CodeHS

# 4-Function Calculator

**default.js**

```
1.  // Initialize variables to store user input
2.  var operator = "";
3.  var firstNum = "";
4.  var secondNum = "";
5.  var isNewCalculation = true;
6.
7.  // Main function to start the calculator program and call mouseClickMethod
8.  function start() {
9.      design();
10.
11.     mouseClickMethod(function (event) {
12.         var clickedObject = getElementAt(event.getX(), event.getY());
13.
14.         if (clickedObject != null) {
15.             if (isNumberButton(clickedObject)) {
16.                 updateDisplay(clickedObject);
17.             } else if (isOperationButton(clickedObject)) {
18.                 if (clickedObject.getLabel() === "=") {
19.                     if (firstNum !== "" && operator !== "" && secondNum !== "") {
20.                         performCalculation(firstNum, operator, secondNum);
21.                         firstNum = "";
22.                         operator = "";
23.                         secondNum = "";
24.                         isNewCalculation = true;
25.                     }
26.                 } else {
27.                     operator = clickedObject.getLabel();
28.                     isNewCalculation = false;
29.                 }
30.             }
31.         }
32.     });
33. }
34.
35. // Functions to create the graphical design of the calculator
36. function design() {
37.     drawRect(380, 460, Color.black, 10, 10);
38.     drawRect(300, 100, Color.black, 50, 25);
39.
40.     drawNumberButtons([
41.         [7, 87.5, 245], [8, 152.5, 245], [9, 217.5, 245], [4, 87.5, 302.5],
42.         [5, 152.5, 302.5], [6, 217.5, 302.5], [1, 87.5, 362.5], [2, 152.5, 362.5],
43.         [3, 217.5, 362.5], [0, 152.5, 425]
44.     ]);
45.     drawOperationButtons([
46.         ["/", 282.5, 185], ["x", 282.5, 245], ["−", 282.5, 302.5], ["+", 282.5, 365],
47.         ["=", 282.5, 422.5]
48.     ]);
49. }
50. function drawNumberButtons(buttonsArray) {
51.     for (let i = 0; i < buttonsArray.length; i++) {
52.         let button = buttonsArray[i];
53.         let number = button[0];
54.         let x = button[1];
55.         let y = button[2];
56.         drawNumberButton(number, x, y);
57.     }
58. }
59. function drawOperationButtons(buttonsArray){
60.     for (let i = 0; i < buttonsArray.length; i++){
61.         let button = buttonsArray[i];
62.         let operation = button[0];
63.         let x = button[1];
64.         let y = button [2];
65.         drawOperationButton(operation, x, y);
66.     }
67. }
68. function drawRect(width, height, color, x, y) {
69.     var rect = new Rectangle(width, height);
70.     rect.setColor(color);
71.     rect.setPosition(x, y);
72.     add(rect);
73. }
74. function drawCircle(radius, color, x, y) {
75.     var circle = new Circle(radius);
76.     circle.setColor(color);
77.     circle.setPosition(x, y);
78.     add(circle);
```

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79.  }
80.  function insertText(label, font, color, x, y) {
81.      var txt = new Text(label, font);
82.      txt.setColor(color);
83.      txt.setPosition(x, y);
84.      add(txt);
85.  }
86.  function drawNumberButton(number, x, y) {
87.      drawCircle(27.5, Color.white, x, y);
88.      insertText(number.toString(), "20pt Arial", Color.black, x - 7, y + 7.5);
89.  }
90.  function drawOperationButton(operation, x, y) {
91.      drawCircle(27.5, Color.purple, x, y);
92.      insertText(operation, "20pt Arial", Color.white, x - 5, y + 7.5);
93.  }
94.
95.  // Functions to check if the clicked object is a number or operation button
96.  function isNumberButton(clickedObject) {
97.      return clickedObject.getType() === "Text" && !isNaN(parseFloat(clickedObject.getLabel()));
98.  }
99.  function isOperationButton(clickedObject) {
100.     var operationSymbols = ["/", "+", "-", "x", "="];
101.     return clickedObject.getType() === "Text" && operationSymbols.includes(clickedObject.getLabel());
102. }
103.
104. // Functions to update/clear the displayed numbers
105. function updateDisplay(clickedObject) {
106.     var clickedLabel = clickedObject.getLabel();
107.
108.     if (operator === "") {
109.         firstNum += clickedLabel;
110.     } else {
111.         secondNum += clickedLabel;
112.     }
113.     updateDisplayText(firstNum + " " + operator + " " + secondNum, 55, 100);
114. }
115. function updateDisplayText(text, x, y) {
116.     clearDisplay();
117.     insertText(text, "30pt Arial", Color.white, x, y);
118. }
119. function clearDisplay() {
120.     var displayText = getElementAt(55, 100);
121.     if (displayText != null) {
122.         remove(displayText);
123.     }
124. }
125.
126. // Function to perform calculation
127. function performCalculation(firstNum, operator, secondNum) {
128.     var result;
129.     var num1 = parseFloat(firstNum);
130.     var num2 = parseFloat(secondNum);
131.
132.     switch (operator) {
133.         case "+":
134.             result = num1 + num2;
135.             break;
136.         case "-":
137.             result = num1 - num2;
138.             break;
139.         case "x":
140.             result = num1 * num2;
141.             break;
142.         case "/":
143.             result = num1 / num2;
144.             break;
145.     }
146.     updateDisplayText(result, 55, 100);
147. }
```