CSE260 Lab Report

Experiment Name: Design a circuit that outputs 2's complement of a 3-bit number using encoder & decoder.

Submitted by

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Section: 09

Date: 29/8/2021

Captain

Date :

1. Name of experiment: Design a circuit that outputs 2's complement of a 3 bit number using encoder & decoder.

2. Objective:

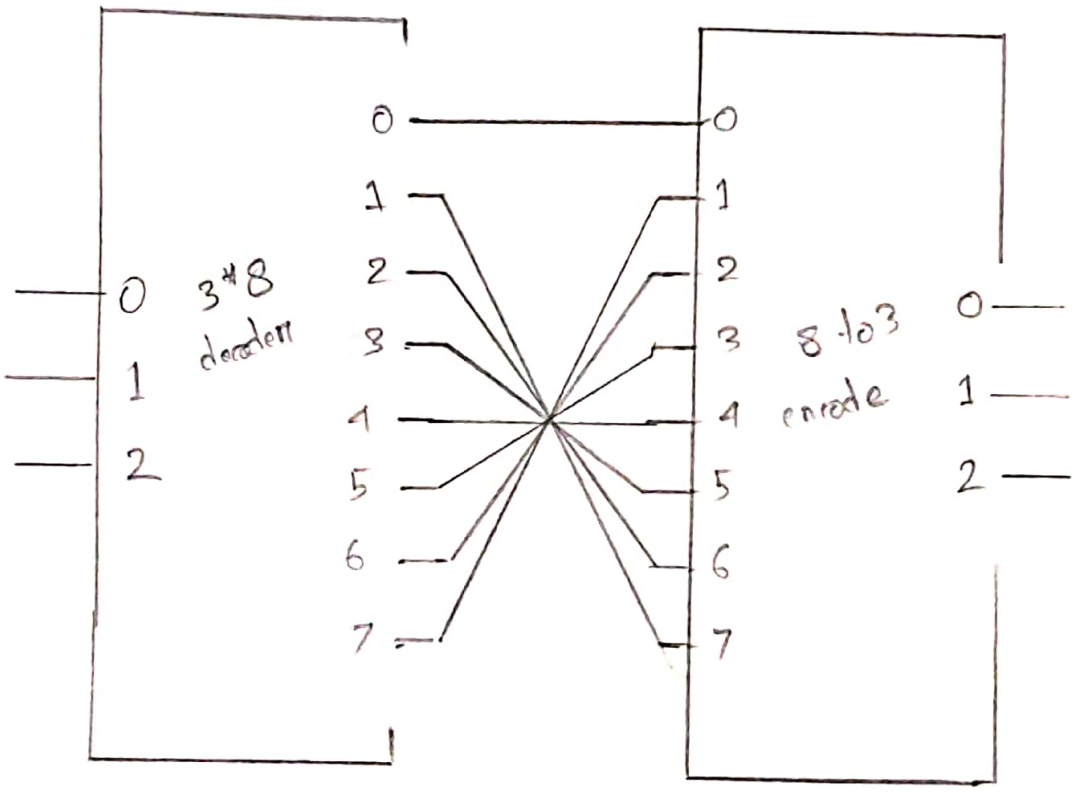
i. To get familianized with using with practical circuits.
ii. To investigate the output of 2's complement using encoder and decoder
iii. To get familarized with encoder and decoder.

3. Required components and equipments:

For simulation we need proteous software and in proteus software we need:

i. Logic Probe (BIG)
ii. Logic State
iii. 74LS138 (Decoder)
iv. 74LS148 (Encoder)

4. Experimental setup:



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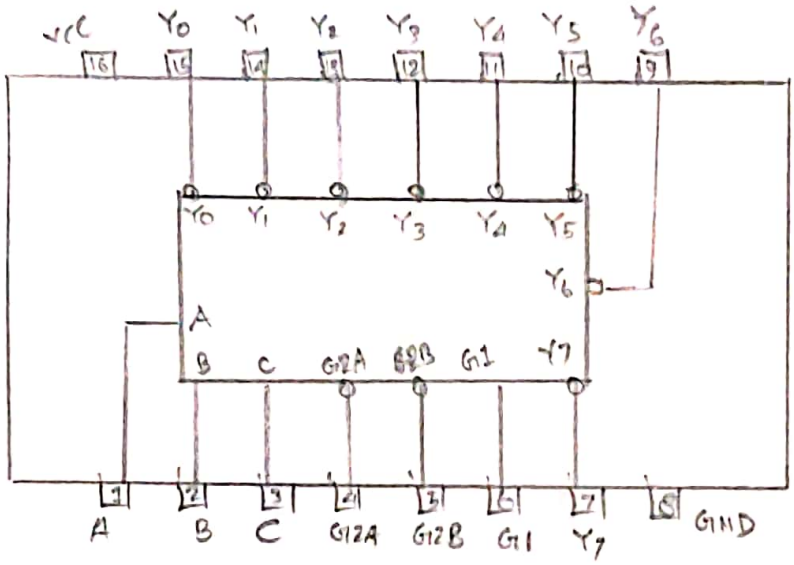
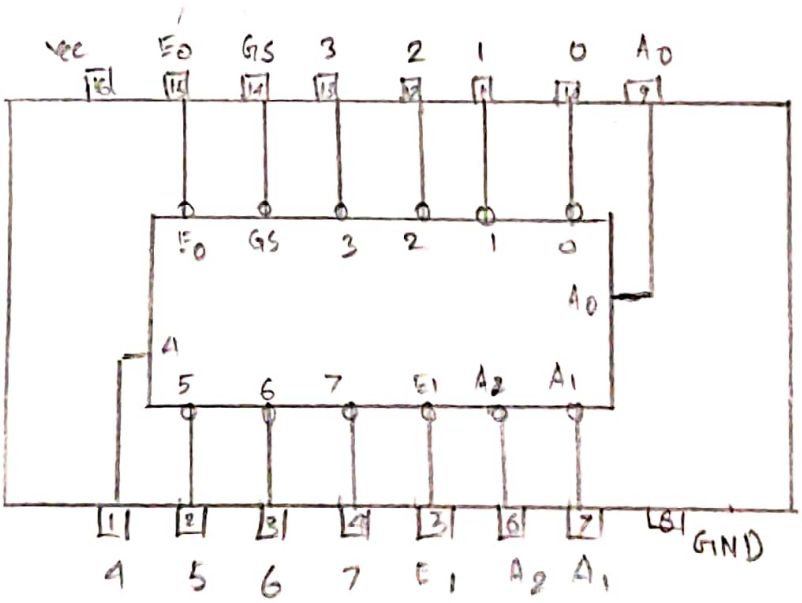
74138 :



74148 :



5. Results and Discussions:

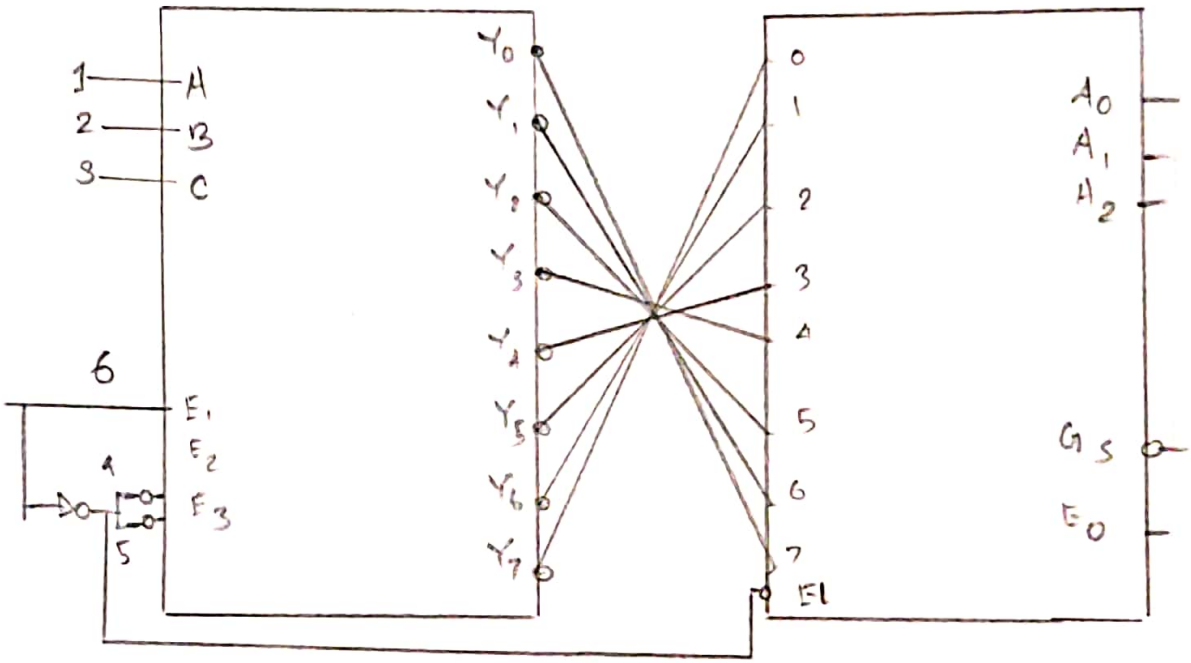
Table:

Inputs				Outputs				Active low outputs			output line connection	
Minterm	C	B	A	Minterm	D_2	D_1	D_0	P_2	P_1	P_0	Decoder	Encoder
0	0	0	0	0	0	0	0	1	1	1	0	0
1	0	0	1	7	1	1	1	0	0	0	1	7
2	0	1	0	6	1	1	0	0	0	1	2	6
3	0	1	1	5	1	0	1	0	1	0	3	5
4	1	0	0	4	1	0	0	0	1	1	4	4
5	1	0	1	3	0	1	1	1	0	0	5	3
6	1	1	0	2	0	1	0	1	0	1	6	2
7	1	1	1	1	0	0	1	1	1	0	7	1

The circuit takes a 3bit value as an input and converts the value to its respective 2's complement for low value by inverting the form of 2's complement.

(a)

A circuit diagram with encoder and decoder that will output the 1's complement of 3 bit number is given below :-



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(b)

Yes, we can implement a code convertion with encoder and decoder. From above, we can see that we can function 1's complement and 2's complement where we could convert one bianary number to another using encoder and decoder. So, we can say code conversion is possible. We converted 0,0,0 into 0 1,1,1 and 0,0,1 to 0,0,0. So, it is possible.