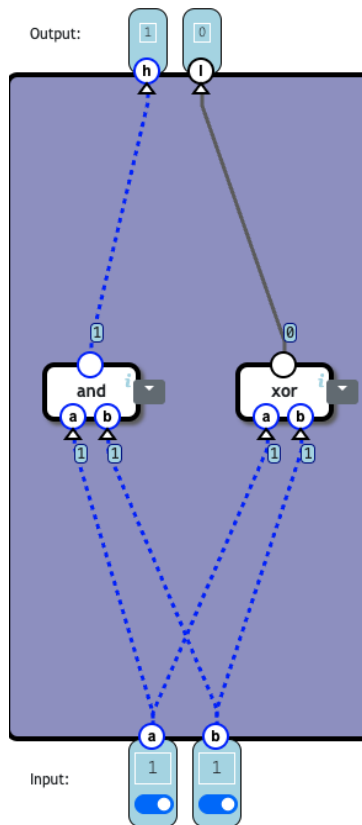


1. Half Adder

Send both inputs to AND, then to the high, 2 slot bit
Send both inputs to XOR, then to the low, 1 slot bit



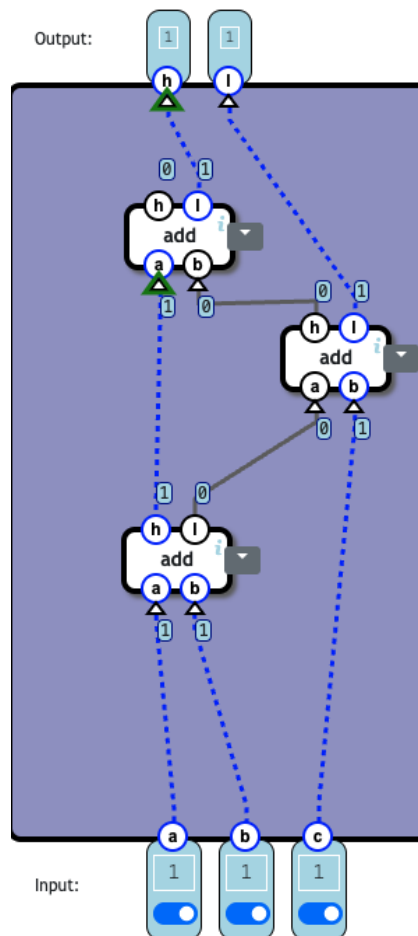
2. Full Adder

All bits 1 slot

Add a and b together

Take low bit of the sum and add to c, return this sum to low bit of output

Take high bit of both sums, return the sum of these to high bit of output



3. Multi-bit Adder

Add all 1 slot bits, including carry

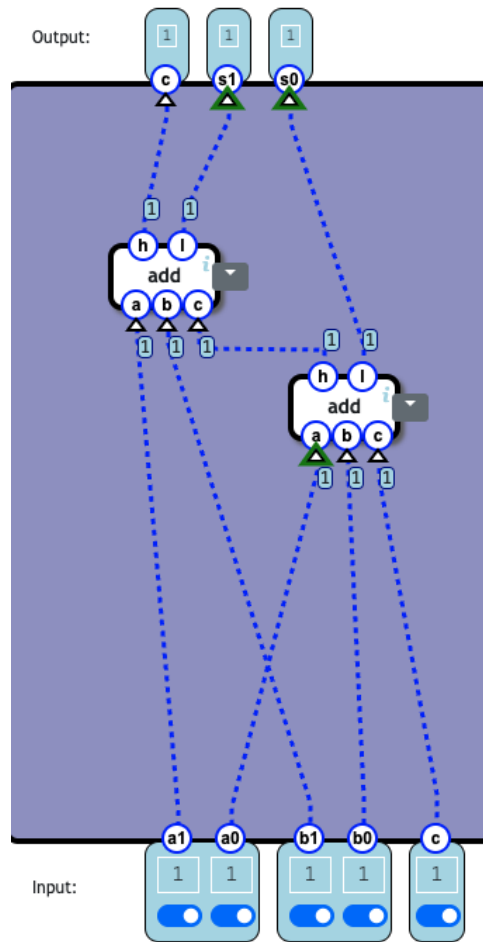
Add all 2 slot bits, including high bit of the sum of 1 slot bits

Output high bit of the sum of 2 slot bits in 3 slot

Output low bit of the sum of 2 slot bits in 2 slot

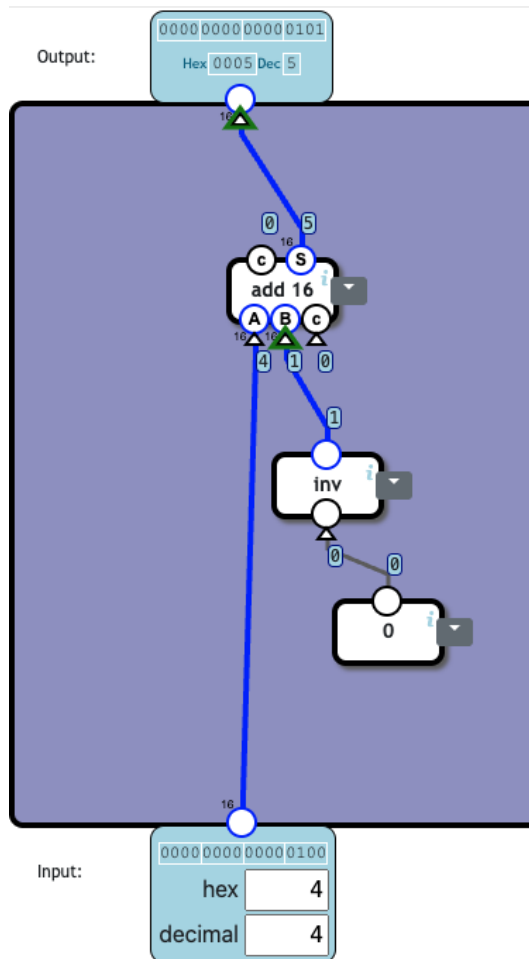
Output low bit of the sum of 1 slot bits in 1 slot

(Repeat as many times as needed for increased bits, can facilitate all integer addition)



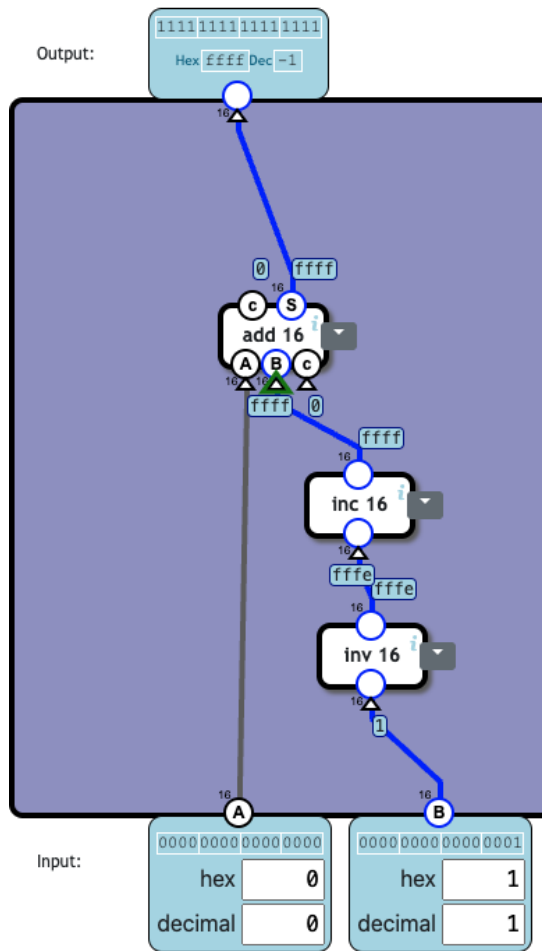
4. Increment

Add the inverse of 0, 0 does not require a component.



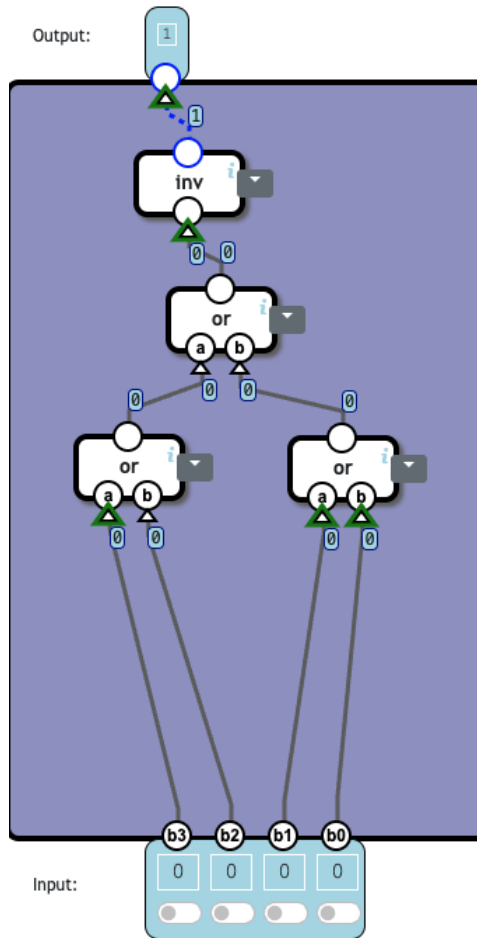
5. Subtraction

Invert the term that is supposed to be negative
Then increment it, as inverting 0 subtracts 1
Add these together and output result



6. Equal to Zero

Make sure bits are an exact sequence, this one being empty



7. Less than Zero

Shows full integer representation, bit 15 is 1 if the number is negative, and 1's and zeroes flip roles for negative numbers to ensure correct arithmetic operations

