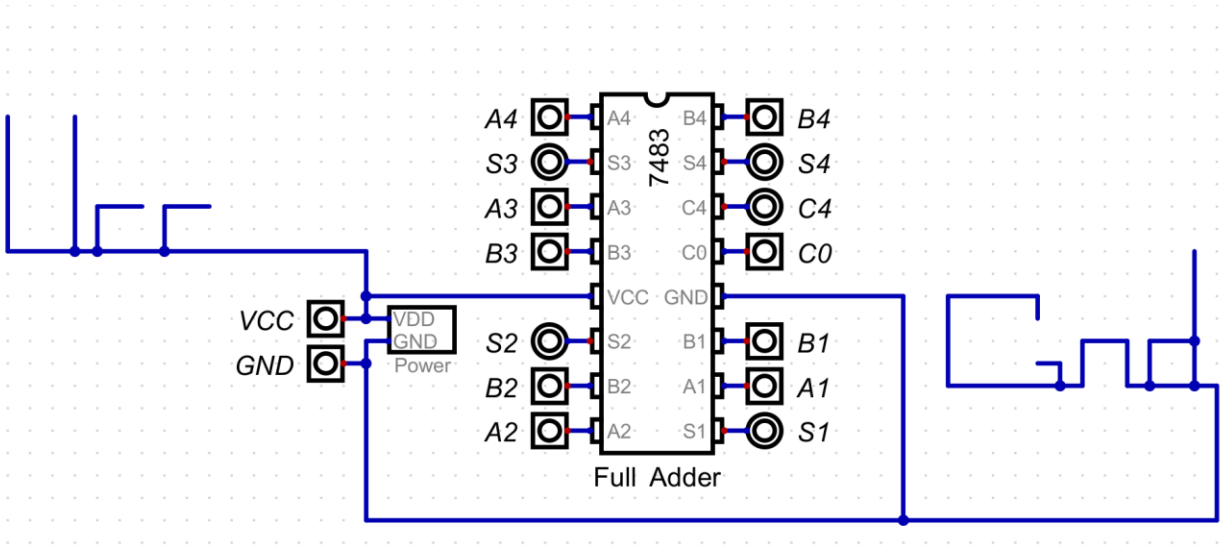
Zen Park
CS 4141.6U1
WXP190001
7/10/2021

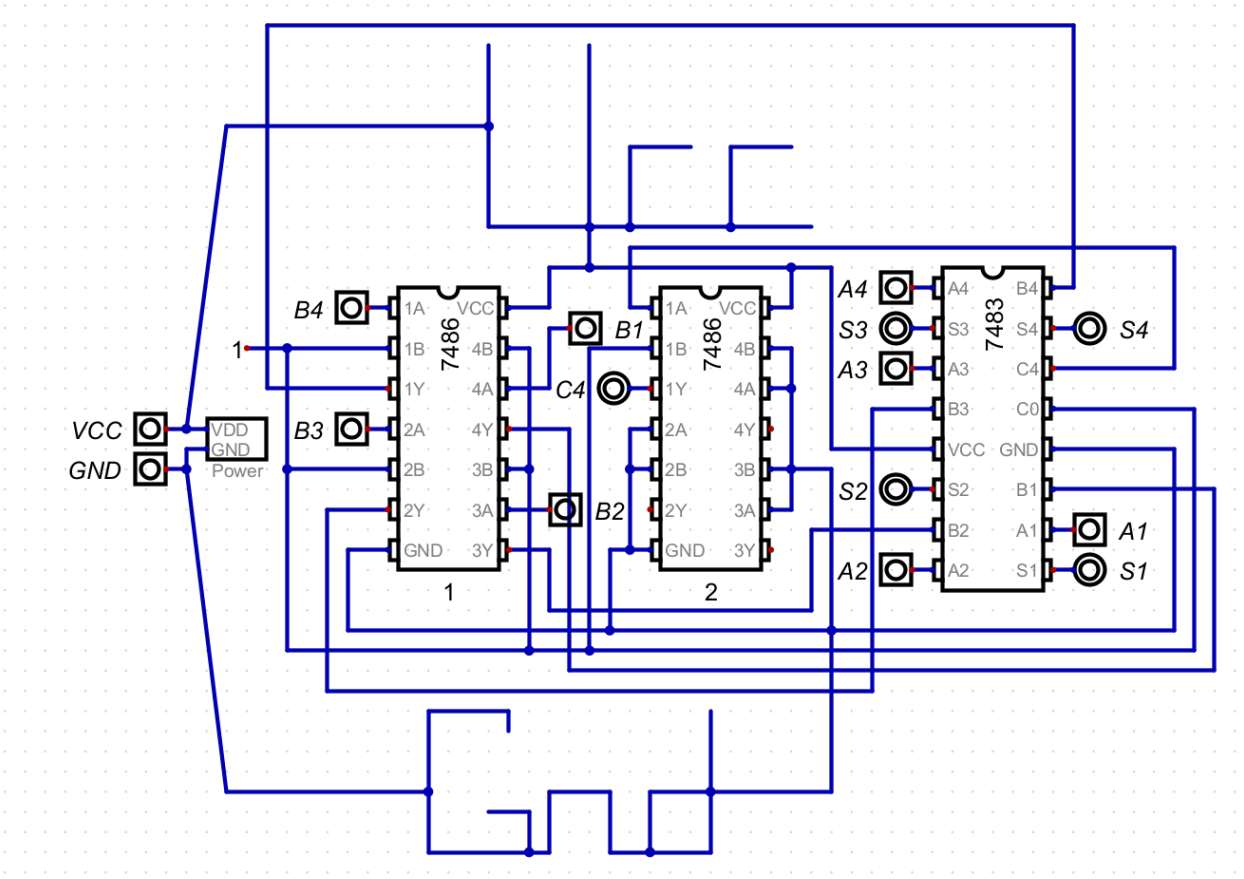
Postlab 3

1) Adder



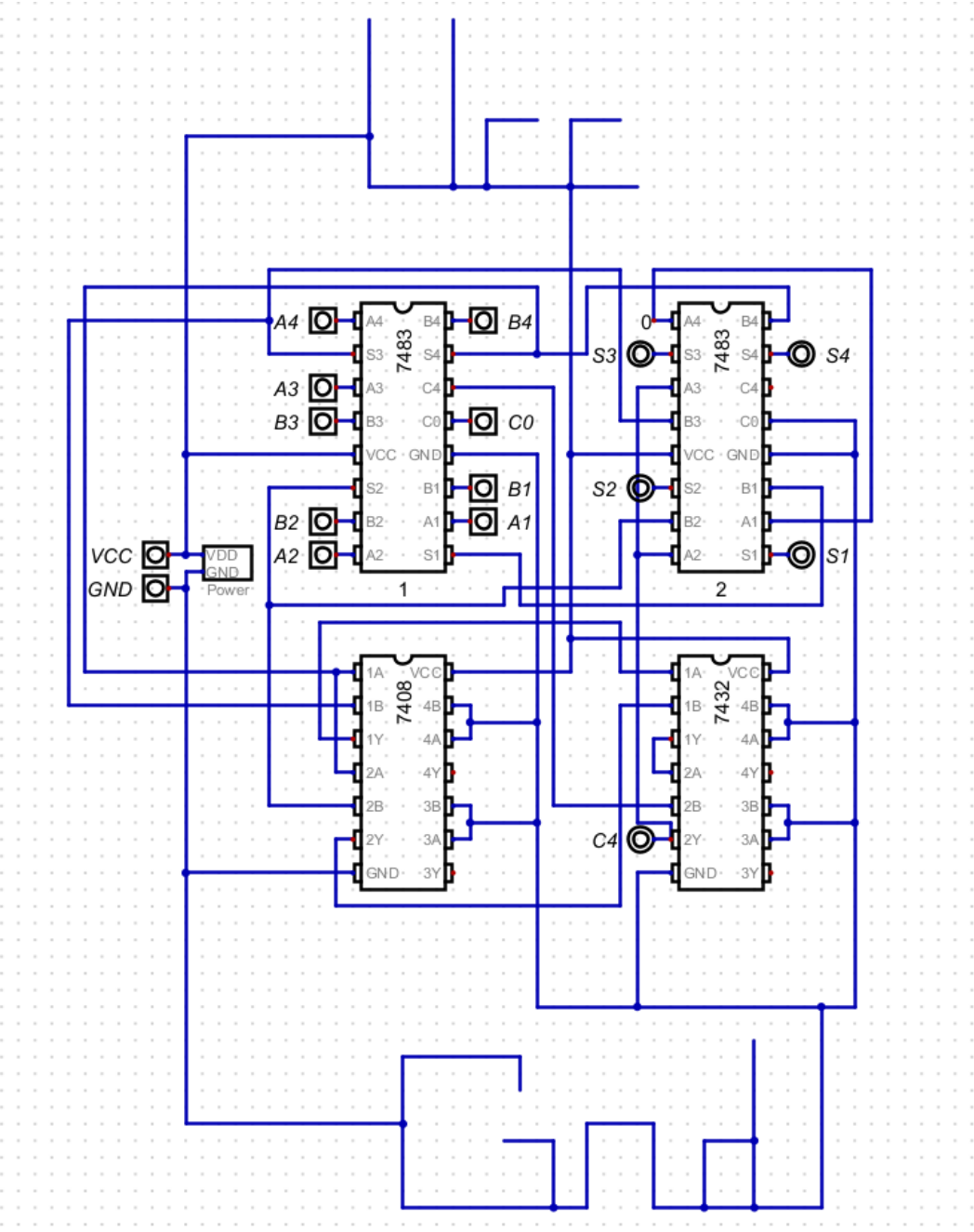
We should be able to tell that this is constructed on 4 bits. The 7483 chip represents full and is generally self-sufficient as it does not require another chip. With this, we are capable of performing simple mathematic operations.

2) Subtractor



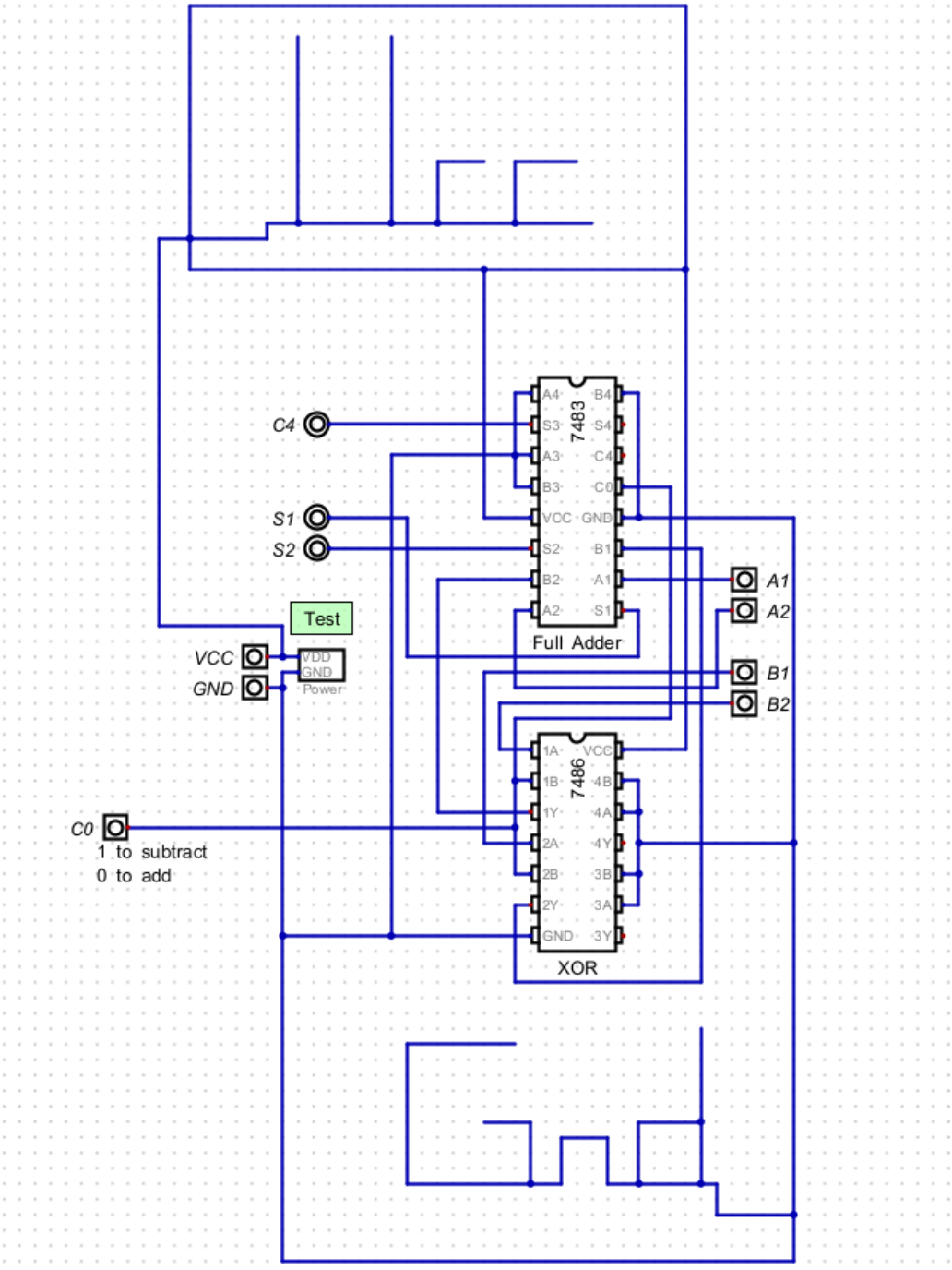
7486 chips represent XOR, and we have two of these connected with 7483. This time, we perform a little bit more of a roundabout way of performing what we did in the first experiment. In our two different inputs, we have the second input represent constant values such as 1, and use this to flip operations.

3) BCD



In this adder, we work with 2 XOR chips (7483), along with 7408 and 7432 chips. Our output is connected directly with 7432, whereas we get our input C0 (or the operator switch flip) into the first XOR chip. We turn our S outputs into the input for 7483, and then connected it with the AND gate chip to create the functionality as the OR. If you take a look at A4 and A3, we see that these pins contain the 0 input over a consistent value. In the end, we can calculate simply by flipping the correct switches that represent numbers and activate C0 to turn it into a negative operator. Leave it off to keep it positive.

4) Extra credit



So this one is quite similar to what we did on the second experiment. Except some minor differences are that we have the full adder chip (7483) and XOR chip (7486). By connecting the output C4 onto 7483, we have much more direct control with the results, because if we were to connect it with the XOR, our outputs would result becoming much more volatile. The A pins are connected to the full adder, whereas the B pins are connected to XOR. This allows us to use the C0 input to make it flip operators from plus to minus, allowing simple calculations.