March 6

CSE241 Spring 2017

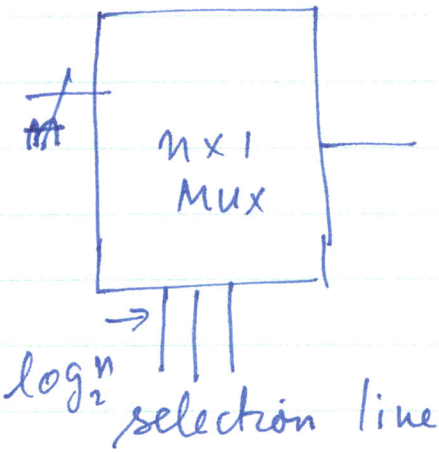
3|8 : Exam 1 Review

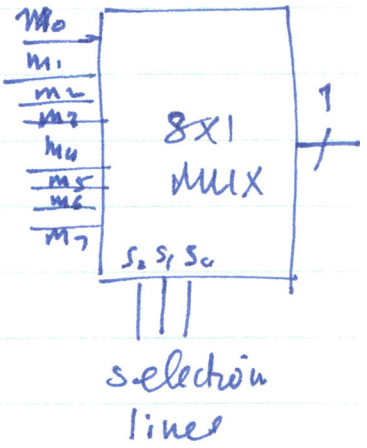
3|10 : 30 min Exam 1 Review

3|13 : Exam 1 ~~CA~~

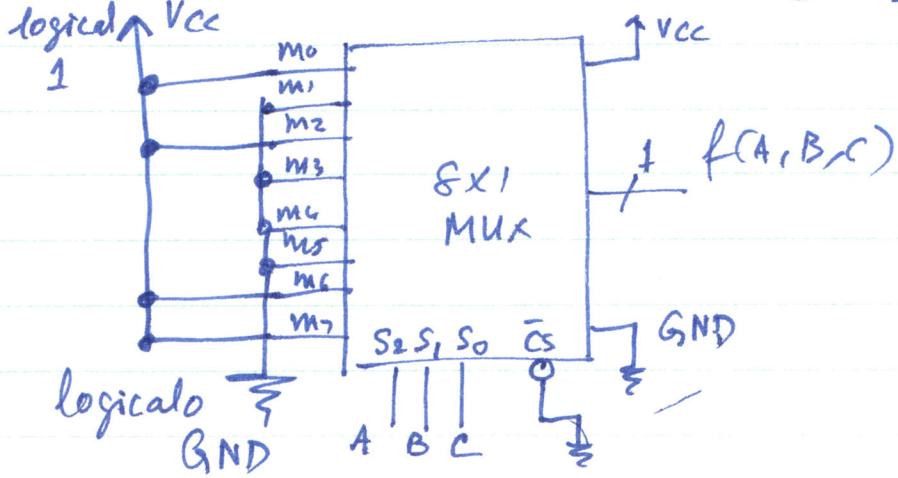
3|15 : Lab2 in-class explanation

Building Combinational Circuits using a Mux.





$f(A, B, C) = \sum (m_0, m_2, m_6, m_7)$



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(2)

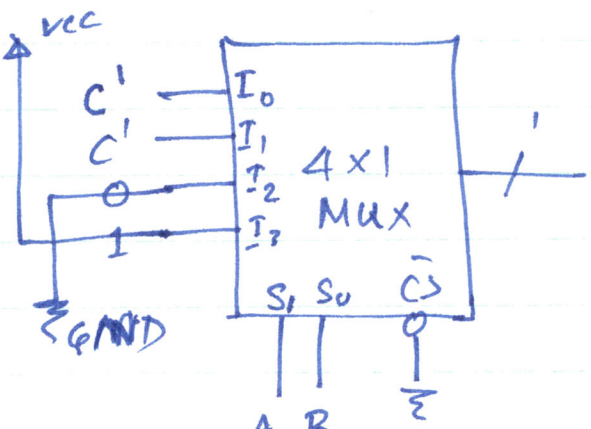
Implement a combinational circuit using 4×1 Mux.

(i) $f(A, B, C) = \Sigma(m_0, m_2, m_6, m_7)$

(ii) $f(W, X, Y, Z) = \Sigma(m_0, m_1, m_2, m_7, m_{15})$

i)

	A	B	C	f(A,B,C)	
m_0	0	0	0	1	$I_0 = C'$
m_1	0	0	1	0	
m_2	0	1	0	1	$I_1 = C'$
m_3	0	1	1	0	
m_4	1	0	0	0	$I_2 = 0$
m_5	1	0	1	0	
m_6	1	1	0	1	$I_3 = 1$
m_7	1	1	1	1	



A	B	
0	0	I_0 is connected to the output
0	1	I_1 is connected to the output
1	0	I_2 is connected to the output
1	1	I_3 is connected to the output

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(3)

(i)

$f(w,x,y,z) = \Sigma(m_0, m_1, m_2, m_7, m_{15})$ "given"

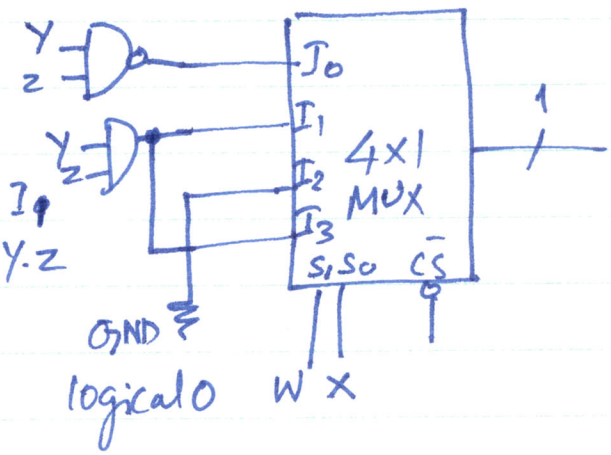
	w	x	y	z	f(w,x,y,z)
I_0	0	0	0	0	1
	0	0	0	1	1
	0	0	1	0	1
	0	0	1	1	0
I_1	0	1	0	0	0
	0	1	0	1	0
	0	1	1	0	0
	0	1	1	1	1
I_2	1	0	0	0	0
	1	0	0	1	0
	1	0	1	0	0
	1	0	1	1	0
I_3	1	1	0	0	0
	1	1	0	1	0
	1	1	1	0	0
	1	1	1	1	1

I_0: NAND $I_0 = (Y \cdot Z)'$

I_1: AND $I_1 = Y \cdot Z$

$I_2 = 0$

$I_3 = Y \cdot Z$

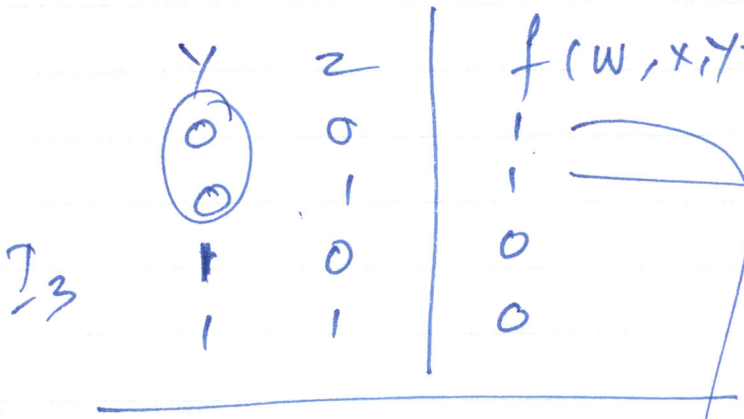


$f_1(w,x,y,z) = (m_0, m_1, m_2, m_7, m_{12}, m_{15})$

Y	Z	f(w,x,y,z)
0	0	1
0	1	0
1	0	0
1	1	1

$I_2 = (Y \oplus Z)'$

$= (Y \odot Z)$



~~$f(w, x$~~

$I_3 ? = y'z' + y'z$

$= y'(z' + z)$

$= 1$