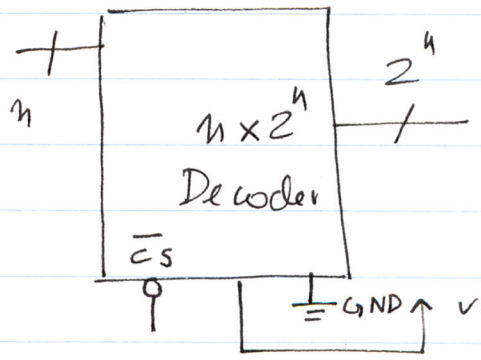
March 3, 2017

CSE 241 © Spring 2017

Midterm Exam 3/13/2017

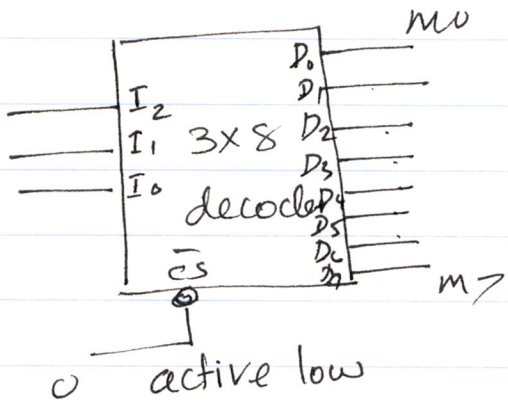
We will review next week for this.

MSI Decoder:



3×8

3×2^3



active low

normal inactive state when $\overline{CS} = 1$

Function:

I_2	I_1	I_0	D_0	D_1	D_2
0	0	0	✓		
0	0	1	~~D~~	✓	
0	1	0			✓

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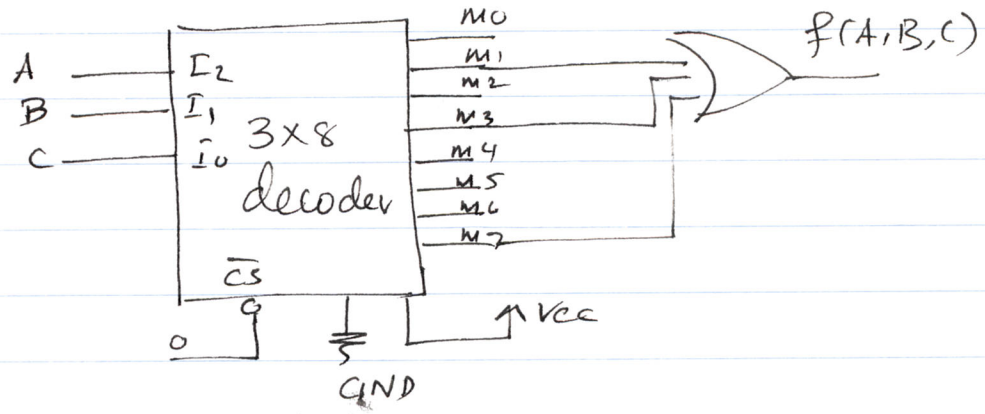
Applications:

Implement a combinational circuit

$f(A,B,C) = \Sigma(m_1, m_3, m_7)$

$= A'B'C + A'BC + ABC$

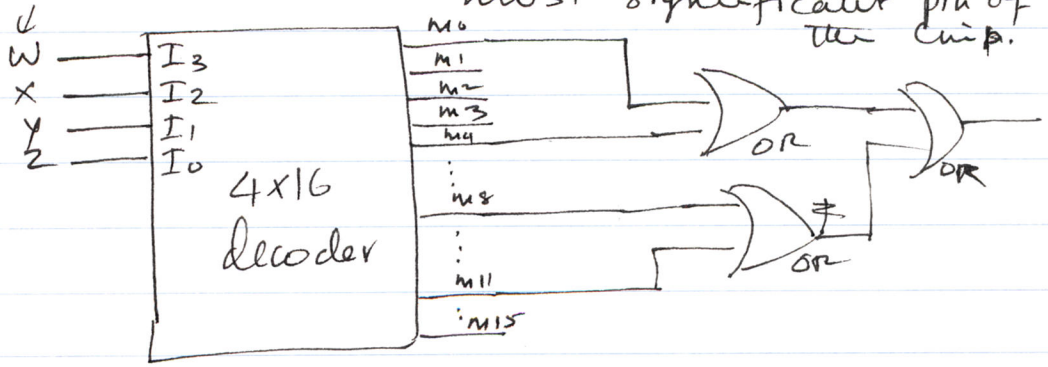


Implement a combinational circuit

$f(w,x,y,z) = \Sigma(m_0, m_4, m_8, m_{11})$

$= w'x'y'z' + w'xy'z' + wx'y'z' + wx'yz$

most significant bit of input goes the most significant pin of the chip.

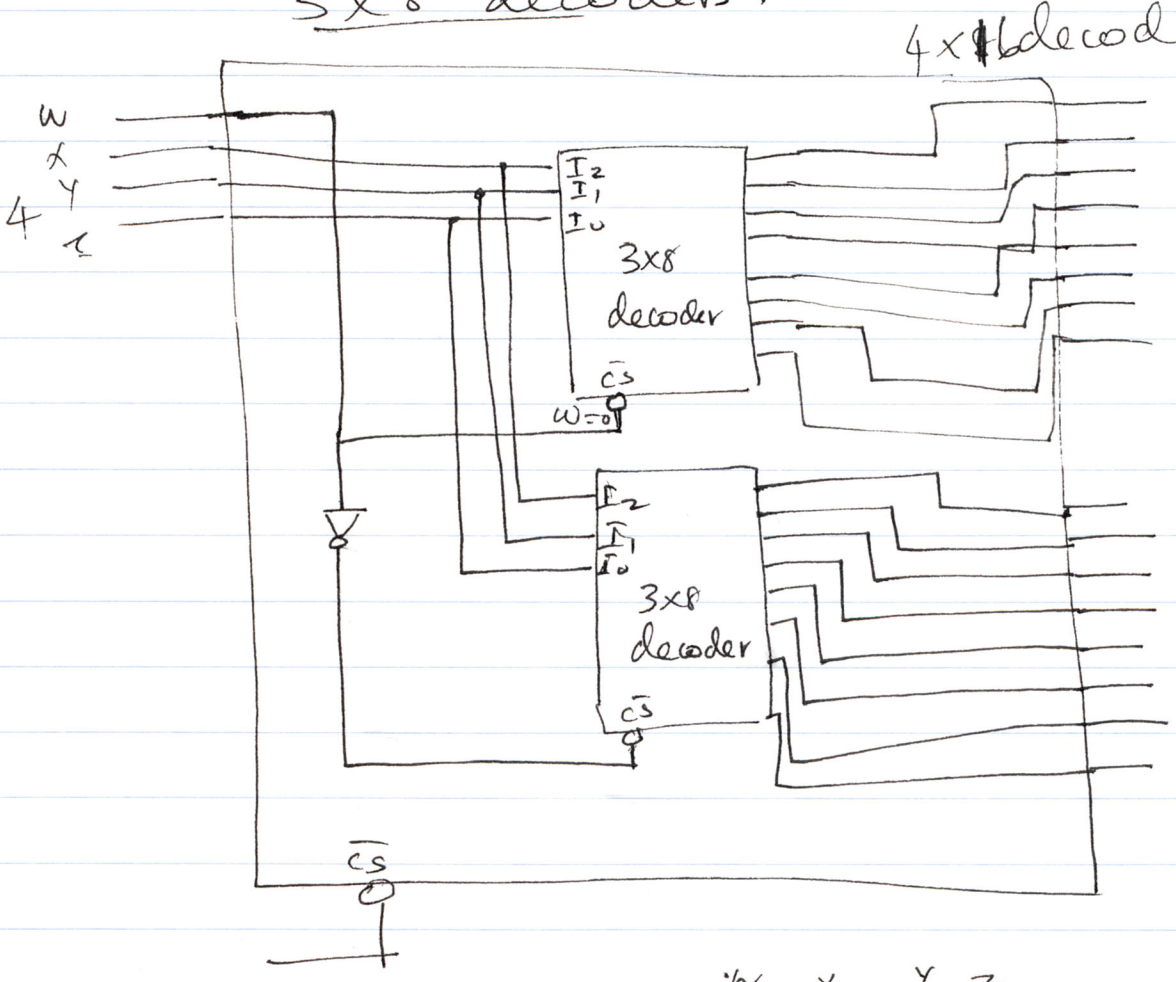


74LS138 is part of your kit

It is a NAND output Decoder 3x8

Make a larger decoder with two or more smaller decoders.

Make a 4 x 16 decoder using 2 3x8 decoders.



w	x	y	z	
0	0	0	0	
0	0	0	1	
0	0	1	0	top chip
0	0	1	1	3x8
0	1	0	0	
0	1	0	1	
0	1	1	0	
0	1	1	1	

w=0

bottom half

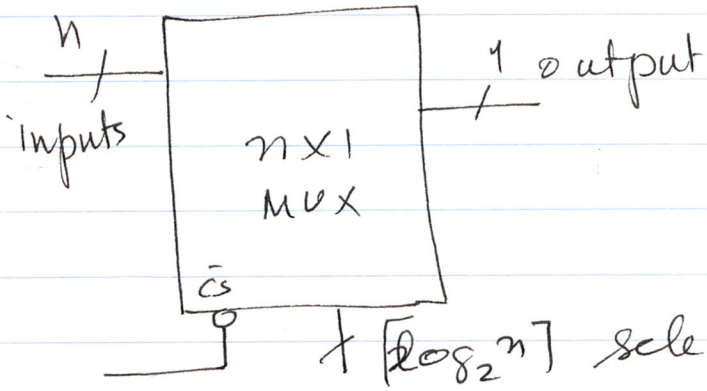
w=1

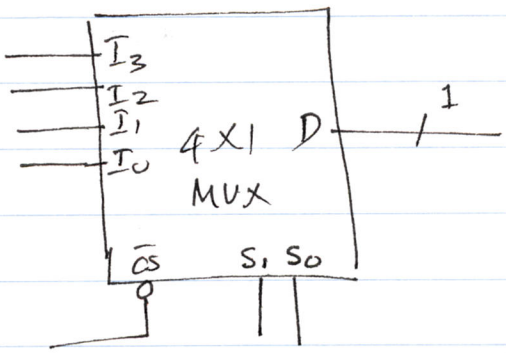
bottom chip 3x8

Marks 3

(4)

Multiplexer Mux





S_1	S_0	D
0	0	I_0
0	1	I_1
1	0	I_2
1	1	I_3

I Build larger Mux using smaller Muxs.

II Building Combinational Circuits using n x 1 Muxs.

Build a 8x1 Mux using 2 4x1 Mux