Slip 2

**Q1**.Perfect number

<!-- activity\_main.xml -->

<RelativeLayout

xmlns:android="http://schemas.android.com/apk/res/android" xmlns:tools="http://schemas.android.com/tools" android:layout\_width="match\_parent" android:layout\_height="match\_parent" android:padding="16dp" tools:context=".MainActivity">

<EditText android:id="@+id/editTextNumber1" android:layout\_width="match\_parent" android:layout\_height="wrap\_content" android:hint="Enter Number 1" android:inputType="numberDecimal" />

<EditText android:id="@+id/editTextNumber2" android:layout\_width="match\_parent" android:layout\_height="wrap\_content" android:layout\_below="@id/editTextNumber1" android:layout\_marginTop="16dp" android:hint="Enter Number 2" android:inputType="numberDecimal" />

<Button android:id="@+id/buttonSubmit" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:layout\_below="@id/editTextNumber2" android:layout\_marginTop="16dp" android:text="Submit" />

<TextView

android:id="@+id/textViewResult" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:layout\_below="@id/buttonSubmit" android:layout\_marginTop="16dp" android:text="Result:" android:textSize="18sp" />

</RelativeLayout>

**MainActivity.java-** package com.example.myapplication; import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle; import android.view.View; import android.widget.Button; import android.widget.EditText; import android.widget.TextView;

public class MainActivity extends AppCompatActivity {

private EditText editTextNumber1; private EditText editTextNumber2; private Button buttonSubmit; private TextView textViewResult;

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

editTextNumber1 = findViewById(R.id.editTextNumber1); editTextNumber2 = findViewById(R.id.editTextNumber2); buttonSubmit = findViewById(R.id.buttonSubmit); textViewResult = findViewById(R.id.textViewResult);

buttonSubmit.setOnClickListener(new View.OnClickListener() { @Override

public void onClick(View v) { submitNumbers();

}

});

}

private void submitNumbers() {

String number1String = editTextNumber1.getText().toString().trim();

String number2String = editTextNumber2.getText().toString().trim();

if (number1String.isEmpty() || number2String.isEmpty()) { textViewResult.setText("Please enter both numbers.");

return;

}

double number1 = Double.parseDouble(number1String); double number2 = Double.parseDouble(number2String);

if (number1 > 20 && number2 > 20) {

textViewResult.setText("Both numbers are greater than

20. Please enter new numbers.");

editTextNumber1.setText(""); editTextNumber2.setText(""); return;

}

textViewResult.setText("Number 1: " + number1 + "\nNumber 2: " + number2);

}

}

**Q2.** Java Android Program to perform all arithmetic Operations using Calculators.

Ans.

<!-- activity\_calculator.xml -->

<RelativeLayout

xmlns:android="http://schemas.android.com/apk/res/android" android:layout\_width="match\_parent" android:layout\_height="match\_parent" android:padding="16dp">

<TextView android:id="@+id/textViewResult" android:layout\_width="match\_parent" android:layout\_height="wrap\_content" android:textSize="24sp" android:layout\_marginBottom="16dp"

android:text="0"

android:textAlignment="textEnd"/>

<GridLayout

android:layout\_width="match\_parent" android:layout\_height="wrap\_content" android:layout\_below="@id/textViewResult" android:columnCount="4" android:orientation="horizontal">

<Button android:id="@+id/button0" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:text="0" android:onClick="onButtonClick"/>

<Button android:id="@+id/button1" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:text="1" android:onClick="onButtonClick"/>

<Button android:id="@+id/button2" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:text="2" android:onClick="onButtonClick"/>

<Button

android:id="@+id/button3" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:text="3" android:onClick="onButtonClick"/> <Button android:id="@+id/button4" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:text="4" android:onClick="onButtonClick"/>

<Button android:id="@+id/button5" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:text="5" android:onClick="onButtonClick"/>

<Button android:id="@+id/button6" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:text="6" android:onClick="onButtonClick"/>

<Button

android:id="@+id/button7" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:text="7" android:onClick="onButtonClick"/> <Button android:id="@+id/button8" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:text="8" android:onClick="onButtonClick"/>

<Button android:id="@+id/button9" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:text="9" android:onClick="onButtonClick"/>

<Button android:id="@+id/buttonPlus" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content"

android:text="+" android:onClick="onButtonClick"/>

<Button android:id="@+id/buttonsubtraction" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content"

android:text="-" android:onClick="onButtonClick"/>

<Button

android:id="@+id/buttonmultipliaction" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content"

android:text="×" android:onClick="onButtonClick"/>

<Button android:id="@+id/buttondivision" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content"

android:text="÷" android:onClick="onButtonClick"/>

<Button android:id="@+id/buttonequal" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:text="=" android:onClick="onButtonClick"/>

<Button android:id="@+id/buttonclear" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:text="C" android:onClick="onButtonClick"/>

</GridLayout>

</RelativeLayout>

**MainActivity.java-**

import android.os.Bundle; import android.view.View; import android.widget.Button; import android.widget.TextView;

import androidx.appcompat.app.AppCompatActivity;

public class CalculatorActivity extends AppCompatActivity {

private TextView textViewResult; private String input = "";

private double operand1 = Double.NaN; private double operand2 = Double.NaN;

private String operator = "";

@Override protected void onCreate(Bundle savedInstanceState) { super.onCreate(savedInstanceState); setContentView(R.layout.activity\_calculator); textViewResult = findViewById(R.id.textViewResult);

}

public void onButtonClick(View view) {

Button button = (Button) view;

String buttonText = button.getText().toString();

switch (buttonText) {

case "C": clear(); break; case "+": case "-": case "×": case "÷":

if (!input.isEmpty()) {

operand1 = Double.parseDouble(input); operator = buttonText;

input = "";

}

break; case "=":

if (!Double.isNaN(operand1) && !input.isEmpty()) { operand2 = Double.parseDouble(input); input = String.valueOf(calculate()); operand1 = Double.NaN;

operand2 = Double.NaN;

operator = "";

} break; default:

input += buttonText;

}

textViewResult.setText(input);

}

private void clear() { input = "";

operand1 = Double.NaN; operand2 = Double.NaN;

operator = ""; textViewResult.setText("0");

}

private double calculate() { switch (operator) { case "+": return operand1 + operand2;

case "-": return operand1 - operand2; case "×":

return operand1 \* operand2;

case "÷":

if (operand2 == 0) return Double.NaN; // handle division by zero return operand1 / operand2; default:

return Double.NaN;

}

}

}