Day 9: Binary Calculator

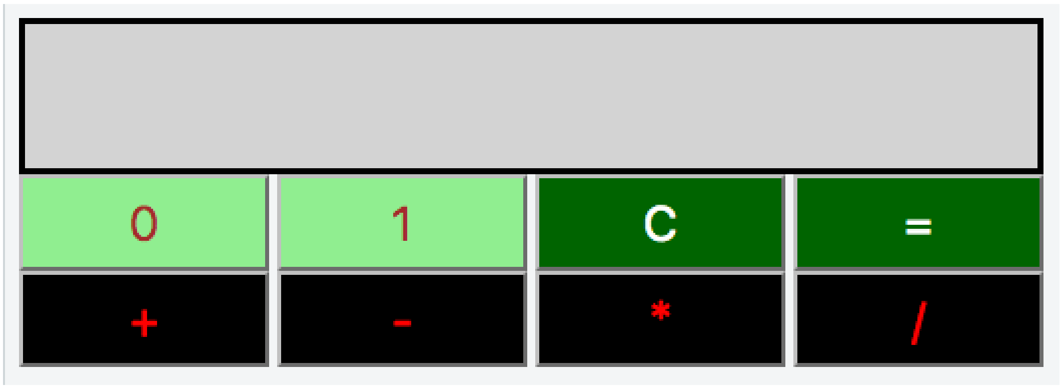
Objective

In this challenge, we implement a calculator that uses binary numbers. Check out the attached tutorial for learning materials.

Task

Implement a simple calculator that performs the following operations on *binary numbers*: addition, subtraction, multiplication, and division. Note that division operation must be *integer division* only; for example 1001/100 = 10, 1110/101=10 and 101/1=101

The calculator's initial state must look like this:



- *Element IDs. Each element in the document must have an* id*, specified below:*

innerHTML	id	Description/Behavior
	res	Contains the result of button presses.
	btns	A button container that displays all eight calculator buttons.
0	btn0	A button expressing binary digit .
1	btn1	A button expressing binary digit .
C	btnClr	A button to clear the contents of .
=	btnEql	A button to evaluate the contents of the expression in .
+	btnSum	A button for the addition operation.
-	btnSub	A button for the subtraction operation.

innerHTML	id	Description/Behavior
*	btnMul	A button for the multiplication operation.
/	btnDiv	A button for the integer division operation.

- *Styling.* The document's elements must have the following styles:
  - body has a width of 33%.
  - res has a background-color of lightgray, a border that is solid, a height of 48px, and a font-size of 20px.
  - btn0 and btn1 have a background-color of lightgreen and a color of brown.
  - btnClr and btnEql have a background-color of darkgreen and a color of white.
  - btnSum, btnSub, btnMul, and btnDiv have a background-color of black, a color of red.
  - All the buttons in btns have a width of 25%, a height of 36px, a font-size of 18px, margin of 0px, and float value left.

The .js and .css files are in different directories, so use the *link* tag to provide the CSS file path and the *script* tag to provide the JS file path:

```
<!DOCTYPE html>
<html>
  <head>
    <link rel="stylesheet" href="css/binaryCalculator.css"  type="text/css">
  </head>

  <body>
            <script src="js/binaryCalculator.js"  type="text/javascript"></script>
  </body>
</html>
```

Constraints

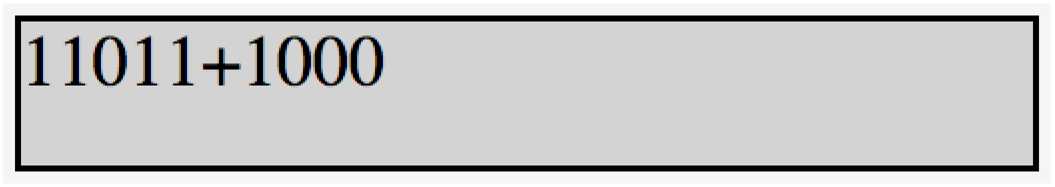
- All expressions in the test dataset are entered in the form operand1 -> operator -> operand2, where operand1 is the first binary number, operand2 is the second binary number, and operator is in the set {+,-,*,=}
- Both operands will always be positive integers when converted from base-2 to base-10.
- All expressions will be valid.

Explanation

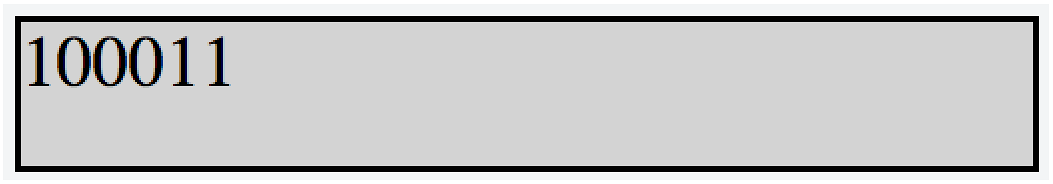
Consider the following sequence of button clicks:

1 -> 1 -> 0 -> 1 -> 1 -> + -> 1 -> 0 -> 0 -> 0 -> =

Before pressing the = button, the result *div* looks like this:


11011+1000

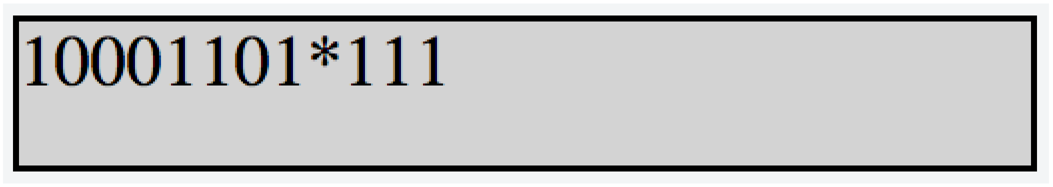
After pressing the = button to evaluate our expression, the result *div* looks like this:


100011

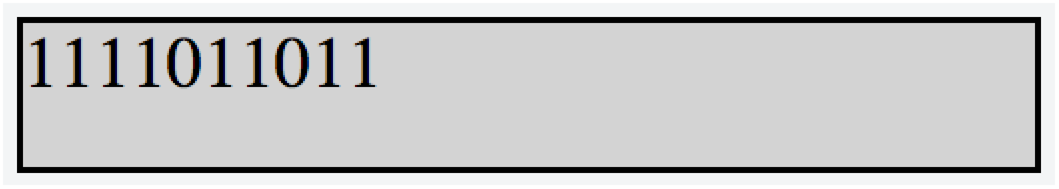
Notice that $(11011)_2 = (27)_{10}$, $(1000)_2 = (8)_{10}$, and $(100011)_2 = (35)_{10}$, so our calculator evaluated the expression correctly. Now, let's consider our next sequence of button clicks as:

0 -> 1 -> * -> 1 -> 1 -> 1 -> =

Before pressing the = button, the result *div* looks like this:


10001101*111

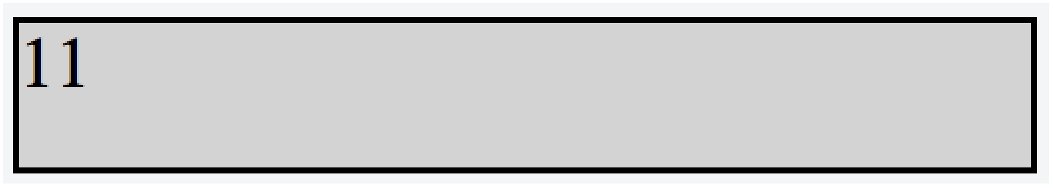
After pressing the = button to evaluate our expression, the result *div* looks like this:


1111011011

Consider the next sequence of button clicks as:

C -> 1 -> 1

The result *div* looks like this: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