

Electronic Voting

Objectives

The objective of this lab was to become more comfortable and to reinforce our understanding what multiplexers are and how they work. In addition it gave us more practice using logic works and designing circuits in actual hardware form.

Introduction

In this lab we are trying to create a circuit that mimics a voting system. The main chip we are going to be using is the SN74153 4-1 which is a multiplexer. In order to create the circuit we will create truth tables for a four to one and a eight to one multiplexers. This will allow us to design the circuit in logic works and ultimately complete the hardware circuit on our protoboards.

Procedure

- 1.) To create this circuit we will first complete a truth table for a four to one multiplexer and then create a truth table for an eight to one multiplexer.

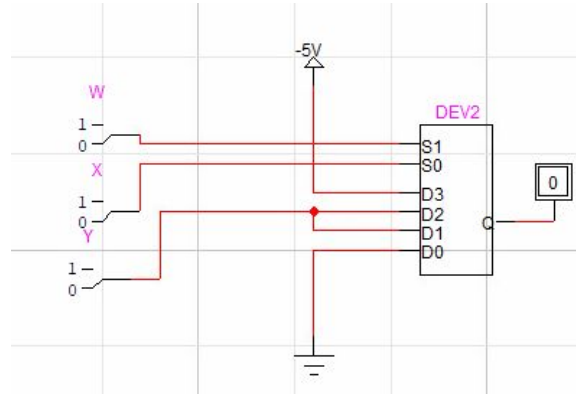
Circuit 1. 74153

W	X	Y	f	Minimizing
0	0	0	0	Ground
0	0	1	0	
0	1	0	0	X
0	1	1	1	
1	0	0	0	Y
1	0	1	1	
1	1	0	1	VCC SV
1	1	1	1	

Part 2 Circuit Voting

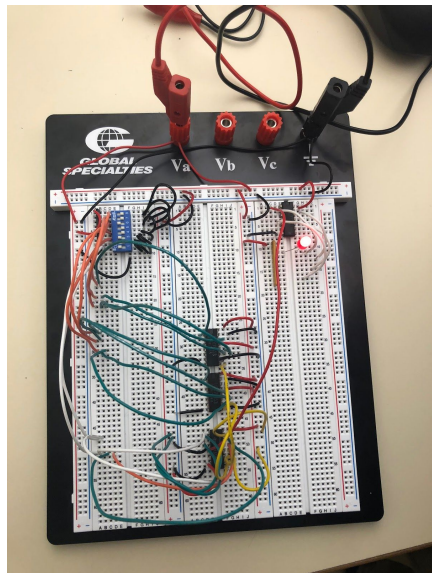
D	C	B	A	f	Minimizing
0	0	0	0	0	f=0
0	0	0	1	0	
0	0	1	0	0	f=0
0	0	1	1	0	
0	1	0	0	0	f=0
0	1	0	1	0	
0	1	1	0	0	f=A
0	1	1	1	1	
1	0	0	0	0	f=0
1	0	0	1	0	
1	0	1	0	0	f=A
1	0	1	1	1	
1	1	0	0	0	f=A
1	1	0	1	1	
1	1	1	0	1	f=1
1	1	1	1	1	

2.) Following the creation of the truth tables I then designed my circuit in logicworks for a



simple four to one multiplexer.

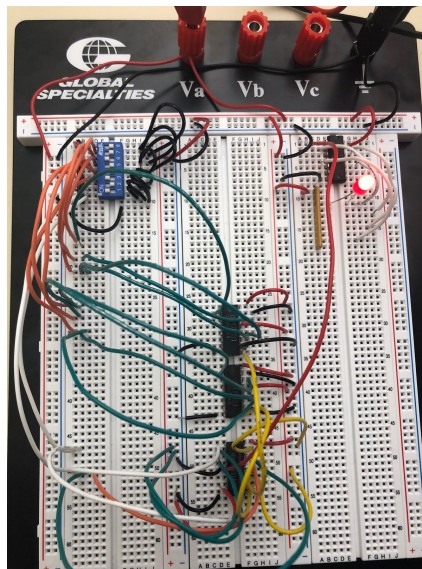
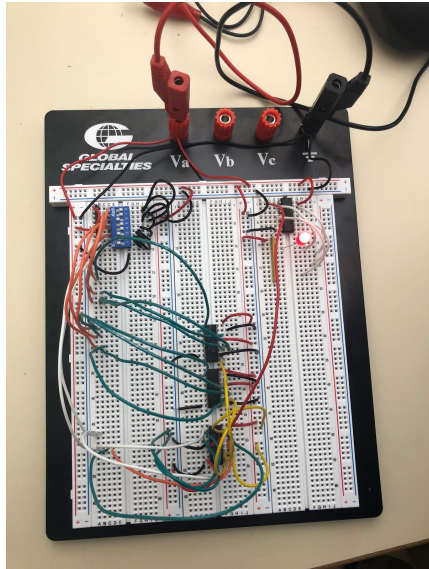
3.) After my logicworks four to one circuit was completed I completed my circuit on my proto



board.

4.) Following my complete of my circuit I extensively tested and debugged it using my logic probe.

Results



The results I got from my hardware circuit are correct (match the truth table) and they were tested and extensively checked by my TA.

Discussion

While I completed my circuit and it works perfectly I feel as though if I designed the circuit in logic works before making it on the protoboard I would have saved myself a lot of time debugging my circuit.

Conclusion

In conclusion, I furthered my learning in how to design and create circuits in not just logic works but in hardware form. I most likely should have designed the second circuit in logic works too so that I didn't have to do some much debugging at the end. The circuit that I designed successfully completes the logic in order to complete this lab I simply wish we had more time in lab to complete this assignment.