Write an android application to create a calculator

**activity\_main.xml**

*<?*xml version="1.0" encoding="utf-8"*?>*<androidx.constraintlayout.widget.ConstraintLayout  
 xmlns:android="http://schemas.android.com/apk/res/android"  
 xmlns:app="http://schemas.android.com/apk/res-auto"  
 xmlns:tools="http://schemas.android.com/tools"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 tools:context=".MainActivity">  
  
 <Button  
 android:id="@+id/button1"  
 android:layout\_width="80dp"  
 android:layout\_height="80dp"  
 android:text="1"  
 android:textColor="#ffff"  
 android:textSize="28sp"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.043"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.817" />  
 <Button  
 android:id="@+id/button2"  
 android:layout\_width="80dp"  
 android:layout\_height="80dp"  
 android:text="2"  
 android:textColor="#ffff"  
 android:textSize="28sp"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.352"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.817" />  
 <Button  
 android:id="@+id/button3"  
 android:layout\_width="80dp"  
 android:layout\_height="80dp"  
  
 android:text="3"  
 android:textColor="#ffff"  
 android:textSize="28sp"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.672"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.817" />  
 <Button  
 android:id="@+id/button4"  
 android:layout\_width="80dp"  
 android:layout\_height="80dp"  
 android:text="4"  
 android:textColor="#ffff"  
 android:textSize="28sp"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.043"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.677" />  
  
 <Button  
 android:id="@+id/button5"  
 android:layout\_width="80dp"  
 android:layout\_height="80dp"  
 android:text="5"  
 android:textColor="#ffff"  
 android:textSize="28sp"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.352"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.677" />  
 <Button  
 android:id="@+id/button6"  
 android:layout\_width="80dp"  
 android:layout\_height="80dp"  
 android:text="6"  
 android:textColor="#ffff"  
 android:textSize="28sp"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.672"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.677" />  
  
 <Button  
 android:id="@+id/button7"  
 android:layout\_width="80dp"  
 android:layout\_height="80dp"  
 android:text="7"  
 android:textColor="#ffff"  
 android:textSize="28sp"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.043"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.541" />  
  
 <Button  
 android:id="@+id/button8"  
 android:layout\_width="80dp"  
 android:layout\_height="80dp"  
 android:text="8"  
 android:textColor="#ffff"  
 android:textSize="28sp"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.352"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.541" />  
  
 <Button  
 android:id="@+id/button9"  
 android:layout\_width="80dp"  
 android:layout\_height="80dp"  
 android:text="9"  
 android:textColor="#ffff"  
 android:textSize="28sp"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.672"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.541" />  
  
 <Button  
 android:id="@+id/button0"  
 android:layout\_width="185dp"  
 android:layout\_height="80dp"  
 android:paddingRight="95sp"  
 android:text="0"  
 android:textColor="#ffff"  
 android:textSize="28sp"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.061"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.957" />  
 <Button  
 android:id="@+id/button\_equal"  
 android:layout\_width="80dp"  
 android:layout\_height="80dp"  
 android:text="="  
 android:textColor="#ffff"  
 android:textSize="28sp"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.99"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.958" />  
  
 <Button  
 android:id="@+id/button\_multi"  
 android:layout\_width="80dp"  
 android:layout\_height="80dp"  
 android:text="×"  
 android:textColor="#ffff"  
 android:textSize="28sp"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.99"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.541" />  
  
 <Button  
 android:id="@+id/button\_divide"  
 android:layout\_width="80dp"  
 android:layout\_height="80dp"  
 android:text="/"  
 android:textColor="#ffff"  
 android:textSize="28sp"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.987"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.406" />  
 <Button  
 android:id="@+id/button\_add"  
 android:layout\_width="80dp"  
 android:layout\_height="80dp"  
 android:text="+"  
 android:textColor="#ffff"  
 android:textSize="28sp"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.99"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.817" />  
  
 <Button  
 android:id="@+id/button\_sub"  
 android:layout\_width="80dp"  
 android:layout\_height="80dp"  
 android:text="-"  
 android:textColor="#ffff"  
 android:textSize="28sp"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.99"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.677" />  
  
 <Button  
 android:id="@+id/button\_clear"  
 android:layout\_width="186dp"  
 android:layout\_height="81dp"  
 android:text="AC"  
 android:textSize="28sp"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.043"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.406" />  
  
 <Button  
 android:id="@+id/button\_para1"  
 android:layout\_width="80dp"  
 android:layout\_height="80dp"  
 android:text="%"  
 android:textSize="28sp"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.672"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.406" />  
  
  
 <Button  
 android:id="@+id/button\_dot"  
 android:layout\_width="80dp"  
 android:layout\_height="80dp"  
 android:text="."  
 android:textColor="#ffff"  
 android:textSize="28sp"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.671"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.958" />  
  
 <TextView  
 android:id="@+id/input"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:inputType="number"  
 android:textColor="@color/black"  
 android:textSize="58sp"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="1.0"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.189"  
 tools:ignore="SpeakableTextPresentCheck,SpeakableTextPresentCheck" />  
  
 <TextView  
 android:id="@+id/output"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:inputType="number"  
 android:textColor="@color/black"  
 android:textSize="36sp"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.909"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.051"  
 tools:ignore="SpeakableTextPresentCheck,SpeakableTextPresentCheck" />  
  
</androidx.constraintlayout.widget.ConstraintLayout>

**MainActivity.java**

package com.example.mycalculator;  
  
import androidx.appcompat.app.AppCompatActivity;  
  
import android.os.Bundle;  
import android.util.TypedValue;  
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;  
 Button b\_equal,b\_multi,b\_divide,b\_add,b\_sub,b\_clear,b\_dot;  
 Button b\_para1;  
 public TextView t1;  
 TextView t2;  
 final char ADDITION = '+';  
 final char SUBTRACTION = '-';  
 final char MULTIPLICATION = '\*';  
 final char DIVISION = '/';  
 final char EQU = '=';  
 final char EXTRA = '@';  
 final char MODULUS = '%';  
 char ACTION;  
 double val1 = Double.*NaN*;  
 double val2;  
  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.*activity\_main*);  
 viewSetup();  
  
 b1.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View view) {  
 ifErrorOnOutput();  
 exceedLength();  
 t1.setText(t1.getText().toString() + "1");  
 }  
 });  
  
 b2.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View view) {  
 ifErrorOnOutput();  
 exceedLength();  
 t1.setText(t1.getText().toString() + "2");  
 }  
 });  
  
 b3.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View view) {  
 ifErrorOnOutput();  
 exceedLength();  
 t1.setText(t1.getText().toString() + "3");  
 }  
 });  
  
 b4.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View view) {  
 ifErrorOnOutput();  
 exceedLength();  
 t1.setText(t1.getText().toString() + "4");  
 }  
 });  
  
 b5.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View view) {  
 ifErrorOnOutput();  
 exceedLength();  
 t1.setText(t1.getText().toString() + "5");  
 }  
 });  
  
 b6.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View view) {  
 ifErrorOnOutput();  
 exceedLength();  
 t1.setText(t1.getText().toString() + "6");  
 }  
 });  
  
 b7.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View view) {  
 ifErrorOnOutput();  
 exceedLength();  
 t1.setText(t1.getText().toString() + "7");  
 }  
 });  
  
 b8.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View view) {  
 ifErrorOnOutput();  
 exceedLength();  
 t1.setText(t1.getText().toString() + "8");  
 }  
 });  
  
 b9.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View view) {  
 ifErrorOnOutput();  
 exceedLength();  
 t1.setText(t1.getText().toString() + "9");  
 }  
 });  
  
 b0.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View view) {  
 ifErrorOnOutput();  
 exceedLength();  
 t1.setText(t1.getText().toString() + "0");  
 }  
 });  
  
 b\_dot.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View view) {  
 exceedLength();  
 t1.setText(t1.getText().toString() + ".");  
 }  
 });  
  
 b\_para1.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View view) {  
 if (t1.getText().length() > 0) {  
 ACTION = MODULUS;  
 operation();  
 if (!ifReallyDecimal()) {  
 t2.setText(val1 + "%");  
 } else {  
 t2.setText((int) val1 + "%");  
 }  
 t1.setText(null);  
 } else {  
 t2.setText("Error");  
 }  
 }  
 });  
  
 b\_add.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View view) {  
 if (t1.getText().length() > 0) {  
 ACTION = ADDITION;  
 operation();  
 if (!ifReallyDecimal()) {  
 t2.setText(val1 + "+");  
 } else {  
 t2.setText((int) val1 + "+");  
 }  
 t1.setText(null);  
 } else {  
 t2.setText("Error");  
 }  
 }  
 });  
  
 b\_sub.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View view) {  
 if (t1.getText().length() > 0) {  
 ACTION = SUBTRACTION;  
 operation();  
 if (t1.getText().length() > 0)  
 if (!ifReallyDecimal()) {  
 t2.setText(val1 + "-");  
 } else {  
 t2.setText((int) val1 + "-");  
 }  
 t1.setText(null);  
 } else {  
 t2.setText("Error");  
 }  
 }  
 });  
  
 b\_multi.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View view) {  
 if (t1.getText().length() > 0) {  
 ACTION = MULTIPLICATION;  
 operation();  
 if (!ifReallyDecimal()) {  
 t2.setText(val1 + "×");  
 } else {  
 t2.setText((int) val1 + "×");  
 }  
 t1.setText(null);  
 } else {  
 t2.setText("Error");  
 }  
 }  
 });  
  
 b\_divide.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View view) {  
 if (t1.getText().length() > 0) {  
 ACTION = DIVISION;  
 operation();  
 if (ifReallyDecimal()) {  
 t2.setText((int) val1 + "/");  
 } else {  
 t2.setText(val1 + "/");  
 }  
 t1.setText(null);  
 } else {  
 t2.setText("Error");  
 }  
 }  
 });  
   
 b\_equal.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View view) {  
 if (t1.getText().length() > 0) {  
 operation();  
 ACTION = EQU;  
 if (!ifReallyDecimal()) {  
 t2.setText(String.*valueOf*(val1));  
 } else {  
 t2.setText(String.*valueOf*((int) val1));  
 }  
 t1.setText(null);  
 } else {  
 t2.setText("Error");  
 }  
 }  
 });  
  
 b\_clear.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View view) {  
 if (t1.getText().length() > 0) {  
 CharSequence name = t1.getText().toString();  
 t1.setText(name.subSequence(0, name.length() - 1));  
 } else {  
 val1 = Double.*NaN*;  
 val2 = Double.*NaN*;  
 t1.setText("");  
 t2.setText("");  
 }  
 }  
 });  
 b\_clear.setOnLongClickListener(new View.OnLongClickListener() {  
 @Override  
 public boolean onLongClick(View view) {  
 val1 = Double.*NaN*;  
 val2 = Double.*NaN*;  
 t1.setText("");  
 t2.setText("");  
 return true;  
 }  
 });  
 }  
  
 void viewSetup() {  
 b1 = findViewById(R.id.*button1*);  
 b2 = findViewById(R.id.*button2*);  
 b3 = findViewById(R.id.*button3*);  
 b4 = findViewById(R.id.*button4*);  
 b5 = findViewById(R.id.*button5*);  
 b6 = findViewById(R.id.*button6*);  
 b7 = findViewById(R.id.*button7*);  
 b8 = findViewById(R.id.*button8*);  
 b9 = findViewById(R.id.*button9*);  
 b0 = findViewById(R.id.*button0*);  
 b\_equal = findViewById(R.id.*button\_equal*);  
 b\_multi = findViewById(R.id.*button\_multi*);  
 b\_divide = findViewById(R.id.*button\_divide*);  
 b\_add = findViewById(R.id.*button\_add*);  
 b\_sub = findViewById(R.id.*button\_sub*);  
 b\_clear = findViewById(R.id.*button\_clear*);  
 b\_dot = findViewById(R.id.*button\_dot*);  
 b\_para1 = findViewById(R.id.*button\_para1*);  
 t1 = findViewById(R.id.*input*);  
 t2 = findViewById(R.id.*output*);  
 }  
  
 void operation() {  
 if (!Double.*isNaN*(val1)) {  
 if (t2.getText().toString().charAt(0) == '-') {  
 val1 = (-1) \* val1;  
 }  
 val2 = Double.*parseDouble*(t1.getText().toString());  
  
 switch (ACTION) {  
 case ADDITION:  
 val1 = val1 + val2;  
 break;  
 case SUBTRACTION:  
 val1 = val1 - val2;  
 break;  
 case MULTIPLICATION:  
 val1 = val1 \* val2;  
 break;  
 case DIVISION:  
 val1 = val1 / val2;  
 break;  
 case EXTRA:  
 val1 = (-1) \* val1;  
 break;  
 case MODULUS:  
 val1 = val1 % val2;  
 break;  
 case EQU:  
 break;  
 }  
 } else {  
 val1 = Double.*parseDouble*(t1.getText().toString());  
 }  
 }  
   
 void ifErrorOnOutput() {  
 if (t2.getText().toString().equals("Error")) {  
 t2.setText("");  
 }  
 }  
  
 boolean ifReallyDecimal() {  
 return val1 == (int) val1;  
 }  
  
 public void noOperation() {  
 String inputExpression = t2.getText().toString();  
 if (!inputExpression.isEmpty() && !inputExpression.equals("Error")) {  
 if (inputExpression.contains("-")) {  
 inputExpression = inputExpression.replace("-", "");  
 t2.setText("");  
 val1 = Double.*parseDouble*(inputExpression);  
 }  
 if (inputExpression.contains("+")) {  
 inputExpression = inputExpression.replace("+", "");  
 t2.setText("");  
 val1 = Double.*parseDouble*(inputExpression);  
 }  
 if (inputExpression.contains("/")) {  
 inputExpression = inputExpression.replace("/", "");  
 t2.setText("");  
 val1 = Double.*parseDouble*(inputExpression);  
 }  
 if (inputExpression.contains("%")) {  
 inputExpression = inputExpression.replace("%", "");  
 t2.setText("");  
 val1 = Double.*parseDouble*(inputExpression);  
 }  
 if (inputExpression.contains("×")) {  
 inputExpression = inputExpression.replace("×", "");  
 t2.setText("");  
 val1 = Double.*parseDouble*(inputExpression);  
 }  
 }  
 }  
 public void exceedLength() {  
 if (t1.getText().toString().length() > 10) {  
 t1.setTextSize(TypedValue.*COMPLEX\_UNIT\_SP*, 20);  
 }  
 }  
}

**Output:-**

**  **