Problem 1

Exercise Objective: Develop a measurement converter application that converts Centimetres into inches.

Problem Statement 1: The app should have input field for Centimetre and a button Convert for Conversion. Upon pressing the "Convert" button, the app should display the value in inches.

Expected Output: The app displays the proper conversion from Centimetres into inches.

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:padding="16dp"
    tools:context=".MainActivity">

    <!-- Title TextView -->
    <TextView
        android:id="@+id/titleTextView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Centimeter to Inch Converter"
        android:textSize="24sp"
        android:textStyle="bold"
        android:textColor="@android:color/holo_blue_dark"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
```

```
        app:layout_constraintTop_toTopOf="parent"
        android:layout_marginTop="32dp"/>

    <!-- EditText for Centimeter Input -->
    <EditText
        android:id="@+id/cmEditText"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_marginTop="32dp"
        android:hint="Enter Centimeters"
        android:inputType="numberDecimal"
        android:minHeight="48dp"
        android:padding="12dp"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/titleTextVie
w" />

    <!-- Convert Button -->
    <Button
        android:id="@+id/convertButton"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_marginTop="24dp"
        android:text="Convert to Inches"
        android:textSize="18sp"
        android:textStyle="bold"
        android:backgroundTint="@android:color/holo_green_dark
"
        android:textColor="@android:color/white"
        app:layout_constraintEnd_toEndOf="parent"
```

```
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/cmEditText"
/>

    <!-- TextView to display Inches -->
    <TextView
        android:id="@+id/inchesResultTextView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="32dp"
        android:text="Result: "
        android:textSize="20sp"
        android:textStyle="italic"
        android:textColor="@android:color/black"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/convertButto
n" />

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

MainActivity.java

```
package com.example.measurementconverter; // Replace with your
package name

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;

import android.widget.Toast; // Import Toast for displaying
messages


import java.text.DecimalFormat; // Import DecimalFormat for
formatting output


public class MainActivity extends AppCompatActivity {


    // Declare UI elements

    private EditText cmEditText;

    private Button convertButton;

    private TextView inchesResultTextView;


    @Override

    protected void onCreate(Bundle savedInstanceState) {

        super.onCreate(savedInstanceState);

        setContentView(R.layout.activity_main); // Set the
layout for this activity


        // Initialize UI elements by finding their IDs from
the layout

        cmEditText = findViewById(R.id.cmEditText);

        convertButton = findViewById(R.id.convertButton);

        inchesResultTextView =
findViewById(R.id.inchesResultTextView);


        // Set an OnClickListener for the convert button

        convertButton.setOnClickListener(new
View.OnClickListener() {

            @Override

            public void onClick(View view) {
```

```
                convertCentimetersToInches(); // Call the
conversion method
            }
        });
    }

    /**
     * This method handles the conversion from centimeters to
inches.
     */
    private void convertCentimetersToInches() {
        // Get the input text from the EditText
        String cmString = cmEditText.getText().toString();

        // Check if the input string is empty
        if (cmString.isEmpty()) {
            // Show a Toast message if the input is empty
            Toast.makeText(this, "Please enter a value in
Centimeters", Toast.LENGTH_SHORT).show();
            inchesResultTextView.setText("Result: "); // Clear
previous result
            return; // Exit the method
        }

        try {
            // Parse the input string to a double
            double centimeters = Double.parseDouble(cmString);

            // Perform the conversion (1 inch = 2.54 cm)
            double inches = centimeters / 2.54;

            // Format the inches value to two decimal places
```

```
            // This makes the output cleaner and more readable
            DecimalFormat df = new DecimalFormat("#.##");
            String formattedInches = df.format(inches);

            // Display the result in the TextView
            inchesResultTextView.setText("Result: " +
formattedInches + " inches");

        } catch (NumberFormatException e) {
            // Handle cases where the user inputs non-numeric
data
            Toast.makeText(this, "Invalid input. Please enter
a valid number.", Toast.LENGTH_LONG).show();
            inchesResultTextView.setText("Result: "); // Clear
previous result
            e.printStackTrace(); // Print the stack trace for
debugging
        }
    }
}
```