

***U18ISE0017 Mobile Application Development
Record***

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Course code: U18ISE0017

Course name: Mobile Application Development

Language: Java

Exercise 1: "Welcome to my first Application"

1. Activity_main.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=".MainActivity">

    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="@string/edit_message1"
        android:textSize="15pt"
        android:textColor="@color/purple_500"
        android:backgroundTint="#E91E63"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

</android.support.constraint.ConstraintLayout>
```

MainActivity.java:

```
package com.example.helloworld;

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

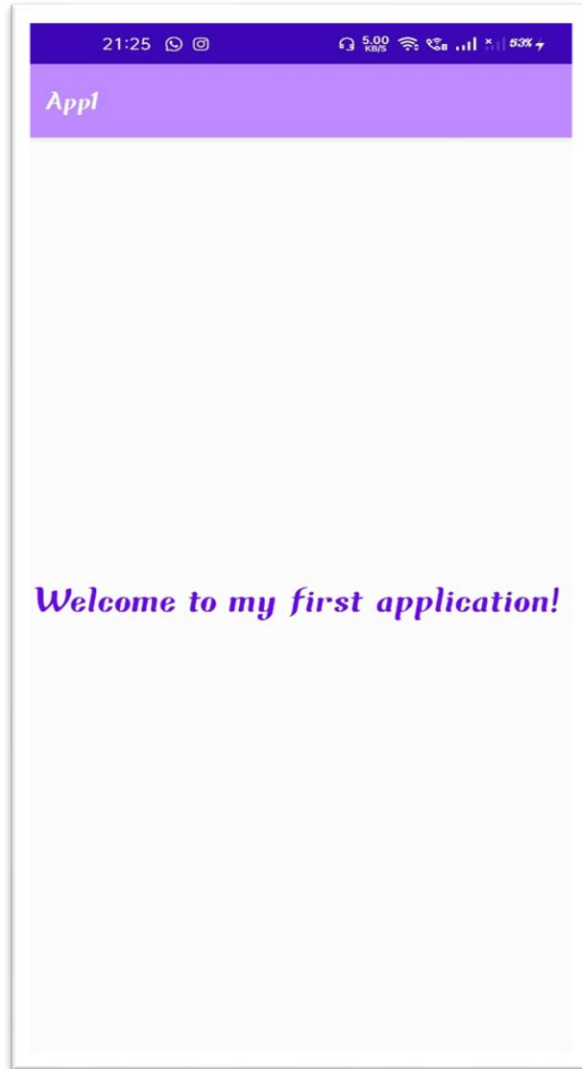
public class MainActivity extends AppCompatActivity {

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

String.xml:

```
<resources>
    <string name="app_name">App1</string>
    <string name="edit_message1">Welcome to my first application!</string>
</resources>
```

Screenshot :



Exercise 2 : "Simple Calculator"

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:ignore="ExtraText">

    <TextView
        android:id="@+id/txt1"
        android:layout_width="392dp"
        android:layout_height="53dp"
        android:fontFamily="sans-serif-black"
        android:text="Simple Calculator"
        android:textColor="#6C2EDA"
        android:textSize="10pt" />

    <TextView
        android:id="@+id/tv2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Value1"
        android:textColor="#E9060908"
        android:textSize="9pt" />

    <EditText
        android:id="@+id/Value1"
```

```
android:layout_width="289dp"
android:layout_height="wrap_content"
android:hint="@string/edit_message1"
android:inputType="number"
android:orientation="vertical"
android:textColor="@color/black"
android:textSize="7pt"
android:textStyle="italic" />
```

<TextView

```
android:id="@+id/tv3"
android:layout_width="wrap_content"
android:layout_height="32dp"
android:text="Value2"
android:textColor="#0B0707"
android:textSize="9pt" />
```

<EditText

```
android:id="@+id/Value2"
android:layout_width="291dp"
android:layout_height="wrap_content"
android:hint="@string/edit_message2"
android:inputType="number"
android:orientation="vertical"
android:textSize="7pt"
android:textStyle="italic" />
```

<Button

```
android:id="@+id/AddBtn"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
```

```
android:backgroundTint="@android:color/holo_green_light"
android:orientation="horizontal"
android:text="Add"
android:textAlignment="gravity"
android:textStyle="italic" />
```

<Button

```
android:id="@+id/AddBtn2"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_alignRight="@id/AddBtn"
android:backgroundTint="@color/teal_700"
android:baselineAligned="false"
android:orientation="horizontal"
android:text="Subtract"
android:textAlignment="gravity"
android:textAllCaps="true"
android:textStyle="italic" />
```

<Button

```
android:id="@+id/AddBtn3"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:backgroundTint="@color/purple_200"
android:orientation="vertical"
android:text="Multiply"
android:textAlignment="gravity"
android:textStyle="italic" />
```

<Button

```
android:id="@+id/AddBtn4"  
android:layout_width="wrap_content"  
android:layout_height="wrap_content"  
android:backgroundTint="#2D85CC"  
android:orientation="vertical"  
android:text="Divide"  
android:textAlignment="gravity"  
android:textStyle="italic" />
```

<Button

```
android:id="@+id/AddBtn5"  
android:layout_width="wrap_content"  
android:layout_height="wrap_content"  
android:backgroundTint="#DCCB39"  
android:orientation="vertical"  
android:text="Power"  
android:textAlignment="gravity"  
android:textStyle="italic" />
```

<Button

```
android:id="@+id/AddBtn6"  
android:layout_width="wrap_content"  
android:layout_height="wrap_content"  
android:backgroundTint="#45F1B5"  
android:orientation="vertical"  
android:text="e power"  
android:textAlignment="gravity"  
android:textStyle="italic" />
```

<Button

```
android:id="@+id/AddBtn7"
```



```
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:backgroundTint="#7779EC"
    android:orientation="vertical"
    android:text="Log10"
    android:textAlignment="gravity"
    android:textStyle="italic" />
```

```
<TextView
    android:id="@+id/Result"
    android:layout_width="match_parent"
    android:layout_height="97dp"
    android:hint="Result will be displayed here!"
    android:textColor="#476BD6"
    android:textSize="9pt"
    android:textStyle="bold|italic" />
```

```
</LinearLayout>
```

MainActivity.java:

```
package com.example.exercise2;

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

public class MainActivity extends AppCompatActivity {
```

```
EditText num1,num2;
TextView results;
Button addBut,subBut,mulBut,divBut,powBut,EBut,logBut;
double v1,v2,add,sub,multiply,divide,power,E,lg;
double e=2.718281828459045;
```

```
@Override
```

```
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    num1=(EditText) findViewById(R.id.Value1);
    num2=(EditText) findViewById(R.id.Value2);
    results=(TextView) findViewById(R.id.Result);
    addBut=(Button) findViewById(R.id.AddBtn);
    subBut=(Button) findViewById(R.id.AddBtn2);
    mulBut=(Button) findViewById(R.id.AddBtn3);
    divBut=(Button) findViewById(R.id.AddBtn4);
    powBut=(Button) findViewById(R.id.AddBtn5);
    EBut=(Button) findViewById(R.id.AddBtn6);
    logBut=(Button) findViewById(R.id.AddBtn7);
```

```
addBut.setOnClickListener(new View.OnClickListener() {
```

```
    @Override
```

```
    public void onClick(View v)
```

```
    {
```

```
        v1 = Double.parseDouble(num1.getText().toString());
```

```
        v2 = Double.parseDouble(num2.getText().toString());
```

```
        add = v1 + v2;
```

```
        results.setText(Double.toString(add));}
    });
```

```
subBut.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v)
    {
        v1 = Double.parseDouble(num1.getText().toString());
        v2 = Double.parseDouble(num2.getText().toString());
        sub = v1 - v2;
        results.setText(Double.toString(sub));}
    });
```

```
mulBut.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v)
    {
        v1 = Double.parseDouble(num1.getText().toString());
        v2 = Double.parseDouble(num2.getText().toString());
        multiply= v1 * v2;
        results.setText(Double.toString(multiply));}
    });
```

```
divBut.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v)
    {
        v1 = Double.parseDouble(num1.getText().toString());
        v2 = Double.parseDouble(num2.getText().toString());
        divide = v1 / v2;
        results.setText(Double.toString(divide));}
    });
```

```
});
```

```
powBut.setOnClickListener(new View.OnClickListener() {  
    @Override  
    public void onClick(View v)  
    {  
        v1 = Double.parseDouble(num1.getText().toString());  
        v2 = Double.parseDouble(num2.getText().toString());  
        power = Math.pow(v1,v2);  
        results.setText(Double.toString(power));  
    }  
});
```

```
EBut.setOnClickListener(new View.OnClickListener() {  
    @Override  
    public void onClick(View v)  
    {  
        v1 = Double.parseDouble(num1.getText().toString());  
        E= Math.pow(e,v1);  
        results.setText(Double.toString(E));  
    }  
});
```

```
logBut.setOnClickListener(new View.OnClickListener() {  
    @Override  
    public void onClick(View v)  
    {  
        v1 = Double.parseDouble(num1.getText().toString());  
        lg=Math.log10(v1);  
        results.setText(Double.toString(lg));  
    }  
});
```

```
}
```

}

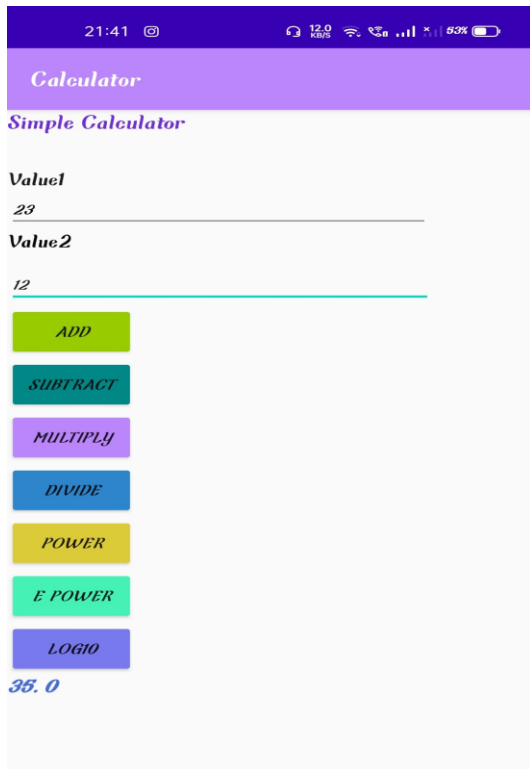
String.xml:

```
<resources>
    <string name="app_name">Calculator</string>
    <string name="edit_message1">Enter the First value</string>
    <string name="edit_message2">Enter the Second value</string>
</resources>
```

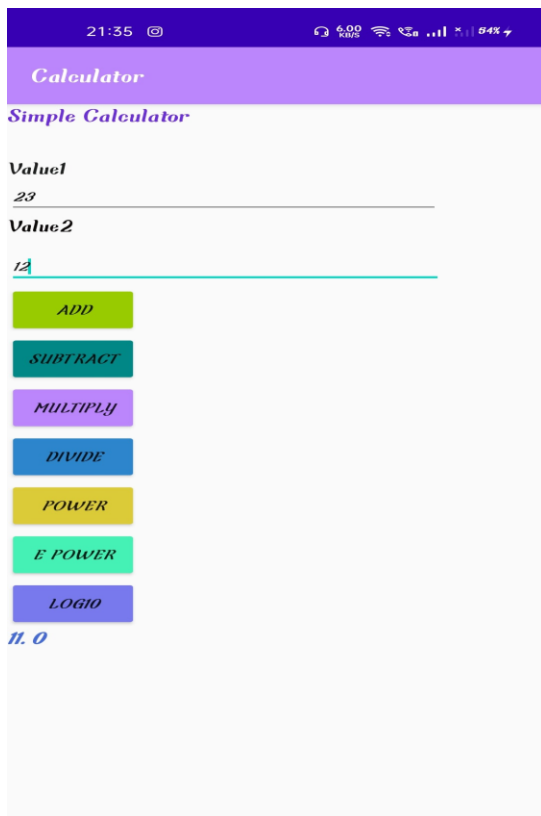
Screenshot :



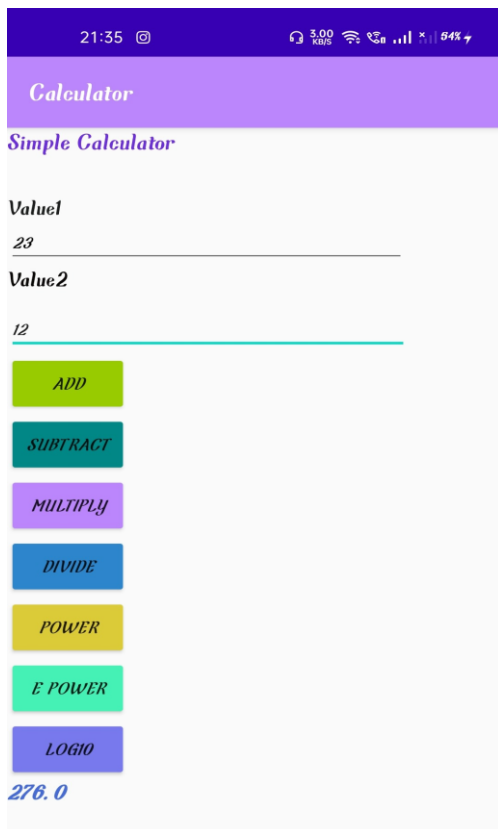
Addition:



Subtract:



Multiplication:



Divide:



Power:

21:36

6.90 KB/S

54%

Calculator

Simple Calculator

Value1

23

Value2

12

ADD

SUBTRACT

MULTIPLY

DIVIDE

POWER

E POWER

LOG10

2.191462443202032E16

E power:

21:36

0.87 KB/S

54%

Calculator

Simple Calculator

Value1

5

Value2

Enter the Second value

ADD

SUBTRACT

MULTIPLY

DIVIDE

POWER

E POWER

LOG10

148.41315910257657

Log(10):

21:36

Calculator

Simple Calculator

Value1

5

Value2

Enter the Second value

ADD

SUBTRACT

MULTIPLY

DIVIDE

POWER

E POWER

LOG10

0.6989700043360189

3.Event Handlers

1.Activity_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:id="@+id/button1"
    android:orientation="vertical"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity"
    android:background="@color/white">

    <TextView
        android:id="@+id/tv1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="16dp"
        android:fontFamily="@font/aguafina_script"
        android:text="Name:"
        android:textColor="#2DA1ED"
        android:textSize="10pt" />

    <EditText
        android:id="@+id/mname"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:ems="9"
```

```
android:fontFamily="@font/aguafina_script"
android:hint="Enter the name"
android:inputType="textPersonName"
android:textColor="@color/black"
android:textSize="9pt" />
```

<TextView

```
android:id="@+id/tv2"
android:layout_width="43dp"
android:layout_height="34dp"
android:layout_marginStart="16dp"
android:fontFamily="@font/aguafina_script"
android:text="Age:"
android:textColor="#2DA1ED"
android:textSize="10pt" />
```

<EditText

```
android:id="@+id/mage"
android:layout_width="292dp"
android:layout_height="59dp"
android:layout_marginEnd="16dp"
android:ems="10"
android:fontFamily="@font/aguafina_script"
android:hint="Enter your age"
android:inputType="number"
android:textColor="@color/black"
android:textSize="9pt"/>
```

<Button

```
android:id="@+id/button"
android:layout_width="wrap_content"
```

```
        android:layout_height="wrap_content"
        android:layout_marginBottom="280dp"
        android:text="Submit"/>
</LinearLayout>
```

2.Main_activity.java:

```
package com.example.intents3;

import androidx.appcompat.app.AppCompatActivity;

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

public class MainActivity extends AppCompatActivity {
    private EditText nameText,ageText;
    private Button button;
    private String name;
    private int age;
    private Intent PackageContext;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        nameText=findViewById(R.id.mname);
        ageText=findViewById(R.id.mage);
        button=findViewById(R.id.button);
        button.setOnClickListener(new View.OnClickListener() {
            @Override
```

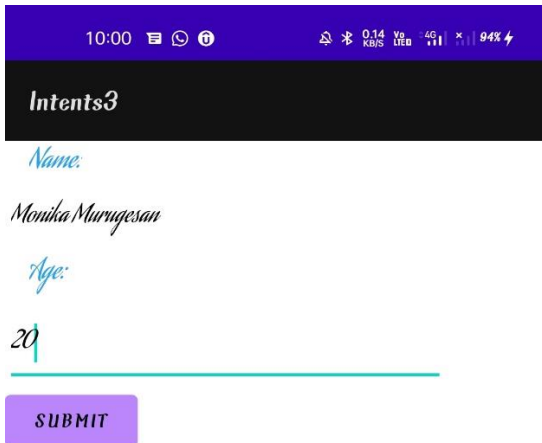
```

        public void onClick(View v) {
            sendData();
        }
    });
}

public void sendData()
{
    name=nameText.getText().toString().trim();
    age=Integer.parseInt(ageText.getText().toString().trim());
    Intent i=new Intent(MainActivity.this,SecondActivity.class);
    i.putExtra(SecondActivity.NAME,name);
    i.putExtra(SecondActivity.AGE,age);
    startActivity(i);
}
}

```

Output:



10:00 0.14 KB/s 4G 94%

Intents3

Name:
Monika Murugesan

Age:
20

SUBMIT

3.Activity2_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=".SecondActivity"
    android:orientation="vertical"
    android:background="@color/white">


    <TextView

        android:id="@+id/mname1"
        android:layout_width="338dp"
        android:layout_height="78dp"
        android:layout_marginLeft="15pt"
        android:layout_marginTop="156dp"
        android:fontFamily="@font/aguaфина_script"
        android:text="TextView"
        android:textColor="#0E1010"
        android:textSize="10pt"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.498"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />


    <TextView

        android:id="@+id/mage1"
        android:layout_width="338dp"
        android:layout_height="78dp"
```

```
        android:layout_marginLeft="15pt"
        android:fontFamily="@font/aguafina_script"
        android:text="TextView"
        android:layout_marginTop="15pt"
        android:textSize="10pt"
        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/mname1"
        android:textColor="#0E1010"
        app:layout_constraintVertical_bias="0.087" />
</LinearLayout>
```

4.Main2_Activity.java

```
package com.example.intents3;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;
import android.os.Bundle;
import android.widget.Button;
import android.widget.TextView;

public class SecondActivity extends AppCompatActivity {
    public static final String NAME="NAME";
    public static final String AGE="AGE";
    private TextView nameText,ageText;
    private Button button;
    private String name;
    private int age;
```

@Override

```
protected void onCreate(Bundle savedInstanceState) {
```

```
    super.onCreate(savedInstanceState);
```

```
    setContentView(R.layout.activity_second);
```

```
    nameText=findViewById(R.id.mname1);
```

```
    ageText=findViewById(R.id.mage1);
```

```
    Intent i= getIntent();
```

```
    name=i.getStringExtra(NAME);
```

```
    age=i.getIntExtra(AGE,o);
```

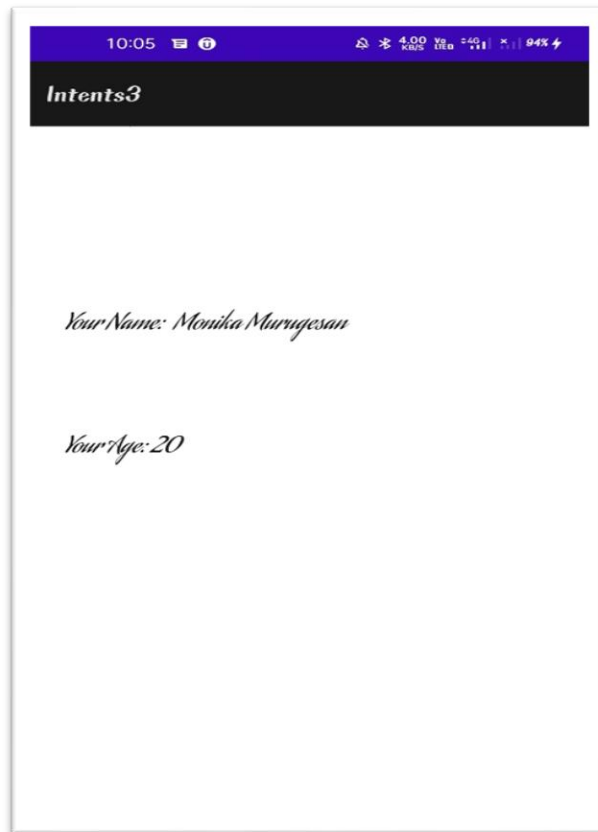
```
    nameText.setText("Your Name: " +name);
```

```
    ageText.setText("Your Age: " +age);
```

```
}
```

```
}
```

Output:



4. Built-in functions:

1. Activity_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=".MainActivity"
    android:background="@color/white">

    <TextView
        android:id="@+id/textview1"
```

```
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_marginLeft="15mm"
android:fontFamily="@font/aguafina_script"
android:text="@string/edit_message7"
android:textColor="#21C5B5"
android:textSize="10pt" />
```

<Button

```
android:id="@+id/contact"
style="@style/Widget.MaterialComponents.Button.Icon"
android:layout_width="45dp"
android:layout_height="45dp"
android:background="@drawable/contact"
android:fontFamily="@font/adamina"
android:textColor="#FFEB3B"
android:textSize="8dp"
android:textStyle="bold|italic" />
```

<Button

```
android:id="@+id/phone"
android:layout_width="45dp"
android:layout_height="45dp"
android:background="@drawable/phone"
android:fontFamily="@font/adamina"
android:textColor="#FFEB3B"
android:textSize="9dp"
android:textStyle="bold|italic" />
```

```
<Button
    android:id="@+id/map"
    android:layout_width="45dp"
    android:layout_height="45dp"
    android:background="@drawable/map"
    android:fontFamily="@font/adamina"
    android:textColor="#FFEB3B"
    android:textSize="9dp"
    android:textStyle="bold|italic" />
```

```
<Button
    android:id="@+id/browser"
    android:layout_width="55dp"
    android:layout_height="55dp"
    android:background="@drawable/google"
    android:fontFamily="@font/adamina"
    android:textColor="#FFEB3B"
    android:textSize="9dp"
    android:textStyle="bold|italic" />
```

```
<Button
    android:id="@+id/camera"
    android:layout_width="55dp"
    android:layout_height="55dp"
    android:background="@drawable/camera"
    android:fontFamily="@font/adamina"
    android:textColor="#FFEB3B"
    android:textSize="10dp"
    android:textStyle="bold|italic" />
```

```
<Button
```

```
        android:id="@+id/gallery"
        android:layout_width="55dp"
        android:layout_height="55dp"
        android:background="@drawable/photos"
        android:fontFamily="@font/adamina"
        android:textColor="#FFEB3B"
        android:textSize="11dp"
        android:textStyle="bold|italic" />
</LinearLayout>
```

2.Main_activity.java:

```
package com.example.builtins;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;
import android.net.Uri;
import android.os.Bundle;
import android.provider.ContactsContract;
import android.view.View;
import android.widget.Button;

public class MainActivity extends AppCompatActivity {
    Button map, call, chrome, contact, camera, photo;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        map = (Button)findViewById(R.id.map);
        map.setOnClickListener(new View.OnClickListener()
        {
```

```

        @Override
        public void onClick(View v)
        {
            Intent i = new Intent(Intent.ACTION_VIEW,
Uri.parse("geo:11.0778,76.9897"));
            startActivity(i);
        }
    });
    call = (Button)findViewById(R.id.phone);
    call.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            Intent j = new Intent(Intent.ACTION_VIEW,
Uri.parse("tel:+914222661100"));
            startActivity(j);
        }
    });
    chrome = (Button)findViewById(R.id.browser);
    chrome.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            Intent k = new
Intent(Intent.ACTION_VIEW,Uri.parse("http://www.google.com"));
            startActivity(k);
        }
    });
    contact = (Button)findViewById(R.id.contact);
    contact.setOnClickListener(new View.OnClickListener() {
        @Override public void onClick(View v) { Intent l = new
Intent(Intent.ACTION_PICK);
            l.setType(ContactsContract.Contacts.CONTENT_TYPE);
            startActivity(l);
        }
    });

```

```

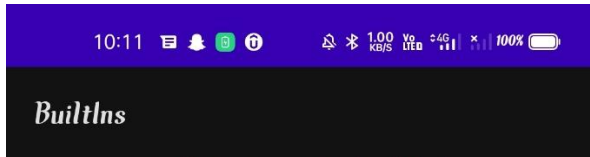
});
camera = (Button)findViewById(R.id.camera);
camera.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        Intent intent = new Intent("android.media.action.IMAGE_CAPTURE");
        startActivity(intent);
    }
});
photo = (Button)findViewById(R.id.gallery);
photo.setOnClickListener(new View.OnClickListener() {
    @Override public void onClick(View v) {
        Intent myIntent = new Intent();
myIntent.setAction(Intent.ACTION_VIEW);

myIntent.setData(android.provider.MediaStore.Images.Media.INTERNAL_CONTE
NT_URI);

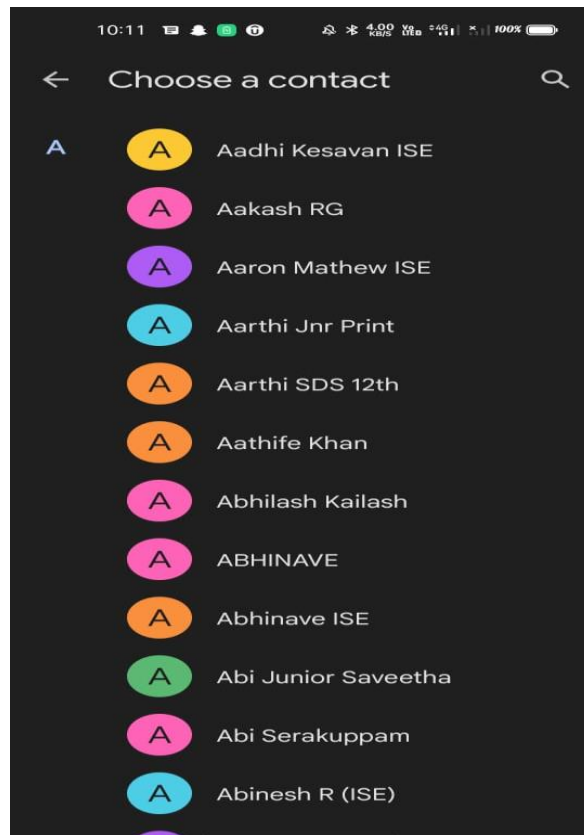
        startActivity(myIntent);
    }
});
}
}

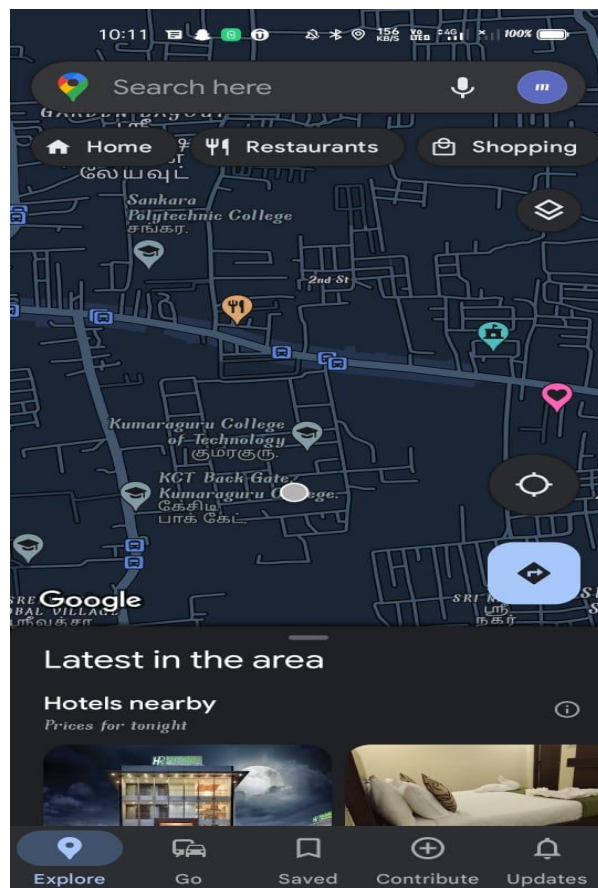
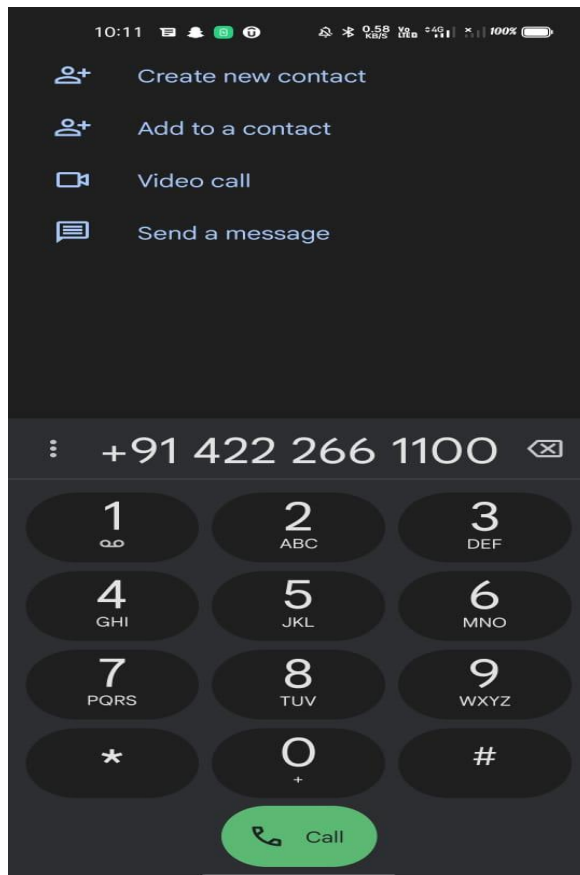
```

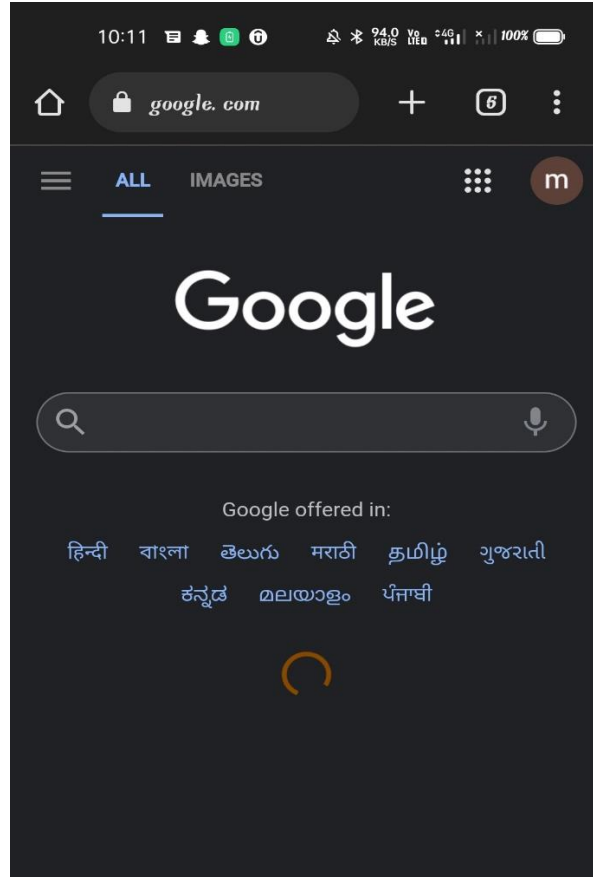
Output:

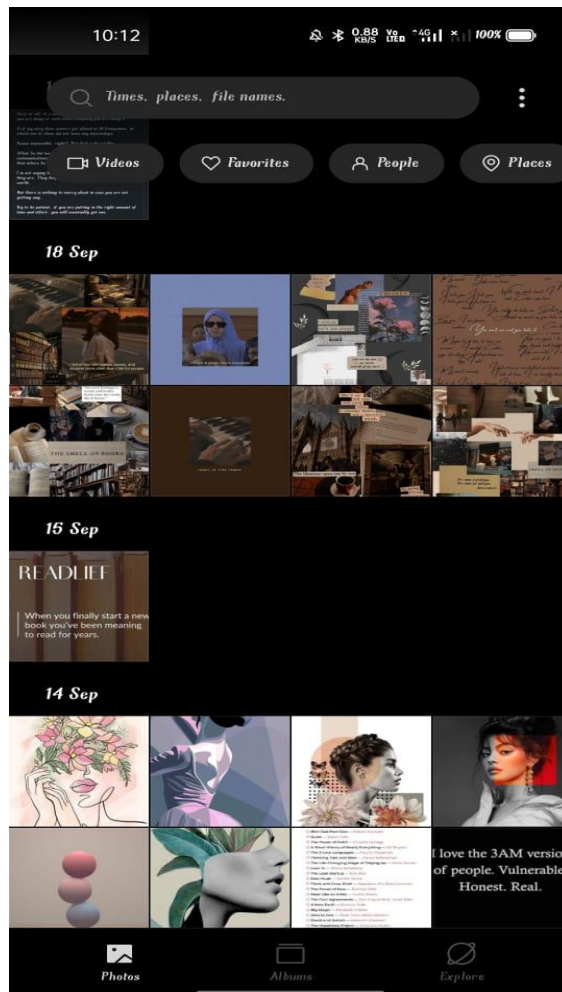


BuiltIn Functions of Android Studio









Exercise 5 : Scientific Calculator

1.Activity.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"
    android:weightSum="10"
    tools:context=".MainActivity"
    android:background="@color/black">
    <TextView
        android:id="@+id/tvsec"
        android:layout_width="match_parent"
        android:layout_height="odp"
        android:background="#000"
        android:text=""
        android:textColor="#f6f6f6"
        android:textSize="30sp"
        android:textAlignment="viewEnd"
        android:padding="10dp"
        android:gravity="bottom"
        android:maxLines="1"
        android:layout_weight="1"
        tools:ignore="RtlCompat">

    </TextView>
    <TextView
        android:id="@+id/tvmain"
        android:layout_width="match_parent"
        android:layout_height="odp"
        android:background="#000"
```

```
android:text=""
android:textColor="#fff"
android:textSize="50sp"
android:textAlignment="viewEnd"
android:padding="10dp"
android:gravity="bottom"
android:maxLines="1"
android:layout_weight="2"
tools:ignore="RtlCompat">
```

```
</TextView>
```

```
<LinearLayout
```

```
    android:layout_weight="7"
    android:orientation="vertical"
    android:layout_width="match_parent"
    android:layout_height="odp">
```

```
<LinearLayout
```

```
    android:orientation="vertical"
    android:weightSum="7"
    android:layout_width="match_parent"
    android:layout_height="match_parent">
```

```
<LinearLayout
```

```
    android:layout_weight="1"
    android:orientation="horizontal"
    android:layout_width="match_parent"
    android:layout_height="match_parent">
```

```
<LinearLayout
```

```
    android:orientation="horizontal"
    android:weightSum="4"
    android:layout_width="match_parent"
    android:layout_height="match_parent">
```

```
<Button
```

```
    android:id="@+id/bac"
    android:text="AC"
```

```
        android:textSize="20sp"
        android:backgroundTint="@color/black"
        android:textColor="#ffa500"
        android:layout_weight="1"
        android:layout_width="match_parent"
        android:layout_height="match_parent">
```

```
</Button>
```

```
<Button
    android:id="@+id/bc"
    android:text="C"
    android:textSize="20sp"
    android:backgroundTint="@color/black"
    android:textColor="#ffa500"
    android:layout_weight="1"
    android:layout_width="match_parent"
    android:layout_height="match_parent">
```

```
</Button>
```

```
<Button
    android:id="@+id/bb1"
    android:text "("
    android:textSize="30sp"
    android:backgroundTint="@color/black"
    android:textColor="#ffa500"
    android:layout_weight="1"
    android:layout_width="match_parent"
    android:layout_height="match_parent">
```

```
</Button>
```

```
<Button
    android:id="@+id/bb2"
    android:text=")"
    android:textSize="30sp"
```

```
        android:backgroundTint="#000"
        android:textColor="#ffa500"
        android:layout_weight="1"
        android:layout_width="match_parent"
        android:layout_height="match_parent">

    </Button>
</LinearLayout>
</LinearLayout>
<LinearLayout
    android:layout_weight="1"
    android:orientation="horizontal"
    android:layout_width="match_parent"
    android:layout_height="match_parent">
    <LinearLayout
        android:orientation="horizontal"
        android:weightSum="5"
        android:layout_width="match_parent"
        android:layout_height="match_parent">
        <Button
            android:id="@+id/bsin"
            android:text="sin"
            android:textAllCaps="false"
            android:textSize="20sp"
            android:backgroundTint="@color/black"
            android:textColor="#ffa500"
            android:layout_weight="1"
            android:layout_width="match_parent"
            android:layout_height="match_parent">

            </Button>
            <Button
                android:id="@+id/bcos"
                android:text="cos"
```

```
        android:textAllCaps="false"
        android:textSize="20sp"
        android:backgroundTint="#000"
        android:textColor="#ffa500"
        android:layout_weight="1"
        android:layout_width="match_parent"
        android:layout_height="match_parent">
```

```
</Button>
```

```
<Button
    android:id="@+id/btan"
    android:text="tan"
    android:textAllCaps="false"
    android:textSize="20sp"
    android:backgroundTint="#000"
    android:textColor="#ffa500"
    android:layout_weight="1"
    android:layout_width="match_parent"
    android:layout_height="match_parent">
```

```
</Button>
```

```
<Button
    android:id="@+id/blog"
    android:text="log"
    android:textAllCaps="false"
    android:textSize="20sp"
    android:backgroundTint="#000"
    android:textColor="#ffa500"
    android:layout_weight="1"
    android:layout_width="match_parent"
    android:layout_height="match_parent">
```

```
</Button>
```

```
<Button
```

```
    android:id="@+id/bln"
    android:text="ln"
    android:textAllCaps="false"
    android:textSize="20sp"
    android:backgroundTint="#000"
    android:textColor="#ffa500"
    android:layout_weight="1"
    android:layout_width="match_parent"
    android:layout_height="match_parent">
```

```
</Button>
```

```
</LinearLayout>
```

```
</LinearLayout>
```

```
<LinearLayout
```

```
    android:layout_weight="1"
    android:orientation="horizontal"
    android:layout_width="match_parent"
    android:layout_height="match_parent">
```

```
<LinearLayout
```

```
    android:orientation="horizontal"
    android:weightSum="5"
    android:layout_width="match_parent"
    android:layout_height="match_parent">
```

```
<Button
```

```
    android:id="@+id/bfact"
    android:text="x!"
    android:textAllCaps="false"
    android:textSize="20sp"
    android:backgroundTint="#000"
    android:textColor="#ffa500"
    android:layout_weight="1"
    android:layout_width="match_parent"
    android:layout_height="match_parent">
```


</Button>

<Button

 android:id="@+id/bsquare"
 android:text="x²"
 android:textAllCaps="false"
 android:textSize="20sp"
 android:backgroundTint="#000"
 android:textColor="#ffa500"
 android:layout_weight="1"
 android:layout_width="match_parent"
 android:layout_height="match_parent">

</Button>

<Button

 android:id="@+id/bsqrt"
 android:text="√"
 android:textAllCaps="false"
 android:textSize="20sp"
 android:backgroundTint="#000"
 android:textColor="#ffa500"
 android:layout_weight="1"
 android:layout_width="match_parent"
 android:layout_height="match_parent">

</Button>

<Button

 android:id="@+id/binv"
 android:text="1/x"
 android:textAllCaps="false"
 android:textSize="20sp"
 android:backgroundTint="#000"
 android:textColor="#ffa500"
 android:layout_weight="1"
 android:layout_width="match_parent"

```

        android:layout_height="match_parent">

</Button>
<Button
    android:id="@+id/bdiv"
    android:text="÷"
    android:textSize="20sp"
    android:backgroundTint="#000"
    android:textColor="#ffa500"
    android:layout_weight="1"
    android:layout_width="match_parent"
    android:layout_height="match_parent">

</Button>
</LinearLayout>
</LinearLayout>
<LinearLayout
    android:layout_weight="1"
    android:orientation="horizontal"
    android:layout_width="match_parent"
    android:layout_height="match_parent">
    <LinearLayout
        android:orientation="horizontal"
        android:weightSum="4"
        android:layout_width="match_parent"
        android:layout_height="match_parent">
        <Button
            android:id="@+id/b7"
            android:text="7"
            android:textSize="20sp"
            android:backgroundTint="#000"
            android:textColor="#fff"
            android:layout_weight="1"
            android:layout_width="match_parent"

```

```
android:layout_height="match_parent">
```

```
</Button>
```

```
<Button
```

```
    android:id="@+id/b8"
```

```
    android:text="8"
```

```
    android:textSize="20sp"
```

```
    android:backgroundTint="#000"
```

```
    android:textColor="#fff"
```

```
    android:layout_weight="1"
```

```
    android:layout_width="match_parent"
```

```
    android:layout_height="match_parent">
```

```
</Button>
```

```
<Button
```

```
    android:id="@+id/b9"
```

```
    android:text="9"
```

```
    android:textSize="20sp"
```

```
    android:backgroundTint="#000"
```

```
    android:textColor="#fff"
```

```
    android:layout_weight="1"
```

```
    android:layout_width="match_parent"
```

```
    android:layout_height="match_parent">
```

```
</Button>
```

```
<Button
```

```
    android:id="@+id/bmul"
```

```
    android:text="×"
```

```
    android:textAllCaps="false"
```

```
    android:textSize="20sp"
```

```
    android:backgroundTint="#000"
```

```
    android:textColor="#ffa500"
```

```
    android:layout_weight="1"
```

```
    android:layout_width="match_parent"
```

```
        android:layout_height="match_parent">

        </Button>
    </LinearLayout>
</LinearLayout>
<LinearLayout
    android:layout_weight="1"
    android:orientation="horizontal"
    android:layout_width="match_parent"
    android:layout_height="match_parent">
    <LinearLayout
        android:orientation="horizontal"
        android:weightSum="4"
        android:layout_width="match_parent"
        android:layout_height="match_parent">
        <Button
            android:id="@+id/b4"
            android:text="4"
            android:textSize="20sp"
            android:backgroundTint="#000"
            android:textColor="#fff"
            android:layout_weight="1"
            android:layout_width="match_parent"
            android:layout_height="match_parent">

        </Button>
        <Button
            android:id="@+id/b5"
            android:text="5"
            android:textSize="20sp"
            android:backgroundTint="#000"
            android:textColor="#fff"
            android:layout_weight="1"
            android:layout_width="match_parent"
```

```
        android:layout_height="match_parent">

</Button>
<Button
    android:id="@+id/b6"
    android:text="6"
    android:textSize="20sp"
    android:backgroundTint="#000"
    android:textColor="#fff"
    android:layout_weight="1"
    android:layout_width="match_parent"
    android:layout_height="match_parent">

</Button>
<Button
    android:id="@+id/bmin"
    android:text="-"
    android:textSize="20sp"
    android:backgroundTint="#000"
    android:textColor="#ffa500"
    android:layout_weight="1"
    android:layout_width="match_parent"
    android:layout_height="match_parent">

</Button>
</LinearLayout>
</LinearLayout>
<LinearLayout
    android:layout_weight="1"
    android:orientation="horizontal"
    android:layout_width="match_parent"
    android:layout_height="match_parent">
<LinearLayout
    android:orientation="horizontal"
```

```
        android:weightSum="4"
        android:layout_width="match_parent"
        android:layout_height="match_parent">
        <Button
            android:id="@+id/b1"
            android:text="1"
            android:textSize="20sp"
            android:backgroundTint="#000"
            android:textColor="#fff"
            android:layout_weight="1"
            android:layout_width="match_parent"
            android:layout_height="match_parent">
```

```
</Button>
```

```
<Button
    android:id="@+id/b2"
    android:text="2"
    android:textSize="20sp"
    android:backgroundTint="#000"
    android:textColor="#fff"
    android:layout_weight="1"
    android:layout_width="match_parent"
    android:layout_height="match_parent">
```

```
</Button>
```

```
<Button
    android:id="@+id/b3"
    android:text="3"
    android:textSize="20sp"
    android:backgroundTint="#000"
    android:textColor="#fff"
    android:layout_weight="1"
    android:layout_width="match_parent"
    android:layout_height="match_parent">
```

```
</Button>
<Button
    android:id="@+id/bplus"
    android:text="+"
    android:textSize="30sp"
    android:backgroundTint="#000"
    android:textColor="#ffa500"
    android:layout_weight="1"
    android:layout_width="match_parent"
    android:layout_height="match_parent">

    </Button>
</LinearLayout>
</LinearLayout>
<LinearLayout
    android:layout_weight="1"
    android:orientation="horizontal"
    android:layout_width="match_parent"
    android:layout_height="match_parent">
    <LinearLayout
        android:orientation="horizontal"
        android:weightSum="4"
        android:layout_width="match_parent"
        android:layout_height="match_parent">
        <Button
            android:id="@+id/bpi"
            android:text="π"
            android:textAllCaps="false"
            android:textSize="20sp"
            android:backgroundTint="#000"
            android:textColor="#fff"
            android:layout_weight="1"
            android:layout_width="match_parent"
```

```
    android:layout_height="match_parent">
```

```
</Button>
```

```
<Button
```

```
    android:id="@+id/bo"
```

```
    android:text="o"
```

```
    android:textSize="20sp"
```

```
    android:backgroundTint="#000"
```

```
    android:textColor="#fff"
```

```
    android:layout_weight="1"
```

```
    android:layout_width="match_parent"
```

```
    android:layout_height="match_parent">
```

```
</Button>
```

```
<Button
```

```
    android:id="@+id/bdot"
```

```
    android:text="."
```

```
    android:textSize="30sp"
```

```
    android:backgroundTint="#000"
```

```
    android:textColor="#fff"
```

```
    android:layout_weight="1"
```

```
    android:layout_width="match_parent"
```

```
    android:layout_height="match_parent">
```

```
</Button>
```

```
<Button
```

```
    android:id="@+id/bequal"
```

```
    android:text="="
```

```
    android:textSize="20sp"
```

```
    android:backgroundTint="#000"
```

```
    android:textColor="#ffa500"
```

```
    android:layout_weight="1"
```

```
    android:layout_width="match_parent"
```

```
    android:layout_height="match_parent">
```



```
        </Button>
    </LinearLayout>
</LinearLayout>
</LinearLayout>
</LinearLayout>

</LinearLayout>
```

2.MainActivity.java

```
package com.example.calculators;

import androidx.appcompat.app.AppCompatActivity;

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

public class MainActivity extends AppCompatActivity {

    Button
    b1,b2,b3,b4,b5,b6,b7,b8,b9,b0,bdot,bpi,bequal,bplus,bmin,bmul,bdiv,binv,bsqrt,bsquare,bfact,bln,bl
    og,btan,bcos,bsin,bb1,bb2,bc,bac;

    TextView tvmain,tvsec;

    String pi = "3.14159265";

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

        b1 = findViewById(R.id.b1);
        b2 = findViewById(R.id.b2);
        b3 = findViewById(R.id.b3);
        b4 = findViewById(R.id.b4);
```

```
b5 = findViewById(R.id.b5);
b6 = findViewById(R.id.b6);
b7 = findViewById(R.id.b7);
b8 = findViewById(R.id.b8);
b9 = findViewById(R.id.b9);
b0 = findViewById(R.id.b0);
bpi = findViewById(R.id.bpi);
bdot = findViewById(R.id.bdot);
bequal = findViewById(R.id.bequal);
bplus = findViewById(R.id.bplus);
bmin = findViewById(R.id.bmin);
bmul = findViewById(R.id.bmul);
bdiv = findViewById(R.id.bdiv);
binv = findViewById(R.id.binv);
bsqrt = findViewById(R.id.bsqrt);
bsquare = findViewById(R.id.bsquare);
bfact = findViewById(R.id.bfact);
bln = findViewById(R.id.bln);
blog = findViewById(R.id.blog);
btan = findViewById(R.id.btan);
bsin = findViewById(R.id.bsin);
bcos = findViewById(R.id.bcos);
bb1 = findViewById(R.id.bb1);
bb2 = findViewById(R.id.bb2);
bc = findViewById(R.id.bc);
bac = findViewById(R.id.bac);

tvmain = findViewById(R.id.tvmain);
tvsec = findViewById(R.id.tvsec);
```

```
//onclick listeners
```

```
b1.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
```

```
        tvmain.setText(tvmain.getText()+"1");
    }
});
b2.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        tvmain.setText(tvmain.getText()+"2");
    }
});
b3.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        tvmain.setText(tvmain.getText()+"3");
    }
});
b4.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        tvmain.setText(tvmain.getText()+"4");
    }
});
b5.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        tvmain.setText(tvmain.getText()+"5");
    }
});
b6.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        tvmain.setText(tvmain.getText()+"6");
    }
});
b7.setOnClickListener(new View.OnClickListener() {
```

```

        @Override
        public void onClick(View v) {
            tvmain.setText(tvmain.getText()+"7");
        }
    });

    b8.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            tvmain.setText(tvmain.getText()+"8");
        }
    });

    b9.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            tvmain.setText(tvmain.getText()+"9");
        }
    });

    b0.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            tvmain.setText(tvmain.getText()+"0");
        }
    });

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

    bac.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            tvmain.setText("");
            tvsec.setText("");
        }
    });

```

```

    }
});
bc.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        String val = tvmain.getText().toString();
        val = val.substring(0, val.length() - 1);
        tvmain.setText(val);
    }
});
bplus.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        tvmain.setText(tvmain.getText()+"");
    }
});
bmin.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        tvmain.setText(tvmain.getText()+"-");
    }
});
bmul.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        tvmain.setText(tvmain.getText()+"×");
    }
});
bdiv.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        tvmain.setText(tvmain.getText()+"÷");
    }
});

```

```
bsqrt.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        String val = tvmain.getText().toString();
        double r = Math.sqrt(Double.parseDouble(val));
        tvmain.setText(String.valueOf(r));
    }
});

bb1.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        tvmain.setText(tvmain.getText()+"(");
    }
});

bb2.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        tvmain.setText(tvmain.getText()+")");
    }
});

bpi.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        tvsec.setText(bpi.getText());
        tvmain.setText(tvmain.getText()+pi);
    }
});

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

bcos.setOnClickListener(new View.OnClickListener() {
```

```

@Override
public void onClick(View v) {
    tvmain.setText(tvmain.getText()+"cos");
}
});

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

binv.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        tvmain.setText(tvmain.getText()+"^"+"(-1)");
    }
});

bfact.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        int val = Integer.parseInt(tvmain.getText().toString());
        int fact = factorial(val);
        tvmain.setText(String.valueOf(fact));
        tvsec.setText(val+"!");
    }
});

bsquare.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        double d = Double.parseDouble(tvmain.getText().toString());
        double square = d*d;
        tvmain.setText(String.valueOf(square));
        tvsec.setText(d+"^2");
    }
}

```

```

});
bln.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        tvmain.setText(tvmain.getText()+"ln");
    }
});
blog.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        tvmain.setText(tvmain.getText()+"log");
    }
});
bequal.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        String val = tvmain.getText().toString();
        String replacedstr = val.replace('÷','/').replace('×','*');
        double result = eval(replacedstr);
        tvmain.setText(String.valueOf(result));
        tvsec.setText(val);
    }
});

}

//factorial function
int factorial(int n)
{
    return (n==1 || n==0) ? 1 : n*factorial(n-1);
}

//eval function

```



```

public static double eval(final String str) {
    return new Object() {
        int pos = -1, ch;

        void nextChar() {
            ch = (++pos < str.length()) ? str.charAt(pos) : -1;
        }

        boolean eat(int charToEat) {
            while (ch == ' ') nextChar();
            if (ch == charToEat) {
                nextChar();
                return true;
            }
            return false;
        }

        double parse() {
            nextChar();
            double x = parseExpression();
            if (pos < str.length()) throw new RuntimeException("Unexpected: " + (char)ch);
            return x;
        }

        // Grammar:
        // expression = term | expression `+` term | expression `-` term
        // term = factor | term `*` factor | term `/` factor
        // factor = `+` factor | `-` factor | `( expression )`
        //      | number | functionName factor | factor `^` factor

        double parseExpression() {
            double x = parseTerm();
            for (;;) {
                if      (eat('+')) x += parseTerm(); // addition

```

```

        else if (eat('-')) x -= parseTerm(); // subtraction
        else return x;
    }
}

double parseTerm() {
    double x = parseFactor();
    for (;;) {
        if (eat('*')) x *= parseFactor(); // multiplication
        else if (eat('/')) x /= parseFactor(); // division
        else return x;
    }
}

double parseFactor() {
    if (eat('+')) return parseFactor(); // unary plus
    if (eat('-')) return -parseFactor(); // unary minus

    double x;
    int startPos = this.pos;
    if (eat('(')) { // parentheses
        x = parseExpression();
        eat(')');
    } else if ((ch >= '0' && ch <= '9') || ch == '.') { // numbers
        while ((ch >= '0' && ch <= '9') || ch == '.') nextChar();
        x = Double.parseDouble(str.substring(startPos, this.pos));
    } else if (ch >= 'a' && ch <= 'z') { // functions
        while (ch >= 'a' && ch <= 'z') nextChar();
        String func = str.substring(startPos, this.pos);
        x = parseFactor();
        if (func.equals("sqrt")) x = Math.sqrt(x);
        else if (func.equals("sin")) x = Math.sin(Math.toRadians(x));
        else if (func.equals("cos")) x = Math.cos(Math.toRadians(x));
        else if (func.equals("tan")) x = Math.tan(Math.toRadians(x));
    }
}

```

```

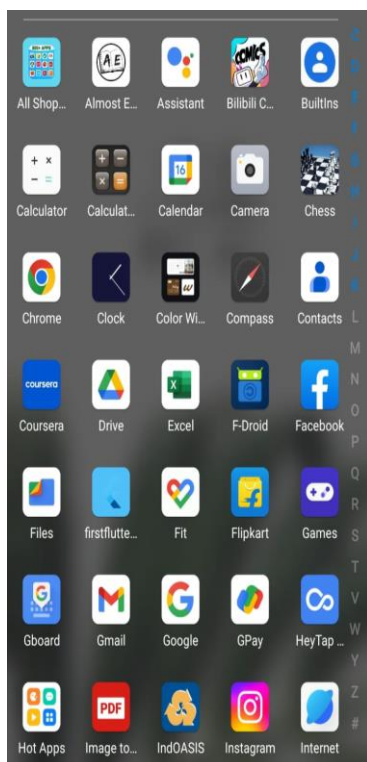
else if (func.equals("log")) x = Math.log10(x);
else if (func.equals("ln")) x = Math.log(x);
else throw new RuntimeException("Unknown function: " + func);
} else {
    throw new RuntimeException("Unexpected: " + (char)ch);
}

if (eat('^')) x = Math.pow(x, parseFactor()); // exponentiation

return x;
}
}.parse();
}
}

```

3.App :





9. Recycler view

1. list_item.xml:

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.cardview.widget.CardView
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:id="@+id/cardview"
    android:layout_width="match_parent"
    android:elevation="10dp"
    android:layout_margin="10dp"
    android:layout_height="wrap_content">
    <LinearLayout
        android:layout_width="match_parent"
        android:padding="10dp"
        android:layout_height="wrap_content">
        <ImageView
            android:layout_width="70dp"
            android:layout_height="70dp"
            android:id="@+id/imageview"
            android:contentDescription="ICON" />
        <TextView
            android:id="@+id/textView"
            android:layout_marginLeft="20dp"
            android:layout_width="match_parent"
            android:layout_height="match_parent"
            android:gravity="center_vertical"
            android:textSize="16sp"/>
    </LinearLayout>
</androidx.cardview.widget.CardView>
```

2.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=".MainActivity"
    android:background="@color/teal_700">

    <androidx.recyclerview.widget.RecyclerView
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:id="@+id/recyclerview"
    />
</RelativeLayout>
```

3.DataModel.java

```
package com.example.recyclerview;

public class DataModel {
    private String description;
    private int imgId;
    public DataModel(String description, int imgId) {
        this.description = description;
        this.imgId = imgId;
    }
    public String getDescription() {
        return description;
    }
}
```

```

    }

    public void setDescription(String description) {
        this.description = description;
    }

    public int getImgId() {
        return imgId;
    }

    public void setImgId(int imgId) {
        this.imgId = imgId;
    }
}

```

4. [ListAdapter.java](#)

```

package com.example.recyclerview;

import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;
import android.widget.ImageView;
import android.widget.TextView;
import android.widget.Toast;

import androidx.cardview.widget.CardView;
import androidx.recyclerview.widget.RecyclerView;

public class ListAdapter extends RecyclerView.Adapter<ListAdapter.ViewHolder>{
    private DataModel[] dataModels;
    public ListAdapter(DataModel[] dataModels) {
        this.dataModels = dataModels;
    }
    @Override

```

```

public ViewHolder onCreateViewHolder(ViewGroup parent, int viewType) {
    LayoutInflater inflater = LayoutInflater.from(parent.getContext());
    View listItem = inflater.inflate(R.layout.list_item, parent, false);
    ViewHolder viewHolder = new ViewHolder(listItem);
    return (ViewHolder) viewHolder;
}

@Override
public void onBindViewHolder(ViewHolder holder, int position) {
    final DataModel myListData = dataModels[position];
    holder.textView.setText(dataModels[position].getDescription());
    holder.imageView.setImageResource(dataModels[position].getImgId());
    holder.cardView.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View view) {
            Toast.makeText(view.getContext(), "click on item:
"+myListData.getDescription(), Toast.LENGTH_LONG).show();
        }
    });
}

@Override
public int getItemCount() {
    return dataModels.length;
}

public static class ViewHolder extends RecyclerView.ViewHolder {
    public ImageView imageView;
    public TextView textView;
    public CardView cardView;
    public ViewHolder(View itemView) {
        super(itemView);
        this.imageView = itemView.findViewById(R.id.imageview);
        this.textView = itemView.findViewById(R.id.textview);
    }
}

```



```
        this.cardView = itemView.findViewById(R.id.cardview);
    }
}
}
```

5.MainActivity.java

```
package com.example.recyclerview;
```

```
import androidx.appcompat.app.AppCompatActivity;
import androidx.recyclerview.widget.LinearLayoutManager;
import androidx.recyclerview.widget.RecyclerView;
```

```
import android.os.Bundle;
```

```
public class MainActivity extends AppCompatActivity {
```

```
    @Override
```

```
    protected void onCreate(Bundle savedInstanceState) {
```

```
        super.onCreate(savedInstanceState);
```

```
        setContentView(R.layout.activity_main);
```

```
        DataModel[] dataModels = new DataModel[] {
```

```
            new DataModel("Email", android.R.drawable.ic_dialog_email),
            new DataModel("Info", android.R.drawable.ic_dialog_info),
            new DataModel("Delete", android.R.drawable.ic_delete),
            new DataModel("Dialer", android.R.drawable.ic_dialog_dialer),
            new DataModel("Alert", android.R.drawable.ic_dialog_alert),
            new DataModel("Map", android.R.drawable.ic_dialog_map),
            new DataModel("Email", android.R.drawable.ic_dialog_email),
            new DataModel("Info", android.R.drawable.ic_dialog_info),
            new DataModel("Delete", android.R.drawable.ic_delete),
            new DataModel("Dialer", android.R.drawable.ic_dialog_dialer),
```

```

        new DataModel("Alert", android.R.drawable.ic_dialog_alert),
        new DataModel("Map", android.R.drawable.ic_dialog_map),
    };
    RecyclerView recyclerView = (RecyclerView) findViewById(R.id.recyclerview);
    ListAdapter adapter = new ListAdapter(dataModels);
    recyclerView.setHasFixedSize(true);
    recyclerView.setLayoutManager(new LinearLayoutManager(this));
    recyclerView.setAdapter(adapter);
    }
}

```

Output :

