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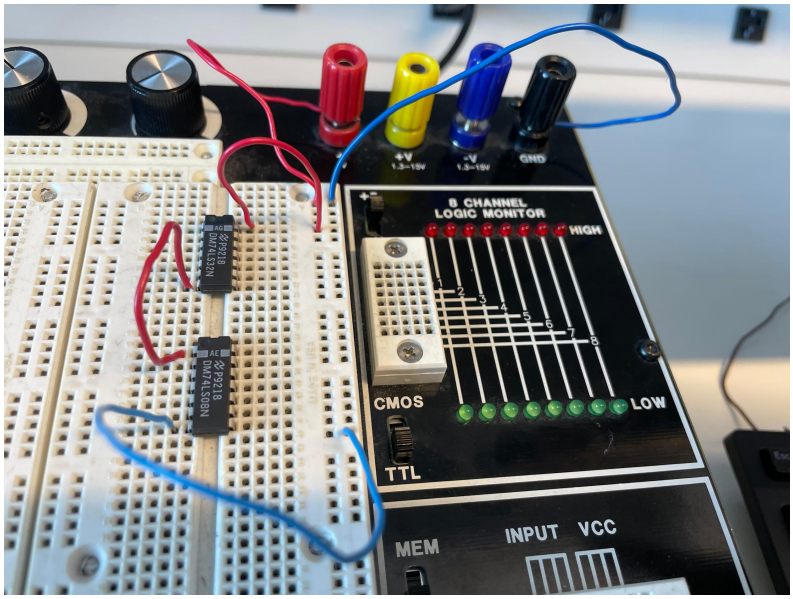
Lab 1 Notes

Part 2

1.



Part 3

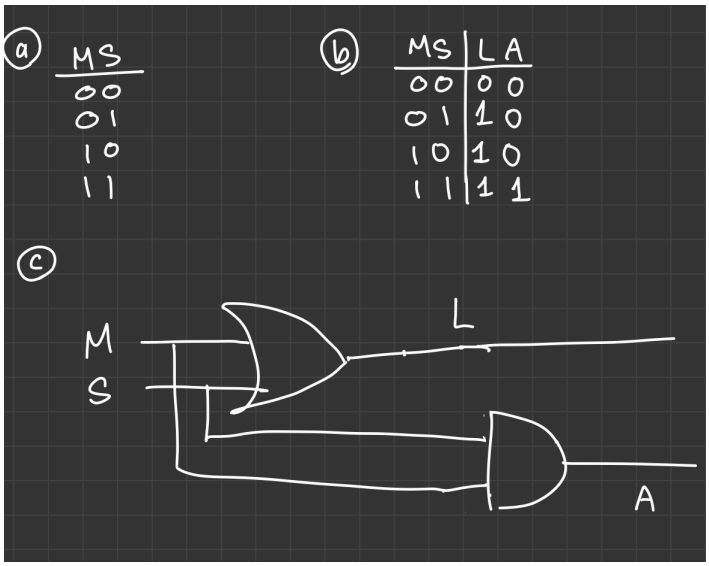
DM74LS08N - AND Gate (bottom)
DM74LS32N - OR Gate (top)

Switch 3	Switch 4	Light 1	Light 2
0	0	0	0
0	1	0	1
1	0	0	1
1	1	1	1

Report

Introduction

L was an OR gate and A was an AND gate. There were 2 inputs and 2 outputs. Here is our prelab (they contain the same answers):



In this lab we will be demonstrating this behavior with a circuit.

Part 1

1. Red - red only
    - Red LEDs are set to 0V
        - When apply 5V turns on (because there is a difference)

Yellow - red only

- When apply 1.4V turns on

Blue - red and green (3+)

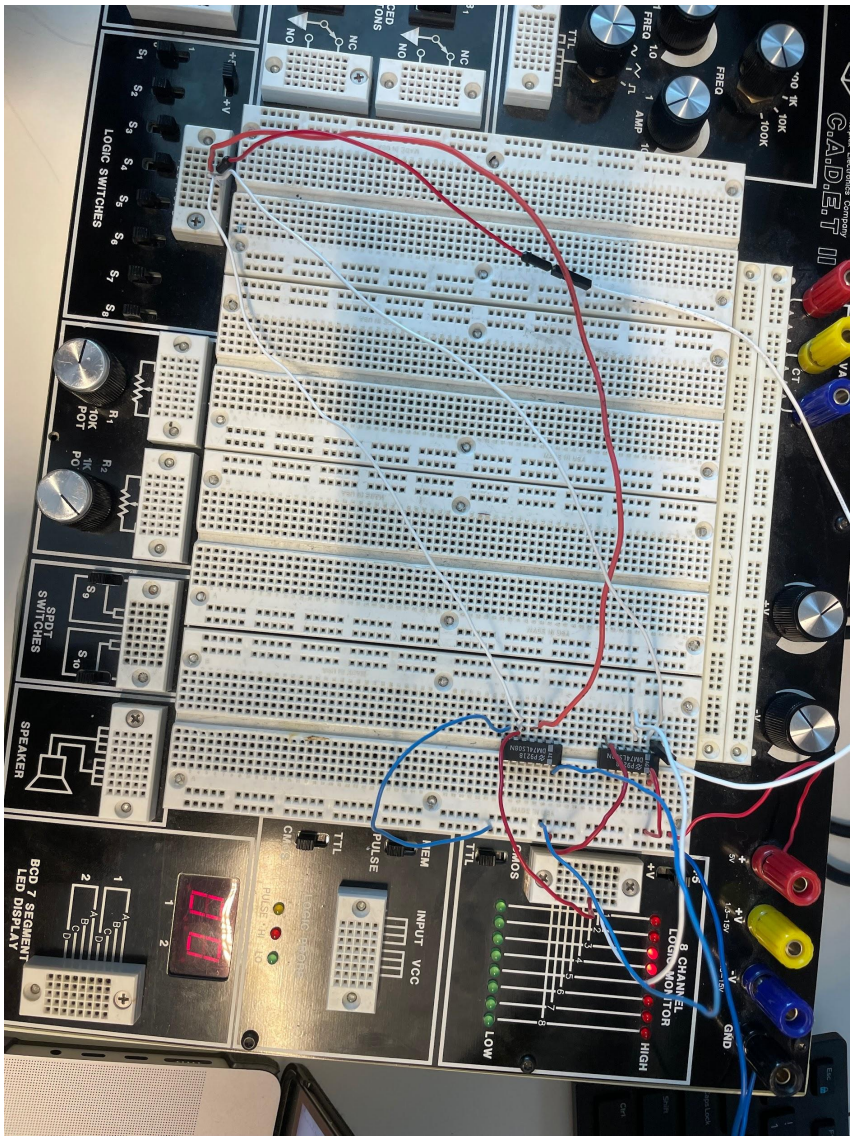
- When apply negative, both turn on

Black - only green

- GND V (0V) Green turns on
    - Green set to 5V

2. S1-S8 = Moving switch on logic switch changes color of LED
3. TTL = alternate color of LED
    - (1) 30 sec interval (1 red every second)
    - (10) Rotary dial to 10 causes lights to alternate faster
    - (100) = both lights turn on at the same time
    - (100K) = center red light on and surrounding 2 lights dim
        - 3 green lights parallel to red lights completely on

The circuit we ended up with was the same that we drew in the prelab. The behavior did not change so we did not need to change anything.



Reflection Questions

If the alarm turns on when motion is detected, this means that the alarm output could be coming from the or gate. Another problem is that the inputs could be going into a nand gate. It could also be going into a xor gate if no manual input is detected. Also, if motion is unintentionally detected, the outputs could possibly not represent what is being inputted.

If the alarm goes on regardless of the state of other inputs, then this means that the case for the alarm output is always 1 / true. In the case of our lab, this means that the power is going to the alarm and the IC chips aren't providing the logic. In order to fix this issue, we can ensure that the power is distributed to the switch and back to ground.