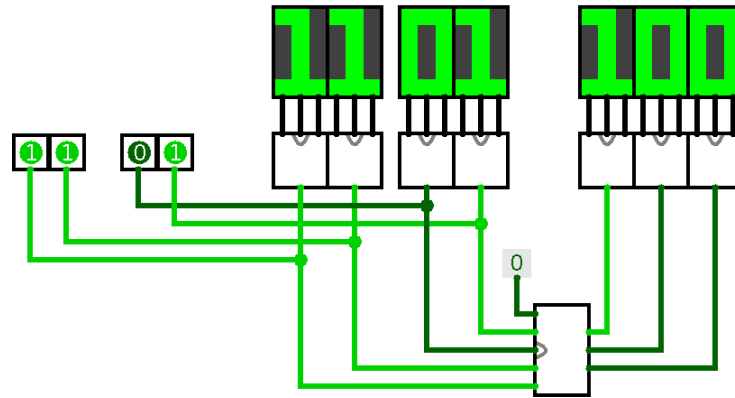## Instructions

Your first project tasks you with creating a two bit unsigned binary integer adder[1]. You must accept the input as two 2-bit unsigned binary integer values and display each pair of 2-bit values using LED matrix displays. You must display the output as a 3-bit unsigned binary integer using LED matrix circuits.

Given that the task is to show your ability to program binary circuits, you may not use the built-in adder. It would be a violation of our syllabus agreement for you to do so[2]. It is easy to test, the **arithmetic** library will be loaded in Logisim, if you use an adder.

You should provide the following:

1. Two pairs of 2-bit input *pin*s representing the two 2-bit unsigned binary integers a_1a_0 and b_1b_0,

2. Two pairs of 3 x 5 LED displays, one pair for a_1a_0 and one pair b_1b_0, and

3. Three 3 x 5 LED displays ($c_{out}s_1s_0$) for the operation $a_1a_0 + b_1b_0 = c_{out}s_1s_0$.

Points

There are three points available in this project.

1. Program a binary LED driver to display the input bits, as illustrated above. You must also provide the LED output for each pair of input bits to receive this point (+0.5 for correct 0, +0.5 for correct 1).

2. Program a 4-bit binary adder ($a_1a_0 + b_1b_0$) with 3 output bits c_{out}, s_1, s_0.

   - This can be tested for points independently if its input and output are labeled and input pins are provided (no partial credit).

3. Program three LEDs to display the 4-bit binary adder's output (no partial credit, parts 1 and 2 required).

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[1]With four input bits total—two 2-bit values
[2]See *Intended Purpose* in the *Course Policies* section of our syllabus