



Faculty of Engineering and Technology Department
of Electrical and Computer Engineering

ENCS 2110

**Digital Electronics and Computer Organization
Lab Experiment No.3 - Encoders, Decoders,
Multiplexers, and Demultiplexers (POST Lab)**

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Section:	4

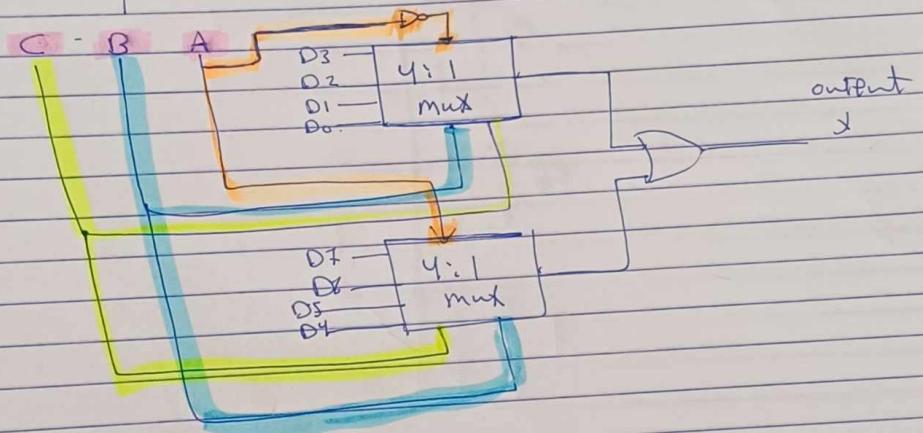
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12/10/20

post lab 3

i) Implementation 8x1 Multiplier using lower order Multiplexers
Show how to solve it

A	B	C	output (x)
0	0	0	D ₀
0	0	1	D ₁
0	1	0	D ₂
0	1	1	D ₃
1	0	0	D ₄
1	0	1	D ₅
1	1	0	D ₆
1	1	1	D ₇



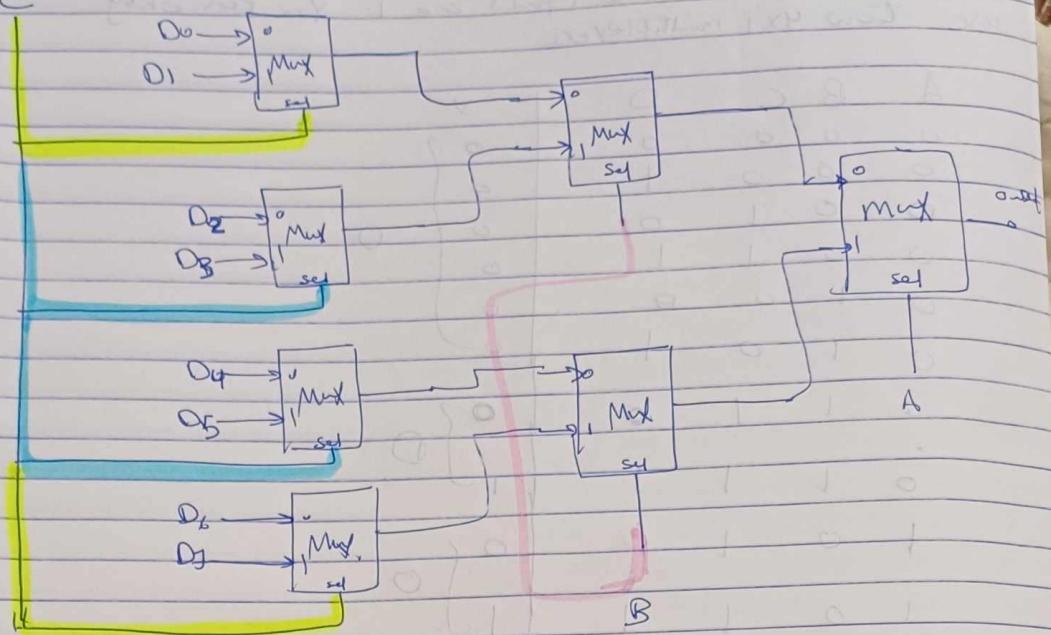
* I implemented a 8x1 mul using two 4x1 mux

$$(D_0 - D_3) + A = 0$$

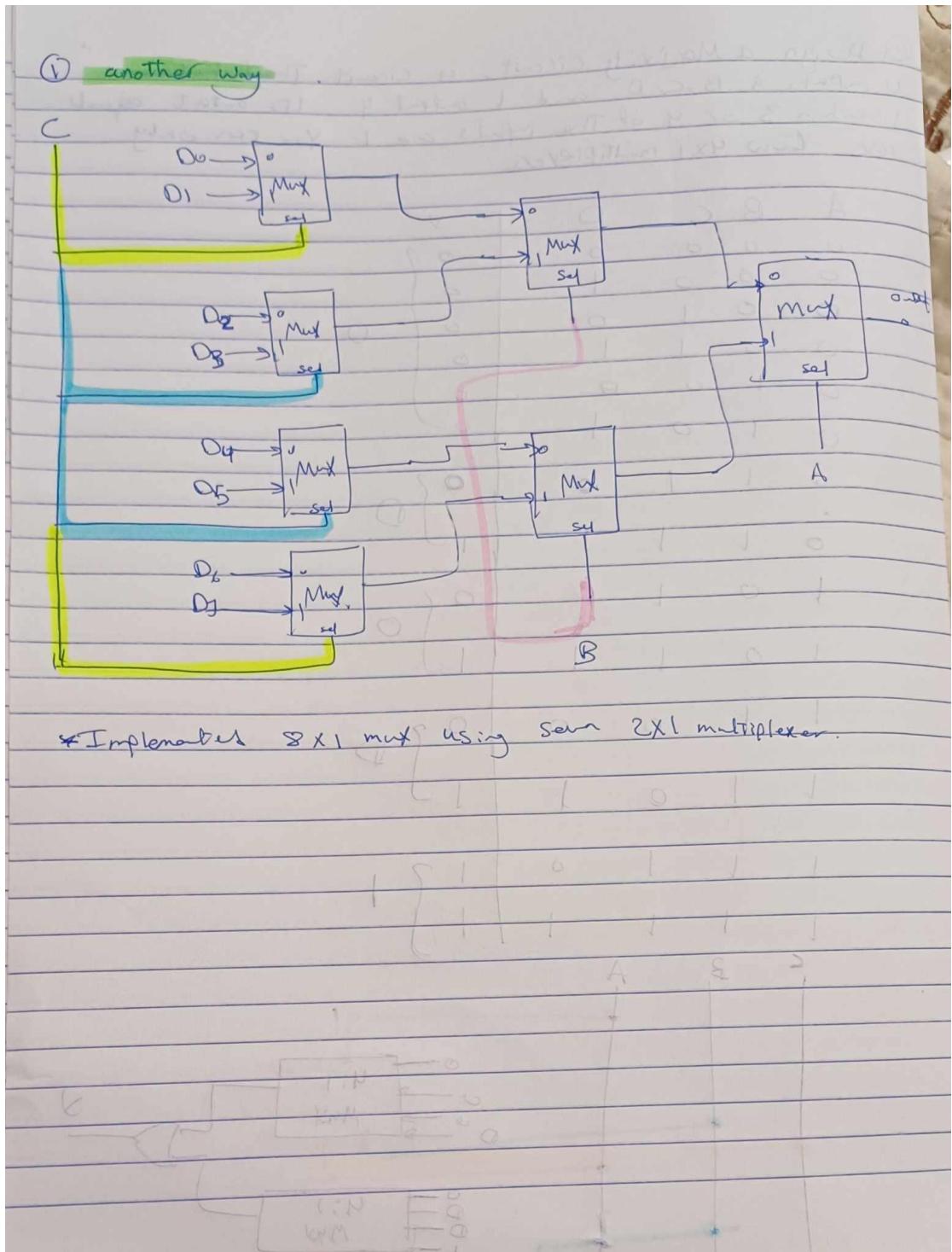
$$(D_4 - D_7), A = 1$$

① another way

C



* Implemented 8x1 mux using seven 2x1 multiplexer.



② Design a Majority Circuit, a circuit that takes 4 inputs A, B, C, D and 1 output Y. Its output equals 1 when 3 or 4 of the inputs are 1. You can only use two 4x1 multiplexers.

A	B	C	D	Y
0	0	0	0	0
0	0	0	1	0
0	0	1	0	0
0	0	1	1	0
0	1	0	0	0
0	1	0	1	0
0	1	1	0	0
.
0	1	1	1	1
1	0	1	0	0
1	0	1	1	1
1	1	0	0	0
1	1	0	1	1
1	1	1	0	1
1	1	1	1	1

