VISVESVARAYA TECHNOLOGICAL UNIVERSITY
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BANGALORE   INSTITUTE OF TECHNOLOGY
K.R. Road, V.V. Puram, Bengaluru-560 004

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

MOBILE APPLICATION DEVELOPMENT
LABORATORY RECORD
VI - SEMESTER
18CSMP68

Submitted By

USN	1BI19CS011
NAME	AKASH JAIN
SEC	A
BATCH	A1

for the academic year 2021-2022

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LABORATORY CERTIFICATE

This is to certify that **MR. AKASH JAIN** bearing **USN - 1BI19CS011** of VI semester Computer Science and Engineering branch has satisfactorily completed the practical of Mobile Application Development laboratory (18CSMP68) prescribed by Visvesvaraya Technological University during the academic year 2021-2022.

Signature of the staff
In-charge for the batch

Signature of HOD

PROGRAM-1

PROGRAM DESCRIPTION

Create an application to design a visiting Card. The Visiting card should have the 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 website address is to be displayed. Insert a horizontal line between the job title and the phone number.

XML CODE:

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

<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"

    xmlns:app="http://schemas.android.com/apk/res-auto"

    xmlns:tools="http://schemas.android.com/tools"

    android:layout_width="match_parent"

    android:layout_height="match_parent"

    tools:context=".MainActivity"

    android:background="#ffefd5"

    android:layout_margin="5dp">

<TextView

    android:layout_width="300dp"

    android:layout_height="wrap_content"

    android:layout_alignParentEnd="true"

    android:layout_alignParentBottom="true"

    android:layout_marginEnd="111dp"

    android:layout_marginBottom="641dp"

    android:text="TechSavy"
```

```xml
    android:textAlignment="center"

    android:textAllCaps="true"

    android:textColor="#000"

    android:textSize="25sp"

    app:layout_constraintBottom_toBottomOf="parent"

    app:layout_constraintLeft_toLeftOf="parent"

    app:layout_constraintRight_toRightOf="parent"

    app:layout_constraintTop_toTopOf="parent" />

  <ImageView

    android:id="@+id/imageView"

    android:layout_width="127dp"

    android:layout_height="127dp"

    android:layout_alignParentEnd="true"

    android:layout_alignParentBottom="true"

    android:layout_marginEnd="-2dp"

    android:layout_marginBottom="594dp"

    app:srcCompat="@drawable/Tech" />

  <View

    android:id="@+id/view"

    android:layout_width="match_parent"

    android:layout_height="3dp"

    android:layout_alignParentBottom="true"

    android:layout_marginBottom="586dp"

    android:background="#000"
```

```
    />

  <TextView

    android:id="@+id/textView"

    android:layout_width="wrap_content"

    android:layout_height="wrap_content"

    android:layout_alignParentEnd="true"

    android:layout_alignParentBottom="true"

    android:layout_marginEnd="110dp"

    android:layout_marginBottom="519dp"

    android:text="AKASH JAIN"

    android:textAlignment="center"

    android:textAllCaps="true"

    android:textColor="#000"

    android:textSize="20sp" />

  <TextView

    android:id="@+id/textView2"

    android:layout_width="wrap_content"

    android:layout_height="wrap_content"

    android:layout_alignParentEnd="true"

    android:layout_alignParentBottom="true"

    android:layout_marginEnd="137dp"

    android:layout_marginBottom="452dp"

    android:text="CEO"

    android:textAlignment="center"
```

```
        android:textAllCaps="true"

        android:textColor="#000"

        android:textSize="20sp" />
  <TextView

        android:id="@+id/textView3"

        android:layout_width="wrap_content"

        android:layout_height="wrap_content"

        android:layout_alignParentEnd="true"

        android:layout_alignParentBottom="true"

        android:layout_marginEnd="121dp"

        android:layout_marginBottom="369dp"

        android:text="8449126051"

        android:textAlignment="center"

        android:textColor="#000"

        android:textSize="20sp" />
  <TextView

        android:id="@+id/textView4"

        android:layout_width="336dp"

        android:layout_height="wrap_content"

        android:layout_alignParentEnd="true"

        android:layout_alignParentBottom="true"

        android:layout_marginEnd="18dp"

        android:layout_marginBottom="285dp"

        android:text="FIROZABAD"
```

```
        android:textAlignment="center"

        android:textColor="#000"

        android:textSize="20sp" />

   <TextView

        android:id="@+id/textView5"

        android:layout_width="wrap_content"

        android:layout_height="wrap_content"

        android:layout_alignParentEnd="true"

        android:layout_alignParentBottom="true"

        android:layout_marginEnd="14dp"

        android:layout_marginBottom="214dp"

        android:text="rajajain70167@gmail.com"

        android:textAlignment="center"

        android:textColor="#000"

        android:textSize="20sp" />

   <TextView

        android:id="@+id/textView6"

        android:layout_width="wrap_content"

        android:layout_height="wrap_content"

        android:layout_alignParentEnd="true"

        android:layout_alignParentBottom="true"

        android:layout_marginEnd="148dp"

        android:layout_marginBottom="22dp"

        android:text="©Akash Jain"
```

```
    android:textAlignment="center"

    android:textAllCaps="true"

    android:textColor="#808080"

    android:textSize="15sp" />

 <ImageView

    android:id="@+id/imageView3"

    android:layout_width="44dp"

    android:layout_height="41dp"

    android:layout_alignParentEnd="true"

    android:layout_alignParentBottom="true"

    android:layout_marginEnd="341dp"

    android:layout_marginBottom="206dp"

    app:srcCompat="@drawable/email2" />

 <ImageView

    android:id="@+id/imageView4"

    android:layout_width="51dp"

    android:layout_height="54dp"

    android:layout_alignParentEnd="true"

    android:layout_alignParentBottom="true"

    android:layout_marginEnd="340dp"

    android:layout_marginBottom="290dp"

    app:srcCompat="@drawable/home" />

 <ImageView

    android:id="@+id/imageView5"
```

```xml
    android:layout_width="45dp"

    android:layout_height="45dp"

    android:layout_alignParentEnd="true"

    android:layout_alignParentBottom="true"

    android:layout_marginEnd="243dp"

    android:layout_marginBottom="363dp"

    app:srcCompat="@drawable/contact" />
 <ImageView

    android:id="@+id/imageView6"

    android:layout_width="56dp"

    android:layout_height="48dp"

    android:layout_alignParentEnd="true"

    android:layout_alignParentBottom="true"

    android:layout_marginEnd="239dp"

    android:layout_marginBottom="441dp"

    app:srcCompat="@drawable/work" />
 <ImageView

    android:id="@+id/imageView7"

    android:layout_width="51dp"

    android:layout_height="51dp"

    android:layout_alignParentEnd="true"

    android:layout_alignParentBottom="true"

    android:layout_marginEnd="240dp"

    android:layout_marginBottom="503dp"
```

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

  <TextView

    android:id="@+id/textView7"

    android:layout_width="294dp"

    android:layout_height="50dp"

    android:layout_alignParentEnd="true"

    android:layout_alignParentBottom="true"

    android:layout_marginEnd="26dp"

    android:layout_marginBottom="138dp"

    android:text="https://github.com/Khushwant-Kumar"

    android:textAlignment="center"

    android:textColor="#000"

    android:textSize="20sp" />

  <ImageView

    android:id="@+id/imageView2"

    android:layout_width="51dp"

    android:layout_height="51dp"

    android:layout_alignParentEnd="true"

    android:layout_alignParentBottom="true"

    android:layout_marginEnd="334dp"

    android:layout_marginBottom="135dp"

    app:srcCompat="@drawable/github" />

  <TextView

    android:id="@+id/textView8"
```

```xml
    android:layout_width="310dp"

    android:layout_height="61dp"

    android:layout_alignParentEnd="true"

    android:layout_alignParentBottom="true"

    android:layout_marginEnd="19dp"

    android:layout_marginBottom="71dp"

    android:text="https://www.linkedin.com/in/khushwant-kumar-a6b228191/"

    android:textAlignment="center"

    android:textColor="#000"

    android:textSize="20sp" />

<ImageView

    android:id="@+id/imageView8"

    android:layout_width="46dp"

    android:layout_height="50dp"

    android:layout_alignParentEnd="true"

    android:layout_alignParentBottom="true"

    android:layout_marginEnd="335dp"

    android:layout_marginBottom="79dp"

    app:srcCompat="@drawable/in" />

</RelativeLayout>
```

SCREENSHOT OF OUTPUT:

PROGRAM-2

PROGRAM DESCRIPTION

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

XML CODE:

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

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

    xmlns:app="http://schemas.android.com/apk/res-auto"

    xmlns:tools="http://schemas.android.com/tools"

    android:layout_width="match_parent"

    android:layout_height="match_parent"

    android:orientation="vertical"

    tools:context=".MainActivity">

    <TextView

        android:layout_width="match_parent"

        android:layout_height="wrap_content"

        android:text="SIMPLE CALCULATOR"

        android:textColor="#C33E3E"

        android:textSize="30sp"

        android:textAlignment="center">

    </TextView>

    <EditText

        android:layout_width="match_parent"
```

```xml
    android:layout_height="wrap_content"

    android:hint="ENTER FIRST NUMBER"

    android:id="@+id/num1"

    android:textSize="20sp"

    android:textAlignment="center"

    android:textColor="#BD72A4">

  </EditText>

  <EditText

    android:layout_width="match_parent"

    android:layout_height="wrap_content"

    android:hint="ENTER SECOND NUMBER"

    android:id="@+id/num2"

    android:textSize="20sp"

    android:textAlignment="center"

    android:textColor="#BD72A4">

  </EditText>

  <TextView

    android:layout_width="match_parent"

    android:layout_height="wrap_content"

    android:hint="RESULT"

    android:textSize="20sp"

    android:textAlignment="center"

    android:textColor="#BD72A4"

    android:id="@+id/result">
```

```xml
  </TextView>

  <LinearLayout

    android:layout_width="wrap_content"

    android:layout_height="wrap_content"

    android:orientation="horizontal"

    android:layout_gravity="center">

    <Button

      android:layout_width="wrap_content"

      android:layout_height="wrap_content"

      android:text="7"

      android:id="@+id/seven"

      android:textAlignment="center"

      android:onClick="seven">

    </Button>

    <Button

      android:layout_width="wrap_content"

      android:layout_height="wrap_content"

      android:text="8"

      android:id="@+id/eight"

      android:textAlignment="center"

      android:onClick="eight">

    </Button>

    <Button

      android:layout_width="wrap_content"
```

```xml
        android:layout_height="wrap_content"

        android:text="9"

        android:id="@+id/nine"

        android:textAlignment="center"

        android:onClick="nine">

    </Button>

    <Button

        android:layout_width="wrap_content"

        android:layout_height="wrap_content"

        android:text="/"

        android:id="@+id/divide"

        android:textAlignment="center"

        android:onClick="divide">

    </Button>

  </LinearLayout>

  <LinearLayout

    android:layout_width="wrap_content"

    android:layout_height="wrap_content"

    android:orientation="horizontal"

    android:layout_gravity="center">

    <Button

        android:layout_width="wrap_content"

        android:layout_height="wrap_content"

        android:text="4"
```

```
    android:id="@+id/four"

    android:textAlignment="center"

    android:onClick="four">

</Button>

<Button

    android:layout_width="wrap_content"

    android:layout_height="wrap_content"

    android:text="5"

    android:id="@+id/five"

    android:textAlignment="center"

    android:onClick="five">

</Button>

<Button

    android:layout_width="wrap_content"

    android:layout_height="wrap_content"

    android:text="6"

    android:id="@+id/six"

    android:textAlignment="center"

    android:onClick="six">

</Button>

<Button

    android:layout_width="wrap_content"

    android:layout_height="wrap_content"

    android:text="*"
```

```xml
    android:id="@+id/multiply"

    android:textAlignment="center"

    android:onClick="multiply">

    </Button>

  </LinearLayout>

  <LinearLayout

    android:layout_width="wrap_content"

    android:layout_height="wrap_content"

    android:orientation="horizontal"

    android:layout_gravity="center">

    <Button

      android:layout_width="wrap_content"

      android:layout_height="wrap_content"

      android:text="1"

      android:id="@+id/one"

      android:textAlignment="center"

      android:onClick="one">

    </Button>

    <Button

      android:layout_width="wrap_content"

      android:layout_height="wrap_content"

      android:text="2"

      android:id="@+id/two"

      android:textAlignment="center"
```

```xml
        android:onClick="two">

    </Button>

    <Button

        android:layout_width="wrap_content"

        android:layout_height="wrap_content"

        android:text="3"

        android:id="@+id/three"

        android:textAlignment="center"

        android:onClick="three">

    </Button>

    <Button

        android:layout_width="wrap_content"

        android:layout_height="wrap_content"

        android:text="-"

        android:id="@+id/subtract"

        android:textAlignment="center"

        android:onClick="subtract">

    </Button>

  </LinearLayout>

  <LinearLayout

    android:layout_width="wrap_content"

    android:layout_height="wrap_content"

    android:orientation="horizontal"

    android:layout_gravity="center">
```

```xml
<Button

    android:layout_width="wrap_content"

    android:layout_height="wrap_content"

    android:text="."

    android:id="@+id/dot"

    android:textAlignment="center"

    android:onClick="dot">

</Button>

<Button

    android:layout_width="wrap_content"

    android:layout_height="wrap_content"

    android:text="0"

    android:id="@+id/zero"

    android:textAlignment="center"

    android:onClick="zero">

</Button>

<Button

    android:layout_width="wrap_content"

    android:layout_height="wrap_content"

    android:text="="

    android:id="@+id/equal"

    android:textAlignment="center"

    android:onClick="compute">

</Button>
```

```xml
    <Button

        android:layout_width="wrap_content"

        android:layout_height="wrap_content"

        android:text="+"

        android:id="@+id/add"

        android:textAlignment="center"

        android:onClick="add">

    </Button>

  </LinearLayout>

  <LinearLayout

    android:layout_width="wrap_content"

    android:layout_height="wrap_content"

    android:orientation="horizontal"

    android:layout_gravity="center">

    <Button

        android:layout_width="wrap_content"

        android:layout_height="wrap_content"

        android:text="C"

        android:id="@+id/clear_one_digit_at_a_time"

        android:textAlignment="center"

        android:onClick="clear_one_digit_at_a_time">

    </Button>

    <Button

        android:layout_width="wrap_content"
```

```
        android:layout_height="wrap_content"

        android:text="CE"

        android:id="@+id/clear_one_field_at_a_time"

        android:textAlignment="center"

        android:onClick="clear_one_field_at_a_time">

    </Button><Button

    android:layout_width="wrap_content"

    android:layout_height="wrap_content"

    android:text="AC"

    android:id="@+id/All_Clear"

    android:textAlignment="center"

    android:onClick="All_Clear">

  </Button>

  </LinearLayout>

</LinearLayout>
```

JAVA CODE:

```java
package com.example.calculator;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.EditText;
import android.widget.TextView;
import android.widget.Toast;
public class MainActivity extends AppCompatActivity {
  EditText number1,number2;
  TextView res;
```

```java
    char op;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        number1 = findViewById(R.id.num1);
        number2 = findViewById(R.id.num2);
        res = findViewById(R.id.result);
    }
    public  void  one(View v)
    {
        if(number1.hasFocus())
        {
            number1.append("1");
        }
        else if(number2.hasFocus())
        {
            number2.append("1");
        }
        else
        {
            Toast.makeText(this, "Please focus on Field 1 / Field 2", Toast.LENGTH_LONG).show();
        }
    }
    public  void  two(View v)
    {
        if(number1.hasFocus())
        {
            number1.append("2");
        }
        else if(number2.hasFocus())
```

```java
        {
          number2.append("2");
        }
        else
        {
          Toast.makeText(this, "Please focus on Field 1 / Field 2", Toast.LENGTH_LONG).show();
        }
    }
    public  void  three(View v)
    {
        if(number1.hasFocus())
        {
          number1.append("3");
        }
        else if(number2.hasFocus())
        {
          number2.append("3");
        }
        else
        {
          Toast.makeText(this, "Please focus on Field 1 / Field 2", Toast.LENGTH_LONG).show();
        }
    }
    public  void  four(View v)
    {
        if(number1.hasFocus())
        {
          number1.append("4");
        }
        else if(number2.hasFocus())
        {
```

```java
        number2.append("4");
      }
      else
      {
        Toast.makeText(this, "Please focus on Field 1 / Field 2", Toast.LENGTH_LONG).show();
      }
    }
    public void five(View v)
    {
      if(number1.hasFocus())
      {
        number1.append("5");
      }
      else if(number2.hasFocus())
      {
        number2.append("5");
      }
      else
      {
        Toast.makeText(this, "Please focus on Field 1 / Field 2", Toast.LENGTH_LONG).show();
      }
    }
    public void six(View v)
    {
      if(number1.hasFocus())
      {
        number1.append("6");
      }
      else if(number2.hasFocus())
      {
        number2.append("6");
```

```java
        }
        else
        {
          Toast.makeText(this, "Please focus on Field 1 / Field 2", Toast.LENGTH_LONG).show();
        }
      }
    public  void  seven(View v)
    {
        if(number1.hasFocus())
        {
          number1.append("7");
        }
        else if(number2.hasFocus())
        {
          number2.append("7");
        }
        else
        {
          Toast.makeText(this, "Please focus on Field 1 / Field 2", Toast.LENGTH_LONG).show();
        }
    }public  void  eight(View v)
    {
        if(number1.hasFocus())
        {
          number1.append("8");
        }
        else if(number2.hasFocus())
        {
          number2.append("8");
        }
        else
```

```java
    {
      Toast.makeText(this, "Please focus on Field 1 / Field 2", Toast.LENGTH_LONG).show();
    }
  }
  public  void  nine(View v)
  {
    if(number1.hasFocus())
    {
      number1.append("9");
    }
    else if(number2.hasFocus())
    {
      number2.append("9");
    }
    else
    {
      Toast.makeText(this, "Please focus on Field 1 / Field 2", Toast.LENGTH_LONG).show();
    }
  }
  public  void  zero(View v)
  {
    if(number1.hasFocus())
    {
      number1.append("0");
    }
    else if(number2.hasFocus())
    {
      number2.append("0");
    }
    else
    {
```

```java
      Toast.makeText(this, "Please focus on Field 1 / Field 2", Toast.LENGTH_LONG).show();

    }

  }

  public  void  dot(View v)

  {

    if(number1.hasFocus())

    {

      number1.append(".");

    }

    else if(number2.hasFocus())

    {

      number2.append(".");

    }

    else

    {

      Toast.makeText(this, "Please focus on Field 1 / Field 2", Toast.LENGTH_LONG).show();

    }

  }

  public void divide(View v)

  {

    op = '/';

  }

  public void multiply(View v)

  {

    op = '*';

  }

  public void subtract(View v)

  {

    op = '-';

  }

  public void add(View v)
```

```java
  {
    op = '+';
  }
  public void compute(View v)
  {
    float n1,n2,r;
    switch (op)
    {
      case '+':
        n1 = Float.parseFloat(number1.getText().toString());
        n2 = Float.parseFloat(number2.getText().toString());
        r = n1+n2;
        res.setText(""+r);
        break;
      case '-':
        n1 = Float.parseFloat(number1.getText().toString());
        n2 = Float.parseFloat(number2.getText().toString());
        r = n1-n2;
        res.setText(""+r);
        break;
      case '*':
        n1 = Float.parseFloat(number1.getText().toString());
        n2 = Float.parseFloat(number2.getText().toString());
        r = n1*n2;
        res.setText(""+r);
        break;
      case '/':
        n1 = Float.parseFloat(number1.getText().toString());
        n2 = Float.parseFloat(number2.getText().toString());
        r = n1/n2;
        res.setText(""+r);
```

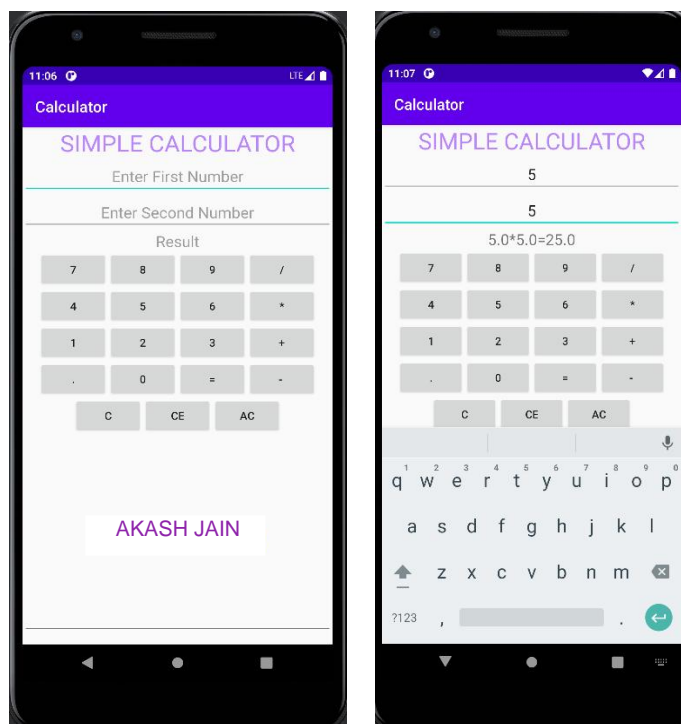```java
        break;
    }
}
public void All_Clear(View v)
{
    number1.setText("");
    number2.setText("");
    res.setText("");
}
public void clear_one_field_at_a_time(View v)
{
    if(number1.hasFocus())
    {
        number1.setText("");
        res.setText("");
    }
    else if(number2.hasFocus())
    {
        number2.setText("");
        res.setText("");
    }
    else
    {
        Toast.makeText(this, "Please focus on Field 1 / Field 2", Toast.LENGTH_LONG).show();
    }
}
public void clear_one_digit_at_a_time(View v)
{
    if(number1.hasFocus())
    {
        String n;
```

```
        n = number1.getText().toString();

        n = n.substring(0,n.length()-1);

        number1.setText(n);

    }

    else if(number2.hasFocus())

    {

        String n;

        n = number2.getText().toString();

        n = n.substring(0,n.length()-1);

        number2.setText(n);

    }

    else

    {

        Toast.makeText(this, "Please focus on Field 1 / Field 2", Toast.LENGTH_LONG).show();

    }

  }

}
```

SCREENSHOTS OF OUTPUT:

PROGRAM-3

PROGRAM DESCRIPTION

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 the 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 disables the SIGN IN button. Use Bundle to transfer information from one activity to another.

XML CODE:

<div align="center">activity1.xml</div>

```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"

    tools:context=".MainActivity"

    android:orientation="vertical"

    >

    <TextView
```

```xml
        android:layout_width="match_parent"

        android:layout_height="wrap_content"

        android:text="SIGNUP!"

        android:textAlignment="center"

        android:textColor="#B54747"

        android:textSize="50sp"

        />

    <EditText

        android:layout_width="match_parent"

        android:layout_height="wrap_content"

        android:hint="Enter user ID"

        android:textAlignment="center"

        android:textSize="20sp"

        android:id="@+id/uid"

        />

    <EditText

        android:layout_width="match_parent"

        android:layout_height="wrap_content"

        android:hint="Enter Password"

        android:textSize="20sp"

        android:textAlignment="center"

        android:inputType="textPassword"

        android:id="@+id/pwd">

    </EditText>
```

```xml
    <Button

        android:layout_width="match_parent"

        android:layout_height="wrap_content"

        android:text="Sign Up"

        android:textAlignment="center"

        android:id="@+id/signUp"

        android:onClick="signUp"

        android:backgroundTint="#CC4040"/>

</LinearLayout>
```

activity2.xml

```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"

    tools:context=".MainActivity2"

    android:orientation="vertical">

    <TextView

        android:layout_width="match_parent"

        android:layout_height="wrap_content"

        android:text="SIGNIN!"

        android:textAlignment="center"

        android:textColor="#B54747"
```

```
        android:textSize="50sp"

        />

    <EditText

        android:layout_width="match_parent"

        android:layout_height="wrap_content"

        android:hint="Enter user ID"

        android:textAlignment="center"

        android:textSize="20sp"

        android:id="@+id/uid"/>

    <EditText

        android:layout_width="match_parent"

        android:layout_height="wrap_content"

        android:hint="Enter Password"

        android:textSize="20sp"

        android:textAlignment="center"

        android:inputType="textPassword"

        android:id="@+id/pwd"/>

    <Button

        android:layout_width="match_parent"

        android:layout_height="wrap_content"

        android:text="Sign In"

        android:textAlignment="center"

        android:id="@+id/signIn"

        android:onClick="signIn"
```

```xml
    android:backgroundTint="#CC4040"/>

</LinearLayout>
```

Activity3.xml

```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"

    tools:context=".MainActivity3"

    android:orientation="vertical">

    <TextView

        android:layout_width="match_parent"

        android:layout_height="wrap_content"

        android:text="LOGGED IN SUCCESSFUL"

        android:textAlignment="center"

        android:textColor="#CF4343"

        android:textSize="50sp"

        android:layout_marginTop="100dp"/>

    <TextView

        android:layout_width="match_parent"

        android:layout_height="wrap_content"

        android:text="©KHUSHWANT"

        android:textAlignment="center"
```

android:layout_marginTop="450dp"

android:textSize="14sp"

android:textColor="#969696">

   </TextView>

</LinearLayout>

JAVA CODE:

<div align="center">Activity1.java</div>

```java
package com.example.signupsignin;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;

import android.os.Bundle;

import android.view.View;

import android.widget.EditText;

import android.widget.Toast;

import java.util.regex.Matcher;

import java.util.regex.Pattern;

public class MainActivity extends AppCompatActivity {

   EditText username,passwd;

   @Override

   protected void onCreate(Bundle savedInstanceState) {

      super.onCreate(savedInstanceState);

      setContentView(R.layout.activity_main);

      username = findViewById(R.id.uid);

      passwd = findViewById(R.id.pwd);
```

```java
    }
  public void signUp(View v)
  {
    if(passwd.getText().toString().length()>=8 &&
validatePassword(passwd.getText().toString()))
    {
      Toast.makeText(this, "SIGN UP Sucessful", Toast.LENGTH_LONG).show();

      Intent i = new Intent(this,MainActivity2.class);

      Bundle b = new Bundle();

      b.putString("uid",username.getText().toString());

      b.putString("password",passwd.getText().toString());

      i.putExtras(b);

      startActivity(i);
    }
    else
    {
      Toast.makeText(this, "Password is not meeting the Constraints",
Toast.LENGTH_LONG).show();
    }
  }
  public  boolean validatePassword(String password)
  {
    Pattern ptrn;

    Matcher mat;
```

```java
    String pswdptrn = "^(?=.*[A-Z])(?=.*[a-z])(?=.*[0-
9])(?=.*[<>@#$%^&*+=])(?=\\S+$).{8,}$";

    ptrn = Pattern.compile(pswdptrn);

    mat = ptrn.matcher(password);

    return mat.matches();

  }

}
```

Activity2.java

```java
package com.example.signupsignin;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;

import android.os.Bundle;

import android.view.View;

import android.widget.Button;

import android.widget.EditText;

import android.widget.Toast;

public class MainActivity2 extends AppCompatActivity {

    EditText username,password;

    Button signin;

    int attempts=0;

    @Override

    protected void onCreate(Bundle savedInstanceState) {

        super.onCreate(savedInstanceState);

        setContentView(R.layout.activity_main2);
```

```java
    username = findViewById(R.id.uid);

    password = findViewById(R.id.pwd);

    signin = findViewById(R.id.signIn);

  }

  public  void signIn(View v)

  {

    Bundle b = getIntent().getExtras();

    String uname = b.getString("uid");

    String passwd = b.getString("password");

    if(username.getText().toString().equals(uname) &&
password.getText().toString().equals(passwd))

    {

      Toast.makeText(this, "LOGGED IN Successful", Toast.LENGTH_LONG).show();

      attempts = 0;

      Intent i = new Intent(this,MainActivity3.class);

      startActivity(i);

    }

    else

    {

      attempts++;

      Toast.makeText(this, "SIGN IN UNSUCESSFUL. Number of Attempts="+attempts,
Toast.LENGTH_SHORT).show();

      if(attempts==3)

        signin.setEnabled(false);

    }
```
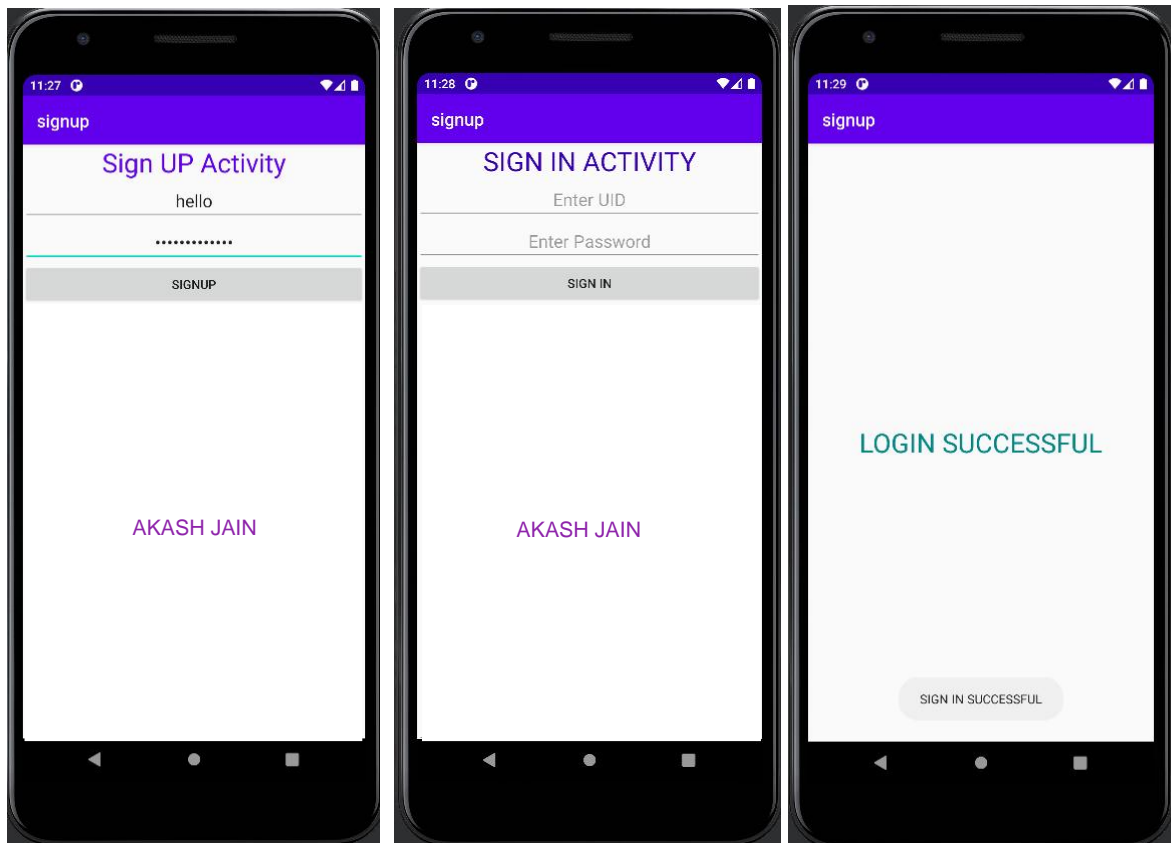
```
    }

}
```

SCREENSHOTS OF OUTPUT:

PROGRAM-4

PROGRAM DESCRIPTION

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

XML CODE:

```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"

    tools:context=".MainActivity"

    android:orientation="vertical">

    <TextView

        android:layout_width="match_parent"

        android:layout_height="wrap_content"

        android:text="WallPaper Changing App"

        android:textAllCaps="true"

        android:textAlignment="center"

        android:textColor="#000"

        android:textSize="25sp"

        app:layout_constraintBottom_toBottomOf="parent"

        app:layout_constraintLeft_toLeftOf="parent"
```

```
        app:layout_constraintRight_toRightOf="parent"

        app:layout_constraintTop_toTopOf="parent" />

    <Button

        android:layout_width="match_parent"

        android:layout_height="wrap_content"

        android:textSize="20sp"

        android:text="Change wallpaper"

        android:layout_marginTop="30dp"

        android:id="@+id/changewallpaper"

        android:onClick="changewallpaper"/>

</LinearLayout>
```

Android_manifest.xml

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

<manifest xmlns:android="http://schemas.android.com/apk/res/android"

    package="com.example.wallpaperchanger">

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

    <application

        android:allowBackup="true"

        android:icon="@mipmap/ic_launcher"

        android:label="@string/app_name"

        android:roundIcon="@mipmap/ic_launcher_round"

        android:supportsRtl="true"

        android:theme="@style/Theme.WallpaperChanger">

        <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>
```

JAVA CODE:

```java
package com.example.wallpaperchanger;

import androidx.appcompat.app.AppCompatActivity;

import android.app.WallpaperManager;

import android.graphics.Bitmap;

import android.graphics.drawable.BitmapDrawable;

import android.graphics.drawable.Drawable;

import android.os.Bundle;

import android.view.View;

import java.io.IOException;

import java.util.Timer;

import java.util.TimerTask;

public class MainActivity extends AppCompatActivity {

    Timer myTimer;

    Drawable drawable;
```

```java
WallpaperManager wpm;

int next = 1;

@Override

protected void onCreate(Bundle savedInstanceState) {

   super.onCreate(savedInstanceState);

   setContentView(R.layout.activity_main);

   myTimer = new Timer();

   wpm = WallpaperManager.getInstance(this);

}

public  void changewallpaper(View v)

{

   setWallpaper();

}

public void setWallpaper()

{

   myTimer.schedule(new TimerTask() {

      @Override

      public void run() {

         if(next == 1)

         {

            drawable = getResources().getDrawable(R.drawable.one);

            next = 2;

         }

         else if(next == 2)
```
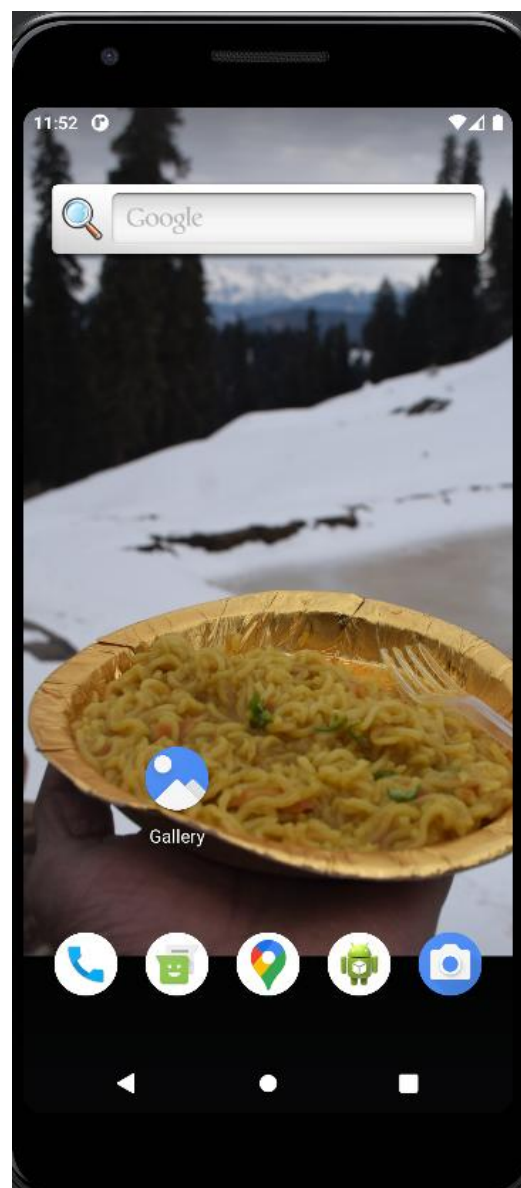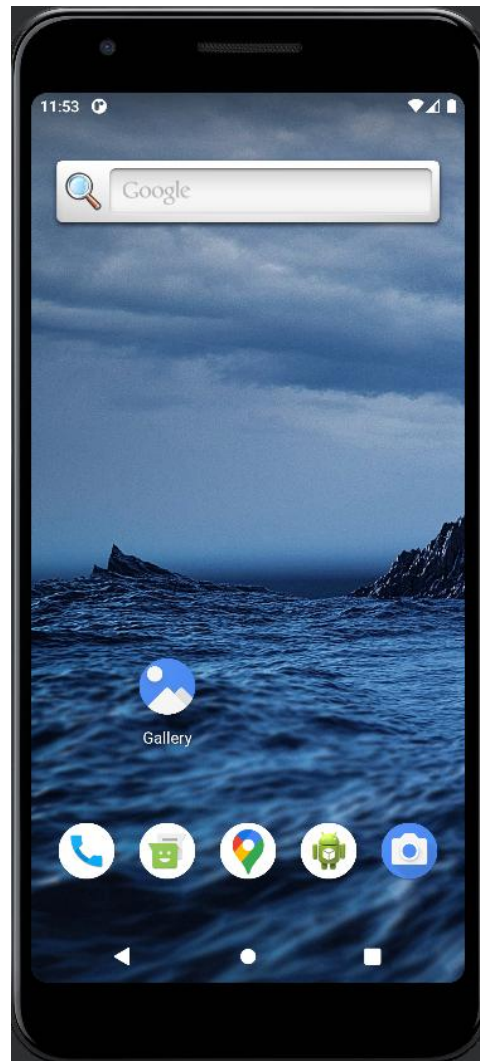
```
    {

        drawable = getResources().getDrawable(R.drawable.two);

        next = 3;

    }

    else if(next == 3)

    {

        drawable = getResources().getDrawable(R.drawable.three);

        next = 4;

    }

    else if(next == 4)

    {

        drawable = getResources().getDrawable(R.drawable.four);

        next = 5;

    }

    else if(next == 5)

    {

        drawable = getResources().getDrawable(R.drawable.five);

        next = 6;

    }

    else if(next == 6)

    {

        drawable = getResources().getDrawable(R.drawable.six);

        next = 7;

    }
```

```
        else if(next == 7)

        {

           drawable = getResources().getDrawable(R.drawable.seven);

           next = 8;

        }

        else if(next == 8)

        {

           drawable = getResources().getDrawable(R.drawable.eight);

           next = 9;

        }

        else if(next == 9)

        {

           drawable = getResources().getDrawable(R.drawable.nine);

           next = 10;

        }

        else if(next == 10)

        {

           drawable = getResources().getDrawable(R.drawable.ten);

           next = 1;

        }

        Bitmap  img = ((BitmapDrawable)drawable).getBitmap();

        try {

           wpm.setBitmap(img);

        } catch (IOException e) {
```

```
            e.printStackTrace();

        }

    }

},30000,5000);

    }

}
```

SCREENSHOTS OF OUTPUT:

PROGRAM-5

PROGRAM DESCRIPTION

Write a program to create an activity with two buttons START and STOP. On pressing 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 TextViewcontrol.

XML CODE:

```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"

    tools:context=".MainActivity"

    android:orientation="vertical"

    android:background="@color/black">

    <TextView

        android:layout_width="match_parent"

        android:layout_height="wrap_content"

        android:text="Counter Application"

        android:textAlignment="center"

        android:textSize="30sp"

         android:textColor="#32cd32"/>

    <TextView

        android:layout_width="match_parent"
```

```
    android:layout_height="wrap_content"

    android:textSize="30sp"

    android:textAlignment="center"

    android:textColor="#d0ff14"

    android:id="@+id/counter"/>

  <Button

    android:layout_width="match_parent"

    android:layout_height="wrap_content"

    android:id="@+id/start"

    android:text="Start"

    android:textAlignment="center"

    android:onClick="startcounter"/>

  <Button

    android:layout_width="match_parent"

    android:layout_height="wrap_content"

    android:id="@+id/stop"

    android:textAlignment="center"

    android:text="STOP"

    android:onClick="stop"/>

  <TextView

    android:layout_width="match_parent"

    android:layout_height="wrap_content"

    android:layout_marginTop="400dp"

    android:text="©Khushwant"
```

android:textColor="#dcdcdc"

android:textAlignment="center"/>

</LinearLayout>

JAVA CODE:

```java
package com.example.counter;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

import android.os.Handler;

import android.view.View;

import android.widget.TextView;

public class MainActivity extends AppCompatActivity {

    TextView tv;

    int i = 0;

    Handler myhandler = new Handler();

    @Override

    protected void onCreate(Bundle savedInstanceState) {

        super.onCreate(savedInstanceState);

        setContentView(R.layout.activity_main);

        tv = findViewById(R.id.counter);

    }

    public void startcounter(View v)

    {

        myhandler.postDelayed(Threadcount,1000);

    }
```

```
    public void stop(View v)

    {

        myhandler.removeCallbacks(Threadcount);

    }

    public Runnable Threadcount = new Runnable() {

        @Override

        public void run() {

            tv.setText(""+(i));

            i++;

            myhandler.postDelayed(Threadcount,1000);

        }

    };

}
```

SCREENSHOT OF OUTPUT:

PROGRAM-6

PROGRAM DESCRIPTION

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

XML CODE:

Activity_main.xml

```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"
    tools:context=".MainActivity"
    android:orientation="vertical"
    android:background="@color/black">
    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="XML and JSON Parser"
        android:textAlignment="center"
        android:textSize="30sp"
        android:textColor="#d1e231"/>
    <Button
```

```xml
    android:layout_width="match_parent"

    android:layout_height="wrap_content"

    android:onClick="XMLParser"

    android:text="XML PARSER"

    android:textAlignment="center"/>

  <Button

    android:layout_width="match_parent"

    android:layout_height="wrap_content"

    android:onClick="JSONParser"

    android:text="JSON PARSER"

    android:textAlignment="center"/>

  <LinearLayout

    android:layout_width="wrap_content"

    android:layout_height="wrap_content"

    android:orientation="horizontal"

    android:layout_gravity="center">

    <TextView

      android:layout_width="wrap_content"

      android:layout_height="wrap_content"

      android:id="@+id/resxml"

      android:textSize="15sp"

      android:text="HELLOXML"

      android:textColor="#ccff00"

      android:textAlignment="center"
```

```
        android:paddingLeft="10dp"

        android:paddingRight="40dp"/>

    <TextView

        android:layout_width="wrap_content"

        android:layout_height="wrap_content"

        android:id="@+id/rejson"

        android:text="HELLOJSON"

        android:textColor="#ccff00"

        android:textSize="15sp"

        android:textAlignment="center"

        android:paddingLeft="40dp"

        />

   </LinearLayout>

</LinearLayout>
```

City.xml

```
<?xml version="1.0" ?>

<records>

  <place>

    <cityname>Mysore</cityname>

    <lat>96.95</lat>

    <long>76.63</long>

    <temp>22</temp>

    <humidity>90%</humidity>

  </place>
```

```xml
  <place>

    <cityname>Bangalore</cityname>

    <lat>96.68</lat>

    <long>76.73</long>

    <temp>20</temp>

    <humidity>90%</humidity>

  </place>

</records>
```

City1.json

```json
[

  {

   "name": "Mysore",

   "lat": "96.95",

   "long": "76.63",

   "temp": "22",

   "humidity": "90%"

  },

  {

   "name": "Bangalore",

   "lat": "96.67",

   "long": "76.76",

   "temp": "20",

   "humidity": "80%"

  }
```

]

JAVA CODE:

```java
package com.example.xml_json_parser;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

import android.view.View;

import android.widget.TextView;

import org.json.JSONArray;

import org.json.JSONException;

import org.json.JSONObject;

import org.w3c.dom.Document;

import org.w3c.dom.Element;

import org.w3c.dom.Node;

import org.w3c.dom.NodeList;

import org.xml.sax.SAXException;

import java.io.IOException;

import java.io.InputStream;

import javax.xml.parsers.DocumentBuilder;

import javax.xml.parsers.DocumentBuilderFactory;

import javax.xml.parsers.ParserConfigurationException;

public class MainActivity extends AppCompatActivity {

    TextView resxml,resjson;

    @Override

    protected void onCreate(Bundle savedInstanceState) {
```

```
    super.onCreate(savedInstanceState);

    setContentView(R.layout.activity_main);

    resxml = findViewById(R.id.resxml);

    resjson = findViewById(R.id.rejson);

  }

  public void XMLParser(View v)

  {

    try {

      InputStream is = getAssets().open("city.xml");

      DocumentBuilderFactory dbFactory = DocumentBuilderFactory.newInstance();

      DocumentBuilder dBuilder = dbFactory.newDocumentBuilder();

      Document doc = dBuilder.parse(is);

      Element element = doc.getDocumentElement();

      element.normalize();

      NodeList nList = doc.getElementsByTagName("place");

      resxml.setText("XML DATA");

      for(int i=0;i<nList.getLength();i++)

      {

        Node node = nList.item(i);

        if(node.getNodeType() == Node.ELEMENT_NODE)

        {

          Element element2 = (Element) node;

          resxml.setText(resxml.getText() + "\nCity
Name:"+getValue("cityname",element2)+"\n");

          resxml.setText(resxml.getText() + "\n Lat:"+getValue("lat",element2)+"\n");
```

```
                resxml.setText(resxml.getText() + "\n Long:"+getValue("long",element2)+"\n");

                resxml.setText(resxml.getText() + "\n Temp:"+getValue("temp",element2)+"\n");

                resxml.setText(resxml.getText() + "\n
Humidity:"+getValue("humidity",element2)+"\n");

                resxml.setText(resxml.getText() + "\n -----------------------");

            }

        }

    } catch (IOException | ParserConfigurationException | SAXException e) {

        e.printStackTrace();

    }

}

private  static String getValue(String tag,Element element)

{

    NodeList nodeList = element.getElementsByTagName(tag).item(0).getChildNodes();

    Node node = nodeList.item(0);

    return node.getNodeValue();

}

public void JSONParser(View v)

{

    String json;

    try {

        InputStream is = getAssets().open("city1.json");

        int size = is.available();

        byte[] buffer = new byte[size];

        is.read(buffer);
```

```
        is.close();

        json = new String(buffer,"UTF-8");

        JSONArray jsonArray = new JSONArray(json);

        resjson.setText("JSON DATA");

        for(int i=0;i<jsonArray.length();i++)

        {

            JSONObject obj = jsonArray.getJSONObject(i);

            resjson.setText(resjson.getText()+"\n City Name:"+obj.getString("name")+"\n");

            resjson.setText(resjson.getText()+"\n Lat:"+obj.getString("lat")+"\n");

            resjson.setText(resjson.getText()+"\n Long:"+obj.getString("long")+"\n");

            resjson.setText(resjson.getText()+"\n Temp:"+obj.getString("temp")+"\n");

            resjson.setText(resjson.getText()+"\n Humidity:"+obj.getString("humidity")+"\n");

            resjson.setText(resjson.getText()+"\n --------------------");

        }

    } catch (IOException | JSONException e) {

        e.printStackTrace();

    }

  }

}
```
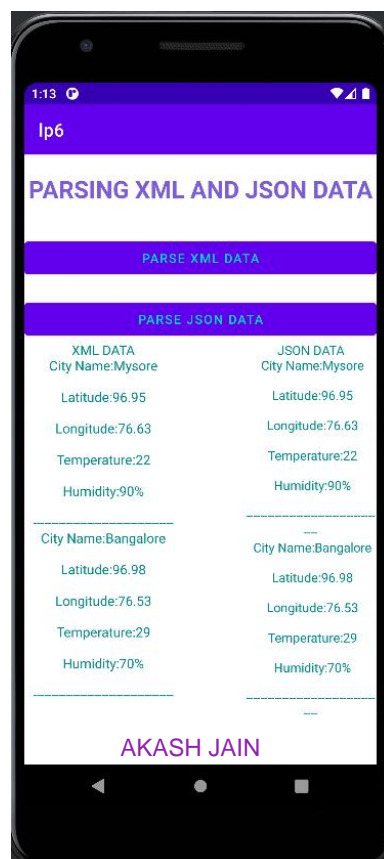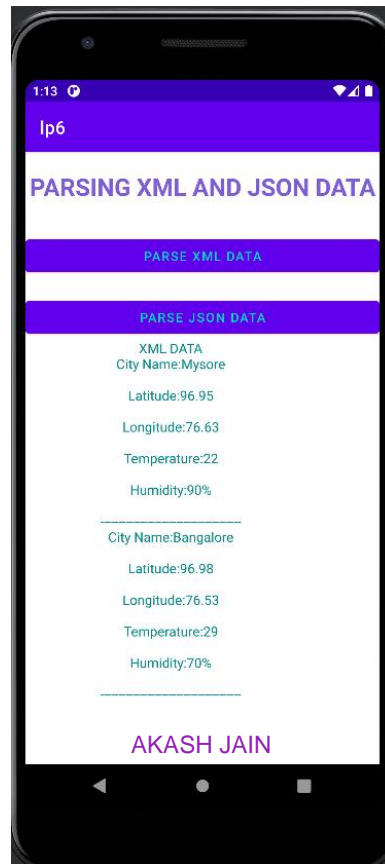
SCREENSHOTS OF OUTPUT:

PROGRAM-7

PROGRAM DESCRIPTION

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

XML CODE:

```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"

    tools:context=".MainActivity"

    android:orientation="vertical">

    <TextView

        android:layout_width="match_parent"

        android:layout_height="wrap_content"

        android:text="Text to Speech"

        android:textAllCaps="true"

        android:textAlignment="center"

        android:textSize="25sp"

        android:textColor="@color/design_default_color_error"

        />

    <EditText

        android:layout_width="match_parent"
```

```xml
        android:layout_height="wrap_content"

        android:id="@+id/pitch"

        android:hint="Enter pitch (1.0 is normal)"

        android:textAlignment="center"

        android:textSize="15sp"

        />

    <EditText

        android:layout_width="match_parent"

        android:layout_height="wrap_content"

        android:id="@+id/speechrate"

        android:hint="Enter speech rate (1.0 is normal)"

        android:textAlignment="center"

        android:textSize="15sp"

        />

    <EditText

        android:layout_width="match_parent"

        android:layout_height="wrap_content"

        android:id="@+id/texttospeech"

        android:textSize="10sp"

        android:textAlignment="center"

        android:hint="Enter text to speak"

        />

    <Button

        android:layout_width="match_parent"
```

```
    android:layout_height="wrap_content"

    android:id="@+id/speak"

    android:text="Text to Speech"

    android:textAlignment="center"

    android:onClick="speak"/>

</LinearLayout>
```

JAVA CODE:

```java
package com.example.texttospeech;

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 {

    EditText pitch,rate,texttospeak;

    Button speak;

    TextToSpeech t;

    @Override

    protected void onCreate(Bundle savedInstanceState) {

        super.onCreate(savedInstanceState);

        setContentView(R.layout.activity_main);
```

```java
    pitch = findViewById(R.id.pitch);

    rate = findViewById(R.id.speechrate);

    texttospeak = findViewById(R.id.texttospeech);

    t = new TextToSpeech(this, new TextToSpeech.OnInitListener() {

        @Override

        public void onInit(int i) {

            if(i == TextToSpeech.SUCCESS)

            {

                t.setLanguage(Locale.ENGLISH);

            }

            else

            {

                Toast.makeText(MainActivity.this, "Text to Speech cannot be initialized",
Toast.LENGTH_LONG).show();

            }

        }

    });

}

public void speak(View v)

{

    String text = texttospeak.getText().toString();

    if(pitch.getText().toString().equals(""))

    {

        t.setPitch(1.0f);

    }
```
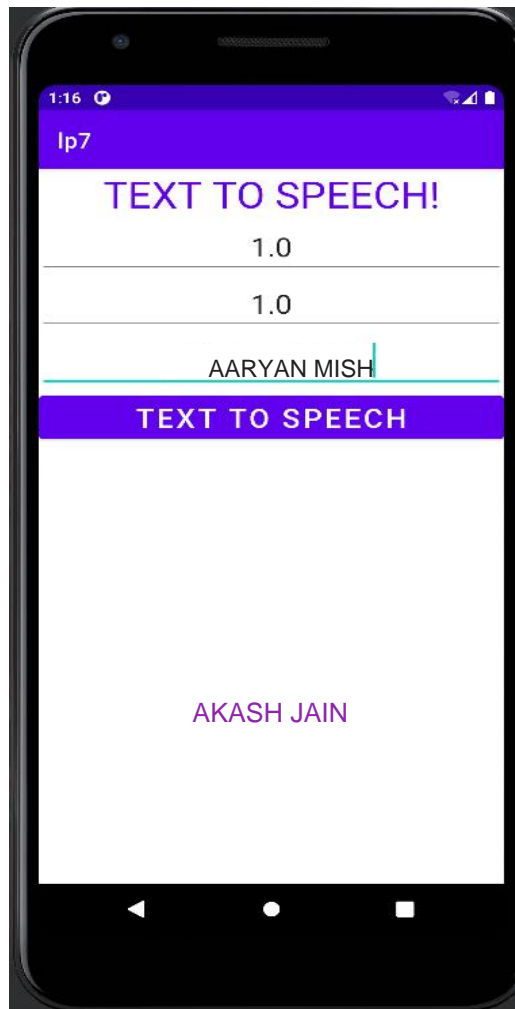
```
    else

    {

        t.setPitch(Float.parseFloat(pitch.getText().toString()));

    }

    if(rate.getText().toString().equals(""))

    {

        t.setSpeechRate(1.0f);

    }

    else

    {

        t.setSpeechRate(Float.parseFloat(rate.getText().toString()));

    }

    t.speak(text,TextToSpeech.QUEUE_FLUSH,null);

  }

}
```

SCREENSHOT OF OUTPUT:

PROGRAM-8

PROJECT DESCRIPTION:

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

XML CODE:

```xml
<?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"

    tools:context=".MainActivity"

    android:orientation="vertical">

    <TextView

        android:layout_width="match_parent"

        android:layout_height="wrap_content"

        android:text="Call and Save Application"

        android:textColor="@color/design_default_color_error"

        android:textSize="30sp"

        android:textAlignment="center"

        />

    <LinearLayout

        android:layout_width="wrap_content"
```

```xml
        android:layout_height="wrap_content"

        android:orientation="horizontal"

        android:layout_gravity="center">

      <EditText

        android:layout_width="wrap_content"

        android:layout_height="wrap_content"

        android:id="@+id/number"

        android:hint="Enter the number to dial or save">

      </EditText>

      <Button

        android:layout_width="wrap_content"

        android:layout_height="wrap_content"

        android:id="@+id/delete"

        android:text="DEL"

        android:onClick="delete">

      </Button>

    </LinearLayout>

    <LinearLayout

      android:layout_width="wrap_content"

      android:layout_height="wrap_content"

      android:orientation="horizontal"

      android:layout_gravity="center">

      <Button

        android:layout_width="wrap_content"
```

```
        android:layout_height="wrap_content"

        android:id="@+id/one"

        android:text="1"

        android:onClick="one">

    </Button>

    <Button

        android:layout_width="wrap_content"

        android:layout_height="wrap_content"

        android:id="@+id/two"

        android:text="2"

        android:onClick="two">

    </Button>

    <Button

        android:layout_width="wrap_content"

        android:layout_height="wrap_content"

        android:id="@+id/three"

        android:text="3"

        android:onClick="three">

    </Button>

  </LinearLayout>

  <LinearLayout

    android:layout_width="wrap_content"

    android:layout_height="wrap_content"

    android:orientation="horizontal"
```

```xml
    android:layout_gravity="center">

    <Button

      android:layout_width="wrap_content"

      android:layout_height="wrap_content"

      android:id="@+id/four"

      android:text="4"

      android:onClick="four">

    </Button>

    <Button

      android:layout_width="wrap_content"

      android:layout_height="wrap_content"

      android:id="@+id/five"

      android:text="5"

      android:onClick="five">

    </Button>

    <Button

      android:layout_width="wrap_content"

      android:layout_height="wrap_content"

      android:id="@+id/six"

      android:text="6"

      android:onClick="six">

    </Button>

  </LinearLayout>

  <LinearLayout
```

```
    android:layout_width="wrap_content"

    android:layout_height="wrap_content"

    android:orientation="horizontal"

    android:layout_gravity="center">

    <Button

      android:layout_width="wrap_content"

      android:layout_height="wrap_content"

      android:id="@+id/seven"

      android:text="7"

      android:onClick="seven">

    </Button>

    <Button

      android:layout_width="wrap_content"

      android:layout_height="wrap_content"

      android:id="@+id/eight"

      android:text="8"

      android:onClick="eight">

    </Button>

    <Button

      android:layout_width="wrap_content"

      android:layout_height="wrap_content"

      android:id="@+id/nine"

      android:text="9"

      android:onClick="nine">
```

```xml
    </Button>

  </LinearLayout>

  <LinearLayout

    android:layout_width="wrap_content"

    android:layout_height="wrap_content"

    android:orientation="horizontal"

    android:layout_gravity="center">

    <Button

      android:layout_width="wrap_content"

      android:layout_height="wrap_content"

      android:id="@+id/star"

      android:text="*"

      android:onClick="star">

    </Button>

    <Button

      android:layout_width="wrap_content"

      android:layout_height="wrap_content"

      android:id="@+id/zero"

      android:text="0"

      android:onClick="zero">

    </Button>

    <Button

      android:layout_width="wrap_content"

      android:layout_height="wrap_content"
```

```xml
        android:id="@+id/hash"

        android:text="#"

        android:onClick="hash">

    </Button>

  </LinearLayout>

  <LinearLayout

    android:layout_width="wrap_content"

    android:layout_height="wrap_content"

    android:orientation="horizontal"

    android:layout_gravity="center">

    <Button

      android:layout_width="wrap_content"

      android:layout_height="wrap_content"

      android:id="@+id/call"

      android:text="CALL"

      android:onClick="call">

    </Button>

    <Button

      android:layout_width="wrap_content"

      android:layout_height="wrap_content"

      android:id="@+id/save"

      android:text="SAVE"

      android:onClick="save">

    </Button>
```

</LinearLayout>

</LinearLayout>

JAVA CODE:

```java
package com.example.pgm8;

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.EditText;

public class MainActivity extends AppCompatActivity {

    EditText num;

    @Override

    protected void onCreate(Bundle savedInstanceState) {

        super.onCreate(savedInstanceState);

        setContentView(R.layout.activity_main);

        num = findViewById(R.id.number);

    }

    public void delete(View v)

    {

        String mynum = num.getText().toString();

        mynum = mynum.substring(0,mynum.length()-1);

        num.setText(mynum);
```

```
    }
  public void one(View v)

  {

    num.append("1");

  }

  public void two(View v)

  {

    num.append("2");

  }

  public void three(View v)

  {

    num.append("3");

  }

  public void four(View v)

  {

    num.append("4");

  }

  public void five(View v)

  {

    num.append("5");

  }

  public void six(View v)

  {

    num.append("6");
```

```java
    }
    public void seven(View v)

    {

      num.append("7");

    }
    public void eight(View v)

    {

      num.append("8");

    }
    public void nine(View v)

    {

      num.append("9");

    }
    public void star(View v)

    {

      num.append("*");

    }
    public void zero(View v)

    {

      num.append("0");

    }
    public void hash(View v)

    {

      num.append("#");
```

```java
    }

    public void call(View v)

    {

        String mynum = num.getText().toString();

        Intent i = new Intent(Intent.ACTION_DIAL, Uri.parse("tel:"+mynum));

        startActivity(i);

    }

    public void save(View v)

    {

        String mynum = num.getText().toString();

        Intent i = new Intent(Intent.ACTION_INSERT,
ContactsContract.Contacts.CONTENT_URI);

        i.putExtra(ContactsContract.Intents.Insert.PHONE,mynum);

        startActivity(i);

    }

}
```

SCREENSHOTS OF OUTPUT: