CSE260 Lab Report

Experiment Name: DESIGN A CIRCUIT THAT OUTPUTS

2'S COMPLEMENT OF A 3-BIT

NUMBER USING ENCODER \$

DECODER

Submitted by

Name: SHAIANE PREMA BAROI

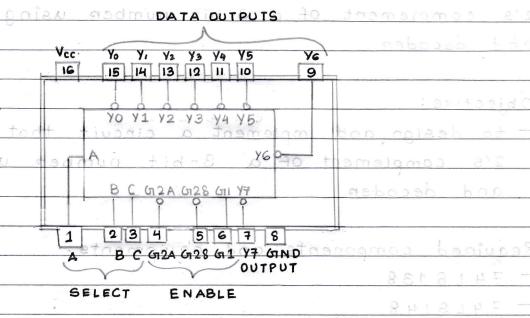
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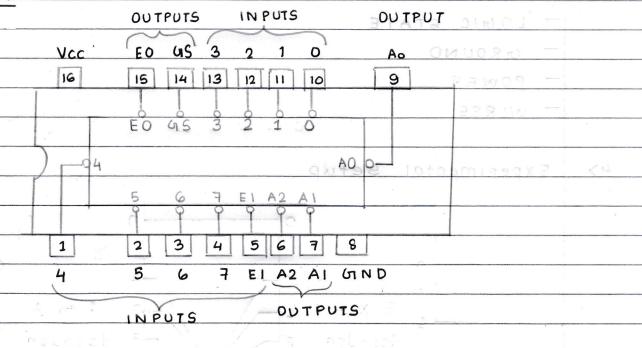
Section: 05

Date: 20 / 12 / 2020

1>	Name of the experiment: Design a circuit that outputs
	2's complement of a 3 bit number using encoder
	and decoder
	Objective:
2>	
	- to design and implement a circuit that outputs the 2's complement of a 3-bit number using encoder
	and decoder
	and decoder
7 \	Required components and equipments:
3/	- 74 L S 138
	- 74LS148
	- LED GREEN - LOGIC STATE STUDY STUDY STUDY STUDY
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	POWER
	- WIRES
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1>	Experimental Setup
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	3 X28U9T2 2 8 to 3
	decoder 3 decoder
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	2 5 2
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5> Results

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Inp	Dutputs							Output Line Connection				
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2	O	1	0	6	1	1	. 00	0	0	1	2	6
3	O	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		1	3/1/-	0	1	1	1	0	0	5	3
	1	1	0	2		1	0	1	0	1	6	2
	1	1	1	117	0	0	1	1	1	0	7	1
	Minterm O 1	Minterm C 0 0 1 0 2 0 3 0 4 1 5 1 6 1	0 0 0 1 0 0 2 0 1 3 0 1 4 1 0 5 1 0 6 1 1	Minterm C B A O O O O 1 O O 1 2 O 1 O 3 O 1 1 4 1 O O 5 1 O 1 6 1 1 O	Minterm C B A Minterm O O O O 1 O O T 2 O 1 O G 3 O 1 1 5 4 1 O O 4 5 1 O 1 3 6 1 1 O 2	Minterm C B A Minterm D2 0 0 0 0 0 0 1 0 0 1 7 1 2 0 1 0 6 1 3 0 1 1 5 1 4 1 0 0 4 1 5 1 0 1 3 0 6 1 1 0 2 0	Minterm C B A Minterm D2 D1 0 1 1 0 0 0 0 0 1 0 0 0 1 0 0 0 1 0 0 1 0 0 0 1 0 0 1 0 0 1 0 0 1 0 0	Minterm C B A Minterm D2 D1 D0 0 1 1 0 0 1 1 0 0 1 1 0 0 1 1 0 0 1 1 0 0 1 1 0 0 1 0 1 0 1 0 1 0	Minterm C B A Minterm D2 D1 D0 D2 0 0 0 0 0 0 0 0 0 0 1 1 0 0 1 7 1 1 1 0 2 0 1 0 6 1 1 0 0 3 0 1 1 5 1 0 1 0 4 1 0 0 4 1 0 0 0 5 1 0 1 3 0 1 1 1 6 1 1 0 2 0 1 0 1	Minterm C B A Minterm D2 D1 D0 D2 D1 0 0 0 0 0 0 0 0 0 1 1 1 1 0 0 1 7 1 1 1 0 0 2 0 1 0 6 1 1 0 0 0 3 0 1 1 5 1 0 1 0 1 4 1 0 0 4 1 0 0 0 1 5 1 0 1 3 0 1 1 1 0 6 1 1 0 2 0 1 0 1	Minterm C B A Minterm D2 D1 D0 D2 D1 D0 O O O O O O O O D1 D0 D0 <td>Minterm C B A Minterm D2 D1 D0 D2 D1 D0 Decoder 0 0 0 0 0 0 0 1 1 1 0 0 0 1 1 1 0 0 0 1 1 1 0 0 0 1 1 1 0 0 0 1 1 1 0 0 0 1 1 1 0 0 0 1 1 1 0 0 0 1 1 0 0 0 1 1 0 0 0 1 1 0 0 0 1 1 0 0 0 1 1 0 0 0 1 1 0 0 0 1 1 0 0 0 0 1 1 0 0 0 0 1 1</td>	Minterm C B A Minterm D2 D1 D0 D2 D1 D0 Decoder 0 0 0 0 0 0 0 1 1 1 0 0 0 1 1 1 0 0 0 1 1 1 0 0 0 1 1 1 0 0 0 1 1 1 0 0 0 1 1 1 0 0 0 1 1 1 0 0 0 1 1 0 0 0 1 1 0 0 0 1 1 0 0 0 1 1 0 0 0 1 1 0 0 0 1 1 0 0 0 1 1 0 0 0 0 1 1 0 0 0 0 1 1

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b) Yes, we can implement a code convertor with encoder and decoder. In this experiment, we had converted a binary number into 2's complement. Additionally, we had also designed and implemented a code conventer in 5(a), where we converted a binary number (3-bit) into 1's complement number system.

Similarly, we can also convert from BCD to excess-3

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Discussion

In this experiment, we had learnt how to use different connections between decoders and encoders to convert an n-bit code from one form to another. Particularly, we had seen how to convert a 3-bit binary number to 2's complement number. Even though, the concept was a little difficult for me to grasp, however constructing the circuit was simple and easy to implement.