Lab 1: Build and Simulate Digital Logic Circuits using Logisim and TinkerCAD

Sign-Off Sheet

Student 1: _____ **ECE mailbox:** _____

Student 2: _____ **ECE mailbox:** _____

COMPLETE ALL THE ASSIGNMENTS IN THE CHECKLIST BELOW IN ORDER TO GET FULL CREDIT!

Check List	
Assignments	**TA Sign-off**
Pre-Lab (**MUST** be completed before the start of the lab) • Watch Videos (see links at the bottom of the next page) and Read Lab Write-up • Complete the truth table • Download Logisim at: https://sourceforge.net/projects/circuit/files/latest/download	
Part 1: • Verifying Digital Logic using Tinkercad	
Part 2: • Verify the Rules and regulations of Boolean • Algebra using Logisim	
Part 3: • 2-bit input Seven Segment Display	
Submission Details: *(see the example submission on CANVAS)*	
• Sign-off sheet, pre-lab work, and screenshots of circuit(s) from TinkerCAD/Logisim, all embedded in single .pdf document. • Record 2-3 minute video showing that you've completed all the assignments in the checklist. • Upload both .pdf and video files on CANVAS individually.	

Due Date: 04/14/2020 [Sec D04]

04/15/2020 [Sec D01, D02, D03]

Both Students MUST be present (Zoom) at Sign-off for any and all parts!!

PRE-LAB

Complete the truth table for the Basic Digital Logic Gates below:

Also drive the Boolean expression for each logic gate.

AND Gate

A	B	Output
0	0	
0	1	
1	0	
1	1	

OR Gate

A	B	Output
0	0	
0	1	
1	0	
1	1	

NAND Gate

A	B	Output
0	0	
0	1	
1	0	
1	1	

NOR Gate

A	B	Output
0	0	
0	1	
1	0	
1	1	

XNOR Gate

A	B	Output
0	0	
0	1	
1	0	
1	1	

XOR Gate

A	B	Output
0	0	
0	1	
1	0	
1	1	

NOT Gate

A	Output
0	
1	

Watch the tutorials on how to get started on TinkerCAD and Logisim at the following links:

1. **Logic Gates using Tinkercad:** https://www.youtube.com/watch?v=xvh8TuudNmk&t=132s   13:35 min
2. **Logisim Tutorial for Beginners:** https://www.youtube.com/watch?v=crApn9nJ_nw&t=7s   15:21 min
3. **Analyze the Digital Circuit using Logisim:** https://www.youtube.com/watch?v=4OFrqu4H7tU   06:09 min
4. **2-bit Input 7-Segment Display Simulation | Logisim | Tinkercad:** https://youtu.be/C1omzzwVdhM 21:06 min