Experiment – 1

Aim: Design an application to perform the arithmetic operations by reading the input from user

Solution:

activity_main.xml:

```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/aBox"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:ems="10"
        android:minHeight="48dp"
        android:minWidth="48dp"
        android:hint="Enter a Value"
        android:inputType="text"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintBottom_toTopOf="@+id/bBox"/>

    <EditText
        android:id="@+id/bBox"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:ems="10"
        android:hint="Enter b Value"
        android:inputType="text"
        android:minWidth="48dp"
        android:minHeight="48dp"
        app:layout_constraintBottom_toTopOf="@+id/addBtn"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/aBox" />

    <Button
        android:id="@+id/addBtn"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="+"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintEnd_toStartOf="@+id/subBtn"
        app:layout_constraintBottom_toTopOf="@+id/mulBtn"
```

```xml
        app:layout_constraintTop_toBottomOf="@+id/bBox"/>

    <Button
        android:id="@+id/subBtn"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="-"
        tools:layout_editor_absoluteX="230dp"
        tools:layout_editor_absoluteY="322dp"
        app:layout_constraintBottom_toTopOf="@+id/divBtn"
        app:layout_constraintStart_toEndOf="@+id/addBtn"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/bBox"/>

    <Button
        android:id="@+id/mulBtn"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="*"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/addBtn"
        app:layout_constraintEnd_toStartOf="@+id/divBtn"
        app:layout_constraintBottom_toTopOf="@+id/result"/>

    <Button
        android:id="@+id/divBtn"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="/"
        tools:layout_editor_absoluteX="230dp"
        tools:layout_editor_absoluteY="322dp"
        app:layout_constraintBottom_toTopOf="@+id/result"
        app:layout_constraintStart_toEndOf="@+id/mulBtn"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/subBtn" />

    <TextView
        android:id="@+id/result"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/divBtn" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java:

```java
package com.example.arith;

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 {
    EditText aval, bval;
    Button add, sub, mul, div;
    TextView res;
    Double a, b;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        aval = findViewById(R.id.aBox);
        bval = findViewById(R.id.bBox);
        add = findViewById(R.id.addBtn);
        sub = findViewById(R.id.subBtn);
        mul = findViewById(R.id.mulBtn);
        div = findViewById(R.id.divBtn);
        res = findViewById(R.id.result);
        add.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                a = Double.parseDouble(aval.getText().toString());
                b = Double.parseDouble(bval.getText().toString());
                res.setText("Result: "+(a+b));
            }
        });
        sub.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                a = Double.parseDouble(aval.getText().toString());
                b = Double.parseDouble(bval.getText().toString());
                res.setText("Result: "+(a-b));
            }
        });
        mul.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                a = Double.parseDouble(aval.getText().toString());
                b = Double.parseDouble(bval.getText().toString());
                res.setText("Result: "+(a*b));
```
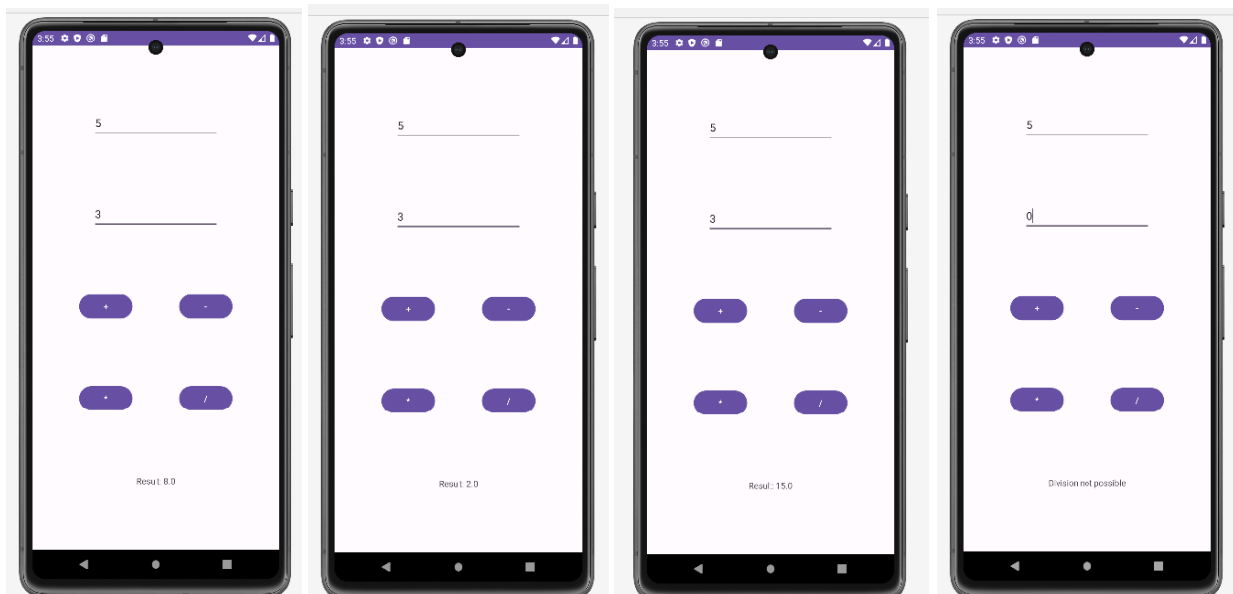
```
        }
    });
    div.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            a = Double.parseDouble(aval.getText().toString());
            b = Double.parseDouble(bval.getText().toString());
            if(b!=0)
                res.setText("Result: "+(a/b));
            else
                res.setText("Division not possible");
        }
    });
  }
}
```

Output:

Experiment – 2
Aim: Design an application to calculate the body mass index by reading the input from user

Solution:
activity_main.xml:

```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/header"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="BMI Calculator"
        android:textSize="48dp"
        android:textStyle="bold"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintBottom_toTopOf="@+id/wtLbl" />

    <TextView
        android:id="@+id/wtLbl"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Weight (in Kg)"
        android:textStyle="bold"
        tools:layout_editor_absoluteX="53dp"
        tools:layout_editor_absoluteY="178dp"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintEnd_toStartOf="@+id/wtBox"
        app:layout_constraintBottom_toTopOf="@+id/htLbl"
        app:layout_constraintTop_toBottomOf="@+id/header" />

    <EditText
        android:id="@+id/wtBox"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:ems="10"
        android:hint="Enter Weight"
        android:inputType="text"
        android:minHeight="48dp"
        tools:layout_editor_absoluteX="184dp"
        tools:layout_editor_absoluteY="164dp"
```

```xml
        app:layout_constraintBottom_toTopOf="@+id/htBox"
        app:layout_constraintStart_toEndOf="@+id/wtLbl"
        app:layout_constraintTop_toBottomOf="@+id/header"
        app:layout_constraintEnd_toEndOf="parent"/>

    <TextView
        android:id="@+id/htLbl"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Height (in Cm)"
        android:textStyle="bold"
        tools:layout_editor_absoluteX="56dp"
        tools:layout_editor_absoluteY="295dp"
        app:layout_constraintTop_toBottomOf="@+id/wtLbl"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintEnd_toStartOf="@+id/wtBox"
        app:layout_constraintBottom_toTopOf="@+id/calcBtn"/>

    <EditText
        android:id="@+id/htBox"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:ems="10"
        android:minHeight="48dp"
        android:hint="Enter Height"
        android:inputType="text"
        tools:layout_editor_absoluteX="184dp"
        tools:layout_editor_absoluteY="275dp"
        app:layout_constraintBottom_toTopOf="@+id/calcBtn"
        app:layout_constraintStart_toEndOf="@+id/htLbl"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/wtBox"/>

    <Button
        android:id="@+id/calcBtn"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Calculate"
        tools:layout_editor_absoluteX="157dp"
        tools:layout_editor_absoluteY="431dp"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@id/htBox"
        app:layout_constraintBottom_toTopOf="@+id/result"/>

    <TextView
        android:id="@+id/result"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:gravity="center_horizontal"
```

```
        android:textStyle="bold"
        tools:layout_editor_absoluteX="180dp"
        tools:layout_editor_absoluteY="571dp"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/calcBtn"/>
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java:
```java
package com.example.bmicalc;

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;

public class MainActivity extends AppCompatActivity {
    EditText wtval, htval;
    Button btn;
    TextView res;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        wtval = findViewById(R.id.wtBox);
        htval = findViewById(R.id.htBox);
        btn = findViewById(R.id.calcBtn);
        res = findViewById(R.id.result);
        btn.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Float wt = Float.parseFloat(wtval.getText().toString());
                Float ht_m = Float.parseFloat(htval.getText().toString())/100;
                Float bmi = wt/ (ht_m*ht_m);
                if(bmi < 18.5)
                    res.setText("The BMI is: "+bmi+" \n Under Weight ");
                else if (bmi >= 18.5 && bmi < 24.9)
                    res.setText("The BMI is: "+bmi+" \n Healthy ");
                else if (bmi >= 24.9 && bmi < 30)
                    res.setText("The BMI is: "+bmi+" \n Over Weight ");
                else if (bmi>=30)
                    res.setText("The BMI is: "+bmi+" \n Suffering from obesity ");
            }
        });
```

```
    }
}
```

Output: