ELC 2137 Lab ##: Lab Title

Put your name(s) here

October 7, 2020

Summary

The goal of this lab was to set up a circuit that displayed an 8-bit number on two 7-segment displays. In order to do this I need to create a multiplexer, a seven-segment decoder, a seven segement display (sseg1), and a wrapper. The multiplexer is used to switch between the digits of the display. When the switch is on, the number/letter will be displayed in the second colulmn (from the right) of the screen on the board and when the switch is off, the number/letter will be displyed in the first column (from the right) of the screen on the board. After I put together the multiplexer, I created a test bench to test it. The next design that I put together was the seven-segment decoder. The decoder takes in a four bit binary number and converts it to a 7-bit binary number. To make sure that the decoder worked, I created a test bench. Next, I created the 7-segment display (sseg1) which connected the decoder to the multiplexer. Again, I created one last test bench to make sure that they were properly connected. To clean up the code and make it more organized, I created a wrapper. The wrapper encompasses the sseg1 and connnects some of the wires. The wrapper connected the sw's, an's, dp's, and seg's together. Now I am able to program my board and see if it works. Once I connected my board I tested all of the values to see if it worked. Then I changed switch 15 to on and tested the values again. All of my results were correct.

Q&A

1. How many wires are connected to the 7-segment display?
There are 4 wires connected to the 7-segment display. There is 1 input and 3 outputs.

2. If the segements were not all connected together, how many wires would there have to be?
There would be 21 wires connected to the 7-segment display.

3. Why do we prefer the current method vs. separating all of the segments?
The current method is much simpler and much cleaner. The current method helps organized the circuit and make it more readable for the creator and for someone who is looking at your code. It will help in the future when you or someone else looks back on your code to see what you did. Instead of taking the time to firgure out where all 21 wires go, you can quickly see where the 4 groups of wires go.

Results

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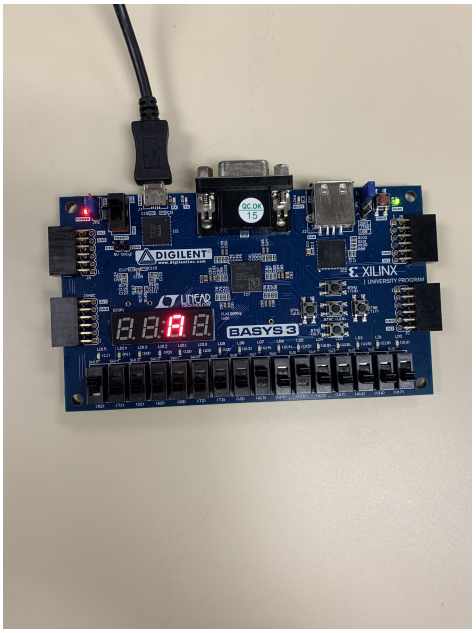	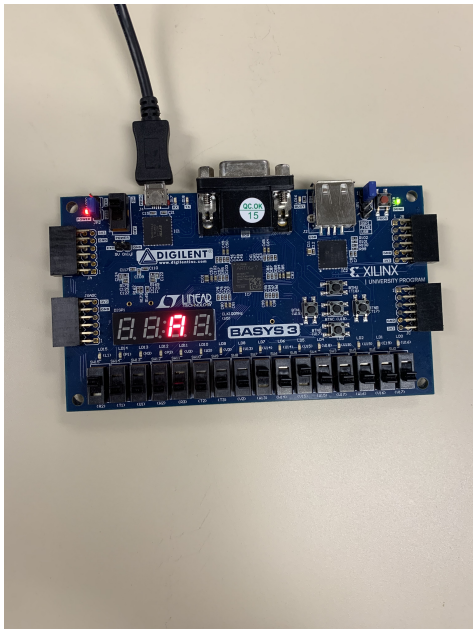

Table 1: Board Pictures

Code