Name: SUBHENDU MAJI Roll Number:18ETCS002121

Laboratory 7

Combinational Circuits-III
Decimal to BCD Encoder and Decoders

1. Introduction and Purpose of Experiment

   Students will learn to design and implement a circuit for Decimal to BCD Encoder.

2. Aim and Objectives

   Aim: Design and implement a circuit for Decimal to BCD Encoder

   Objectives: At the end of this lab, the student will be able to

   - Develop a circuit for Decimal to BCD Encoder
   - Understand the basics of Decoders

3. Experimental Procedure

   a. Write truth table and block diagram for Decimal to BCD Encoder

   b. Construct the circuits for Decimal to BCD Encoder using appropriate ICs. Verify the functionality and show the output to the course leader

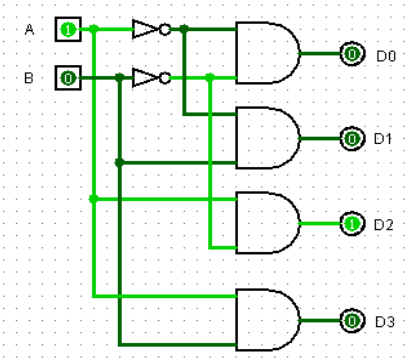
   c. Using an example, describe how a decoder can be implemented using a Demultiplexer.

Your document should include:

- Handwritten truth table and block diagrams for the circuit in 3(a).
- Answer to 3(c)

2:4 decoders

Circuit diagram



truth table

A	B	D3	D2	D1	D0
0	0	0	0	0	1
0	1	0	0	1	0
1	0	0	1	0	0
1	1	1	0	0	0

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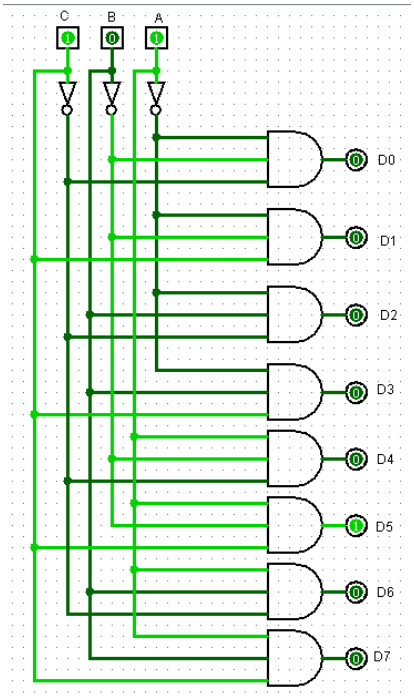
3:8 decoders

Circuit diagram

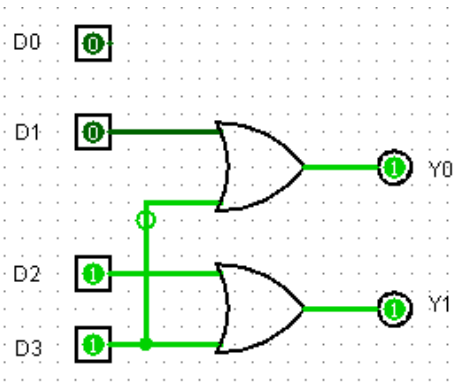


truth table

A	B	C	D7	D6	D5	D4	D3	D2	D1	D0
0	0	0	0	0	0	0	0	0	0	1
0	0	1	0	0	0	0	0	0	1	0
0	1	0	0	0	0	0	0	1	0	0
0	1	1	0	0	0	0	1	0	0	0
1	0	0	0	0	0	1	0	0	0	0
1	0	1	0	0	1	0	0	0	0	0
1	1	0	0	1	0	0	0	0	0	0
1	1	1	1	0	0	0	0	0	0	0

4:2 encoders

Circuit diagram



truth table

Y1	Y0	D3	D2	D1	D0
0	0	0	0	0	1
0	1	0	0	1	0
1	0	0	1	0	0
1	1	1	0	0	0

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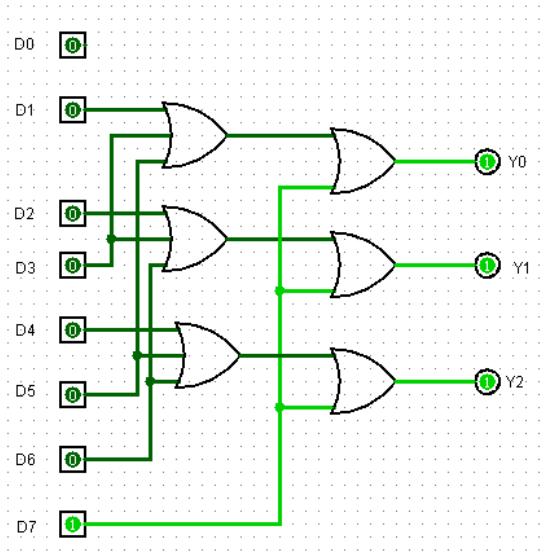
8:3 encoders

Circuit diagram

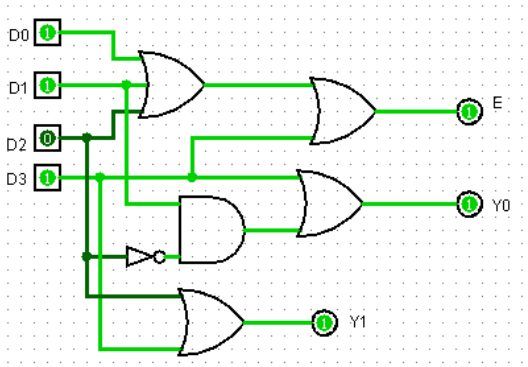


truth table

Y2	Y1	Y0	D7	D6	D5	D4	D3	D2	D1	D0
0	0	0	0	0	0	0	0	0	0	1
0	0	1	0	0	0	0	0	0	1	0
0	1	0	0	0	0	0	0	1	0	0
0	1	1	0	0	0	0	1	0	0	0
1	0	0	0	0	0	1	0	0	0	0
1	0	1	0	0	1	0	0	0	0	0
1	1	0	0	1	0	0	0	0	0	0
1	1	1	1	0	0	0	0	0	0	0

4:2 priority encoders

Circuit diagram



truth table

Y1	Y0	E	D3	D2	D1	D0
0	0	0	0	0	0	0
0	0	1	0	0	0	1
0	1	0	0	0	0	0
0	1	1	0	0	1	x
1	0	0	0	0	0	0
1	0	1	0	1	x	x
1	1	0	0	0	0	0
1	1	1	1	x	x	x

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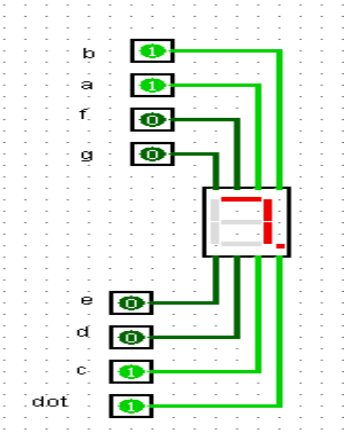
Bcd to 7 segment display

Block diagram



truth table

A	B	C	D	a	b	c	d	e	f	g
0	0	0	0	1	1	1	1	1	1	0
0	0	0	1	0	1	1	0	0	0	0
0	0	1	0	1	1	0	1	1	0	1
0	0	1	1	1	1	1	1	0	0	1
0	1	0	0	0	1	1	0	0	1	1
0	1	0	1	1	0	1	1	0	1	1
0	1	1	0	1	0	1	1	1	1	1
0	1	1	1	1	1	1	0	0	0	0
1	0	0	0	1	1	1	1	1	1	1
1	0	0	1	1	1	1	1	0	1	1