Slip 2

**Q1**.Perfect number

<?xml version=”1.0” encoding=”utf-8”?>

<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”

Tools:context=”.MainActivity”>

<EditText

Android:id=”@+id/number\_input”

Android:layout\_width=”match\_parent”

Android:layout\_height=”wrap\_content”

Android:hint=”Enter a number”

Android:inputType=”number” />

<Button

Android:id=”@+id/check\_button”

Android:layout\_width=”wrap\_content”

Android:layout\_height=”wrap\_content”

Android:layout\_below=”@id/number\_input”

Android:layout\_centerHorizontal=”true”

Android:layout\_marginTop=”16dp”

Android:text=”Check” />

</RelativeLayout>

Java code

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 MainActivity extends AppCompatActivity {

EditText numberInput;

Button checkButton;

@Override

Protected void onCreate(Bundle savedInstanceState) {

Super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_main);

numberInput = findViewById(R.id.number\_input);

checkButton = findViewById(R.id.check\_button);

checkButton.setOnClickListener(new View.OnClickListener() {

@Override

Public void onClick(View v) {

String inputStr = numberInput.getText().toString();

If (!inputStr.isEmpty()) {

Int number = Integer.parseInt(inputStr);

If (isPerfectNumber(number)) {

showToast(“The number is a perfect number!”);

} else {

showToast(“The number is not a perfect number.”);

}

} else {

showToast(“Please enter a number.”);

}

}

});

}

Private boolean isPerfectNumber(int number) {

Int sum = 0;

For (int I = 1; I <= number / 2; i++) {

If (number % I == 0) {

Sum += I;

}

}

Return sum == number;

}

Private void showToast(String message) {

Toast.makeText(this, message, Toast.LENGTH\_SHORT).show();

}

}

**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;

}

}

}