**PRE-LAB QUESTIONS OR EXERCISES**

N/A

**PROBLEMS ENCOUNTERED**

N/A

**REQUIREMENTS NOT MET**

N/A

**FUTURE WORK/APPLICATIONS**

This lab gave me a better understanding of how somewhat more complex circuit and logic designs can be made and implemented. In this lad we created a decoder that converted a binary number into HEX of an LED display. This is valuable because it gives insight as to how basic conversion works, even if this is at a really low level.

**PRE-LAB REQUIREMENTS (Design, Schematic, ASM Chart, VHDL, etc.)**

**Part A**

A close up of a piece of paper

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Figure 1: Truth and voltage table for MUX

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Figure 2: Logic equations for MUX

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Figure 3: Functional Block Diagram for MUX

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Figure 4: Circuit design for MUX

A close up of a map

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Figure 5: Quartus circuit design for MUX

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The final output of the MUX.

When being directed to, all the inputs have a 0 and a 1. The arrow is pointing to when S0 and S1 are 00, then D0 is 0 then 1.

S0 and S1 corresponds to which input it is directing to. 00 goes to D0, 01 goes to D1\_L, 10 goes to D2, and 11 goes to D3\_L.

**Part B**

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Figure 6: Truth table for 7-segment LED

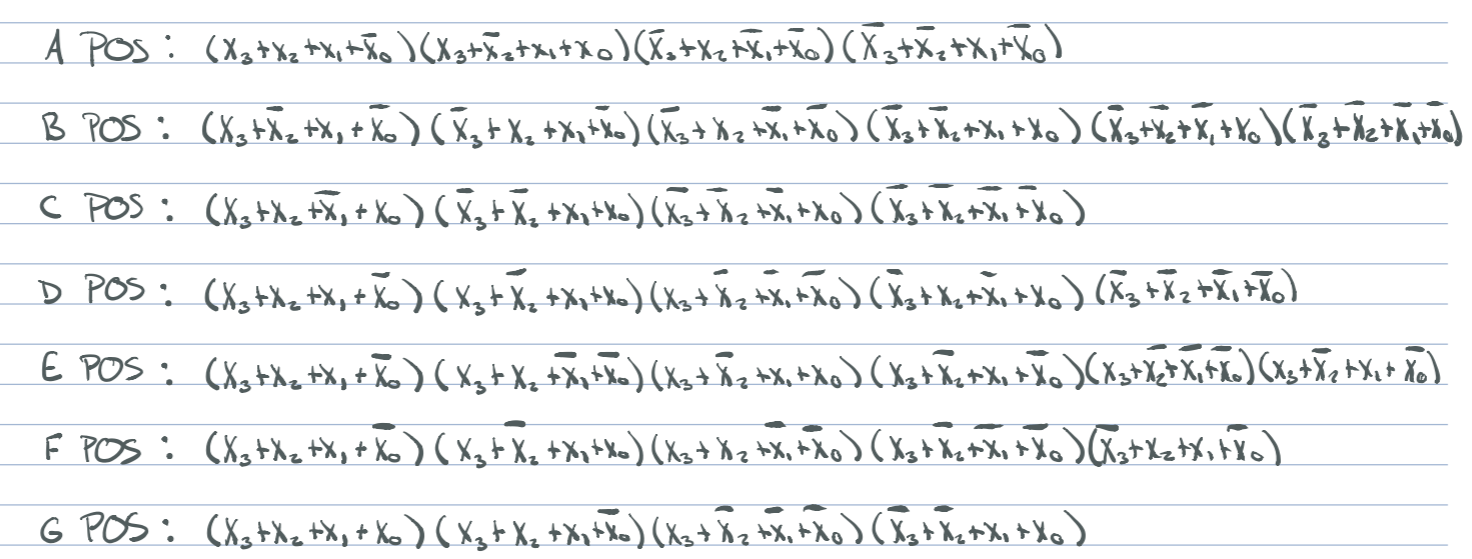


Figure 7: Logic equations for 7-segment LED

A close up of a piece of paper

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Figure 8: Voltage table for 7-segment LED

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Figure 9: Functional block diagram for 7-segment LED

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Figure 10: Quartus circuit design for 7-segment LED

A screenshot of a social media post

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T is a test input which if it is Low, then all the LED segments should turn on.

The inputs represent a binary number which is then translated into the hex via the LED segments previously described. IE. 1111= 15 = F

The letter determines whether not that respective LED segment is on. High is on and Low is off