AIM:

1. To Develop an android application to display a simple text in the emulator

Algorithm:

SOURCE CODE:

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout 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"
   android:gravity="center"
   android:orientation="vertical">
   <TextView
      android:id="@+id/text"
      android:textSize="18sp"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content" />
</LinearLayout>
```

MainActivity.Java

```
package com.lab.exp1;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.widget.TextView;
public class MainActivity extends AppCompatActivity {

   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);
      TextView textView= (TextView) findViewById(R.id.text);
      textView.setText("Welcome");
   }
}
```

AIM:

2 . To Develop an android application to display the internal keyboard in the emulator.

Algorithm:

SOURCE CODE:

Actitvity_main.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="match_parent"
```

```
    android:layout_height="match_parent"
    android:padding="16dp"
    android:gravity="center"
    tools:context="com.example.exp2.MainActivity">
    <EditText
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:id="@+id/edit_text"
        android:hint="Enter text"
        android:padding="12dp"
        android:singleLine="true"
        android:imeOptions="actionDone"
        android:background="@android:drawable/editbox_background"
        />

</RelativeLayout>
```

MainActivity.Java

```
package com.lab.exp2;

import android.content.Context;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.KeyEvent;
import android.view.WindowManager;
import android.view.inputmethod.EditorInfo;
import android.view.inputmethod.InputMethodManager;
import android.widget.EditText;

import android.widget.TextView;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {
    EditText editText;

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

        editText =(EditText) findViewById(R.id.edit_text);


getWindow().setSoftInputMode(WindowManager.LayoutParams.SOFT_INPUT_STATE_ALWAYS_VISIBLE);

        showKeyboard(editText);
        editText.setOnEditorActionListener(new TextView.OnEditorActionListener() {
            @Override
            public boolean onEditorAction(TextView v, int actionId, KeyEvent event) {
```

```
            String s = editText.getText().toString().trim();
            if(actionId == EditorInfo.IME_ACTION_DONE) {
               hideKeyboard(editText);
               Toast.makeText(getApplicationContext(), s, Toast.LENGTH_SHORT).show();
               return true;
            }
               return false;
         }
      });
   }

   private void hideKeyboard(EditText editText) {
      InputMethodManager manager = (InputMethodManager)
getSystemService(Context.INPUT_METHOD_SERVICE);

      manager.hideSoftInputFromWindow(editText.getApplicationWindowToken(),0);
   }

   private void showKeyboard(EditText editText){

      InputMethodManager manager =
(InputMethodManager)getSystemService(Context.INPUT_METHOD_SERVICE);

manager.showSoftInput(editText.getRootView(),InputMethodManager.SHOW_IMPLICIT);

      editText.requestFocus();

   }
   }
```

3. A)To Write an android program to display a message in the toast

SOURCE CODE:

activity_main.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="match_parent"
   android:layout_height="match_parent"
   tools:context="com.example.arun.expno3b.MainActivity">


   <Button
      android:id="@+id/button"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:layout_alignParentTop="true"
      android:layout_centerHorizontal="true"
      android:layout_marginTop="75dp"
      android:text="Button" />
</RelativeLayout>
```

MainActivity.Java

```
package com.example.arun.expno3b;

import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {

    Button btn;

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

        btn = (Button)findViewById(R.id.button);

        btn.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Toast.makeText(MainActivity.this,"Mobile App”
",Toast.LENGTH_LONG).show();
            }
        });
    }
}
```

3b)

Aim:

To Write an android program to input a text through a text and the same must be displayed in the toast when a button is clicked on the screen

SOURCE CODE:

activity_main.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="match_parent"
    android:layout_height="match_parent"
    tools:context="com.example.arun.expno3a.MainActivity">

    <EditText
        android:id="@+id/editText"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:ems="10"
        android:inputType="textPersonName"
```

```
        android:layout_marginTop="50dp"
        android:hint="Name"
        tools:layout_editor_absoluteX="-55dp"
        tools:layout_editor_absoluteY="16dp" />

    <Button
        android:id="@+id/button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Button"
        tools:layout_editor_absoluteX="31dp"
        tools:layout_editor_absoluteY="160dp"
        android:layout_below="@+id/editText"
        android:layout_alignParentLeft="true"
        android:layout_alignParentStart="true"
        android:layout_marginTop="30dp" />
</RelativeLayout>
```

MainActivity.Java

```
package com.example.arun.expno3b;

import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {

    Button btn;


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

        btn = (Button)findViewById(R.id.button);

         btn.setOnClickListener(new View.OnClickListener() {
           @Override
           public void onClick(View v) {
              e1 = (EditText)findViewById(R.id.editText);
              String message=e1.getText().toString();
              Toast.makeText(MainActivity.this,message,Toast.LENGTH_LONG).show();
           }
        });
    }
}
```

4a)

AIM

To Develop an application to perform 5 arithmetic operations: Addition, Subtraction, Multiplication, Division and Modulo operation with necessary user interface creation.

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:paddingBottom="@dimen/activity_vertical_margin"
   android:paddingLeft="@dimen/activity_horizontal_margin"
   android:paddingRight="@dimen/activity_horizontal_margin"
   android:paddingTop="@dimen/activity_vertical_margin"
   tools:context=".MainActivity" >

   <EditText
      android:id="@+id/editText1"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:layout_below="@+id/textView1"
      android:layout_centerHorizontal="true"
      android:layout_marginTop="48dp"
      android:ems="10" >

      <requestFocus />
   </EditText>

   <EditText
      android:id="@+id/editText2"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:layout_below="@+id/editText1"
      android:layout_centerHorizontal="true"
      android:layout_marginTop="33dp"
      android:ems="10" />

   <Button
      android:id="@+id/buttonsub"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:layout_alignBaseline="@+id/buttonsum"
      android:layout_alignBottom="@+id/buttonsum"
      android:layout_alignRight="@+id/editText2"
      android:text="buttonsub" />

   <Button
      android:id="@+id/buttonmul"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:layout_alignBaseline="@+id/buttondiv"
      android:layout_alignBottom="@+id/buttondiv"
      android:layout_alignRight="@+id/buttonsum"
      android:text="buttonmul" />

   <TextView
```

```
        android:id="@+id/textView1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentTop="true"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="22dp"
        android:text="Arithmetic Operation" />

    <Button
        android:id="@+id/buttonsum"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_below="@+id/editText2"
        android:layout_marginLeft="15dp"
        android:layout_marginTop="38dp"
        android:text="buttonsum" />

    <Button
        android:id="@+id/buttondiv"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignRight="@+id/buttonsub"
        android:layout_below="@+id/buttonsub"
        android:text="buttondiv" />

</RelativeLayout>
```

MainActivity.java:

```
package com.example.arithmetic;

import android.os.Bundle;
import android.app.Activity;
import android.view.Menu;
import android.app.Activity;
import android.os.Bundle;
import android.view.View;
import android.view.View.OnClickListener;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;
public class MainActivity extends Activity
{

Button btnsum,btnsub,btndiv,btnmul;


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

            Button btnsum = (Button) findViewById(R.id.buttonsum);
            Button btnsub = (Button) findViewById(R.id.buttonsub);
```

```
        Button btndiv = (Button) findViewById(R.id.buttondiv);
        Button btnmul = (Button) findViewById(R.id.buttonmul);
        final EditText etv = (EditText) findViewById(R.id.editText1);
        final EditText etv2 = (EditText) findViewById(R.id.editText2);
        final TextView result = (TextView) findViewById(R.id.textView1);

btnsub.setOnClickListener(new OnClickListener() {

public void onClick(View v) {
int x = new Integer(etv.getText().toString());
int y = new Integer(etv2.getText().toString());
int sub = x - y; //Perform Maths operation
result.setText("The ANS of " + x + " - " + y + " = " + sub);//print answer
                        }
                        });

btndiv.setOnClickListener(new OnClickListener() {

@Override
public void onClick(View v) {
int x = new Integer(etv.getText().toString());
int y = new Integer(etv2.getText().toString());
int div = x / y; //Perform Maths operation
result.setText("The ANS of " + x + " / " + y + " = " + div);//print answer
}
                        });

btnmul.setOnClickListener(new OnClickListener() {

@Override
public void onClick(View v) {
int x = new Integer(etv.getText().toString());
int y = new Integer(etv2.getText().toString());
int mul = x * y; //Perform Maths operation
result.setText("The ANS of " + x + " * " + y + " = " + mul);//Print answer
}
});

btnsum.setOnClickListener(new OnClickListener() {

@Override
public void onClick(View v) {
int x = new Integer(etv.getText().toString());
int y = new Integer(etv2.getText().toString());
int sum = x + y; //Perform Maths operation
result.setText("The ANS of " + x + " + " + y + " = " + sum);//Print answer
}
```

```
});
}

}
```

4b)

AIM: To Develop an android application to process a student mark list by creating proper UI using the necessary controls

SOURCE CODE:

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>

<LinearLayout 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:orientation="vertical"
   tools:context="com.example.arun.exp4b.MainActivity">
   <TextView
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:gravity="center"
      android:text="Student Mark Information"
      android:textSize="30dp"
      android:layout_marginTop="10dp"
      android:textStyle="bold"
      android:layout_marginBottom="20dp"
      android:textColor="@color/colorPrimaryDark"
      app:layout_constraintBottom_toBottomOf="parent" />

   <EditText
      android:id="@+id/name"
      android:layout_width="match_parent"
      android:layout_height="wrap_content"
      android:hint="Name"
      android:inputType="text"
      android:maxLength="25"
      android:textStyle="bold" />
   <EditText
      android:id="@+id/mark1"
      android:layout_width="match_parent"
      android:layout_height="wrap_content"
      android:inputType="text"
      android:hint="Enter Mark 1 "
      android:layout_marginTop="5dp"
      android:textStyle="bold"/>

   <EditText
      android:id="@+id/mark2"
```

```
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:inputType="text"
        android:hint="Enter Mark 2"
        android:layout_marginTop="5dp"
        android:textStyle="bold"/>
    <Button
        android:id="@+id/button1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Submit"
        android:background="@color/colorAccent"
        android:layout_marginTop="15dp"
        android:layout_gravity="center"/>

    <TextView
        android:id="@+id/resultText"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:gravity="left"
        android:layout_marginTop="10dp"
        android:textStyle="bold"
        android:textSize="30dp"
        android:layout_marginBottom="20dp"
        android:textColor="@color/colorPrimary" />
</LinearLayout>
```

MainActivity.Java

```
package com.example.arun.exp4b;

import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;

import org.w3c.dom.Text;

public class MainActivity extends AppCompatActivity {

    private EditText stdName,m1,m2;
    private Button btn;
    private TextView tv;

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

        stdName = (EditText)findViewById(R.id.name);
        m1 = (EditText)findViewById(R.id.mark1);
```

```
        m2 = (EditText)findViewById(R.id.mark2);

        btn = (Button)findViewById(R.id.button1);
        tv = (TextView)findViewById(R.id.resultText);
        btn.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                String name = stdName.getText().toString();
                String mOne = m1.getText().toString();
                String mTwo = m2.getText().toString();

                tv.setText("Name:"+ name +"\nMark1:"+ mOne+ "\nMark2:"+ mTwo);

            }
        });
    }
}
```

5). Write an android application to create a calculator

AIM:

To Write an android application to create a calculator

Activity_Main.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="match_parent"
    android:layout_height="match_parent"
    tools:context="com.example.arun.calculator.MainActivity">

    <EditText
        android:id="@+id/edt1"
        android:layout_width="match_parent"
        android:layout_height="wrap_content" />


    <Button
        android:id="@+id/button1"
        style="?android:attr/buttonStyleSmall"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignEnd="@+id/button4"
        android:layout_alignRight="@+id/button4"
        android:layout_below="@+id/edt1"
        android:layout_marginTop="94dp"
        android:text="1" />

    <Button
        android:id="@+id/button2"
        style="?android:attr/buttonStyleSmall"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignTop="@+id/button1"
        android:layout_toLeftOf="@+id/button3"
```

```
    android:layout_toStartOf="@+id/button3"
    android:text="2" />

<Button
    android:id="@+id/button3"
    style="?android:attr/buttonStyleSmall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignTop="@+id/button2"
    android:layout_centerHorizontal="true"
    android:text="3" />

<Button
    android:id="@+id/button4"
    style="?android:attr/buttonStyleSmall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_below="@+id/button1"
    android:layout_toLeftOf="@+id/button2"
    android:text="4" />

<Button
    android:id="@+id/button5"
    style="?android:attr/buttonStyleSmall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignBottom="@+id/button4"
    android:layout_alignLeft="@+id/button2"
    android:layout_alignStart="@+id/button2"
    android:text="5" />

<Button
    android:id="@+id/button6"
    style="?android:attr/buttonStyleSmall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignLeft="@+id/button3"
    android:layout_alignStart="@+id/button3"
    android:layout_below="@+id/button3"
    android:text="6" />

<Button
    android:id="@+id/button7"
    style="?android:attr/buttonStyleSmall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_below="@+id/button4"
    android:layout_toLeftOf="@+id/button2"
    android:text="7" />

<Button
    android:id="@+id/button8"
    style="?android:attr/buttonStyleSmall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
```

```
    android:layout_alignLeft="@+id/button5"
    android:layout_alignStart="@+id/button5"
    android:layout_below="@+id/button5"
    android:text="8" />

<Button
    android:id="@+id/button9"
    style="?android:attr/buttonStyleSmall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignLeft="@+id/button6"
    android:layout_alignStart="@+id/button6"
    android:layout_below="@+id/button6"
    android:text="9" />

<Button
    android:id="@+id/buttonadd"
    style="?android:attr/buttonStyleSmall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignEnd="@+id/edt1"
    android:layout_alignRight="@+id/edt1"
    android:layout_alignTop="@+id/button3"
    android:layout_marginLeft="46dp"
    android:layout_marginStart="46dp"
    android:layout_toRightOf="@+id/button3"
    android:text="+" />

<Button
    android:id="@+id/buttonsub"
    style="?android:attr/buttonStyleSmall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignEnd="@+id/buttonadd"
    android:layout_alignLeft="@+id/buttonadd"
    android:layout_alignRight="@+id/buttonadd"
    android:layout_alignStart="@+id/buttonadd"
    android:layout_below="@+id/buttonadd"
    android:text="-" />

<Button
    android:id="@+id/buttonmul"
    style="?android:attr/buttonStyleSmall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignLeft="@+id/buttonsub"
    android:layout_alignParentEnd="true"
    android:layout_alignParentRight="true"
    android:layout_alignStart="@+id/buttonsub"
    android:layout_below="@+id/buttonsub"
    android:text="*" />

<Button
    android:id="@+id/button10"
    style="?android:attr/buttonStyleSmall"
```

```
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_below="@+id/button7"
        android:layout_toLeftOf="@+id/button2"
        android:text="." />

    <Button
        android:id="@+id/button0"
        style="?android:attr/buttonStyleSmall"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignLeft="@+id/button8"
        android:layout_alignStart="@+id/button8"
        android:layout_below="@+id/button8"
        android:text="0" />

    <Button
        android:id="@+id/buttonC"
        style="?android:attr/buttonStyleSmall"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignLeft="@+id/button9"
        android:layout_alignStart="@+id/button9"
        android:layout_below="@+id/button9"
        android:text="C" />

    <Button
        android:id="@+id/buttondiv"
        style="?android:attr/buttonStyleSmall"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignEnd="@+id/buttonmul"
        android:layout_alignLeft="@+id/buttonmul"
        android:layout_alignRight="@+id/buttonmul"
        android:layout_alignStart="@+id/buttonmul"
        android:layout_below="@+id/buttonmul"
        android:text="/" />

    <Button
        android:id="@+id/buttoneql"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignEnd="@+id/buttondiv"
        android:layout_alignLeft="@+id/button10"
        android:layout_alignRight="@+id/buttondiv"
        android:layout_alignStart="@+id/button10"
        android:layout_below="@+id/button0"
        android:layout_marginTop="37dp"
        android:text="=" />

</RelativeLayout>
```

MainActivity.java

```
import androidx.appcompat.app.AppCompatActivity;

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

public class MainActivity extends AppCompatActivity {

    Button button0, button1, button2, button3, button4, button5, button6,
            button7, button8, button9, buttonAdd, buttonSub, buttonDivision,
            buttonMul, button10, buttonC, buttonEqual;
    EditText calciEditText;

    float mValueOne, mValueTwo;

    boolean cAddition, cSubtract, cMultiplication, cDivision;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        button0 = (Button) findViewById(R.id.button0);
        button1 = (Button) findViewById(R.id.button1);
        button2 = (Button) findViewById(R.id.button2);
        button3 = (Button) findViewById(R.id.button3);
        button4 = (Button) findViewById(R.id.button4);
        button5 = (Button) findViewById(R.id.button5);
        button6 = (Button) findViewById(R.id.button6);
        button7 = (Button) findViewById(R.id.button7);
        button8 = (Button) findViewById(R.id.button8);
        button9 = (Button) findViewById(R.id.button9);
        button10 = (Button) findViewById(R.id.button10);
        buttonAdd = (Button) findViewById(R.id.buttonadd);
        buttonSub = (Button) findViewById(R.id.buttonsub);
        buttonMul = (Button) findViewById(R.id.buttonmul);
        buttonDivision = (Button) findViewById(R.id.buttondiv);
        buttonC = (Button) findViewById(R.id.buttonC);
        buttonEqual = (Button) findViewById(R.id.buttoneql);
        calciEditText = (EditText) findViewById(R.id.edt1);

        button1.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                calciEditText.setText(calciEditText.getText() + "1");
            }
        });

        button2.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                calciEditText.setText(calciEditText.getText() + "2");
            }
```

```
});

button3.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        calciEditText.setText(calciEditText.getText() + "3");
    }
});

button4.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        calciEditText.setText(calciEditText.getText() + "4");
    }
});

button5.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        calciEditText.setText(calciEditText.getText() + "5");
    }
});

button6.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        calciEditText.setText(calciEditText.getText() + "6");
    }
});

button7.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        calciEditText.setText(calciEditText.getText() + "7");
    }
});

button8.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        calciEditText.setText(calciEditText.getText() + "8");
    }
});

button9.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        calciEditText.setText(calciEditText.getText() + "9");
    }
});

button0.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        calciEditText.setText(calciEditText.getText() + "0");
```

```
    }
});

buttonAdd.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {

        if (calciEditText == null) {
            calciEditText.setText("");
        } else {
            mValueOne = Float.parseFloat(calciEditText.getText() + "");
            cAddition = true;
            calciEditText.setText(null);
        }
    }
});

buttonSub.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        mValueOne = Float.parseFloat(calciEditText.getText() + "");
        cSubtract = true;
        calciEditText.setText(null);
    }
});

buttonMul.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        mValueOne = Float.parseFloat(calciEditText.getText() + "");
        cMultiplication = true;
        calciEditText.setText(null);
    }
});

buttonDivision.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        mValueOne = Float.parseFloat(calciEditText.getText() + "");
        cDivision = true;
        calciEditText.setText(null);
    }
});

buttonEqual.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        mValueTwo = Float.parseFloat(calciEditText.getText() + "");

        if (cAddition == true) {
            calciEditText.setText(mValueOne + mValueTwo + "");
            cAddition = false;
        }

        if (cSubtract == true) {
```

```
                calciEditText.setText(mValueOne - mValueTwo + "");
                cSubtract = false;
            }

            if (cMultiplication == true) {
                calciEditText.setText(mValueOne * mValueTwo + "");
                cMultiplication = false;
            }

            if (cDivision == true) {
                calciEditText.setText(mValueOne / mValueTwo + "");
                cDivision = false;
            }
        }
    });

    buttonC.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            calciEditText.setText("");
        }
    });

    button10.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            calciEditText.setText(calciEditText.getText() + ".");
        }
    });
  }

}
```

EXP 6. Create an android UI that consists of Different Departments of a company namely Production, Finance, Marketing and HR. If the user clicks on any department it should show details of that department. Use indents.

Activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout 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">

    <Spinner
        android:id="@+id/spinner1"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_weight="1" />
</LinearLayout>
```

MainActivity.java

```
package com.example.exp6;

import android.content.Intent;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.AdapterView;
import android.widget.ArrayAdapter;
import android.widget.Spinner;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        String[] department  = {"Select One", "Production", "Finance", "Marketing", "HR"};
        Spinner mySpinner = (Spinner) findViewById(R.id.spinner1);
        ArrayAdapter<String> myAdapter = new ArrayAdapter<String>(MainActivity.this,
                android.R.layout.simple_spinner_dropdown_item,department);

        mySpinner.setAdapter(myAdapter);

        mySpinner.setOnItemSelectedListener(new AdapterView.OnItemSelectedListener() {
            @Override
            public void onItemSelected(AdapterView<?> adapterView, View view, int position,
long i) {
                String selectedClass = adapterView.getItemAtPosition(position).toString();
                if (selectedClass == "Production"){
                    Toast.makeText(MainActivity.this, "selected", Toast.LENGTH_LONG).show();
                    Intent intent = new Intent(MainActivity.this, SecondActivity.class);
                    intent.putExtra("DepartmentIndex",selectedClass);
                    startActivity(intent);
                }
                else if(selectedClass == "Finance") {
                    Toast.makeText(MainActivity.this, "selected", Toast.LENGTH_LONG).show();
                    Intent intent = new Intent(MainActivity.this, SecondActivity.class);
                    intent.putExtra("DepartmentIndex", selectedClass);
                    startActivity(intent);
                }
                else if(selectedClass == "Marketing") {
                    Toast.makeText(MainActivity.this, "selected", Toast.LENGTH_LONG).show();
                    Intent intent = new Intent(MainActivity.this, SecondActivity.class);
                    intent.putExtra("DepartmentIndex", selectedClass);
                    startActivity(intent);
                }
                else if(selectedClass == "HR") {
                    Toast.makeText(MainActivity.this, "selected", Toast.LENGTH_LONG).show();
                    Intent intent = new Intent(MainActivity.this, SecondActivity.class);
                    intent.putExtra("DepartmentIndex", selectedClass);
                    startActivity(intent);
                }
            }
```

```
        @Override
        public void onNothingSelected(AdapterView<?> adapterView) {

        }
    });
  }
}
```

activity_second.xml

```
<?xml version="1.0" encoding="utf-8"?>
<android.support.constraint.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=".SecondActivity">

   <TextView
      android:id="@+id/textViewDesc"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:gravity="center_horizontal"
      android:textColor="@color/purple_200"
      android:textSize="30sp"
      tools:ignore="MissingConstraints"
      tools:layout_editor_absoluteX="165dp"
      tools:layout_editor_absoluteY="187dp" />
</android.support.constraint.ConstraintLayout>
```

SecondActivity.java

```
package com.example.exp6;

import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.widget.TextView;

public class SecondActivity extends AppCompatActivity {

   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_second);
      Bundle bundle = getIntent().getExtras();
      if(bundle!=null){
         String deptIndex = bundle.getString("DepartmentIndex");
         setDepartmentInfo(deptIndex);
      }
   }
   private void setDepartmentInfo(String i)
```

```
    {


        TextView textViewDesc = (TextView)findViewById(R.id.textViewDesc);
        switch (i)
        {
            case "Production":

                textViewDesc.setText("The production department is responsible for " +
                        "creating the finished products which the company needs to sell to earn" +
                        "a profit.");
                break;
            case "Finance":

                textViewDesc.setText("Besides supervising the inflows and outflows of money");
            case "Marketing":

                textViewDesc.setText("It serves as the face of your company, " +
                        "coordinating and producing all materials representing the business.");
                break;
            case "HR":

                textViewDesc.setText("Recruit candidates");
                break;
        }

    }
}
```

AndroidManifest.xml

Highlighted code in yellow colour should be mentioned in this xml file.

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.exp6">

    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/Theme.Exp6">
        <activity
            android:name=".SecondActivity"
            android:exported="false" />
        <activity
            android:name=".MainActivity"
            android:exported="true">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />
                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>

        </activity>
```

```
    </application>

</manifest>
```

EXP:NO;-7 Design an android application to display a list of items on the android screen. If the user clicks any one of the list items a dialogue box should show that the user has clicked that particular item (Use array adapters)

Activity_Main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout 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">

    <ListView
        android:id="@+id/lv"
        android:layout_width="match_parent"
        android:layout_height="match_parent" />
</LinearLayout>
```

MainActivity.Java

```
package com.example.exp7;

import android.app.Dialog;
import android.content.Intent;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.AdapterView;
import android.widget.ArrayAdapter;
import android.widget.Button;
import android.widget.ImageView;
import android.widget.ListView;
import android.widget.Spinner;
import android.widget.TextView;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {

    String[] items = {"TV","BIKE","CAR"};
    ListView listView;
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        listView = (ListView) findViewById(R.id.lv);
        ArrayAdapter<String> myAdapter = new ArrayAdapter<String>(MainActivity.this,
                android.R.layout.simple_list_item_1,items);
        listView.setAdapter(myAdapter);
        listView.setOnItemClickListener(new AdapterView.OnItemClickListener() {
            @Override
            public void onItemClick(AdapterView<?> adapterView, View view, int position, long l)
```

```
{
            Toast.makeText(MainActivity.this, "selected", Toast.LENGTH_LONG).show();
            Intent intent = new Intent(MainActivity.this, MainActivity2.class);
            intent.putExtra("details", items[position]);
            startActivity(intent);

        }
    });

 }
}
```

activity_main2.xml

```
<?xml version="1.0" encoding="utf-8"?>
<android.support.constraint.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=".MainActivity2">

  <TextView
      android:id="@+id/textView1"
      android:layout_width="250sp"
      android:layout_height="75sp"
      android:textSize="25sp"
      tools:ignore="MissingConstraints"
      tools:layout_editor_absoluteX="139dp"
      tools:layout_editor_absoluteY="281dp" />
</android.support.constraint.ConstraintLayout>
```

MainActivity2.Java

```
package com.example.exp7;

import android.content.Intent;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.widget.TextView;

public class MainActivity2 extends AppCompatActivity {
   TextView textView, textView1;
   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main2);
      Bundle bundle = getIntent().getExtras();
      if(bundle!=null){
         String val = bundle.getString("details");
         if(val.equals("TV")) {

            textView1 = (TextView) findViewById(R.id.textView1);
            textView1.setText("LCD TV and LED TV");
```

```
        }
        else if(val.equals("BIKE")) {

            textView1 = (TextView) findViewById(R.id.textView1);
            textView1.setText("YAMAHA and HONDA");
        }
        else if(val.equals("CAR")) {

            textView1 = (TextView) findViewById(R.id.textView1);
            textView1.setText("KIA and FORD");
        }
    }
  }
}
```

AndroidManifest.XML

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
   package="com.example.exp7">

   <application
      android:allowBackup="true"
      android:icon="@mipmap/ic_launcher"
      android:label="@string/app_name"
      android:roundIcon="@mipmap/ic_launcher_round"
      android:supportsRtl="true"
      android:theme="@style/Theme.Exp7">
      <activity
         android:name=".MainActivity"
         android:exported="true">
         <intent-filter>
            <action android:name="android.intent.action.MAIN" />

            <category android:name="android.intent.category.LAUNCHER" />
         </intent-filter>
      </activity>
      <activity
         android:name=".MainActivity2"
         android:theme="@style/Theme.AppCompat.Dialog.Alert"
         android:exported="false"></activity>
   </application>

</manifest>
```

Exp 8: Develop an android application to show some categories such as education, entertainment, health, provisions etc., If the user clicks on any one of the items it should show the sub categories of the category and if is again clicked it should the details of those items. (Use indents and lists)

example_menu.xml

```
<?xml version="1.0" encoding="utf-8"?>
<menu xmlns:android="http://schemas.android.com/apk/res/android"
   xmlns:app="http://schemas.android.com/apk/res-auto">
```

```
<item android:id="@+id/click"
        android:title="Categories"
        app:showAsAction="ifRoom"/>


    <item android:id="@+id/item1"
        android:title="Education Web Links"
        app:showAsAction="never"/>


    <item android:id="@+id/item2"
        android:title="Entertainmnent"
        app:showAsAction="never">


        <menu>
            <item android:id="@+id/subitem1"
                android:title="Music Web Links"/>
            <item android:id="@+id/subitem2"
                android:title="Movie"/>
        </menu>



    </item>
    <item android:id="@+id/item3"
        android:title="Health"
        app:showAsAction="never"/>


    <item android:id="@+id/item4"
        android:title="Provisions"
        app:showAsAction="never"/>


</menu>
```

activity_main2.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="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity2">


       <TextView
        android:id="@+id/txtview"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginBottom="-102dp"
        android:gravity="left"
        android:textColor="@android:color/background_dark"
```

```
        android:textStyle="bold" />

    <TextView
        android:id="@+id/txtview2"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_alignBottom="@+id/txtview"
        android:layout_marginBottom="-39dp"
        android:gravity="left"
        android:textColor="@android:color/background_dark"
        android:textStyle="bold" />

</RelativeLayout>
```

MainActivity2.java

```
package com.example.exp8;

import android.support.annotation.NonNull;
import android.support.v4.text.HtmlCompat;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.text.method.LinkMovementMethod;
import android.widget.TextView;
import android.widget.CalendarView;


public class MainActivity2 extends AppCompatActivity {

    // Define the variable of TextView type;

    TextView txtView, txtView1;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main2);

        txtView  = (TextView) findViewById(R.id.txtview);
        txtView1  = (TextView) findViewById(R.id.txtview2);
        String web = "<b>ALISON<b>  <a href='https://alison.com/'>Open</a>";
        String web1 = "<b>UDEMY<b>  <a
href='https://www.udemy.com/'>Open</a>";
        // movementMethod which traverses the links in the text buffer
        txtView.setMovementMethod(LinkMovementMethod.getInstance());
        txtView.setText(HtmlCompat.fromHtml(web, 0));

        txtView1.setMovementMethod(LinkMovementMethod.getInstance());
        txtView1.setText(HtmlCompat.fromHtml(web1, 0));


    }
}
```

activity_main4.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="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity4">

    <TextView
        android:id="@+id/txtview"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginBottom="-102dp"
        android:gravity="left"
        android:textColor="@android:color/background_dark"
        android:textStyle="bold" />

    <TextView
        android:id="@+id/txtview2"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_alignBottom="@+id/txtview"
        android:layout_marginBottom="-39dp"
        android:gravity="left"
        android:textColor="@android:color/background_dark"
        android:textStyle="bold" />

</RelativeLayout>
```

MainActivity4.Java

```
package com.example.exp8;

import android.support.v4.text.HtmlCompat;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.text.method.LinkMovementMethod;
import android.widget.TextView;

public class MainActivity4 extends AppCompatActivity {
    TextView txtView, txtView1;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main4);


        txtView  = (TextView) findViewById(R.id.txtview);
        txtView1  = (TextView) findViewById(R.id.txtview2);
        String web = "<b>Wynk<b>  <a href='https://wynk.in/'>Open</a>";
        String web1 = "<b>PRIME MUSIC<b>  <a
href='https://music.amazon.in/'>Open</a>";
        // movementMethod which traverses the links in the text buffer
        txtView.setMovementMethod(LinkMovementMethod.getInstance());
```

```
        txtView.setText(HtmlCompat.fromHtml(web, 0));

        txtView1.setMovementMethod(LinkMovementMethod.getInstance());
        txtView1.setText(HtmlCompat.fromHtml(web1, 0));

    }
}
```

After Creating two activities [MainActivity2 & MainActivity4] pages, need to add code in MainActivity.Java

MainActivity.Java

```
package com.example.exp8;

import android.app.assist.AssistContent;
import android.content.Intent;
import android.support.annotation.NonNull;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.Menu;
import android.view.MenuInflater;
import android.view.MenuItem;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {

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



    @Override
    public boolean onCreateOptionsMenu(Menu menu) {
        MenuInflater inflater = getMenuInflater();
        inflater.inflate(R.menu.example_menu, menu);
        return true;
    }


    @Override
    public boolean onOptionsItemSelected(@NonNull MenuItem item) {
        int id= item.getItemId();
        if(id==R.id.item1)
        {
            Intent intent = new Intent(MainActivity.this, MainActivity2.class);
            startActivity(intent);
            finish();
            return  true;

        }
        if(id==R.id.subitem1)
```

```
        {
            Intent intent = new Intent(MainActivity.this, MainActivity4.class);
            startActivity(intent);
            finish();
            return  true;

        }
        return super.onOptionsItemSelected(item);
    }
}
```

Exp:11 Develop an android application to demonstrate the database connectivitywith the SQLite database to post and retrieve data through the User Interface (Example: Student mark list processing, Email Registration and Login,Products and sales)

Activity_Main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
    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:orientation="vertical"
    tools:context=".MainActivity">


    <EditText
        android:id="@+id/idEdtStudName"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_margin="10dp"
        android:hint="Enter Student Name" />


    <EditText
        android:id="@+id/idEdtStudRollNumber"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_margin="10dp"
        android:hint="Enter Roll Number" />


    <EditText
        android:id="@+id/idEdtAddress"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_margin="10dp"
        android:hint="Enter Address" />


    <EditText
        android:id="@+id/idEdtStudBranch"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
```

```
        android:layout_margin="10dp"
        android:hint="Enter Branch" />

    <!--button for adding new course-->
    <Button
        android:id="@+id/idBtnAddStudent"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_margin="10dp"
        android:text="Add Details"
        android:textAllCaps="false" />

</LinearLayout>
```

MainActivity.Java

```
package com.example.exp11;

import android.support.v7.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 {
    private EditText studentName, studentRoll, studentAddress,
studentBranch;
    private Button addStudentDetails;private
    DBHandler dbHandler; @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        studentName = findViewById(R.id.idEdtStudName); studentRoll =
        findViewById(R.id.idEdtStudRollNumber); studentAddress =
        findViewById(R.id.idEdtAddress); studentBranch =
        findViewById(R.id.idEdtStudBranch); addStudentDetails =
        findViewById(R.id.idBtnAddStudent);


        dbHandler = new DBHandler(MainActivity.this);

        addStudentDetails.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {

                String Name = studentName.getText().toString(); String
                RollNumber = studentRoll.getText().toString();String Address =
                studentAddress.getText().toString();String Branch =
                studentBranch.getText().toString();


                if (Name.isEmpty() && RollNumber.isEmpty() &&
Address.isEmpty() && Branch.isEmpty()) {
```

```
                    Toast.makeText(MainActivity.this, "Please enter all thedata..",
Toast.LENGTH_SHORT).show();
                    return;
                }
                dbHandler.addNewStudent(Name, RollNumber, Address, Branch);


                Toast.makeText(MainActivity.this, "Details has beenadded.",
Toast.LENGTH_SHORT).show();
                studentName.setText("");
                studentRoll.setText("");
                studentAddress.setText("");
                studentBranch.setText("");


            }
        });
    }
}
```

Exp:12 Demonstrate the usage of Sensors in android by developing proper application.

STEP #1 AndroidManifest.XML

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.sensordemo">
    <uses-feature android:name="android.hardware.sensor.accelerometer"
android:required="true"/>
    <uses-feature android:name="android.hardware.sensor.gyroscope"
android:required="true"/>
    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/Theme.SensorDemo">
        <activity
            android:name=".MainActivity"
            android:exported="true">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />

                <category android:name="android.intent.category.LAUNCHER"
/>
            </intent-filter>
        </activity>
    </application>

</manifest>
```

Create TWO java class Accelerometer & Gyroscope

STEP #2 Accelerometer.java

```
package com.example.sensordemo;

import android.content.Context; import
android.hardware.Sensor; import
android.hardware.SensorEvent;
import android.hardware.SensorEventListener;import
android.hardware.SensorManager;

public class Accelerometer {
	private SensorManager sensoreManager;
	private Sensor sensor;
	private SensorEventListener sensorEventListener;

	public   interface Listner{
		void onTranslation(float tx, float ty, float tz);
	}
	private   Listner listner;

	public void setListner(Listner l){listner = l;
	}
	Accelerometer(Context context)


	{
		sensoreManager = (SensorManager)
context.getSystemService(Context.SENSOR_SERVICE);
		sensor =

sensoreManager.getDefaultSensor(sensor.TYPE_LINEAR_ACCELERATION);
		sensorEventListener = new SensorEventListener() {

			@Override
			public void onSensorChanged(SensorEvent sensorEvent) {
				if(listner!=null){

listner.onTranslation(sensorEvent.values[0],sensorEvent.values[1],
sensorEvent.values[2]);
				}
			}

			@Override
			public void onAccuracyChanged(Sensor sensor, int i) {

			}
		};
	}


	public void register(){ sensoreManager.registerListener(sensorEventListener, sensor,
sensoreManager.SENSOR_DELAY_NORMAL);

	}

	public void unregister(){
		sensoreManager.unregisterListener(sensorEventListener);
	}
```

}

STEP #3 - Gyroscope.java

```
package com.example.sensordemo;

import android.content.Context; import
android.hardware.Sensor; import
android.hardware.SensorEvent;
import android.hardware.SensorEventListener;import
android.hardware.SensorManager;

public class Gyroscope { public
	interface Listerner
	{
		void onRotaion(float rx, float ry, float rz);
	}
	private   Listerner listerner;

	public void setListerner(Listerner l){listerner = l;
	}
	private SensorManager sensorManager;
	private Sensor sensor;
	private SensorEventListener sensorEventListener;

	Gyroscope(Context context)
	{
		sensorManager = (SensorManager)
context.getSystemService(Context.SENSOR_SERVICE);
```

```
            sensor = sensorManager.getDefaultSensor(Sensor.TYPE_GYROSCOPE);
            sensorEventListener = new SensorEventListener() {
                @Override
                public void onSensorChanged(SensorEvent sensorEvent) {
                    if(listerner!=null)
                    {

listerner.onRotaion(sensorEvent.values[0],sensorEvent.values[1],
sensorEvent.values[2]);
                    }


                }

                @Override
                public void onAccuracyChanged(Sensor sensor, int i) {

                }
            };
    }
public   void register()
{
    sensorManager.registerListener(sensorEventListener, sensor,
sensorManager.SENSOR_DELAY_NORMAL);
}
public   void unRegister()
{
    sensorManager.unregisterListener(sensorEventListener);
}
}
```

STEP #4 - MainActivity.java

```
package com.example.sensordemo;

import android.graphics.Color;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;

public class MainActivity extends AppCompatActivity {private
    Accelerometer accelerometer;
    private Gyroscope gyroscope;

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

        accelerometer = new Accelerometer(this);
        gyroscope = new Gyroscope(this);
```

```
        accelerometer.setListner(new Accelerometer.Listner() {
            @Override
            public void onTranslation(float tx, float ty, float tz) {if(tx>1.0f)
                {

getWindow().getDecorView().setBackgroundColor(Color.RED);
                }


                else if(tx < -1.0f)
                {

getWindow().getDecorView().setBackgroundColor(Color.BLUE);
                }
            }
        });


        gyroscope.setListerner(new Gyroscope.Listerner() {
            @Override
            public void onRotaion(float rx, float ry, float rz) {if(rz>1.0f)
                {

getWindow().getDecorView().setBackgroundColor(Color.GREEN);
                }
                else if(rz < -1.0f)
                {

getWindow().getDecorView().setBackgroundColor(Color.YELLOW);
                }
            }
        });
    }


    @Override
    protected void onResume() {
        super.onResume();
        accelerometer.register();
        gyroscope.register();
    }

    @Override
    protected void onPause() {
        super.onPause();
        accelerometer.unregister();
        gyroscope.unRegister();
    }
```