

NEUB CSE 222 LAB 7: Decoder and Encoder

North East University Bangladesh

Department of CSE

Course no: CSE 222

Experiment no: 07

Experiment Name: Decoder and Encoder

CAUTIONS:

1. Don't switch on the supply of the circuit until you have verified the circuit carefully
2. Take readings of apparatus carefully
3. Take care of any bare circuit elements in energized condition
4. Never try to touch bare live wires

Objective

The objective of this experiment is to design and implement and get familiar with Decoder and encoder

Apparatus Needed

- Trainer Board (Bread board)
- Logic Gate ICs (You decide what you need)
- Connecting wires
- LEDs
- Push Buttons / DIP switch
- Logic gates
- Decoder IC

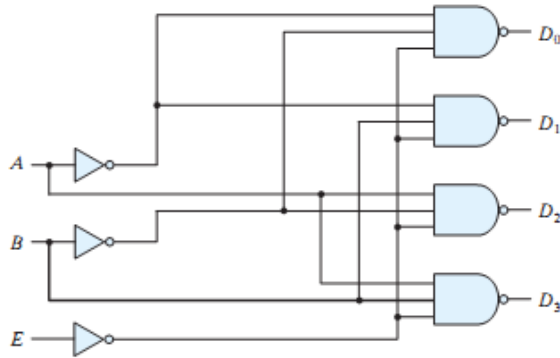
Procedure

1. Find a proper decoder IC necessary for this lab.
2. Create a logic function from the block diagram
3. Place the IC in the in the breadboard
4. Connect VCC and Ground to the respective pins of IC
5. Connect the inputs switches provided in the IC trainer kit
6. Connect all the internal connections
7. Connect the output of the ICs to LEDs
8. Apply various combinations of inputs according to the tables of result section
9. Observe and write the output of the LED in the corresponding table in result section.
10. Repeat for all the circuits

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Circuits

- 2 to 4 line decoder



(a) Logic diagram

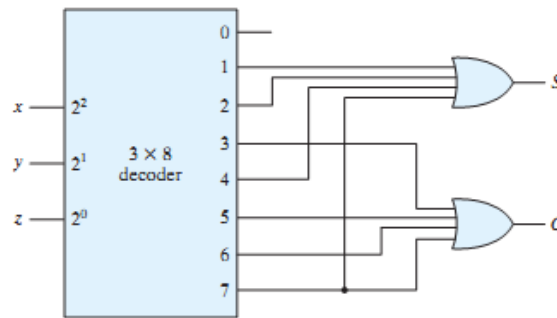
<i>E</i>	<i>A</i>	<i>B</i>	<i>D</i> ₀	<i>D</i> ₁	<i>D</i> ₂	<i>D</i> ₃
1	X	X	1	1	1	1
0	0	0	0	1	1	1
0	0	1	1	0	1	1
0	1	0	1	1	0	1
0	1	1	1	1	1	0

(b) Truth table

- Full adder using decoder (Use decoder IC)

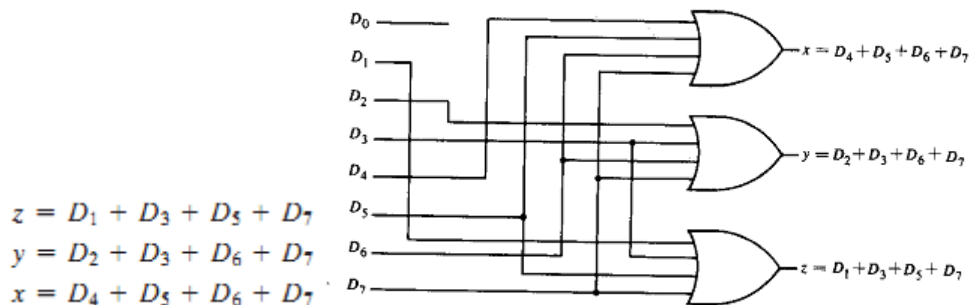
$$S(x, y, z) = \Sigma(1, 2, 4, 7)$$

$$C(x, y, z) = \Sigma(3, 5, 6, 7)$$



- Octal to binary encoder

Inputs								Outputs		
<i>D</i> ₀	<i>D</i> ₁	<i>D</i> ₂	<i>D</i> ₃	<i>D</i> ₄	<i>D</i> ₅	<i>D</i> ₆	<i>D</i> ₇	<i>x</i>	<i>y</i>	<i>z</i>
1	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	1
0	0	1	0	0	0	0	0	0	1	0
0	0	0	1	0	0	0	0	0	1	1
0	0	0	0	1	0	0	0	1	0	0
0	0	0	0	0	1	0	0	1	0	1
0	0	0	0	0	0	1	0	1	1	0
0	0	0	0	0	0	0	1	1	1	1



Report

- For the parts where schematic is not provided, design a circuit from block diagram provided.
- Mention the tests and results for checking the circuits.
- Comment on the learning from this LAB