1.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"
    android:paddingBottom="10dp"
    android:paddingLeft="10dp"
    android:paddingRight="10dp"
    android:paddingTop="10dp"
    tools:context=".MainActivity">
    <EditText
        android:id="@+id/result"
        android:layout_width="match_parent"
        android:layout_height="200dp"
        android:layout_gravity="left"
        android:gravity="bottom"
        android:textSize="26sp"
        />
    <GridLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content">
        <Button
            android:id="@+id/clear"
            android:layout_width="180dp"
            android:layout_height="wrap_content"
            android:layout_marginTop="10dp"
            android:text="cle"
            android:textSize="26sp"
            />
        <Button
            android:id="@+id/backspace"
            android:layout_width="200dp"
            android:layout_height="wrap_content"
            android:layout_marginTop="10dp"
            android:layout_marginLeft="10dp"
            android:text="del"
            android:textSize="26sp"
            />
    </GridLayout>
    <GridLayout
```

```
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:layout_gravity="center"
android:columnCount="4"
android:rowCount="4">
<Button
    android:id="@+id/btn_1"
    android:text="1"
    android:textSize="26sp"
    />
<Button
    android:id="@+id/btn_2"
    android:text="2"
    android:textSize="26sp"
    android:layout_marginLeft="10dp"
    />
<Button
    android:id="@+id/btn_3"
    android:text="3"
    android:textSize="26sp"
    android:layout_marginLeft="10dp"
    />
<Button
    android:id="@+id/btn_add"
    android:text="+"
    android:textSize="26sp"
    android:layout_marginLeft="10dp"
    />
<Button
    android:id="@+id/btn_4"
    android:text="4"
    android:textSize="26sp"
    />
<Button
    android:id="@+id/btn_5"
    android:text="5"
    android:textSize="26sp"
    android:layout_marginLeft="10dp"
    />
<Button
    android:id="@+id/btn_6"
    android:text="6"
    android:textSize="26sp"
    android:layout_marginLeft="10dp"
```

```
        />
    <Button
        android:id="@+id/btn_sub"
        android:text="-"
        android:textSize="26sp"
        android:layout_marginLeft="10dp"
        />
    <Button
        android:id="@+id/btn_7"
        android:text="7"
        android:textSize="26sp"
        />

    <Button
        android:id="@+id/btn_8"
        android:text="8"
        android:textSize="26sp"
        android:layout_marginLeft="10dp"
        />
    <Button
        android:id="@+id/btn_9"
        android:text="9"
        android:textSize="26sp"
        android:layout_marginLeft="10dp"
        />
    <Button
        android:id="@+id/btn_mul"
        android:text="x"
        android:textSize="26sp"
        android:layout_marginLeft="10dp"
        />
    <Button
        android:id="@+id/btn_dot"
        android:text="."
        android:textSize="26sp"
        />
    <Button
        android:id="@+id/btn_0"
        android:text="0"
        android:textSize="26sp"
        android:layout_marginLeft="10dp"
        />
    <Button
        android:id="@+id/btn_equ"
```

```
            android:text="="
            android:textSize="26sp"
            android:layout_marginLeft="10dp"
            />
        <Button
            android:id="@+id/btn_div"
            android:text="/"
            android:textSize="26sp"
            android:layout_marginLeft="10dp"
            />

    </GridLayout>


</LinearLayout>
```

2. 逻辑思路：在 onClick()方法中加入一个 switch 循环，每个 case 是按钮的 id，申请一个字符串，每点击一下按钮就将按钮的值存入字符串，当点击等号按钮时，将字符串中所储存的中缀表达时转为后缀表达式进行计算。代码如下：

MainActivity.java

```
package com.example.calculator;

import androidx.appcompat.app.AppCompatActivity;

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

public class MainActivity extends AppCompatActivity {

    private Button btn1;//数字 1
    private Button btn2;//数字 2
    private Button btn3;//数字 3
    private Button btn4;//数字 4
    private Button btn5;//数字 5
    private Button btn6;//数字 6
    private Button btn7;//数字 7
    private Button btn8;//数字 8
    private Button btn9;//数字 9
```

```
private Button btn0;//数字 0
private Button add;//+号
private Button subtract;//-号
private Button mul;//X
private Button div;// /号
private Button dot;//小数点
private Button equ;//=号
private Button clear;//清除
private Button backspace;//退格
private EditText text;//显示文本
private StringBuilder pending = new StringBuilder();



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

    btn1=findViewById(R.id.btn_1);
    btn2=findViewById(R.id.btn_2);
    btn3=findViewById(R.id.btn_3);
    btn4=findViewById(R.id.btn_4);
    btn5=findViewById(R.id.btn_5);
    btn6=findViewById(R.id.btn_6);
    btn7=findViewById(R.id.btn_7);
    btn8=findViewById(R.id.btn_8);
    btn9=findViewById(R.id.btn_9);
    btn0=findViewById(R.id.btn_0);
    add=findViewById(R.id.btn_add);
    subtract=findViewById(R.id.btn_sub);
    mul=findViewById(R.id.btn_mul);
    div=findViewById(R.id.btn_div);
    dot=findViewById(R.id.btn_dot);
    equ=findViewById(R.id.btn_equ);
    clear=findViewById(R.id.clear);
    backspace=findViewById(R.id.backspace);
    text=(EditText) findViewById(R.id.result);

    btn1.setOnClickListener(new Click());
    btn2.setOnClickListener(new Click());
    btn3.setOnClickListener(new Click());
    btn4.setOnClickListener(new Click());
```

```
        btn5.setOnClickListener(new Click());
        btn6.setOnClickListener(new Click());
        btn7.setOnClickListener(new Click());
        btn8.setOnClickListener(new Click());
        btn9.setOnClickListener(new Click());
        btn0.setOnClickListener(new Click());
        add.setOnClickListener(new Click());
        subtract.setOnClickListener(new Click());
        mul.setOnClickListener(new Click());
        div.setOnClickListener(new Click());
        equ.setOnClickListener(new Click());
        dot.setOnClickListener(new Click());
        clear.setOnClickListener(new Click());
        backspace.setOnClickListener(new Click());
        text.setOnClickListener(new Click());
    }

    class Click implements View.OnClickListener {

        @Override
        public void onClick(View v) {
            switch (v.getId()){
                case R.id.btn_0:
                    pending = pending.append("0");
                    text.setText(pending);
                    break;
                case R.id.btn_1:
                    pending = pending.append("1");
                    text.setText(pending);
                    break;
                case R.id.btn_2:
                    pending = pending.append("2");
                    text.setText(pending);
                    break;
                case R.id.btn_3:
                    pending = pending.append("3");
                    text.setText(pending);
                    break;
                case R.id.btn_4:
                    pending = pending.append("4");
                    text.setText(pending);
                    break;
                case R.id.btn_5:
                    pending = pending.append("5");
```

```
            text.setText(pending);
            break;
        case R.id.btn_6:
            pending = pending.append("6");
            text.setText(pending);
            break;
        case R.id.btn_7:
            pending = pending.append("7");
            text.setText(pending);
            break;
        case R.id.btn_8:
            pending = pending.append("8");
            text.setText(pending);
            break;
        case R.id.btn_9:
            pending = pending.append("9");
            text.setText(pending);
            break;
        case R.id.btn_dot:
            pending = pending.append(".");
            text.setText(pending);
            break;
        case R.id.btn_add:
            pending = pending.append("+");
            text.setText(pending);
            break;
        case R.id.btn_sub:
            pending = pending.append("-");
            text.setText(pending);
            break;
        case R.id.btn_mul:
            pending = pending.append("x");
            text.setText(pending);
            break;
        case R.id.btn_div:
            pending = pending.append("/");
            text.setText(pending);
            break;
        case R.id.clear:
            pending=pending.delete(0,pending.length());
            text.setText(pending);
            break;
        case R.id.backspace:
            if (pending.length()!=0){
```

```
                    pending=pending.deleteCharAt(pending.length()-1);
                }
                    text.setText(pending);
                    break;
                case R.id.btn_equ:
                    if (pending.length()>1){
                        Count c = new Count();
                        String result;
                        try {
                            String a =c.change(pending);
                            result = c.calculate(a);
                        }catch (Exception ex){
                            result = "error";
                            Toast.makeText(MainActivity.this,"除数不能为零
    ",Toast.LENGTH_SHORT).show();
                        }
                        text.setText(pending + "=" + result);
                        pending=pending.delete(0,pending.length());
                        if (Character.isDigit(result.charAt(0))){
                            pending=pending.append(result);
                        }
                    }
                    break;
                /*default:
                    throw new IllegalStateException("Unexpected value: " +
    v.getId());*/
                }
            }
        }
    }
```

Count.java

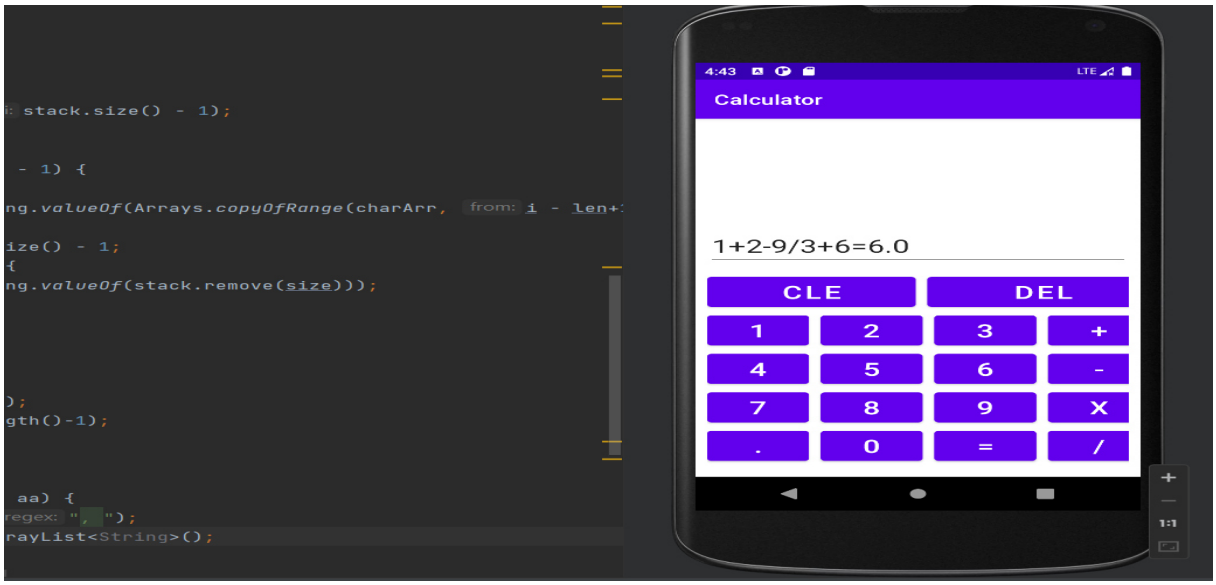
```
package com.example.calculator;

import androidx.annotation.NonNull;

import java.util.ArrayList;
import java.util.Arrays;
import java.util.HashMap;
import java.util.List;
import java.util.Map;

class Count {
    private static final Map<Character, Integer> basic = new HashMap<Character, Integer>();
```

```
static {
        basic.put('-', 1);
        basic.put('+', 1);
        basic.put('*', 2);
        basic.put('/', 2);
}

public String change(StringBuilder p) {
        List<String> queue = new ArrayList<String>();
        List<Character> stack = new ArrayList<Character>();

        char[] charArr = p.substring(0, p.length()).trim().toCharArray();
        String standard = "*/+-()";
        char ch = '&';
        int len = 0;
        for (int i = 0; i < charArr.length; i++) {

                ch = charArr[i];
                if (Character.isDigit(ch)) {
                        len++;
                } else if (ch == '.') {
                        len++;
                } else if (standard.indexOf(ch) != -1) {
                        if (len > 0) {
                                queue.add(String.valueOf(Arrays.copyOfRange(charArr, i - len, i)));
                                len = 0;
                        }
                        if (ch == '(') {
                                stack.add(ch);
                                continue;
                        }
                        if (!stack.isEmpty()) {
                                int size = stack.size() - 1;
                                boolean flag = false;
                                while (size >= 0 && ch == ')' && stack.get(size) != '(') {
                                        queue.add(String.valueOf(stack.remove(size)));
                                        size--;
                                        flag = true;
                                }
                                if (ch == ')' && stack.get(size) == '(') {
                                        flag = true;
                                }
                                while (size >= 0 && !flag && basic.get(stack.get(size)) >=
```

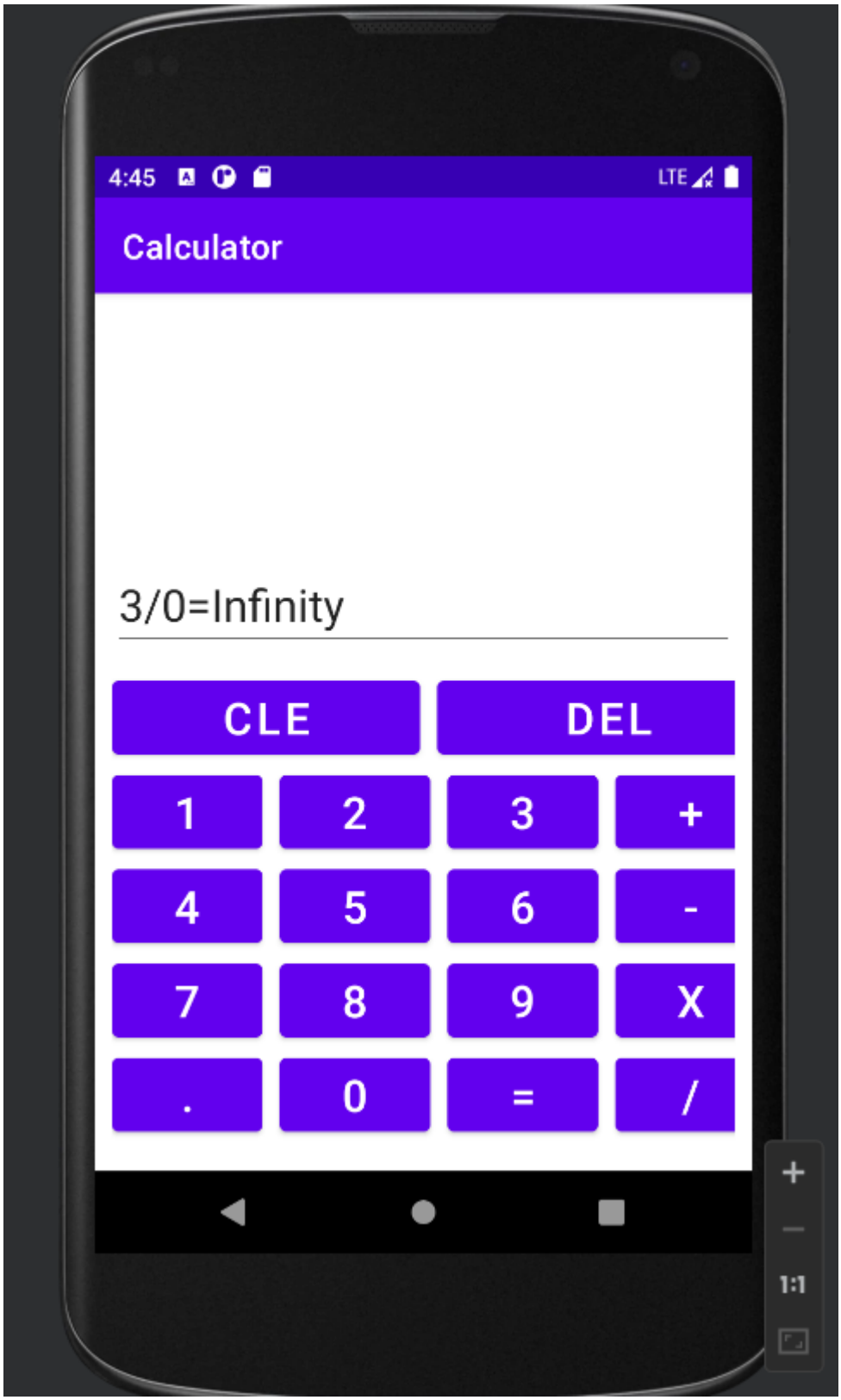
```
basic.get(ch)) {
                                queue.add(String.valueOf(stack.remove(size)));
                                size--;
                            }
                        }
                        if (ch != ')') {
                            stack.add(ch);
                        } else {
                            stack.remove(stack.size() - 1);
                        }
                    }
                    if (i == charArr.length - 1) {
                        if (len > 0) {
                            queue.add(String.valueOf(Arrays.copyOfRange(charArr, i - len + 1, i +
1)));
                        }
                        int size = stack.size() - 1;
                        while (size >= 0) {
                            queue.add(String.valueOf(stack.remove(size)));
                            size--;
                        }
                    }

                }
                String a = queue.toString();
                return a.substring(1, a.length() - 1);

            }

            public String calculate(@NonNull String aa) {
                String[] arr = aa.split(", ");
                List<String> list = new ArrayList<String>();


                for (int i = 0; i < arr.length; i++) {
                    int size = list.size();
                    switch (arr[i]) {
                        case "+":
                            double a = Double.parseDouble(list.remove(size - 2)) +
Double.parseDouble(list.remove(size - 2));
                            list.add(String.valueOf(a));
                            break;
                        case "-":
                            double b = Double.parseDouble(list.remove(size - 2)) -
```

```
Double.parseDouble(list.remove(size - 2));
                    list.add(String.valueOf(b));
                    break;
                case "*":
                    double c = Double.parseDouble(list.remove(size - 2)) *
Double.parseDouble(list.remove(size - 2));
                    list.add(String.valueOf(c));
                    break;
                case "/":
                    //if (Double.parseDouble(list.remove(size - 2))!=0){
                        double d = Double.parseDouble(list.remove(size - 2)) /
Double.parseDouble(list.remove(size - 2));
                        list.add(String.valueOf(d));
                    //}

                    break;
                default:
                    list.add(arr[i]);
                    break;                                          //如果是数字  直接
放进 list 中
                }
            }

            return list.size() == 1 ? list.get(0) : "运算失败";

        }
}
```

3 运算结果展示：



点击 CLE 后会全部清零，点击 DEL 后会退格


4:45
LTE
Calculator
3/0=Infinity
CLE
DEL
1
2
3
+
4
5
6
-
7
8
9
X
.
0
=
/
1:1