F8FA63"
    tools:context=".MainActivity">

    <TextView
        android:id="@+id/tvHeading"
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:layout_marginStart="8dp"
        android:layout_marginTop="30dp"
        android:text="Simple Calculator"
        android:textSize="40sp"
        android:gravity="center"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

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



```
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="150dp"
        android:background="@android:drawable/editbox_background"
        android:backgroundTint="#A9FB74"
        android:ems="10"
        android:gravity="center"
        android:inputType="textPersonName"
        android:text=""
        android:textColor="#091B95"
        android:textSize="40sp"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />
<Button
    android:id="@+id/btn1"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="10dp"
    android:layout_marginTop="300dp"
    android:backgroundTint="#00BCD4"
    android:text="1"
    android:textSize="30sp"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent" />

<Button
    android:id="@+id/btn2"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="10dp"
    android:layout_marginTop="300dp"
    android:backgroundTint="#00BCD4"
    android:text="2"
    android:textSize="30sp"
    app:layout_constraintStart_toEndOf="@+id/btn1"
    app:layout_constraintTop_toTopOf="parent" />

<Button
    android:id="@+id/btn3"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="10dp"
    android:layout_marginTop="300dp"
    android:backgroundTint="#00BCD4"
    android:text="3"
    android:textSize="30sp"
    app:layout_constraintStart_toEndOf="@+id/btn2"
```

```
        app:layout_constraintTop_toTopOf="parent" />

<Button
    android:id="@+id/btnPlus"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="10dp"
    android:layout_marginTop="300dp"
    android:backgroundTint="#00BCD4"
    android:text="+"
    android:textSize="30sp"
    app:layout_constraintStart_toEndOf="@+id/btn3"
    app:layout_constraintTop_toTopOf="parent" />

<Button
    android:id="@+id/btn4"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="10dp"
    android:layout_marginTop="400dp"
    android:backgroundTint="#00BCD4"
    android:text="4"
    android:textSize="30sp"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent" />

<Button
    android:id="@+id/btn5"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="10dp"
    android:layout_marginTop="400dp"
    android:backgroundTint="#00BCD4"
    android:text="5"
    android:textSize="30sp"
    app:layout_constraintStart_toEndOf="@+id/btn4"
    app:layout_constraintTop_toTopOf="parent" />

<Button
    android:id="@+id/btn6"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="10dp"
    android:layout_marginTop="400dp"
    android:backgroundTint="#00BCD4"
    android:text="6"
    android:textSize="30sp"
```

```
app:layout_constraintStart_toEndOf="@+id/btn5"
app:layout_constraintTop_toTopOf="parent" />

<Button
    android:id="@+id/btnMinus"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="10dp"
    android:layout_marginTop="400dp"
    android:backgroundTint="#00BCD4"
    android:text="-"
    android:textSize="30sp"
    app:layout_constraintStart_toEndOf="@+id/btn6"
    app:layout_constraintTop_toTopOf="parent" />

<Button
    android:id="@+id/btn7"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="10dp"
    android:layout_marginTop="500dp"
    android:backgroundTint="#00BCD4"
    android:text="7"
    android:textSize="30sp"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent" />

<Button
    android:id="@+id/btn8"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="10dp"
    android:layout_marginTop="500dp"
    android:backgroundTint="#00BCD4"
    android:text="8"
    android:textSize="30sp"
    app:layout_constraintStart_toEndOf="@+id/btn7"
    app:layout_constraintTop_toTopOf="parent" />

<Button
    android:id="@+id/btn9"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="10dp"
    android:layout_marginTop="500dp"
    android:backgroundTint="#00BCD4"
    android:text="9"
```

```
        android:textSize="30sp"
        app:layout_constraintStart_toEndOf="@+id/btn8"
        app:layout_constraintTop_toTopOf="parent" />

<Button
    android:id="@+id/btnDivision"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="10dp"
    android:layout_marginTop="500dp"
    android:backgroundTint="#00BCD4"
    android:text="/"
    android:textSize="30sp"
    app:layout_constraintStart_toEndOf="@+id/btn9"
    app:layout_constraintTop_toTopOf="parent" />

<Button
    android:id="@+id/btn0"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="10dp"
    android:layout_marginTop="600dp"
    android:backgroundTint="#00BCD4"
    android:text="0"
    android:textSize="30sp"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent" />

<Button
    android:id="@+id/btnMultiplication"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="10dp"
    android:layout_marginTop="600dp"
    android:backgroundTint="#00BCD4"
    android:text="*"
    android:textSize="30sp"
    app:layout_constraintStart_toEndOf="@+id/btn0"
    app:layout_constraintTop_toTopOf="parent" />

<Button
    android:id="@+id/btnClear"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="10dp"
    android:layout_marginTop="600dp"
    android:backgroundTint="#00BCD4"
```

```
        android:text="C"
        android:textSize="30sp"
        app:layout_constraintStart_toEndOf="@+id/btnMultiplication"
        app:layout_constraintTop_toTopOf="parent" />

<Button
    android:id="@+id/btnEquals"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="10dp"
    android:layout_marginTop="600dp"
    android:backgroundTint="#00BCD4"
    android:text="="
    android:textSize="30sp"
    app:layout_constraintStart_toEndOf="@+id/btnClear"
    app:layout_constraintTop_toTopOf="parent" />

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

MainActivity.java

```
package com.rymec.calculaterlab2;

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

public class MainActivity extends AppCompatActivity {

    EditText etResult;
    Button btn1, btn2, btn3, btn4, btn5, btn6, btn7, btn8, btn9, btn0,
    btnPlus, btnMinus, btnMultiplication, btnDivision, btnEquals, btnClear;
    String data = "", flag = "add";
    double val1, val2, res;

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

        etResult = findViewById(R.id.etResult);
        btn1 = findViewById(R.id.btn1);

        btn1.setOnClickListener(new View.OnClickListener() {
```



```
@Override
public void onClick(View view) {
    data = etResult.getText().toString();
    data = data + "1";
    etResult.setText(data);
}
});

btn2 = findViewById(R.id.btn2);

btn2.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        data = etResult.getText().toString();
        data = data + "2";
        etResult.setText(data);
    }
});

btn3 = findViewById(R.id.btn3);

btn3.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        data = etResult.getText().toString();
        data = data + "3";
        etResult.setText(data);
    }
});

btn4 = findViewById(R.id.btn4);

btn4.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        data = etResult.getText().toString();
        data = data + "4";
        etResult.setText(data);
    }
});

btn5 = findViewById(R.id.btn5);

btn5.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        data = etResult.getText().toString();
```

```
        data = data + "5";
        etResult.setText(data);
    }
});

btn6 = findViewById(R.id.btn6);

btn6.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        data = etResult.getText().toString();
        data = data + "6";
        etResult.setText(data);
    }
});

btn7 = findViewById(R.id.btn7);

btn7.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        data = etResult.getText().toString();
        data = data + "7";
        etResult.setText(data);
    }
});

btn8 = findViewById(R.id.btn8);

btn8.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        data = etResult.getText().toString();
        data = data + "8";
        etResult.setText(data);
    }
});

btn9 = findViewById(R.id.btn9);

btn9.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        data = etResult.getText().toString();
        data = data + "9";
        etResult.setText(data);
    }
});
```



```
});

btnPlus = findViewById(R.id.btnPlus);

btnPlus.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        val1 = Double.parseDouble(etResult.getText().toString());
        //data = data + "+";
        flag = "add";
        etResult.setText("");
    }
});

btnMinus = findViewById(R.id.btnMinus);

btnMinus.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        val1 = Double.parseDouble(etResult.getText().toString());
        flag = "sub";
        //data = etResult.getText().toString();
        //data = data + "-";
        etResult.setText("");
    }
});

btnMultiplication = findViewById(R.id.btnMultiplication);

btnMultiplication.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        val1 = Double.parseDouble(etResult.getText().toString());
        flag = "mul";
        //data = etResult.getText().toString();
        //data = data + "-";
        etResult.setText("");
    }
});

btnDivision = findViewById(R.id.btnDivision);

btnDivision.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        val1 = Double.parseDouble(etResult.getText().toString());
        flag = "div";
```



```
//data = etResult.getText().toString();
//data = data + "-";
etResult.setText("");
    }
});

btnEquals = findViewById(R.id.btnEquals);

btnEquals.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        val2 = Double.parseDouble(etResult.getText().toString());
        //data = etResult.getText().toString();
        Toast toast;
        toast = Toast.makeText(getApplicationContext(), data,
Toast.LENGTH_LONG);
        toast.show();
        if(flag == "add")
            res = val1 + val2;
        else if(flag == "sub")
            res = val1 - val2;
        else if(flag == "div")
            res = val1 / val2;
        else if(flag == "mul")
            res = val1 * val2;

        etResult.setText(""+res);
    }
});

btnClear = findViewById(R.id.btnClear);
btnClear.setOnClickListener(new View.OnClickListener(){

    @Override
    public void onClick(View view) {
        etResult.setText("");
    }
});
}
```

Output:



Calculator Lab2

Simple Calculator

123

1

2

3

+

4

5

6

-

7

8

9

/

0

*

C

=



Program 3:

Create a SIGN Up activity with Username and Password. Validation of password should happen

based on the following rules:

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

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

Activity_sinup.xml:

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:paddingLeft="16dp"
    android:paddingRight="16dp"
    android:orientation="vertical"
    android:gravity="center">

    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:textSize="48sp"
        android:textAlignment="center"
        android:text="Sign Up" />

    <EditText
        android:id="@+id/etEmail"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        xmlns:layout_margin="4dp"
        android:textSize="24sp"
        android:hint="Email ID"
        android:autofillHints="Example@gmail.com" />

    <EditText
        android:id="@+id/etPassword"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
```

```
        android:layout_margin="4dp"
        android:layout_marginTop="32dp"
        android:textSize="24sp"
        android:inputType="textPassword"
        android:hint="Password"
        android:autofillHints="123456" />
    <Button
        android:id="@+id/BtnSignUp"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_margin="4dp"
        android:text="Sign Up"
    />
</LinearLayout>
```

SignUpActivity.java:

```
package com.rymec.signupactivity;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;
import java.util.regex.Pattern;

import androidx.appcompat.app.AppCompatActivity;

public class SignUpActivity extends AppCompatActivity {
    EditText emailEditText, passwordEditText;
    Button signUpBtn;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_signup);
        emailEditText = findViewById(R.id.etEmail);
        passwordEditText = findViewById(R.id.etPassword);
        signUpBtn = findViewById(R.id.BtnSignUp);
        signUpBtn.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                String email = emailEditText.getText().toString();
                String password = passwordEditText.getText().toString();
                if (!isValidPassword(password)) {
                    Toast.makeText(SignUpActivity.this, "Password doesn't
match rules"
, Toast.LENGTH_SHORT).show();
```

```
        return;
    }
    Intent intent = new Intent(SignUpActivity.this,
LoginActivity.class);
    intent.putExtra("email", email);
    intent.putExtra("password", password);
    startActivity(intent);
}
});
}
Pattern lowerCase = Pattern.compile("^[a-z].*$");
Pattern upperCase = Pattern.compile("^[A-Z].*$");
Pattern number = Pattern.compile("^[0-9].*$");
Pattern specialCharacter = Pattern.compile("^[^a-zA-Z0-9].*$");
private Boolean isValidPassword(String password) {
// Checks if password length is less than 8
    if (password.length() < 8) {
        return false;
    }
// Returns false if password doesn't contain a lower case character
    if (!lowerCase.matcher(password).matches()) {
        return false;
    }
// Returns false if password doesn't contain an upper case character
    if (!upperCase.matcher(password).matches()) {
        return false;
    }
// Returns false if password doesn't contain a number
    if (!number.matcher(password).matches()) {
        return false;
    }
// Returns false if password doesn't contain a special character
    if (!specialCharacter.matcher(password).matches()) {
        return false;
    }
    return true;
}
}
```

Activity_login.xml:

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



```
android:orientation="vertical"
android:paddingLeft="16dp"
android:paddingRight="16dp"
android:gravity="center"
tools:ignore="MissingPrefix">

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

<EditText
    android:id="@+id/etEmail"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_margin="4dp"
    android:textSize="24sp"
    android:hint="Email ID" />

<EditText
    android:id="@+id/etPassword"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_margin="4dp"
    android:layout_marginTop="32dp"
    android:textSize="24sp"
    android:inputType="textPassword"
    android:hint="Password"/>

<Button
    android:id="@+id/btnLogin"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_margin="4dp"
    android:text="Login" />
</LinearLayout>
```

LoginActivity.java:

```
package com.rymec.signupactivity;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
```

```
import android.widget.Toast;

import androidx.appcompat.app.AppCompatActivity;

public class LoginActivity extends AppCompatActivity {
    EditText emailEditText, passwordEditText;
    Button loginBtn;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_login);
        emailEditText = findViewById(R.id.etEmail);
        passwordEditText = findViewById(R.id.etPassword);
        loginBtn = findViewById(R.id.btnLogin);
        String registeredEmail = getIntent().getStringExtra("email");
        String registeredPassword =
        getIntent().getStringExtra("password");
        loginBtn.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                String email = emailEditText.getText().toString();
                String password = passwordEditText.getText().toString();
                if (registeredEmail.equals(email) &&
                registeredPassword.equals(password)) {
                    Intent intent = new Intent(LoginActivity.this,
                LoginActivity.class);
                    startActivity(intent);
                } else {
                    Toast.makeText(LoginActivity.this, "Invalid
                Credentials", Toast.LENGTH_SHORT).show();
                }
            }
        });
    }
}
```

Activity_login_success.xml:

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:gravity="center">
    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
```

```

        android:text="Login Successful"
        android:textAlignment="center"
        android:textSize="36sp"/>
</LinearLayout>

```

LoginSuccessActivity.java:

```

package com.rymec.signupactivity;

import androidx.appcompat.app.AppCompatActivity;

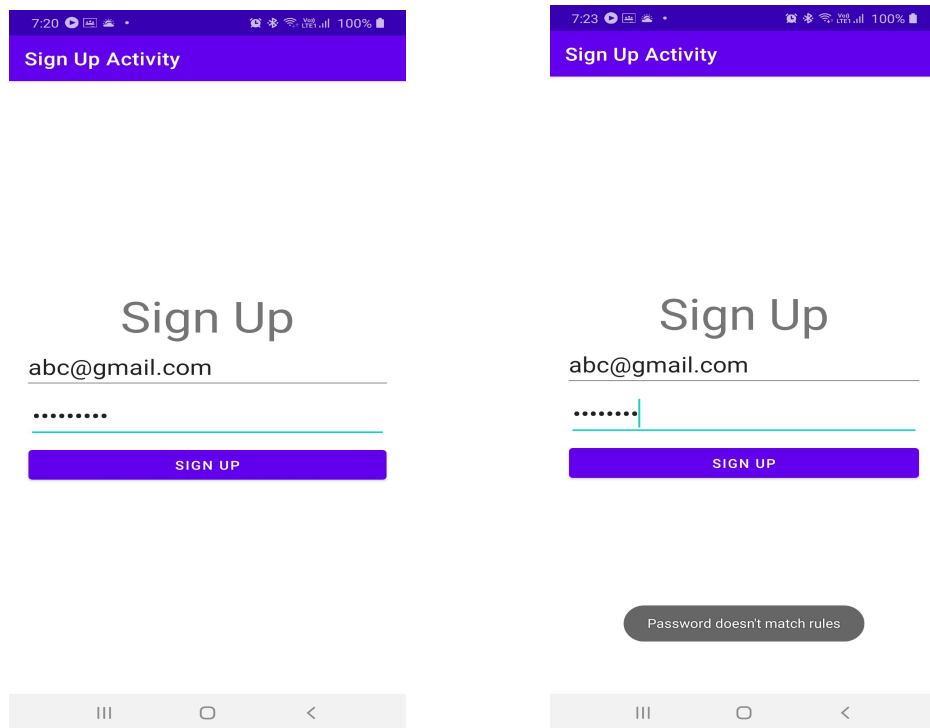
import android.os.Bundle;

public class LoginSuccessActivity extends AppCompatActivity {

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

```

OUTPUT:



7:21 100%
LoginActivity

Login

vinu@gmail.com

.....

LOGIN

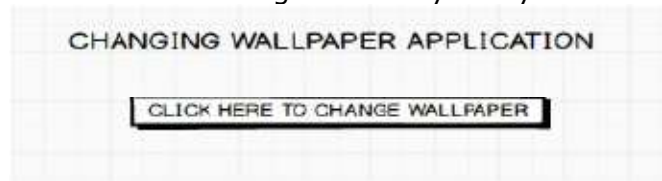
Invalid Credentials

7:21 100%
Sign Up Activity

Login Successful

Program 4:

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

**Activity_main.xml:**

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="CHANGING WALLPAPER APPLICATION"
        android:textColor="#071A52"
        android:textStyle="bold"
        android:textSize="30dp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.496"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.063"
        android:gravity="center"/>

    <Button
        android:id="@+id/button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="100dp"
        android:layout_marginTop="53dp"
        android:layout_marginBottom="500dp"
        android:text="CLICK HERE TO CHANGE WALLPAPER"
        android:textSize="25dp"
        android:backgroundTint="#F4FA9C"
        android:textColor="#071A52"
        app:layout_constraintBottom_toBottomOf="parent"
```

```
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="1.0"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="1.0" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

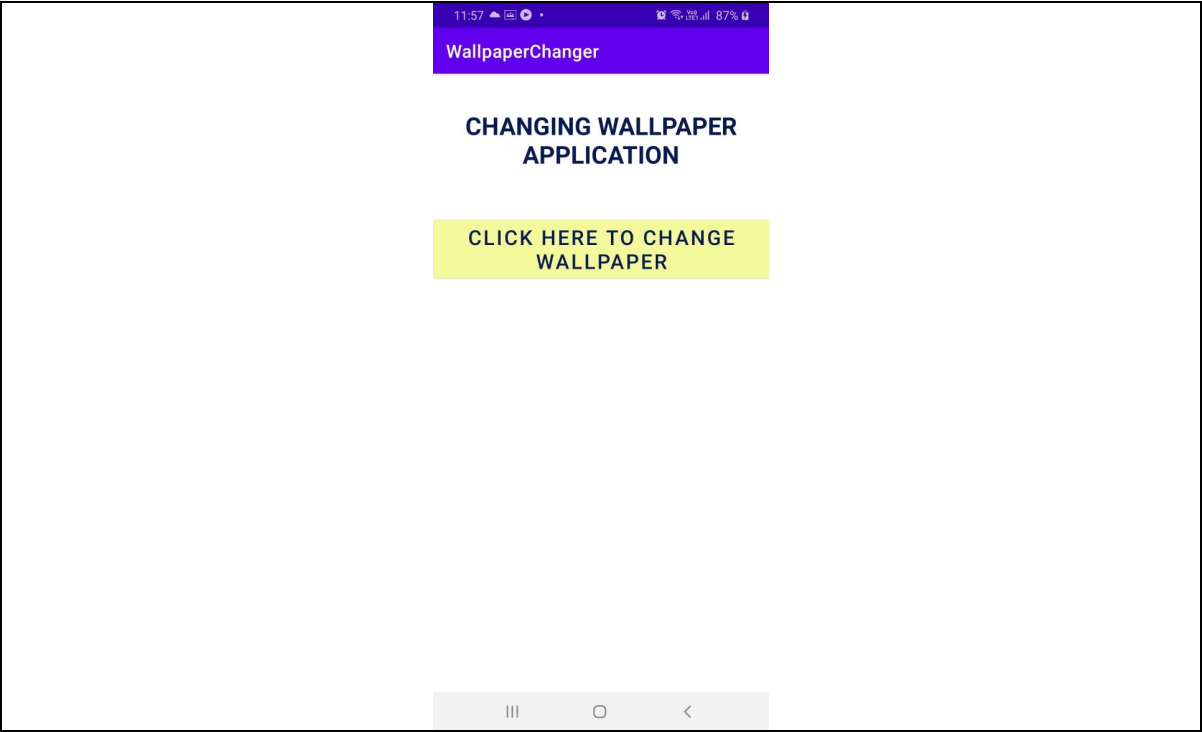
MainActivity.java

```
package com.rymec.wallpaperchanger;

import androidx.appcompat.app.AppCompatActivity;
import android.app.WallpaperManager;
import android.graphics.Bitmap;
import android.graphics.BitmapFactory;
import android.graphics.drawable.AnimationDrawable;
import android.graphics.drawable.BitmapDrawable;
import android.graphics.drawable.Drawable;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.Toast;
import java.io.IOException;
import java.util.Timer;
import java.util.TimerTask;
public class MainActivity extends AppCompatActivity {
    Button changewallpaper;
    Timer mytimer;
    Drawable drawable;
    WallpaperManager wpm;
    int prev=1;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        mytimer = new Timer();
        wpm = WallpaperManager.getInstance(this);
        changewallpaper = findViewById(R.id.button);
        changewallpaper.setOnClickListener(new View.OnClickListener() {
            @Override public void onClick(View view) {
                setWallpaper();
            }
        });
    }
    private void setWallpaper() {
        mytimer.schedule(new TimerTask() {
            @Override
            public void run() {
```

```
        if(prev==1) {
            drawable =
getResources().getDrawable(R.drawable.one);
            prev = 2;
        }
        else if(prev==2) {
            drawable =
getResources().getDrawable(R.drawable.two);
            prev=3;
        }
        else if(prev==3) {
            drawable =
getResources().getDrawable(R.drawable.three);
            prev=4;
        }
        else if(prev==4) {
            drawable =
getResources().getDrawable(R.drawable.four);
            prev=5;
        }
        else if(prev==5) {
            drawable =
getResources().getDrawable(R.drawable.five);
            prev=1;
        }
        Bitmap wallpaper =
((BitmapDrawable)drawable).getBitmap();
        try {
            wpm.setImageBitmap(wallpaper);
        } catch (IOException e) {
            e.printStackTrace();
        }
    }
},0,30000); } }
```

Output:





Program 5:

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

Activity_main.xml:

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

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="COUNTER APPLICATION"
        android:textColor="#FF2E63"
        android:textSize="30sp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.498"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.071" />

    <TextView
        android:id="@+id/textView1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="60dp"
        android:layout_marginTop="125dp"
        android:layout_marginEnd="79dp"
        android:layout_marginBottom="500dp"
        android:textSize="40dp"
        android:text="Counter Value"
        android:textColor="#1EB2A6"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.498"
```

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

<Button
    android:id="@+id/btnStart"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="152dp"
    android:layout_marginTop="220dp"
    android:layout_marginEnd="171dp"
    android:layout_marginBottom="542dp"
    android:text="START"
    android:textSize="20dp"
    android:textColor="#FF2E63"
    android:backgroundTint="#FFC2C2"
    app:layout_constraintHorizontal_bias="0.498"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.071"/>

<Button
    android:id="@+id/btnStop"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="152dp"
    android:layout_marginTop="300dp"
    android:layout_marginEnd="171dp"
    android:layout_marginBottom="542dp"
    android:text="STOP"
    android:textSize="20dp"
    android:textColor="#FF2E63"
    android:backgroundTint="#FFC2C2"
    app:layout_constraintHorizontal_bias="0.498"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.071"/>

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

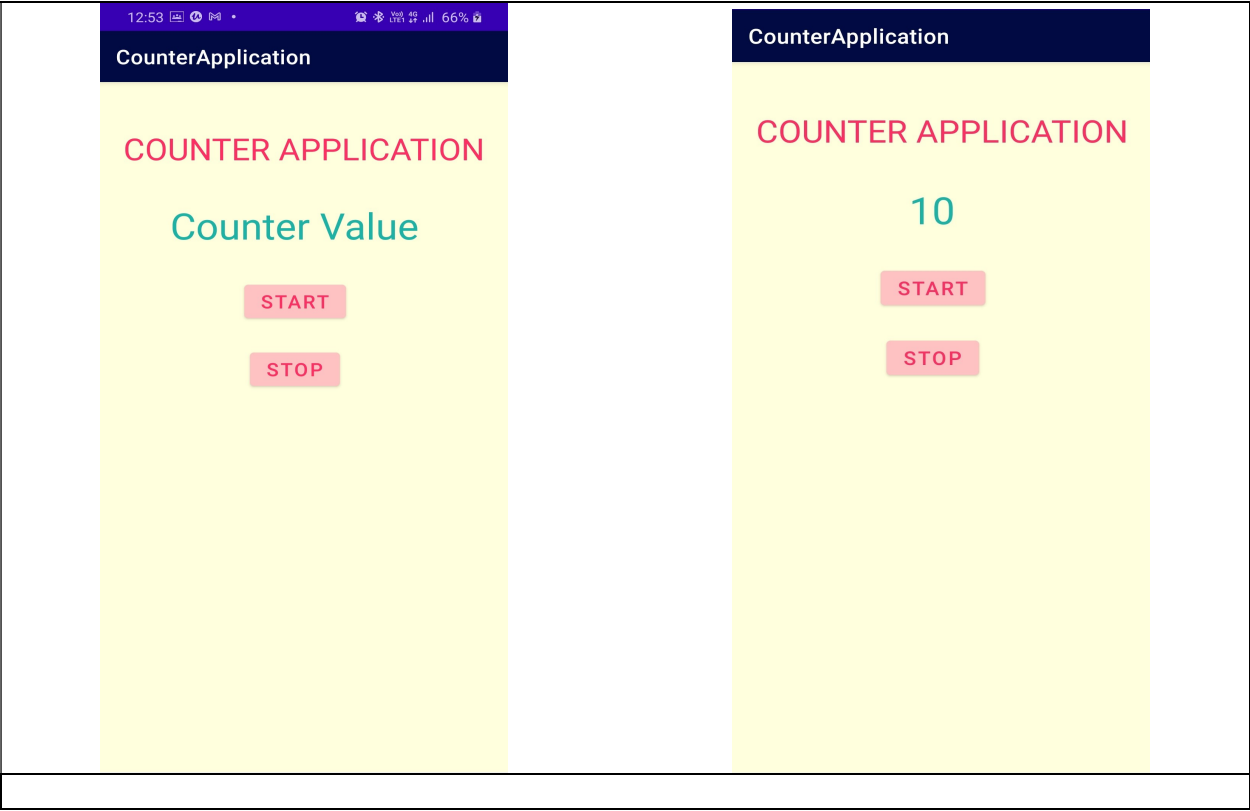
MainActivity.java:

```
package com.rymec.counterapplication;
import androidx.appcompat.app.AppCompatActivity;
```



```
import android.os.Bundle;
import android.os.Handler;
import android.view.View;
import android.widget.Button;
import android.widget.TextView;
public class MainActivity extends AppCompatActivity {
    Button btnstart, btnstop;
    TextView txtcounter;
    int i = 1;
    Handler customHandler = new Handler();
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        txtcounter = findViewById(R.id.textView1);
        btnstart = findViewById(R.id.btnStart);
        btnstop = findViewById(R.id.btnStop);
        btnstart.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                customHandler.postDelayed(updateTimerThread,0);
            }
        });
        btnstop.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                customHandler.removeCallbacks(updateTimerThread);
            }
        });
    }
    private final Runnable updateTimerThread = new Runnable() {
        @Override
        public void run() {
            txtcounter.setText(""+i);
            customHandler.postDelayed(this,1000);
            i++;
        }
    };
}
```

Output:





Program 6

Create 2 files of XML and JSON type with the values of city_name, Latitude, Longitude, Temperature and Humidity. Develop an application to create an activity with two buttons to parse XML and JSON file which when clicked should display the data in their respective layouts side by side.

Important Notes:

1. First create a folder named "raw" under res/ directory
2. In the raw folder create the following two files
3. This program in completely depends on the structure of the XML/JSON files.
4. If you are using different XML/JSON files the program need to be modified accordingly.

Xmldata.xml:

```
<?xml version="1.0" encoding="utf-8"?>
<current>

  <city id="2643743" name="London">
    <coord lon="-0.12574" lat="51.50853"/>
    <country>GB</country>
    <sun rise="2013-10-08T06:13:56" set="2013-10-08T17:21:45"/>
  </city>

  <temperature value="289.54" min="289.15" max="290.15" unit="kelvin"/>
  <humidity value="77" unit="%"/>
  <pressure value="1025" unit="hPa"/>
</current>
```

Jsontdata.json:

```
{
  "current": {
    "city": {
      "id": "2643743",
      "name": "London",
      "coord": [
        "lon": "-0.12574",
        "lat": "51.50853"
      ],
      "country": "GB"
    },
    "temperature": { "value": "289.54", "min": "289.15", "max": "290.15",
    "unit": "kelvin"},
    "humidity": { "value": "77", "unit": "%"},
    "pressure": { "value": "1025", "unit": "hPa"}
```

```
}  
}
```

Activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>  
<androidx.constraintlayout.widget.ConstraintLayout  
    xmlns:android="http://schemas.android.com/apk/res/android"  
    xmlns:app="http://schemas.android.com/apk/res-auto"  
    xmlns:tools="http://schemas.android.com/tools"  
    android:layout_width="match_parent"  
    android:layout_height="match_parent"  
    tools:context=".MainActivity">  
  
    <TextView  
        android:id="@+id/tvHeading"  
        android:layout_width="wrap_content"  
        android:layout_height="wrap_content"  
        android:text="Parsing Data"  
        android:textColor="@color/cardview_light_background"  
        android:textSize="35sp"  
        app:layout_constraintBottom_toBottomOf="parent"  
        app:layout_constraintHorizontal_bias="0.498"  
        app:layout_constraintLeft_toLeftOf="parent"  
        app:layout_constraintRight_toRightOf="parent"  
        app:layout_constraintTop_toTopOf="parent"  
        app:layout_constraintVertical_bias="0.084" />  
  
    <Button  
        android:id="@+id/btnXML"  
        android:layout_width="wrap_content"  
        android:layout_height="wrap_content"  
        android:layout_marginStart="120dp"  
        android:layout_marginTop="32dp"  
        android:alpha="60"  
        android:background="#66000000"  
        android:text="Parse XML"  
        android:textSize="20sp"  
        app:layout_constraintStart_toStartOf="parent"  
        app:layout_constraintTop_toBottomOf="@+id/tvHeading" />  
  
    <Button  
        android:id="@+id/btnJSON"  
        android:layout_width="wrap_content"  
        android:layout_height="wrap_content"  
        android:layout_marginStart="120dp"  
        android:layout_marginTop="32dp"  
        android:alpha="60"  
        android:background="#66000000"
```



```
        android:text="Parse JSON"
        android:textSize="20sp"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/btnXML" />
    <TextView
        android:id="@+id/tvXML"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="40dp"
        android:layout_marginTop="124dp"
        android:ems="10"
        android:inputType="textMultiLine"
        android:text="XML Data"
        android:textAlignment="viewStart"
        android:textColor="@color/cardview_light_background"
        android:textFontWeight="100"
        android:textSize="20sp"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/btnJSON" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java

```
package com.rymec.xmlandjson;
```

```
//References    //https://www.tutorialspoint.com/android/android_xml_parsers.htm
//https://www.tutorialspoint.com/android/android_json_parser.htm
```

```
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.TextView;
import android.widget.Toast;
import org.json.JSONException;
import org.json.JSONObject;
import org.w3c.dom.Document;
import org.w3c.dom.Element;
import org.w3c.dom.Node;
import org.w3c.dom.NodeList;
import org.xml.sax.SAXException;
import java.io.IOException;
import java.io.InputStream;
import java.nio.charset.StandardCharsets;
import javax.xml.parsers.DocumentBuilder;
import javax.xml.parsers.DocumentBuilderFactory;
import javax.xml.parsers.ParserConfigurationException;

public class MainActivity extends AppCompatActivity {
    TextView tvxml;
    Button btnXML, btnJSON;
```



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

    try {
        //is = getAssets().open("xmldata.xml");

        btnXML = findViewById(R.id.btnXML);
        btnJSON = findViewById(R.id.btnJSON);
        tvxml = findViewById(R.id.tvXML);

        btnXML.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                InputStream is =
getResources().openRawResource(R.raw.xmldata);
                DocumentBuilderFactory dbFactory =
DocumentBuilderFactory.newInstance();
                DocumentBuilder dBuilder = null;
                Document doc = null;
                try {
                    dBuilder = dbFactory.newDocumentBuilder();
                    doc = dBuilder.parse(is);
                }
                catch (ParserConfigurationException e) {
                    e.printStackTrace();
                }
                catch (IOException e) {
                    e.printStackTrace();
                } catch (SAXException e) {
                    e.printStackTrace();
                }

                Element element=doc.getDocumentElement();
                element.normalize();
                tvxml.setText("XML DATA \n");
                NodeList nList = doc.getElementsByTagName("city");
                Element ele = (Element) nList.item(0);

                tvxml.setText(tvxml.getText() + "\nCity: " +
ele.getAttribute("name")+"\n");

                ele = (Element) doc.getElementsByTagName("country").item(0);
                tvxml.setText(tvxml.getText() + "Contry: " +
ele.getTextContent()+"\n");

                ele = (Element) doc.getElementsByTagName("coord").item(0);
                tvxml.setText(tvxml.getText() + "Longitude: " +
ele.getAttribute("lon")+"\n");
            }
        });
    }
}
```



```
        ele = (Element) doc.getElementsByTagName("coord").item(0);
        tvxml.setText(tvxml.getText() + "Latitude: " +
ele.getAttribute("lat")+"\n");

        ele = (Element)
doc.getElementsByTagName("temperature").item(0);
        tvxml.setText(tvxml.getText() + "Temperature: " +
ele.getAttribute("value")+"\n");

        ele = (Element)
doc.getElementsByTagName("humidity").item(0);
        tvxml.setText(tvxml.getText() + "Humidity: " +
ele.getAttribute("value")+"%\n");
    }
    });
} catch (Exception e) {e.printStackTrace();}

btnJSON.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        InputStream is = getResources().openRawResource(R.raw.jsondata);

        try {
            int size = is.available();
            byte[] buffer = new byte[size];
            is.read(buffer);
            String json = new String(buffer, StandardCharsets.UTF_8);
            JSONObject jsonObj = new JSONObject(json);
            String city =
jsonObj.getJSONObject("current").getJSONObject("city").getString("name");
            String country =
jsonObj.getJSONObject("current").getJSONObject("city").getString("country");
            String longitude =
jsonObj.getJSONObject("current").getJSONObject("city").getJSONObject("coord").ge
tString("lon");
            String latitude =
jsonObj.getJSONObject("current").getJSONObject("city").getJSONObject("coord").ge
tString("lat");

            String temp =
jsonObj.getJSONObject("current").getJSONObject("temperature").getString("value")
;
            String humidity =
jsonObj.getJSONObject("current").getJSONObject("humidity").getString("value");

            tvxml.setText("JSON DATA" + "\n\nCity: " + city +
                "\nCountry: " + country +
                "\nlongitude:" + longitude +
                "\nLatitude: " + latitude +
                "\nTemperature: " + temp +
                "\nHumidity: " + humidity);
        } catch (JSONException e) {
```

```

        e.printStackTrace();
    }
    catch (IOException e) {
        e.printStackTrace();
    }
    });
}
}
}

```

Outputs:

JSON and XML

Parsing Data

PARSE XML

PARSE JSON

JSON DATA

City Name: London
Country: GB
Temperature:289.54F
Humidity: 77%

JSON and XML

Parsing Data

PARSE XML

PARSE JSON

XML DATA

City Name: London
Country: GB
Temperature:289.54F
Humidity: 77%

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Program 7

Develop a simple application with one EditText so that the user can write some text in it. Create a button called "Convert Text to Speech" that converts the user input text into voice.

Activity_main.xml:

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

    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Text to Speech Application"
        android:textSize="30sp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintHorizontal_bias="0.498"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.115" />

    <EditText
        android:id="@+id/etText"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="64dp"
        android:ems="10"
        android:inputType="textPersonName"
        android:hint="Enter the Text"
        android:textSize="20sp"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/textView"
        />

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



```
        android:layout_marginStart="156dp"
        android:layout_marginTop="72dp"
        android:text="Speak"
        android:textSize="20sp"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/etText" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java:

```
package com.rymec.texttospeechapplication;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.speech.tts.TextToSpeech;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;

import java.util.Locale;

public class MainActivity extends AppCompatActivity {
    Button btnSpeak;
    EditText etText;
    TextToSpeech tts;

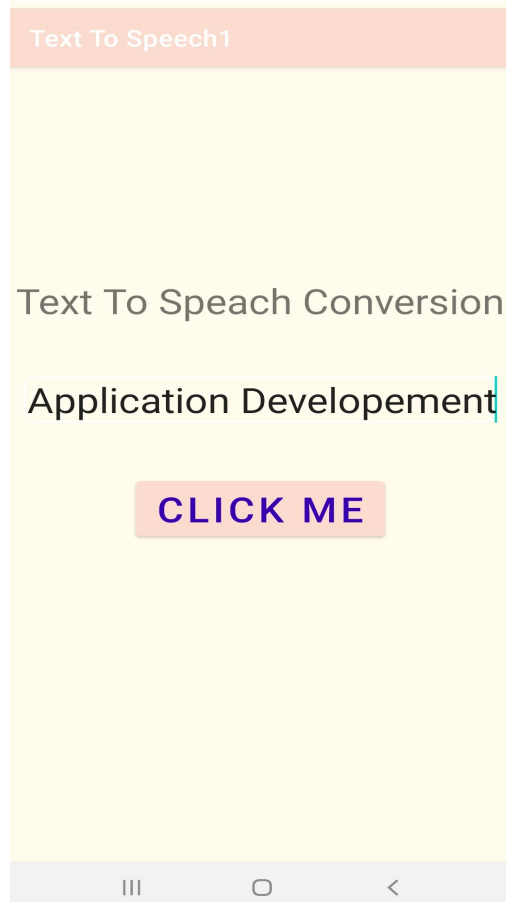
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        btnSpeak = findViewById(R.id.btnSpeak);
        etText = findViewById(R.id.etText);

        tts = new TextToSpeech(getApplicationContext(), new
        TextToSpeech.OnInitListener() {
            @Override
            public void onInit(int status) {
                if(status != TextToSpeech.ERROR){
                    tts.setLanguage(Locale.ENGLISH);
                }
                else{
                    Toast t = Toast.makeText(getApplicationContext(),
                    "Error loading tts Engin", Toast.LENGTH_LONG);
                    t.show();
                }
            }
        });
    }
}
```

```
    }  
    });  
  
    btnSpeak.setOnClickListener(new View.OnClickListener() {  
        @Override  
        public void onClick(View v) {  
            String text = etText.getText().toString();  
            tts.speak(text, TextToSpeech.QUEUE_FLUSH, null);  
        }  
    });  
}  
}
```

Outputs:





Program 8

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

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/etPhoneNumber"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_margin="16dp"
        android:layout_marginTop="24dp"
        android:inputType="phone"
        android:textSize="24sp"
        app:layout_constraintEnd_toStartOf="@+id/btnClear"
        app:layout_constraintHorizontal_bias="0.5"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />
    <Button
        android:id="@+id/btnClear"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_margin="16dp"
        android:text="Clear"
        app:layout_constraintBottom_toBottomOf="@+id/etPhoneNumber"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.5"
        app:layout_constraintStart_toEndOf="@+id/etPhoneNumber"
        app:layout_constraintTop_toTopOf="@+id/etPhoneNumber" />

    <TableLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginTop="32dp"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/etPhoneNumber">
        <TableRow
            android:layout_width="match_parent"
```



```
        android:layout_height="match_parent"
        android:gravity="center_horizontal">
        <Button
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_margin="8dp"
            android:onClick="inputNumber"
            android:text="7" />
        <Button
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_margin="8dp"
            android:onClick="inputNumber"
            android:text="8" />
        <Button
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_margin="8dp"
            android:onClick="inputNumber"
            android:text="9" />

    </TableRow>
    <TableRow
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:gravity="center_horizontal">
        <Button
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_margin="8dp"
            android:onClick="inputNumber"
            android:text="4" />
        <Button
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_margin="8dp"
            android:onClick="inputNumber"
            android:text="5" />
        <Button
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_margin="8dp"
            android:onClick="inputNumber"
            android:text="6" />
    </TableRow>
    <TableRow
        android:layout_width="match_parent"
```

```
        android:layout_height="match_parent"
        android:gravity="center_horizontal">
        <Button
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_margin="8dp"
            android:onClick="inputNumber"
            android:text="1" />
        <Button
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_margin="8dp"
            android:onClick="inputNumber"
            android:text="2" />
        <Button
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_margin="8dp"
            android:onClick="inputNumber"
            android:text="3" />
    </TableRow>
    <TableRow
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:gravity="center_horizontal">
        <Button
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_margin="8dp"
            android:onClick="inputNumber"
            android:text="*" />
        <Button
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_margin="8dp"
            android:onClick="inputNumber"
            android:text="0" />
        <Button
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_margin="8dp"
            android:onClick="inputNumber"
            android:text="#" />
    </TableRow>
    <TableRow
        android:layout_width="match_parent"
        android:layout_height="match_parent"
```

```
        android:gravity="center_horizontal">
        <Button
            android:id="@+id/btnCall"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_margin="8dp"
            android:text="Call" />
        <Button
            android:id="@+id/btnSave"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_margin="8dp"
            android:text="Save" />
    </TableRow>
</TableLayout>
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java:

```
package com.rymec.calldialer;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;
import android.net.Uri;
import android.os.Bundle;
import android.provider.ContactsContract;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;

public class MainActivity extends AppCompatActivity {
    EditText etPhoneNumber;
    Button btnClear, btnCall, btnSave;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        btnCall = findViewById(R.id.btnCall);
        btnClear = findViewById(R.id.btnClear);
        btnSave = findViewById(R.id.btnSave);
        etPhoneNumber = findViewById(R.id.etPhoneNumber);

        btnClear.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
```



```
        etPhoneNumber.setText("");
    }
});
btnCall.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        String phoneNumber = etPhoneNumber.getText().toString();
        Intent intent = new Intent(Intent.ACTION_DIAL);
        intent.setData(Uri.parse("tel:" + phoneNumber));
        startActivity(intent);
    }
});
btnSave.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        String phoneNumber = etPhoneNumber.getText().toString();
        Intent intent = new Intent(Intent.ACTION_INSERT);
        intent.setType(ContactsContract.Contacts.CONTENT_TYPE);
        intent.putExtra(ContactsContract.Intents.Insert.PHONE,
phoneNumber);
        startActivity(intent);
    }
});
}

public void inputNumber(View v) {
    Button btn = (Button)v;
    String digit = btn.getText().toString();
    String phoneNumber = etPhoneNumber.getText().toString();
    etPhoneNumber.setText(phoneNumber + digit);
}
}
```

Outputs:

Call Dialer

CLEAR

789

456

123

*0#

CALL

SAVE

Call Dialer

9731633111

CLEAR

789

456

123

*0#

CALL

SAVE

10:09 100%

Phone

Name

Name

Work info

Phone

9731633111

Mobile

Email

Groups

Not assigned

View more

Cancel

Save

10:09 100%

Phone

+ Add to Contacts

9731633111

123

456

789

*0#