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Lab 1

12L-01

Lab 1 Write Up

I originally did part C before part B by “notting” the line only line that did not work when A is low. But I later did part B by using Boolean algebra and just putting inverters where there is a “not”. I used three input ands to put the three inputs together and used a 3 input or to put the three and gates together. There are 38 transistors in the original design, 8 for each of the 3 input and/or gates and 2 for each inverter. For the Nand gate design there are only 20 transistors, 4 for each nand gate. To change it to part C, one could just reduce the problem using Boolean algebra to get a more simple design, this got rid of many transistors, and left me with only 16 transistors, 6 for the and nor gates and two for the transistors. The reason that the and/or gates have 6 transistors is because the nand and nor gates have 4 and the inverter has 2. Well I have heard that there is no true randomization in computers, but my best guess is that they just send a high signal to a certain output based on whether it has another signal allowing it to change to a high from a low and vice versa.