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## **REQUIREMENTS NOT MET**

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N/A

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## **PROBLEMS ENCOUNTERED**

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Had trouble figuring out how to program but I got it finally with some help.

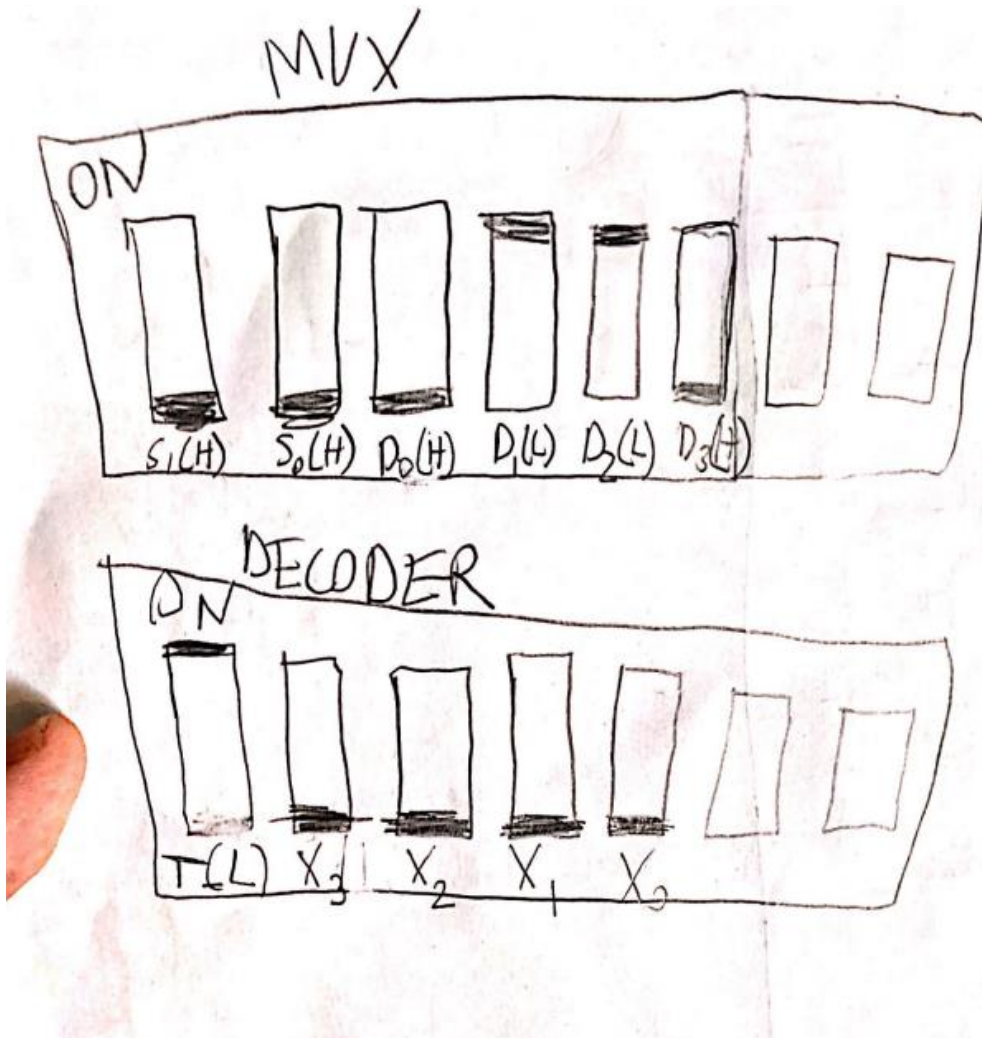
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## **FUTURE WORK/APPLICATIONS**

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We will be learning how to use MSI components as well as the PCB board to simulate real chips.

## PRE-LAB QUESTIONS OR EXERCISES



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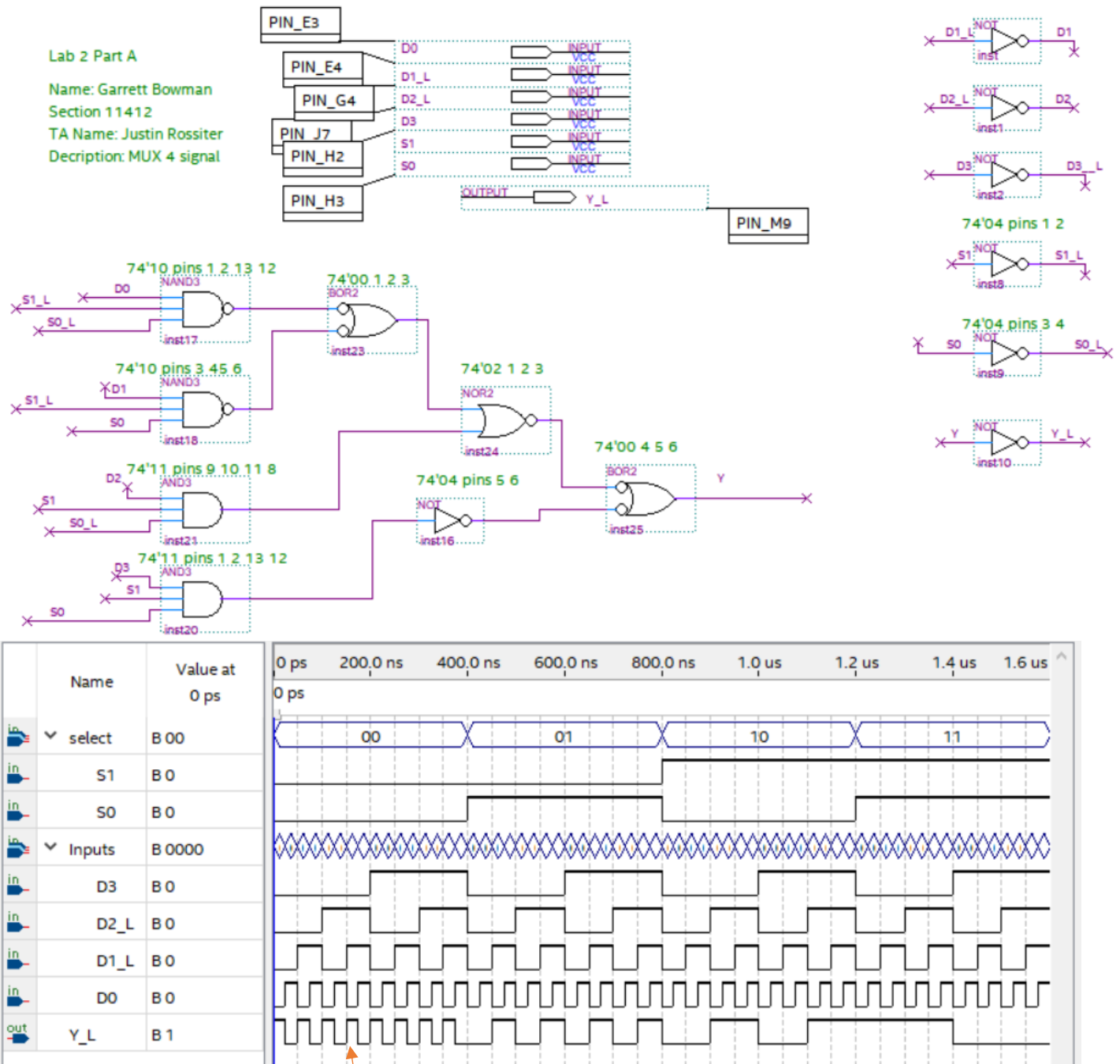
## PRE-LAB REQUIREMENTS (Design, Schematic, ASM Chart, VHDL, etc.)

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# Lab 2 Part A

Name: Garrett Bowman  
Section 11412  
TA Name: Justin Rossiter  
Description: MUX 4 signal



The only place that the inputs are reversed is when S1 and S0 are 0.



$S_1$	$S_0$	$D_3$	$D_2$	$D_1$	$D_0$	$Y$
0	0	X	X	X	0	0
0	0	X	X	X	1	1
0	1	X	X	0	X	0
0	1	X	X	1	X	1
1	0	X	0	X	X	0
1	0	X	1	X	X	1
1	1	0	X	X	X	0
1	1	1	X	X	X	1

Sum of Products

$$D_0 \bar{S}_1 \bar{S}_0 + D_1 \bar{S}_1 S_0 + D_2 S_1 \bar{S}_0 + D_3 S_1 S_0$$

Product of Sums

$$(D_0 + \bar{S}_1 + \bar{S}_0)(D_1 + \bar{S}_1 + S_0)(D_2 + S_1 + \bar{S}_0)(D_3 + S_1 + S_0)$$

$S_1$	$S_0$	$D_3$	$D_2$	$D_1$	$D_0$	$Y$
L	0	X	X	X	L	H
L	L	X	X	X	H	L
L	H	X	X	L	X	L
L	H	X	X	H	X	H
H	L	X	L	X	X	L
H	L	X	H	X	X	H
H	H	L	X	X	X	H
H	H	H	X	X	X	L

B.

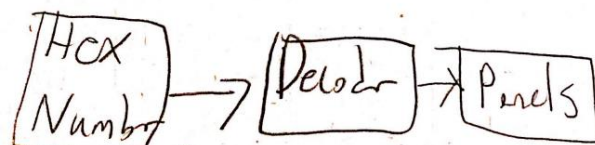
F A B E 6 L D					A	B	C	D	E	F	G	Test
T	X <sub>1</sub>	X <sub>2</sub>	X <sub>3</sub>	X <sub>0</sub>	A	B	C	D	E	F	G	Test
1	1	1	1	1	1	1	1	1	1	1	1	0
0	0	0	0	0	1	1	1	1	1	1	0	1
0	0	0	0	1	0	1	1	1	1	1	0	2
0	0	0	1	0	1	1	1	1	1	0	1	3
0	0	0	1	1	0	1	1	1	1	0	1	4
0	0	1	0	0	0	1	1	1	1	0	1	5
0	0	1	0	1	1	0	1	1	1	0	1	6
0	0	1	1	0	1	0	1	1	1	0	1	7
0	0	1	1	1	1	1	1	1	1	0	1	8
0	1	0	0	0	1	1	1	1	1	0	1	9
0	1	0	0	1	1	1	1	1	1	0	1	A
0	1	0	1	0	1	0	1	1	1	1	1	B
0	1	0	1	1	0	0	1	1	1	1	1	C
0	1	1	0	0	1	0	0	1	1	1	1	D
0	1	1	0	1	0	1	1	1	1	1	1	E
0	1	1	1	0	1	0	0	1	1	1	1	F
0	1	1	1	1	1	0	0	0	1	1	1	

A)  $X_1 X_0$   
 $X_3 X_2$   
 $F = X_1 + X_3 + \bar{X}_2 \bar{X}_0 + X_2 X_0$   
 SOP

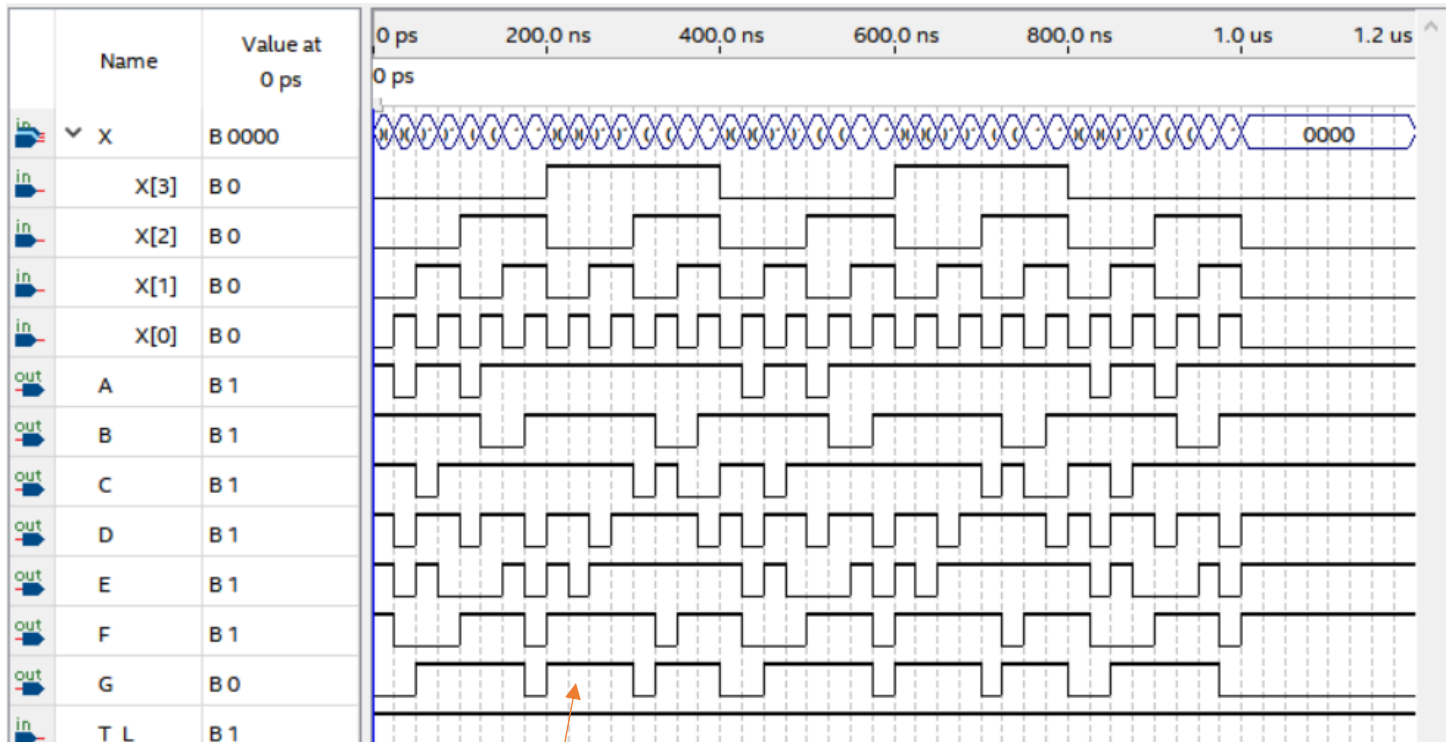
C)  $X_1 X_0$   
 $X_3 X_2$   
 $Sop = X_2 + \bar{X}_1 + X_0$   
 SOP

B)  $X_1 X_0$   
 $X_3 X_2$   
 $F = X_2 + \bar{X}_1 \bar{X}_0 + X_1 X_0$   
 SOP

Functional Box Diagram

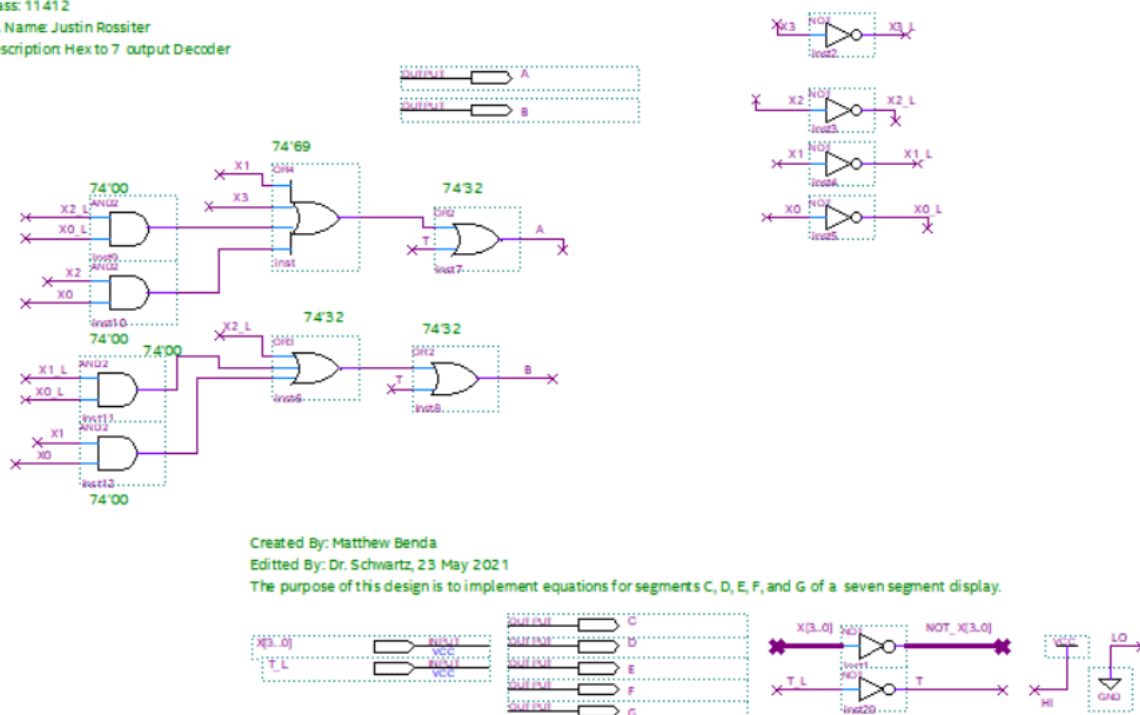


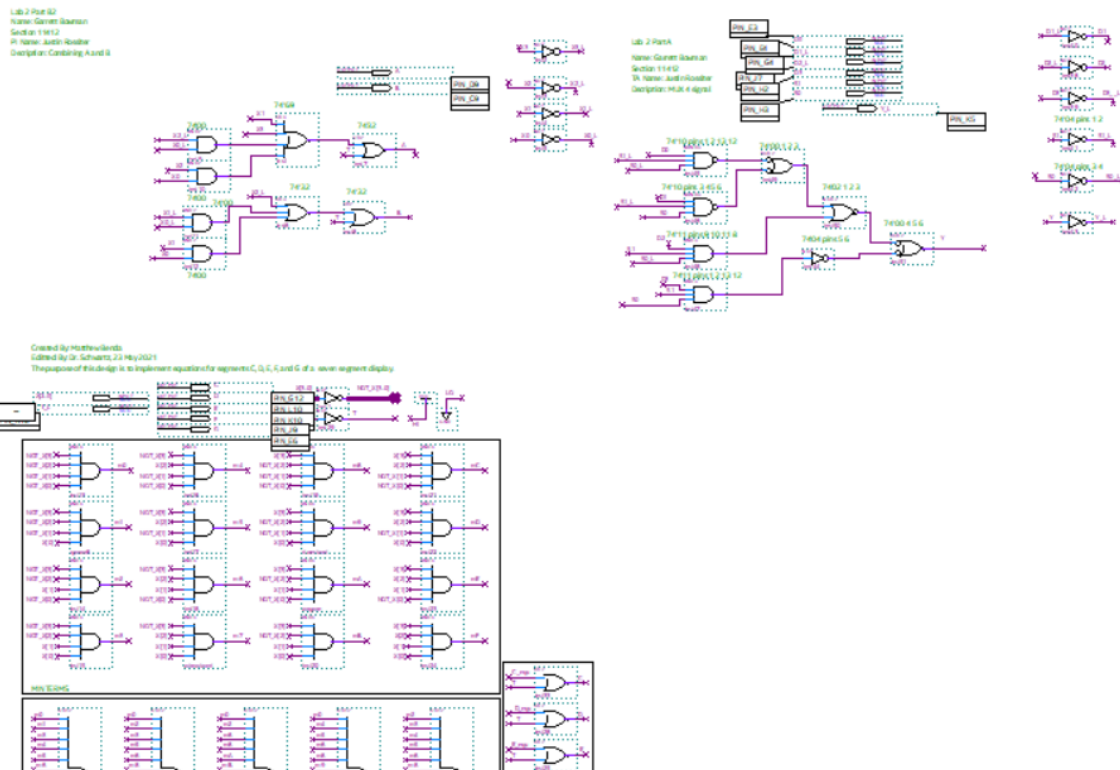




This is where we get letters on the display.

Lab 2 Part B  
Name: Garrett Bowman  
Class: 11412  
TA Name: Justin Rossiter  
Description: Hex to 7 output Decoder





C



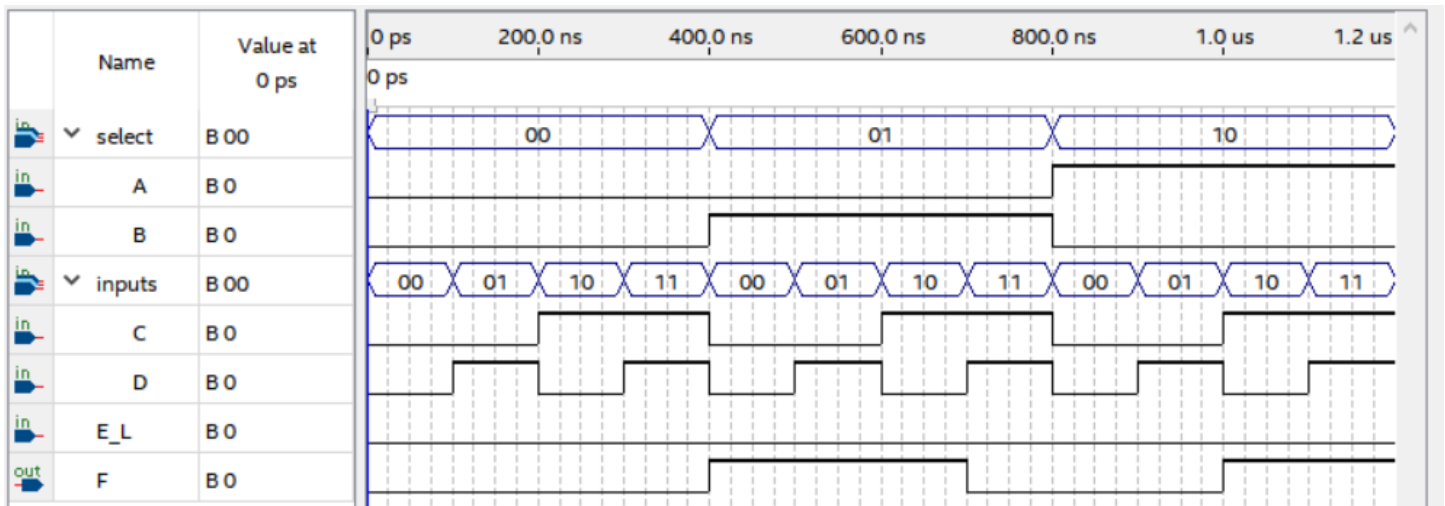
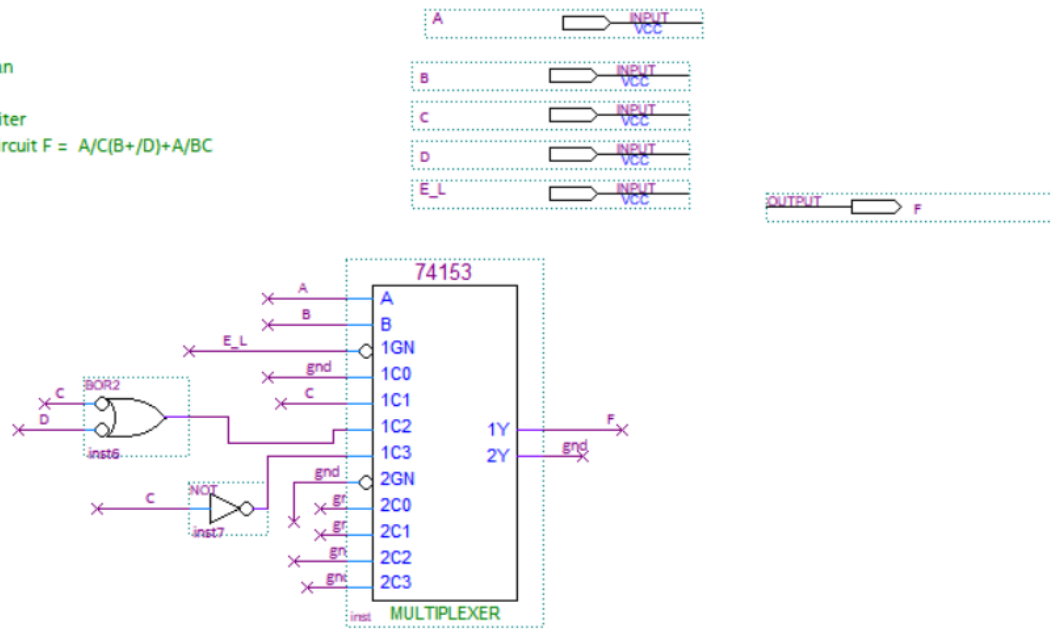
Lab 2 Part C

Name: Garrett Bowman

Section 11412

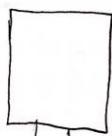
TA Name: Justin Rossiter

Description: 74153 circuit  $F = A/C(B+/D)+A/BC$



$$F = A\bar{C}(B + \bar{D}) + A\bar{B}C$$

$$S_1 = A \quad S_0 = B$$



F

AB	00	01	11	10
0	0	0	0	0
1	0	0	0	0
2	1	0	1	1
3	1	1	1	0

SOP

$$F = ABC + A\bar{C}\bar{D} + A\bar{B}C$$

A	B	C	D	F
0	0	-	-	0
0	1	-	-	0
1	0	0	0	1
1	0	0	1	0
1	0	1	0	1
1	0	1	1	1
1	1	0	0	1
1	1	0	1	1
1	1	1	0	0
1	1	1	1	0

A	B	C	D	F
L	L	-	-	L
L	H	-	-	L
H	L	L	L	H
H	L	L	H	L
H	L	H	L	H
H	L	H	H	H
H	H	L	L	H
H	H	L	H	H
H	H	H	L	L
H	H	H	H	L