Faculty of Engineering and Technology

Department of Electrical and Computer Engineering

DIGITAL ELECTRONICS AND COMPUTER ORGANIZATION LABORATORY (ENCS2110)

“Post-Lab 3 (Experiment3)”

Prepared by:

Name: Eman Asfour Number: 1200206

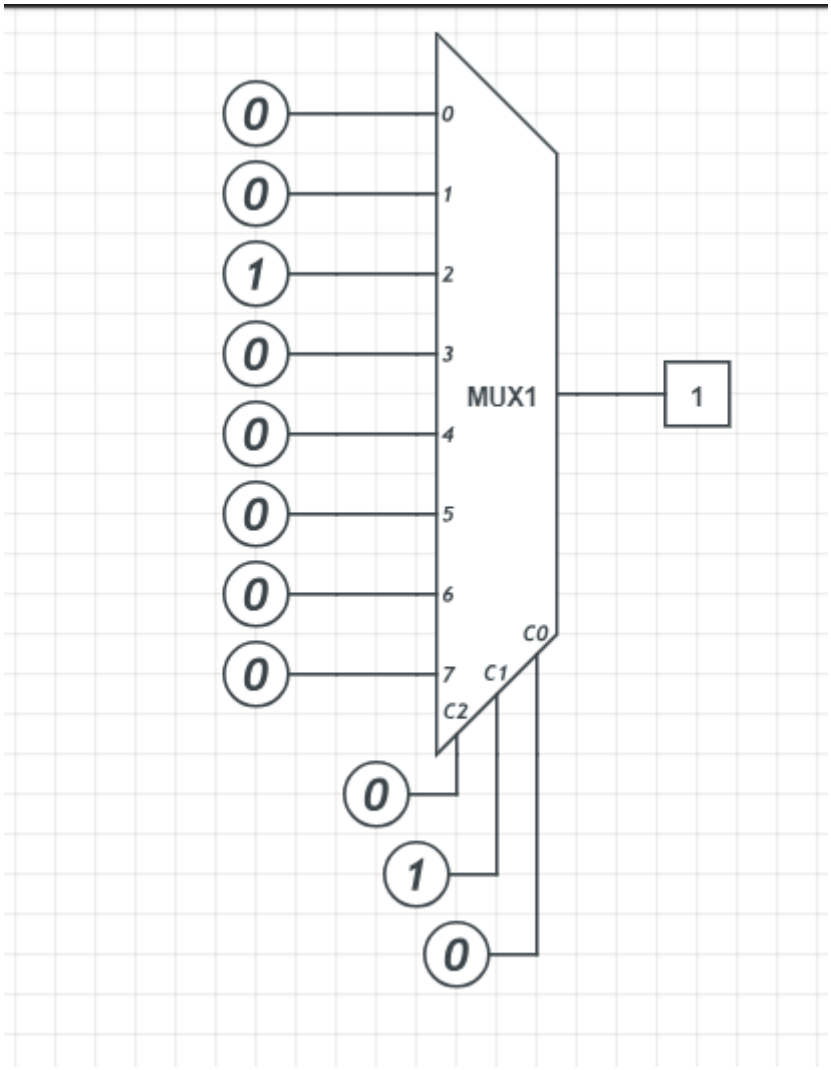
Instructor: Dr. Jamal Seyam

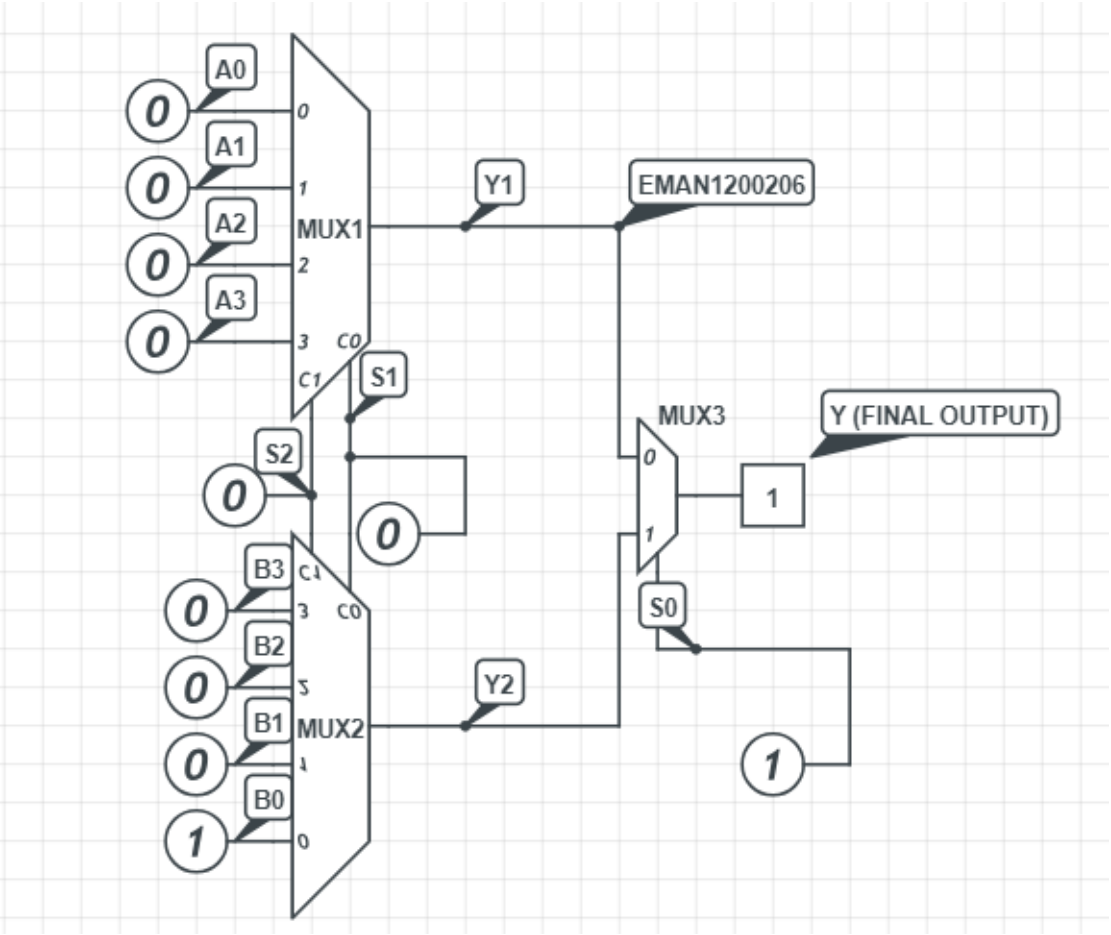
Eng: Haleema Hmedan

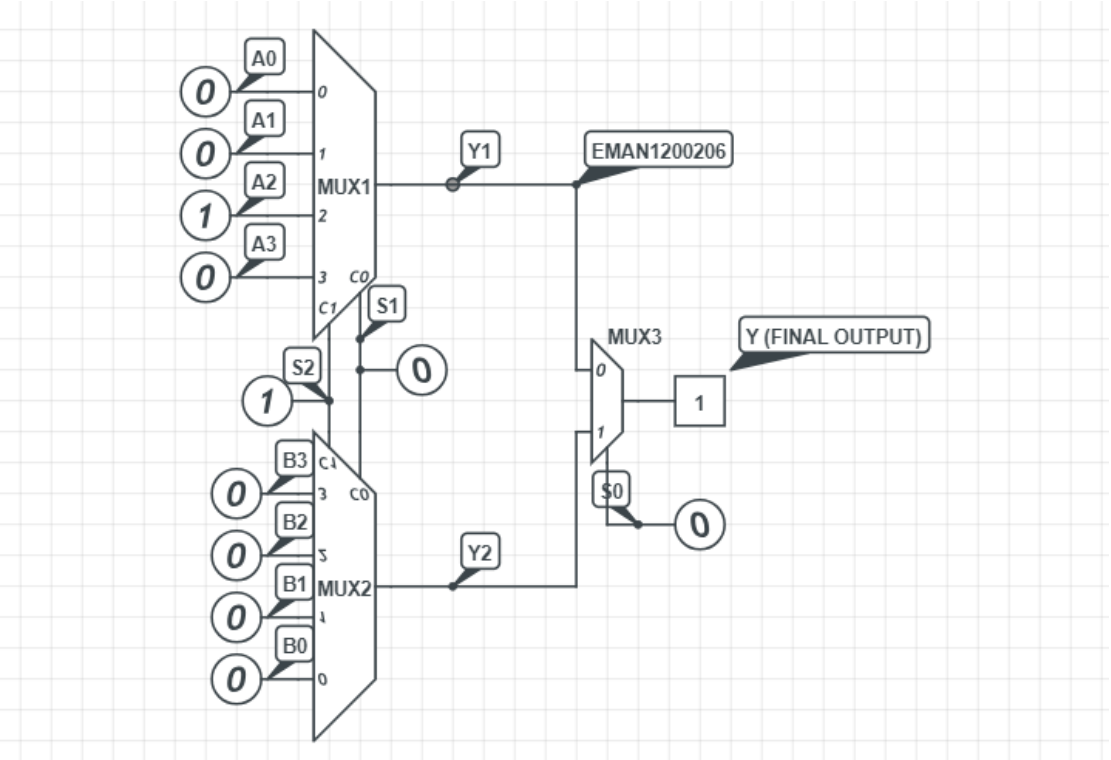
Section: 4

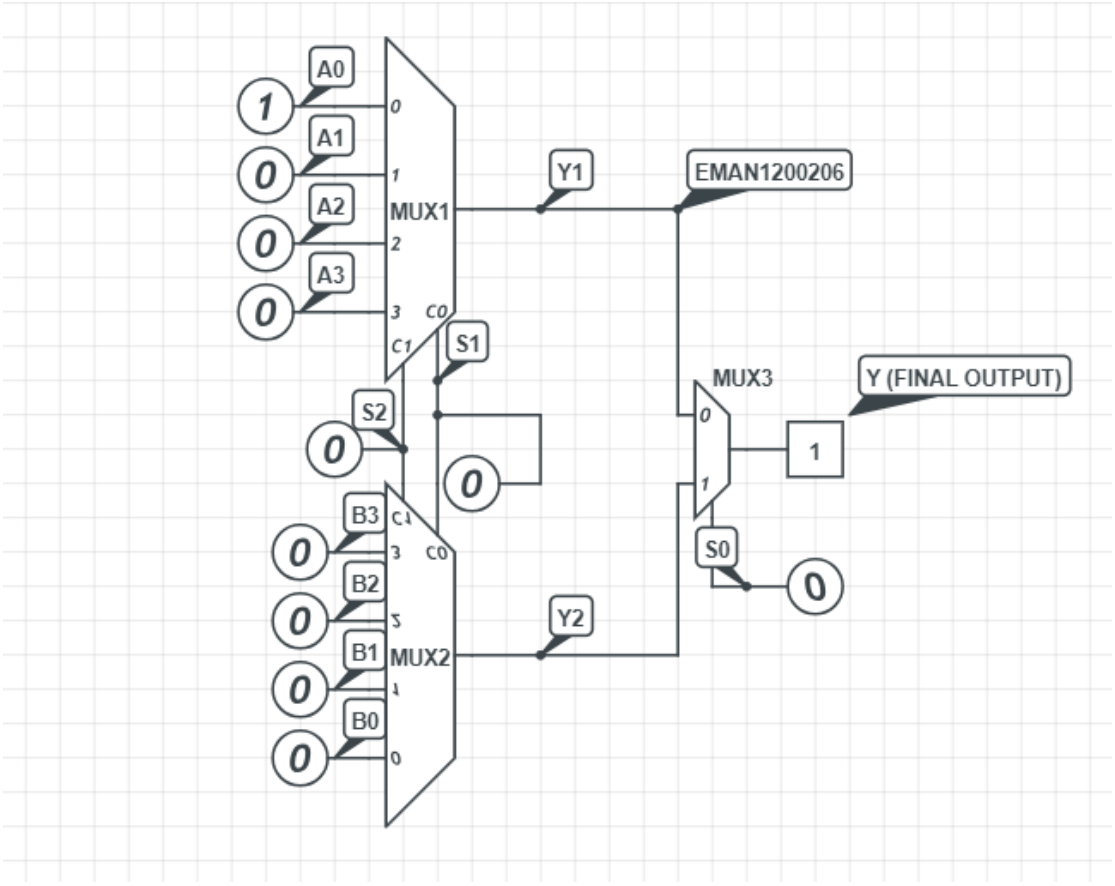
Date: 8 / 13 / 2023

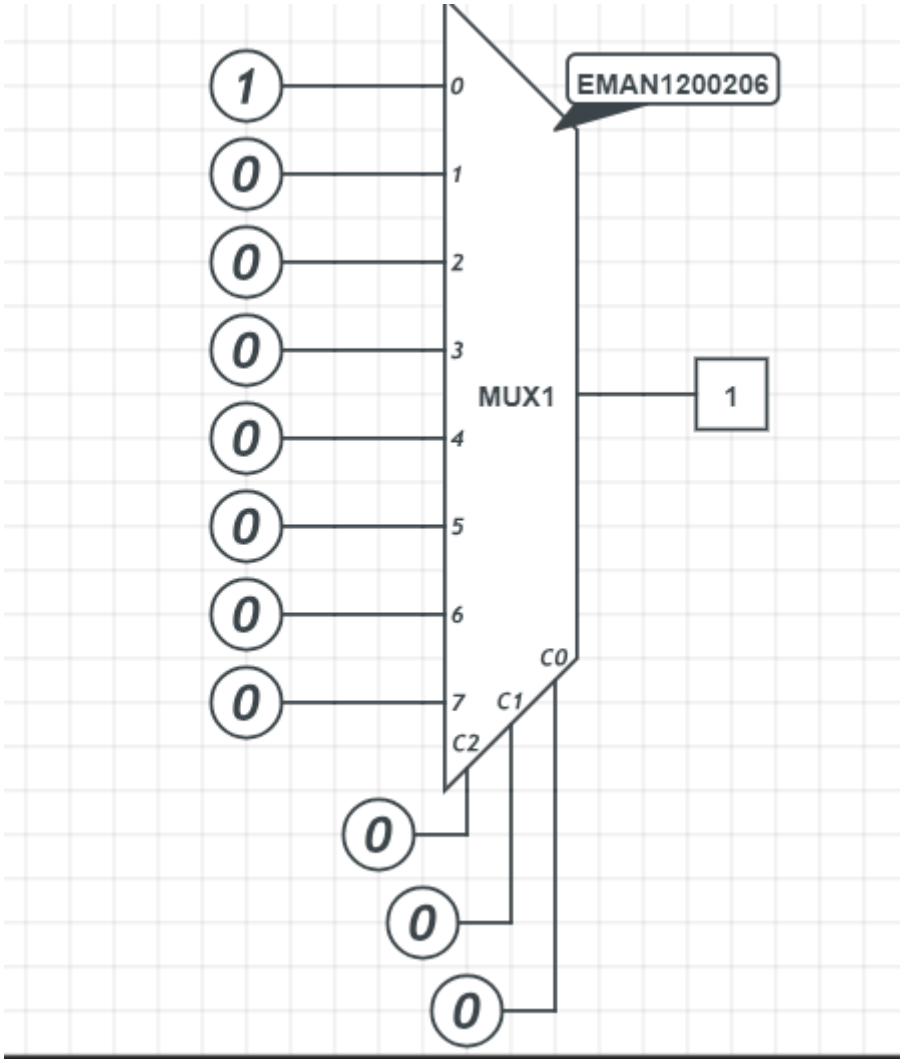
1. Implement an 8x1 Multiplexer using lower order Multiplexers Show how to solve it.




A0
A1
A2
A3
MUX1
Y1
EMAN1200206
S1
S2
MUX3
Y (FINAL OUTPUT)
B3
B2
B1
B0
MUX2
Y2
S0
0
1

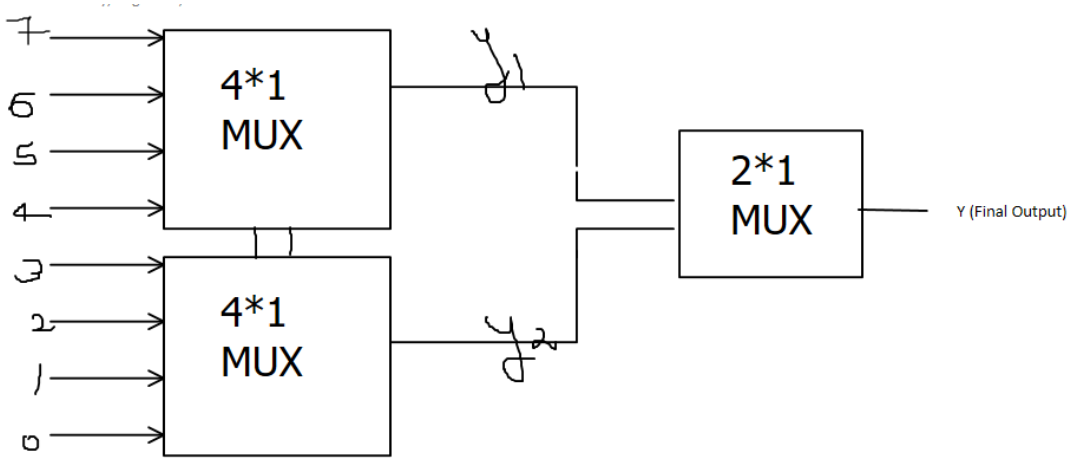

A0
A1
A2
A3
MUX1
Y1
EMAN1200206
S1
S2
MUX3
Y (FINAL OUTPUT)
B3
B2
B1
B0
MUX2
Y2
S0
0
1


A0
1
A1
0
A2
0
A3
0
MUX1
Y1
EMAN1200206
S1
S2
0
0
MUX3
Y (FINAL OUTPUT)
1
B3
0
B2
0
B1
0
B0
0
MUX2
Y2
S0
0

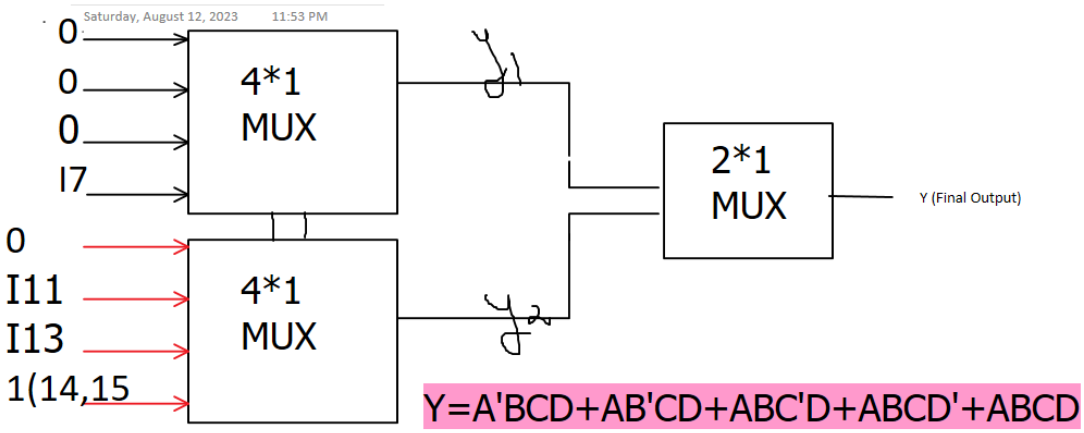


Selection Inputs			Output
S_2	S_1	S_0	Y
0	0	0	I_0
0	0	1	I_1
0	1	0	I_2
0	1	1	I_3
1	0	0	I_4
1	0	1	I_5
1	1	0	I_6

1	1	1	I_7

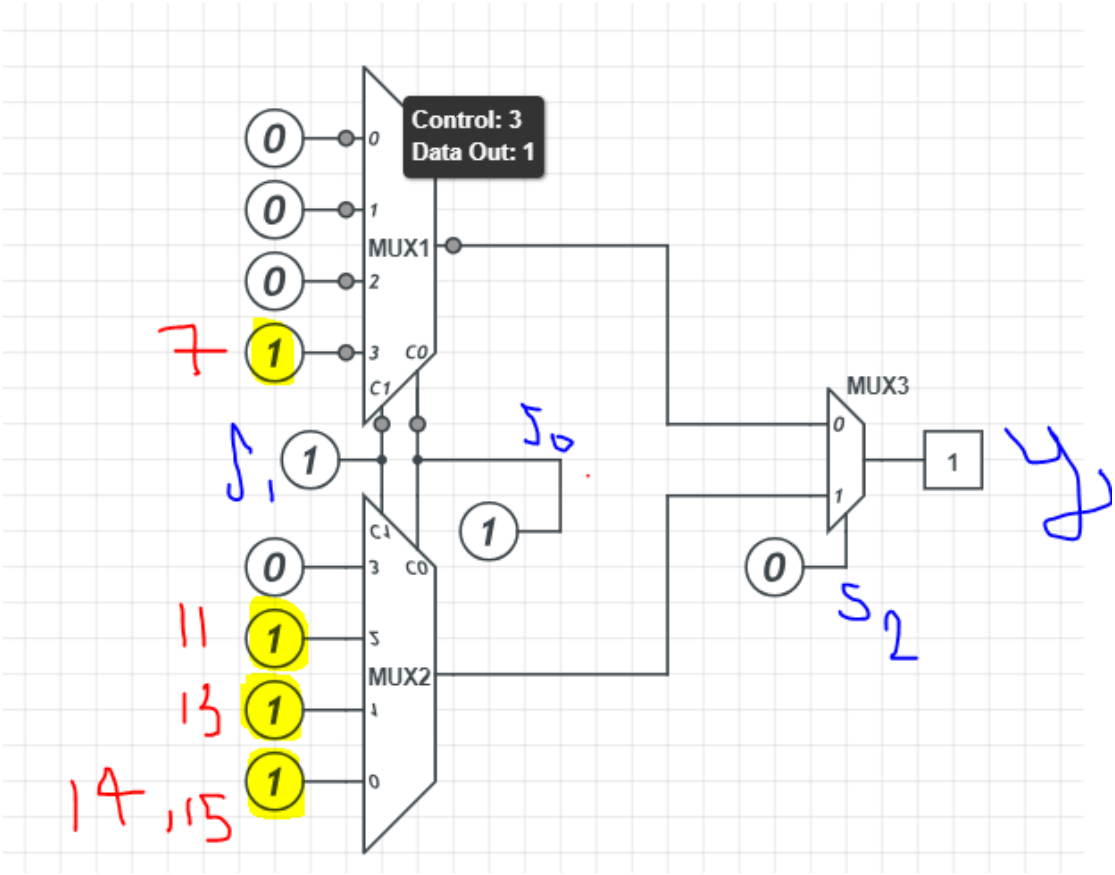


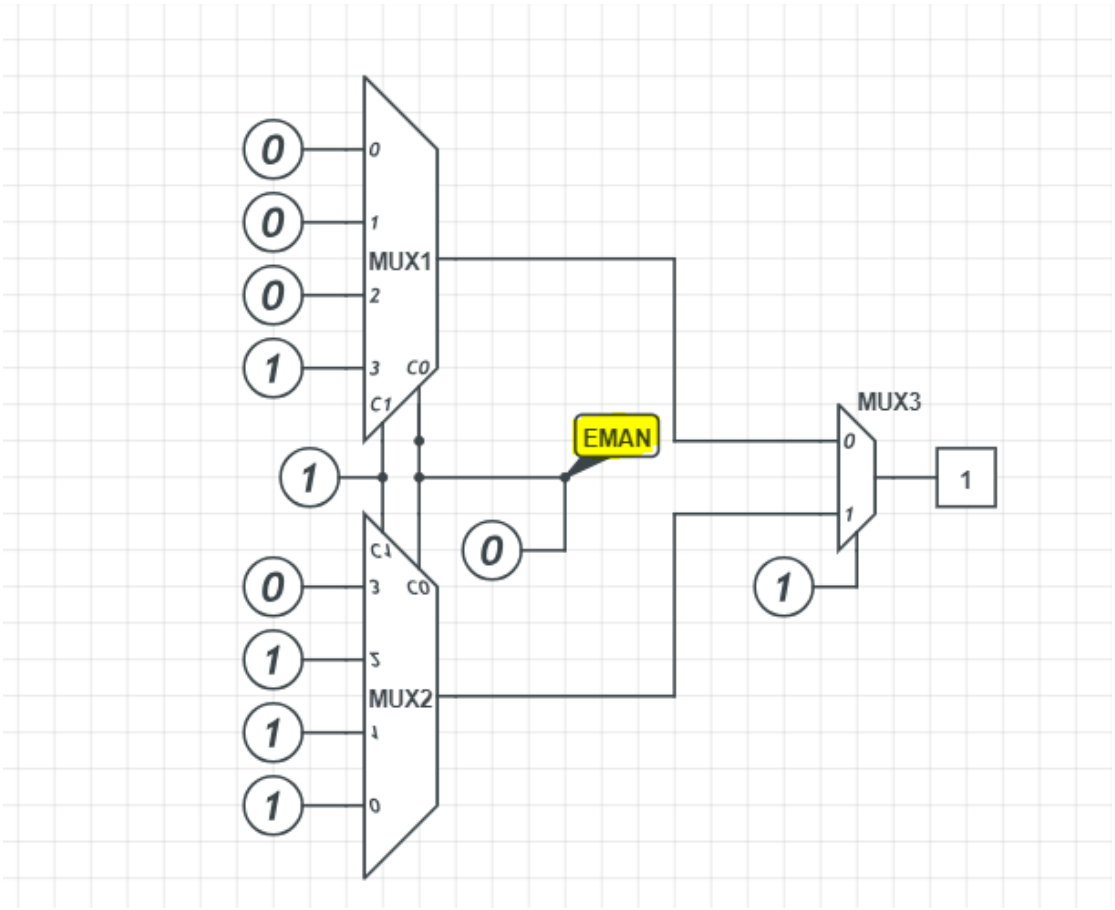
2. Design a Majority Circuit; a circuit that takes 4 inputs A, B, C, D, and 1 output Y. Its output equals 1 when 3 or 4 of the inputs are 1. You can only use two 4×1 multiplexers.



Inputs				Output
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	0	0	0
1	0	0	1	0
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

7
11
13
14
15




0
0
0
1
MUX1
0
1
2
3
C0
C1
1
EMAN
0
C1
3
C0
0
1
3
MUX2
1
1
1
0
MUX3
0
1
1
1