



UNIVERSIDAD NACIONAL AUTÓNOMA DE MÉXICO

Actividad M3-01

Mi primera calculadora en Android Studio

Materia: Desarrollo de Aplicaciones Móviles

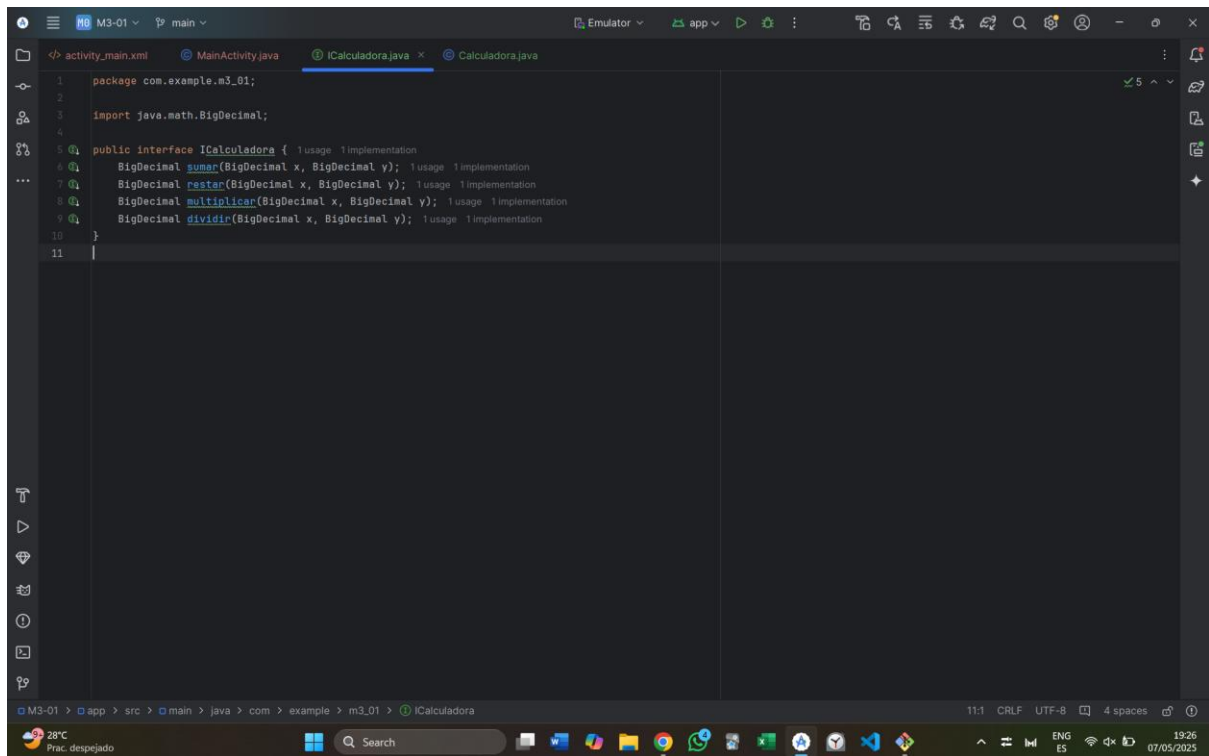
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Semestre: 2025-2

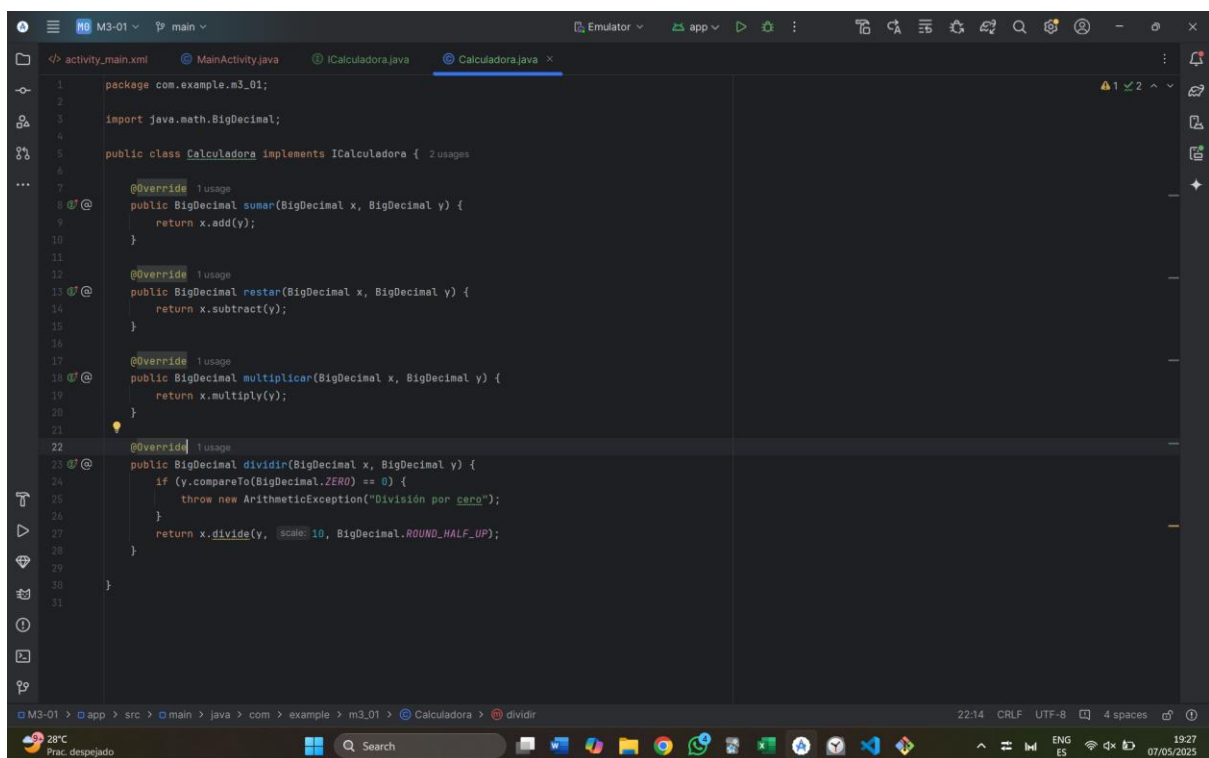


Interfaz e implementación



This screenshot shows the definition of the `ICalculadora` interface in the `ICalculadora.java` file. The interface is located in the package `com.example.m3_01` and imports `java.math.BigDecimal`. It defines four methods: `sumar`, `restar`, `multiplicar`, and `dividir`, each taking two `BigDecimal` parameters and returning a `BigDecimal`. The IDE interface includes a top toolbar with icons for running, debugging, and other development tasks. The bottom status bar shows the file path, encoding (UTF-8), and other details.

```
1 package com.example.m3_01;
2
3 import java.math.BigDecimal;
4
5 public interface ICalculadora {
6     BigDecimal sumar(BigDecimal x, BigDecimal y);
7     BigDecimal restar(BigDecimal x, BigDecimal y);
8     BigDecimal multiplicar(BigDecimal x, BigDecimal y);
9     BigDecimal dividir(BigDecimal x, BigDecimal y);
10 }
11
```



This screenshot shows the implementation of the `ICalculadora` interface in the `Calculadora` class. The class is located in the package `com.example.m3_01` and implements the `ICalculadora` interface. It defines four methods: `sumar`, `restar`, `multiplicar`, and `dividir`, each taking two `BigDecimal` parameters and returning a `BigDecimal`. The `dividir` method includes a check for division by zero, throwing an `ArithmeticException` if the divisor is zero. The IDE interface includes a top toolbar with icons for running, debugging, and other development tasks. The bottom status bar shows the file path, encoding (UTF-8), and other details.

```
1 package com.example.m3_01;
2
3 import java.math.BigDecimal;
4
5 public class Calculadora implements ICalculadora {
6     @Override
7     public BigDecimal sumar(BigDecimal x, BigDecimal y) {
8         return x.add(y);
9     }
10
11     @Override
12     public BigDecimal restar(BigDecimal x, BigDecimal y) {
13         return x.subtract(y);
14     }
15
16     @Override
17     public BigDecimal multiplicar(BigDecimal x, BigDecimal y) {
18         return x.multiply(y);
19     }
20
21     @Override
22     public BigDecimal dividir(BigDecimal x, BigDecimal y) {
23         if (y.compareTo(BigDecimal.ZERO) == 0) {
24             throw new ArithmeticException("División por cero");
25         }
26         return x.divide(y, 10, BigDecimal.ROUND_HALF_UP);
27     }
28 }
29
30
31
```

MainActivity

```
1 package com.example.m3_01;
2
3 import android.os.Bundle;
4 import android.widget.Button;
5 import android.widget.TextView;
6
7 import androidx.activity.EdgeToEdge;
8 import androidx.appcompat.app.AppCompatActivity;
9 import androidx.core.graphics.Insets;
10 import androidx.core.view.ViewCompat;
11 import androidx.core.view.WindowInsetsCompat;
12
13 import java.math.BigDecimal;
14
15 public class MainActivity extends AppCompatActivity {
16
17     TextView resultTv, solutionTv; 5 usages
18     Button buttonC, buttonBrackOpen, buttonBrackClose; 1 usage
19     Button buttonDivide, buttonMultiply, buttonMinus, buttonEquals; 1 usage
20     Button button0, button1, button2, button3, button4, button5, button6, button7, button8, button9; 1 usage
21     Button buttonAC, buttonDot; 1 usage
22
23     StringBuilder currentInput = new StringBuilder(); 13 usages
24
25     Calculadora calculadora = new Calculadora(); 4 usages
26
27     BigDecimal operando1 = null; 5 usages
28     String operador = null; 5 usages
29
30     @Override
31     protected void onCreate(Bundle savedInstanceState) {
32         super.onCreate(savedInstanceState);
33         EdgeToEdge.enable(this);
34         setContentView(R.layout.activity_main);
35
36         resultTv = findViewById(R.id.result_tv);
37
38         // ... (rest of the code is visible in the next screenshot)
39     }
40 }
```

```
36         resultTv = findViewById(R.id.result_tv);
37         solutionTv = findViewById(R.id.solution_tv);
38         buttonC = findViewById(R.id.button_c);
39         buttonBrackOpen = findViewById(R.id.button_open_bracket);
40         buttonBrackClose = findViewById(R.id.button_close_bracket);
41         buttonDivide = findViewById(R.id.button_divide);
42         buttonMultiply = findViewById(R.id.button_multiply);
43         buttonPlus = findViewById(R.id.button_plus);
44         buttonMinus = findViewById(R.id.button_minus);
45         buttonEquals = findViewById(R.id.button_equals);
46         button0 = findViewById(R.id.button_0);
47         button1 = findViewById(R.id.button_1);
48         button2 = findViewById(R.id.button_2);
49         button3 = findViewById(R.id.button_3);
50         button4 = findViewById(R.id.button_4);
51         button5 = findViewById(R.id.button_5);
52         button6 = findViewById(R.id.button_6);
53         button7 = findViewById(R.id.button_7);
54         button8 = findViewById(R.id.button_8);
55         button9 = findViewById(R.id.button_9);
56         buttonAC = findViewById(R.id.button_ac);
57         buttonDot = findViewById(R.id.button_dot);
58
59         // Numeros y punto decimal
60         setDigitListener(R.id.button_0, "0");
61         setDigitListener(R.id.button_1, "1");
62         setDigitListener(R.id.button_2, "2");
63         setDigitListener(R.id.button_3, "3");
64         setDigitListener(R.id.button_4, "4");
65         setDigitListener(R.id.button_5, "5");
66         setDigitListener(R.id.button_6, "6");
67         setDigitListener(R.id.button_7, "7");
68         setDigitListener(R.id.button_8, "8");
69         setDigitListener(R.id.button_9, "9");
70
71         // ... (rest of the code is visible in the next screenshot)
72     }
73 }
```

```
15 public class MainActivity extends AppCompatActivity {
16     protected void onCreate(Bundle savedInstanceState) {
17         // Paréntesis
18         setDigitListener(R.id.button_9, value: "9");
19         setDigitListener(R.id.button_dot, value: ".");
20
21         // Operadores
22         setOperatorListener(R.id.button_plus, op: "+");
23         setOperatorListener(R.id.button_minus, op: "-");
24         setOperatorListener(R.id.button_multiply, op: "*");
25         setOperatorListener(R.id.button_divide, op: "/");
26
27         // Botón "="
28         findViewById(R.id.button_equals).setOnClickListener(view -> {
29             if (operator != null && operand1 != null && currentInput.length() > 0) {
30                 try {
31                     BigDecimal operando2 = new BigDecimal(currentInput.toString());
32                     BigDecimal resultado = calcular(operand1, operando2, operator);
33                     resultTv.setText(resultado.stripTrailingZeros().toPlainString());
34                     solutionIv.setText("");
35                     currentInput.setLength(0);
36                     operator = null;
37                     operand1 = null;
38                 } catch (Exception e) {
39                     resultTv.setText("Error");
40                 }
41             }
42         });
43
44         // Botón AC
45         findViewById(R.id.button_ac).setOnClickListener(view -> {
46             currentInput.setLength(0);
47             operand1 = null;
48         });
49     }
50 }
```

```
15 public class MainActivity extends AppCompatActivity {
16     protected void onCreate(Bundle savedInstanceState) {
17         findViewById(R.id.button_ac).setOnClickListener(view -> {
18             currentInput.setLength(0);
19             operand1 = null;
20             operador = null;
21             solutionIv.setText("");
22             resultTv.setText("0");
23         });
24
25         // Botón C
26         findViewById(R.id.button_c).setOnClickListener(view -> {
27             if (currentInput.length() > 0) {
28                 currentInput.deleteCharAt(index: currentInput.length() - 1);
29                 solutionIv.setText(currentInput.toString());
30             }
31         });
32
33         ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main), (v, insets) -> {
34             Insets systemBars = insets.getInsets(WindowInsetsCompat.Type.systemBars());
35             v.setPadding(systemBars.left, systemBars.top, systemBars.right, systemBars.bottom);
36             return insets;
37         });
38
39         private void setDigitListener(int id, String value) { 13 usages
40             Button button = findViewById(id);
41             button.setOnClickListener(view -> {
42                 currentInput.append(value);
43                 solutionIv.setText(currentInput.toString());
44             });
45         }
46
47         private void setOperatorListener(int id, String op) { 4 usages
48             Button button = findViewById(id);
49             button.setOnClickListener(view -> {
50                 if (currentInput.length() > 0) {
51                     // ...
52                 }
53             });
54         }
55     }
56 }
```

```
15 public class MainActivity extends AppCompatActivity {
123     private void setDigitListener(int id, String value) { 13 usages
129     }
130
131     private void setOperatorListener(int id, String op) { 4 usages
132         Button button = findViewById(id);
133         button.setOnClickListener(view -> {
134             if (currentInput.length() > 0) {
135                 try {
136                     operand1 = new BigDecimal(currentInput.toString());
137                     operador = op;
138                     currentInput.setLength(0);
139                     solutionTv.setText("");
140                 } catch (Exception e) {
141                     resultTv.setText("Error");
142                 }
143             }
144         });
145     }
146
147     @
148     private BigDecimal calcular(BigDecimal x, BigDecimal y, String op) { 1 usage
149         switch (op) {
150             case "+": return calculadora.sumar(x, y);
151             case "-": return calculadora.restar(x, y);
152             case "*": return calculadora.multiplicar(x, y);
153             case "/": return calculadora.dividir(x, y);
154             default: throw new IllegalArgumentException("Operador no válido");
155         }
156     }
157 }
```

Resultado

```
1 package com.example.m3_01;
2
3 import android.os.Bundle;
4 import android.widget.Button;
5 import android.widget.TextView;
6
7 import androidx.activity.EdgeToEdge;
8 import androidx.appcompat.app.AppCompatActivity;
9 import androidx.core.graphics.Insets;
10 import androidx.core.view.ViewCompat;
11 import androidx.core.view.WindowInsetsCompat;
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13 import java.math.BigDecimal;
14
15 public class MainActivity extends AppCompatActivity {
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19     Button buttonDivide, buttonMultiply, buttonPlus, buttonMinus, buttonEquals; 1 usage
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27     BigDecimal operand1 = null; 5 usages
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30     @Override
31     protected void onCreate(Bundle savedInstanceState) {
32         super.onCreate(savedInstanceState);
33         EdgeToEdge.enable(this);
34         setContentView(R.layout.activity_main);
35
36         resultTv = findViewById(R.id.result_tv);
```