Jain (Deemed-to-be) University, Faculty of Engineering and Technology

Department of CSE – Mobile Application & Cloud Technology

Mobile Application Development Using Open Source Lab

Semester – V

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20BTLCM003

Experiment – 1

➢ Aim:-

Installation of Android Studio and display Hello World.

➢ Source Code:-

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:tools="http://schemas.android.com/tools"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Hello World!"
        android:textColor="@color/black"
        android:textSize="20sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <TextView
        android:id="@+id/textView2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="88dp"

        android:textColor="@color/black"
        android:textSize="20sp"
        android:textStyle="bold"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.498"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

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

MainActivity.java

```java
package com.example.experiment1;

import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;

public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }
}
```

➢ **Output:-**

Experiment – 2

➢ **Aim:-**

Add two Edit Text. When a number is entered in Edit Text 1, the square of that number should be displayed in Edit Text 2.

➢ **Source Code:-**

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:id="@+id/textview2"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity" >

    <TextView
        android:id="@+id/textView2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="88dp"

        android:textAlignment="center"
        android:textColor="@color/black"
        android:textSize="20sp"
        android:textStyle="bold"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.498"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <EditText
        android:id="@+id/num"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="188dp"
        android:layout_marginEnd="88dp"
        android:ems="10"
        android:hint="Enter the number"
        android:inputType="textPersonName"
        android:textAlignment="center"
        android:textColor="@color/black"
        android:textSize="20sp"
```

```xml
        android:textStyle="bold"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <EditText
        android:id="@+id/result"
        android:layout_width="235dp"
        android:layout_height="47dp"
        android:layout_marginTop="44dp"
        android:layout_marginEnd="88dp"
        android:ems="10"
        android:hint="Square of the number"
        android:inputType="textPersonName"
        android:textAlignment="center"
        android:textColor="@color/black"
        android:textSize="20sp"
        android:textStyle="bold"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/num" />

    <Button
        android:id="@+id/button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="52dp"
        android:layout_marginEnd="152dp"
        android:onClick="calculate"
        android:text="Calculate"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/result" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java

```java
package com.example.experiment2;

import androidx.appcompat.app.AppCompatActivity;

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

public class MainActivity extends AppCompatActivity {

    EditText et1, et2;
```
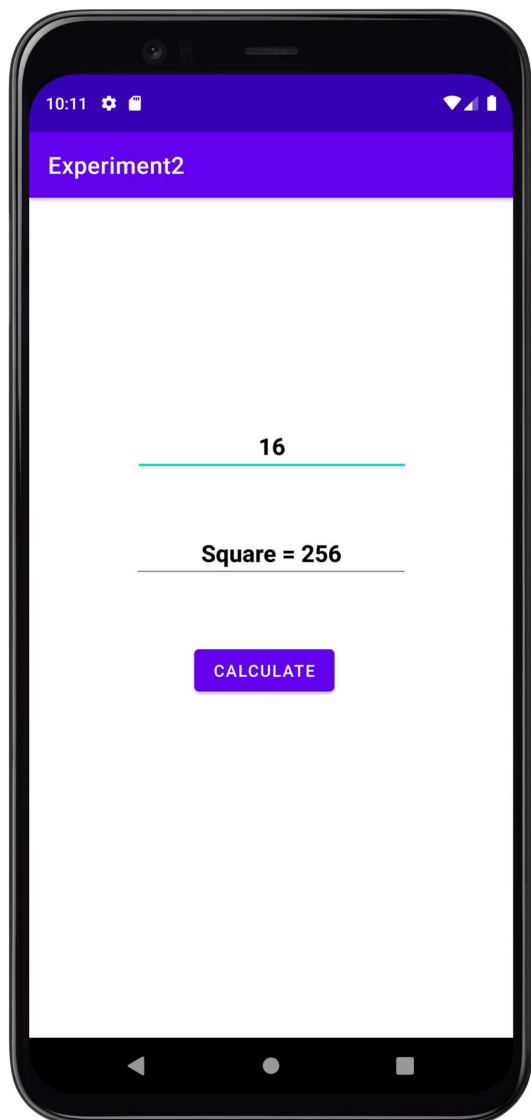
```java
@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
}

public void calculate(View view) {
    et1=findViewById(R.id.num);
    int i = Integer.parseInt(String.valueOf(et1.getText()));

    et2=findViewById(R.id.result);
    et2.setText("Square = "+(i*i));
}
}
```

➢ **Output:-**

Experiment – 3

➢ **Aim:-**

Add an Edit Text and a button. When the button is clicked, the text inputted in Edit Text should be retrieved and displayed back to the user.

➢ **Source Code:-**

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/textView2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="88dp"

        android:textAlignment="center"
        android:textColor="@color/black"
        android:textSize="20sp"
        android:textStyle="bold"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.498"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <EditText
        android:id="@+id/input"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="188dp"
        android:layout_marginEnd="23dp"
        android:ems="10"
        android:hint="Enter the text"
        android:inputType="textPersonName"
        android:textAlignment="center"
        android:textColor="@color/black"
        android:textSize="20sp"
        android:textStyle="bold"
```

```xml
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.572"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <Button
        android:id="@+id/button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="48dp"
        android:onClick="display"
        android:text="Display"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/input" />

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

MainActivity.java

```java
package com.example.experiment3;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.view.View;
import android.widget.EditText;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {

    EditText et1;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }

    public void display(View view) {
        et1=findViewById(R.id.input);
        Toast.makeText(this,et1.getText(),Toast.LENGTH_LONG).show();
    }
}
```
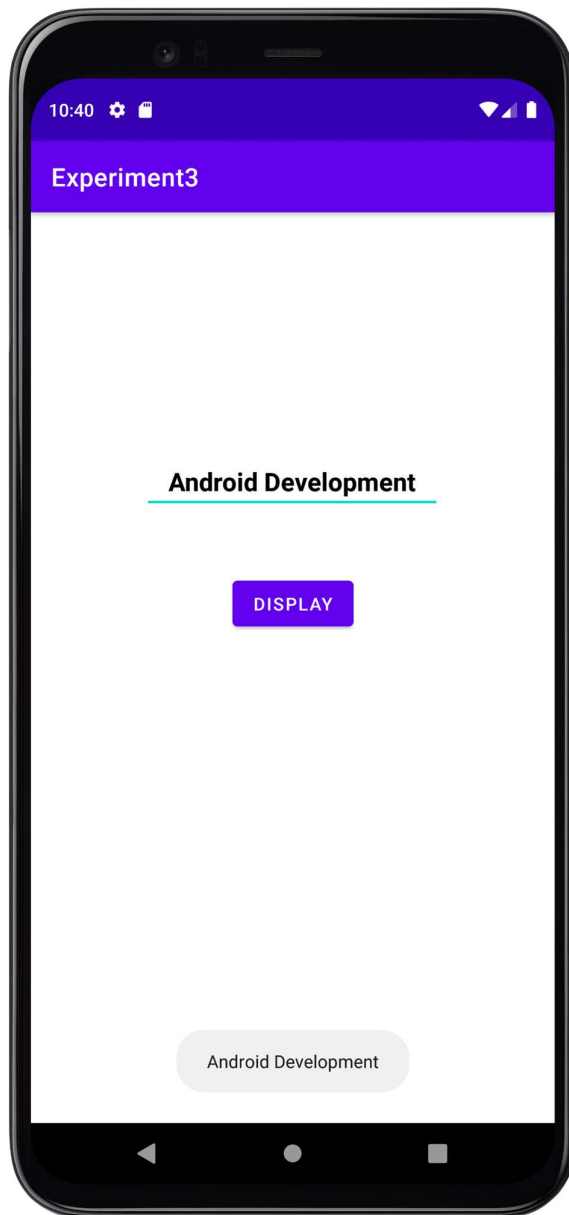
➢ **Output:-**

Experiment – 4

➢ **Aim:-**

Add two Edit Text and a button. When the button is clicked, the text inputted in Edit Text 1 should be retrieved and displayed in EditText2.

➢ **Source Code:-**

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/textView2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="88dp"

        android:textAlignment="center"
        android:textColor="@color/black"
        android:textSize="20sp"
        android:textStyle="bold"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.498"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <EditText
        android:id="@+id/input"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="156dp"
        android:ems="10"
        android:hint="Enter the text"
        android:inputType="textPersonName"
        android:textAlignment="center"
        android:textColor="@color/black"
        android:textSize="20sp"
        android:textStyle="bold"
        app:layout_constraintEnd_toEndOf="parent"
```

```xml
        app:layout_constraintHorizontal_bias="0.497"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <Button
        android:id="@+id/button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="216dp"
        android:text="Display"
        android:onClick="Display"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.498"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <EditText
        android:id="@+id/show"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="316dp"
        android:ems="10"
        android:hint="Text entered"
        android:inputType="textPersonName"
        android:textAlignment="center"
        android:textSize="20sp"
        android:textStyle="bold"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.497"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

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

MainActivity.java

```java
package com.example.experiment4;

import androidx.appcompat.app.AppCompatActivity;

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

public class MainActivity extends AppCompatActivity {

    EditText et1, et2;
```
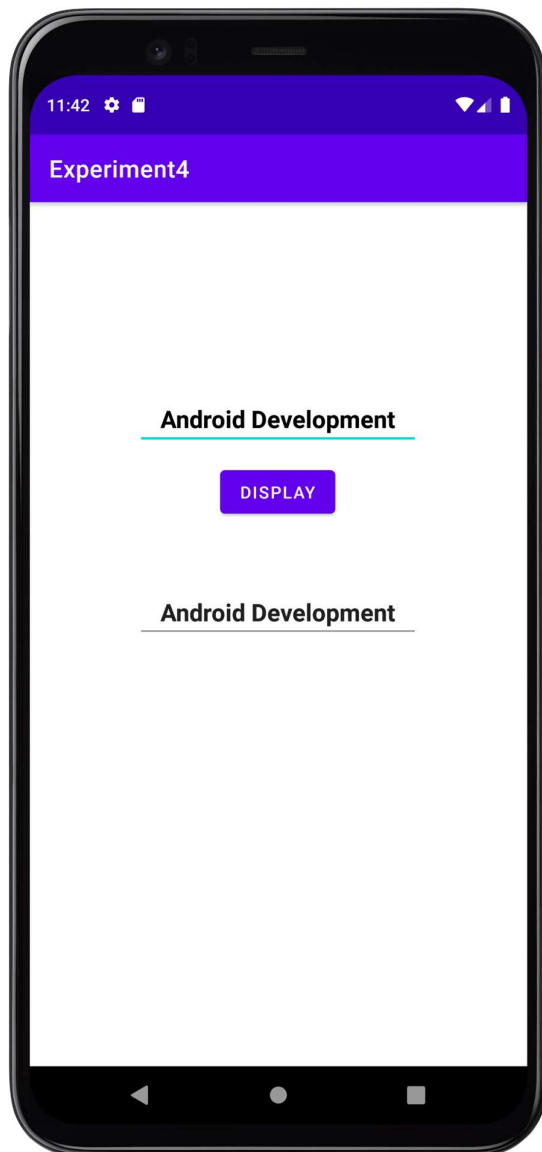
```java
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }

    public void Display(View view) {
        et1 = findViewById(R.id.input);
        et2 = findViewById(R.id.show);
        et2.setText(et1.getText());
    }
}
```

➢ **Output:-**

Experiment – 5

> ## Aim:-
> Program a calculator.

> ## Source Code:-

activity_main.xml

```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="wrap_content"
    android:layout_height="wrap_content"
    tools:context=".MainActivity">

    <TextView
        android:id="@+id/textView2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentTop="true"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="33dp"

        android:textAlignment="center"
        android:textColor="@color/black"
        android:textSize="20sp"
        android:textStyle="bold"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.498"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <EditText
        android:id="@+id/num1"
        android:layout_width="wrap_content"
        android:layout_height="55dp"
        android:layout_alignParentStart="true"
        android:layout_alignParentTop="true"
        android:layout_alignParentEnd="true"
        android:layout_centerHorizontal="true"
        android:layout_marginStart="20dp"
        android:layout_marginTop="105dp"
        android:layout_marginEnd="23dp"
        android:ems="10"
```

```xml
    android:hint="Number 1"
    android:inputType="numberDecimal"
    android:textSize="20sp"
    android:textStyle="bold" />

<EditText
    android:id="@+id/num2"
    android:layout_width="wrap_content"
    android:layout_height="55dp"
    android:layout_alignParentStart="true"
    android:layout_alignParentTop="true"
    android:layout_alignParentEnd="true"
    android:layout_centerHorizontal="true"
    android:layout_marginStart="28dp"
    android:layout_marginTop="161dp"
    android:layout_marginEnd="15dp"
    android:ems="10"
    android:hint="Number 2"
    android:inputType="numberDecimal"
    android:textSize="20sp"
    android:textStyle="bold" />

<TextView
    android:id="@+id/result"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignParentStart="true"
    android:layout_alignParentTop="true"
    android:layout_marginStart="28dp"
    android:layout_marginTop="225dp"
    android:hint="Result"
    android:textColor="@color/black"
    android:textSize="20sp"
    android:textStyle="bold" />

<Button
    android:id="@+id/sum"
    android:layout_width="336dp"
    android:layout_height="wrap_content"
    android:layout_alignParentStart="true"
    android:layout_alignParentTop="true"
    android:layout_centerHorizontal="true"
    android:layout_marginStart="38dp"
    android:layout_marginTop="272dp"
    android:onClick="Calculate"
    android:text="ADDITION"
    android:backgroundTint="@color/grey"
    app:cornerRadius="@android:dimen/app_icon_size" />
```

```xml
    <Button
        android:id="@+id/difference"
        android:layout_width="336dp"
        android:layout_height="wrap_content"
        android:layout_alignParentStart="true"
        android:layout_alignParentTop="true"
        android:layout_centerHorizontal="true"
        android:layout_marginStart="38dp"
        android:layout_marginTop="321dp"
        android:backgroundTint="@color/grey"
        android:onClick="Calculate"
        android:text="SUBTRACTION"
        app:cornerRadius="@android:dimen/app_icon_size" />

    <Button
        android:id="@+id/product"
        android:layout_width="336dp"
        android:layout_height="wrap_content"
        android:layout_alignParentStart="true"
        android:layout_alignParentTop="true"
        android:layout_centerHorizontal="true"
        android:layout_marginStart="40dp"
        android:layout_marginTop="370dp"
        android:backgroundTint="@color/grey"
        android:onClick="Calculate"
        android:text="MULTIPLICATION"
        app:cornerRadius="@android:dimen/app_icon_size" />

    <Button
        android:id="@+id/quotient"
        android:layout_width="336dp"
        android:layout_height="wrap_content"
        android:layout_alignParentStart="true"
        android:layout_alignParentTop="true"
        android:layout_centerHorizontal="true"
        android:layout_marginStart="38dp"
        android:layout_marginTop="417dp"
        android:layout_marginBottom="7dp"
        android:backgroundTint="@color/grey"
        android:onClick="Calculate"
        android:text="DIVISION"
        app:cornerRadius="@android:dimen/app_icon_size" />

</RelativeLayout>
```

MainActivity.java

```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;

public class MainActivity extends AppCompatActivity {

    EditText etnum1, etnum2;
    TextView tvresult;

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

        etnum1 = findViewById(R.id.num1);
        etnum2 = findViewById(R.id.num2);
        tvresult = findViewById(R.id.result);
    }

    public void Calculate(View view) {
        float num1=0, num2=0, result=0;
        num1=Float.parseFloat(etnum1.getText().toString());
        num2=Float.parseFloat(etnum2.getText().toString());

        switch (view.getId())
        {
            case R.id.sum:
                result = num1 + num2;
                break;
            case R.id.difference:
                result = num1 - num2;
                break;
            case R.id.product:
                result = num1 * num2;
                break;
            case R.id.quotient:
                result = num1 / num2;
        }
        tvresult.setText(""+result);
    }
}
```
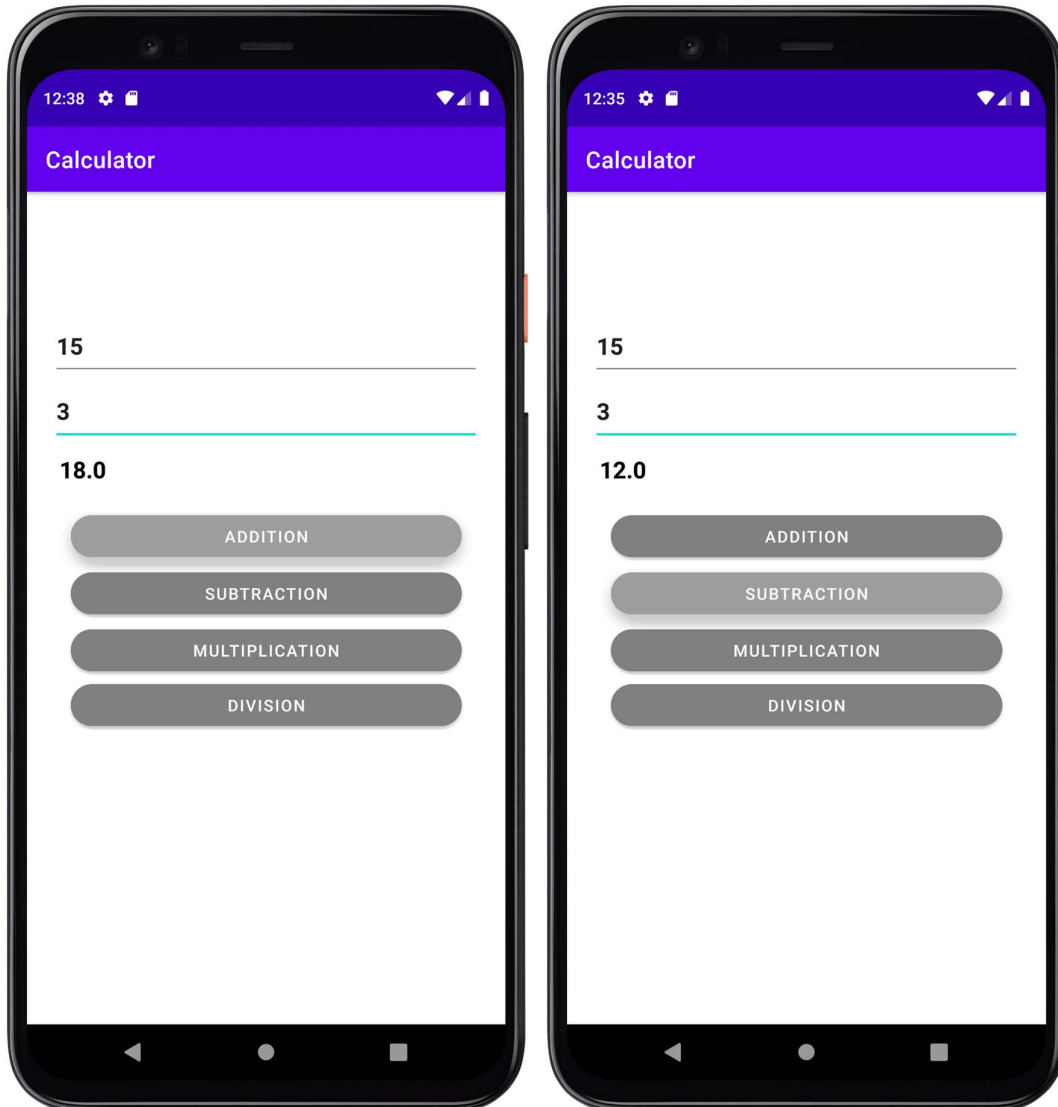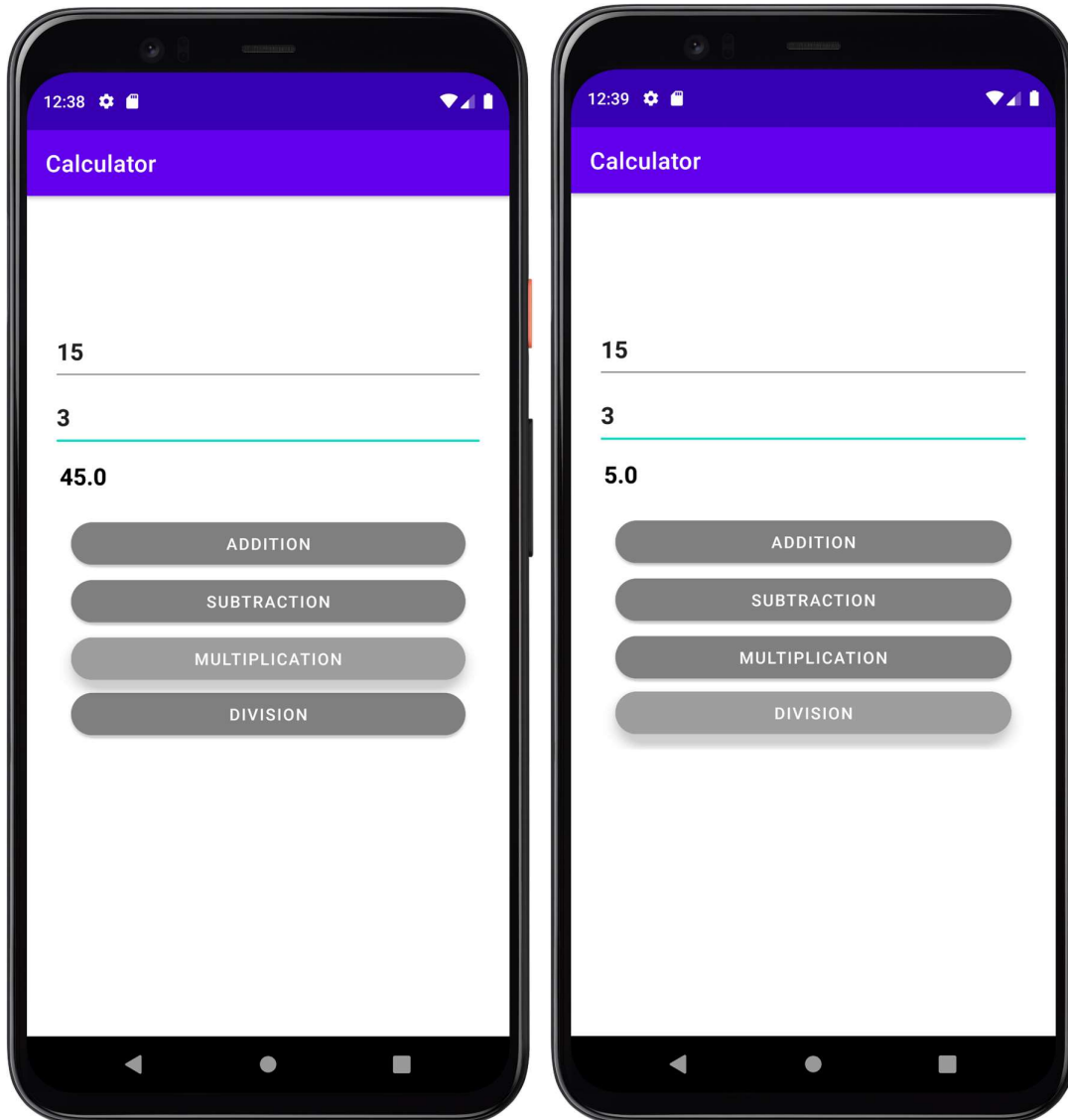
➢ **Output:-**

Experiment – 6

➢ **Aim:-**
Create a Unit converter for height.

➢ **Source Code:-**

<u>activity_main.xml</u>

```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/textView2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="60dp"

        android:textColor="@color/black"
        android:textSize="20sp"
        android:textStyle="bold"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <TextView
        android:id="@+id/tv"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="116dp"
        android:text="HEIGHT CONVERTER"
        android:textColor="@color/black"
        android:textSize="20sp"
        android:textStyle="bold"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.497"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <EditText
        android:id="@+id/cm"
```

```xml
        android:layout_width="213dp"
        android:layout_height="54dp"
        android:layout_marginTop="32dp"
        android:ems="10"
        android:hint="cm"
        android:inputType="textPersonName"
        android:textColor="@color/black"
        android:textStyle="bold"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.502"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/tv" />

    <EditText
        android:id="@+id/inch"
        android:layout_width="214dp"
        android:layout_height="57dp"
        android:layout_marginTop="20dp"
        android:ems="10"
        android:hint="inch"
        android:inputType="textPersonName"
        android:textColor="@color/black"
        android:textStyle="bold"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.497"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/cm" />

    <Button
        android:id="@+id/convert"
        android:layout_width="117dp"
        android:layout_height="52dp"
        android:backgroundTint="@color/grey"
        android:text="CONVERT"
        android:textColor="@color/black"
        android:textSize="16sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.498"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/inch"
        app:layout_constraintVertical_bias="0.082" />

    <Button
        android:id="@+id/reset"
        android:layout_width="117dp"
        android:layout_height="52dp"
        android:backgroundTint="@color/grey"
        android:text="RESET"
        android:textColor="@color/black"
```

```
        android:textSize="16sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/inch"
        app:layout_constraintVertical_bias="0.266" />

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

MainActivity.java

```java
package com.example.unitconverter;

import androidx.appcompat.app.AppCompatActivity;

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

public class MainActivity extends AppCompatActivity {

    EditText et1, et2;
    Button convert, reset;
    double val1=0, val2=0;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        et1 = findViewById(R.id.cm);
        et2 = findViewById(R.id.inch);
        convert = findViewById(R.id.convert);
        reset = findViewById(R.id.reset);

        convert.setOnClickListener(new View.OnClickListener()
{
            @Override
            public void onClick(View view) {
                if(et1.getText().length()>0)
                {
                    val1 =
Double.parseDouble(et1.getText().toString());
                    val2 = val1 * 2.54;
                    et1.setText(Double.toString(val1)+" cm");
                    et2.setText(Double.toString(val2)+"
inch");
                }
```

```java
                else if(et2.getText().length()>0)
                {
                    val2 =
Double.parseDouble(et2.getText().toString());
                    val1 = val2/2.54;
                    et1.setText(Double.toString(val1)+" cm");
                    et2.setText(Double.toString(val2)+"
inch");
                }
                else
                {

Toast.makeText(getApplicationContext(),"Please enter a
value",Toast.LENGTH_LONG).show();
                }
            }
        });

        reset.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                et1.setText("");
                et2.setText("");
            }
        });

    }
}
```

> ➢ **Output:-**