BIRZEIT UNIVERSITY

Faculty of Engineering and Technology

Department of Electrical and Computer Engineering

DIGITAL ELECTRONICS AND COMPUTER ORGANIZATION LABORATORY (ENCS2110)

"Post _lab 4&6(Experiment4&6)"

Prepared by:

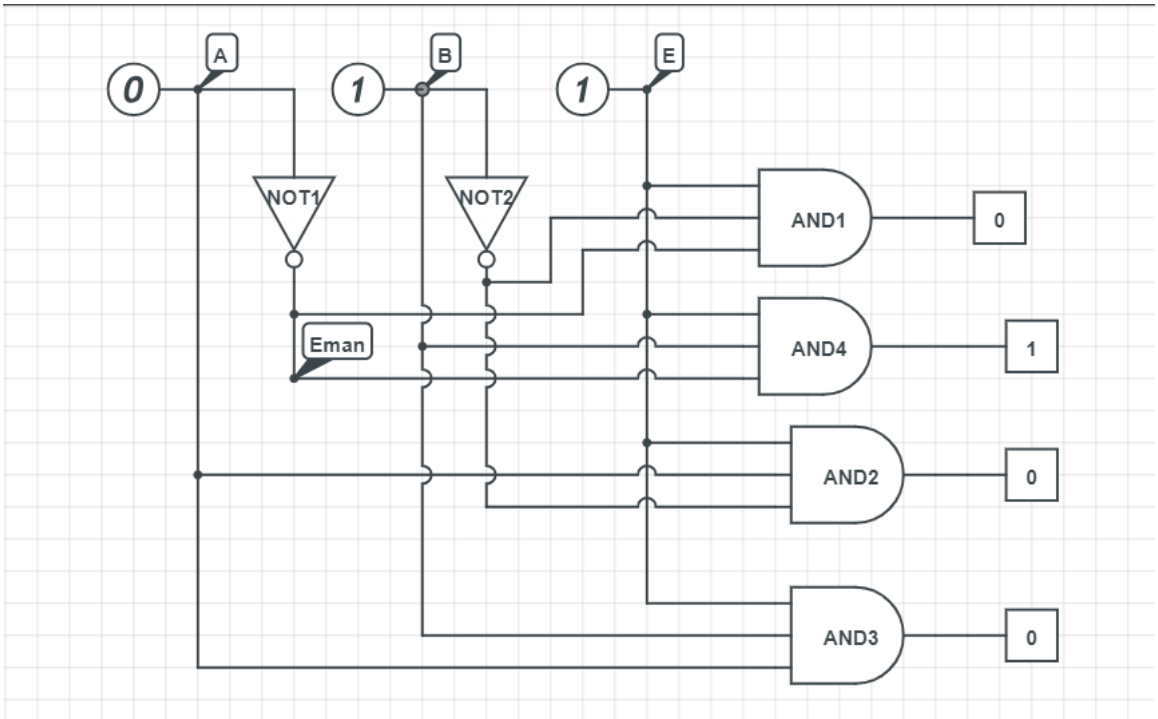
Name: Eman Asfour **Number:** 1200206

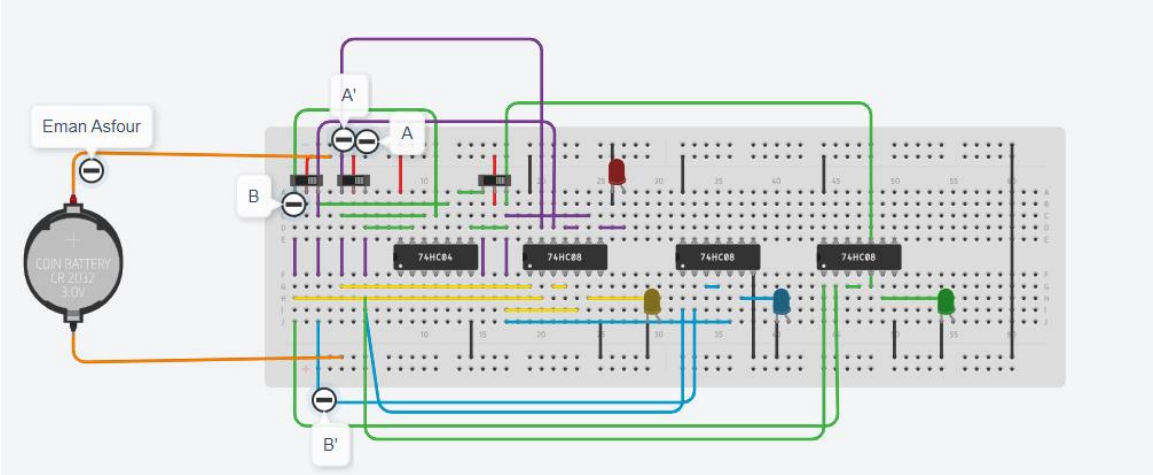
Instructor: Dr. Jamal Seyam

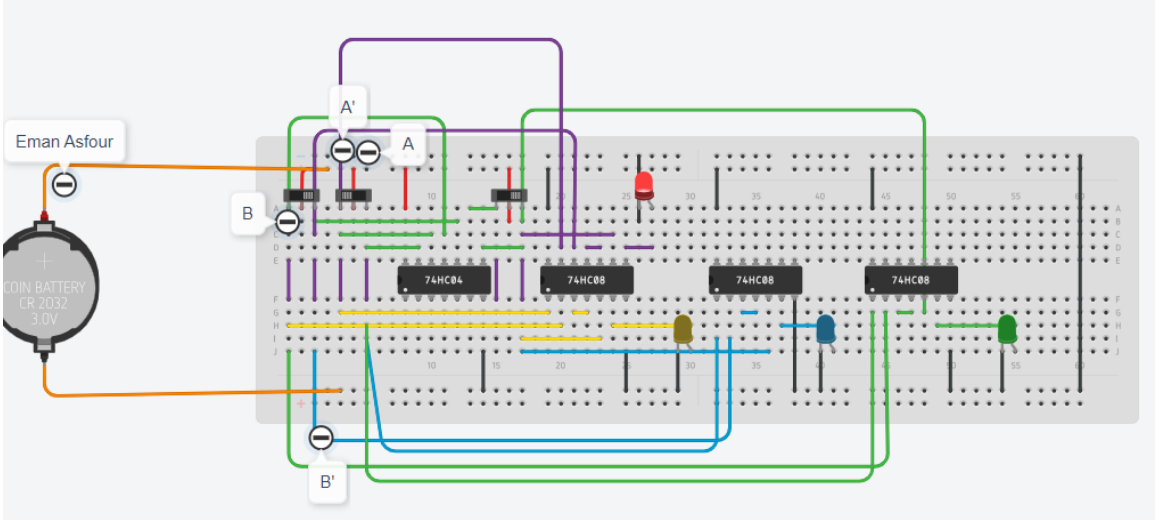
Section: 4

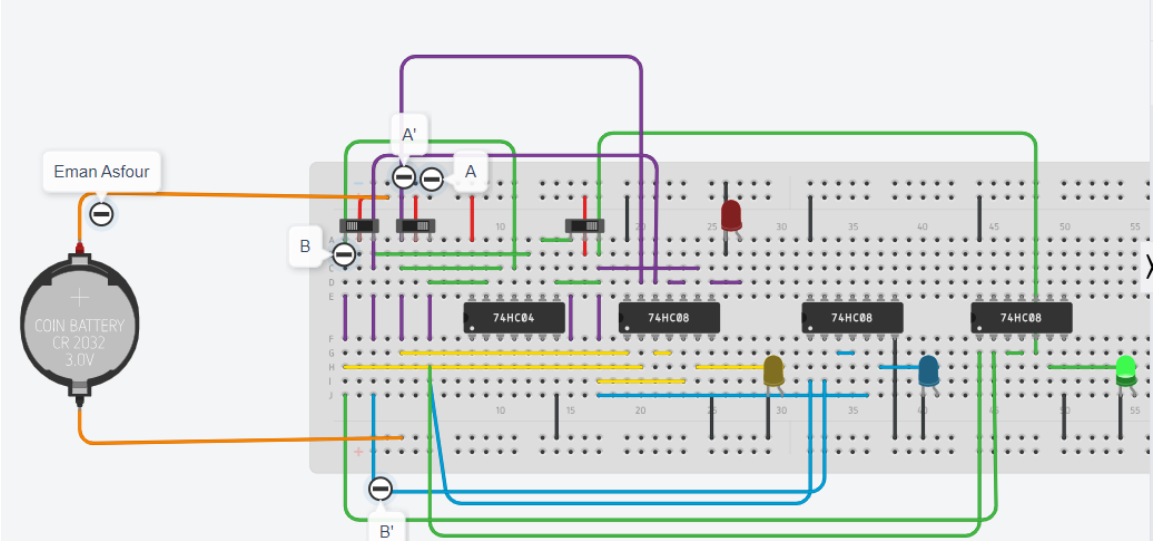
Date: 8 / 14 / 2023

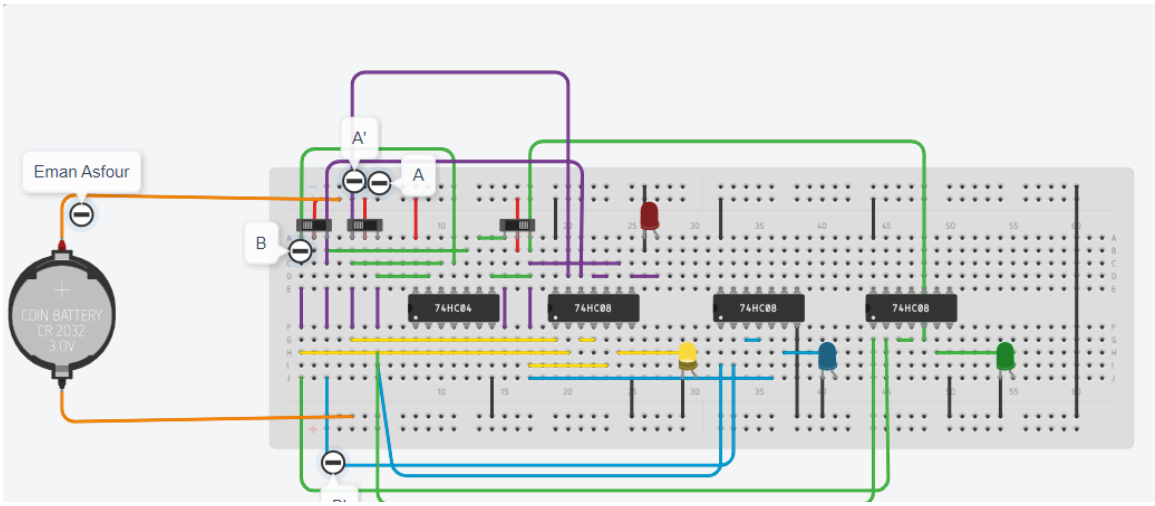
1. How do you go about adding an Enable (E) signal to the decoder in Figure 4.7? Modify the implementation to show that. (Design Only using chips in Figure 1)


A
B
E
0
1
1
NOT1
NOT2
Eman
AND1
AND4
AND2
AND3
0
1
0
0

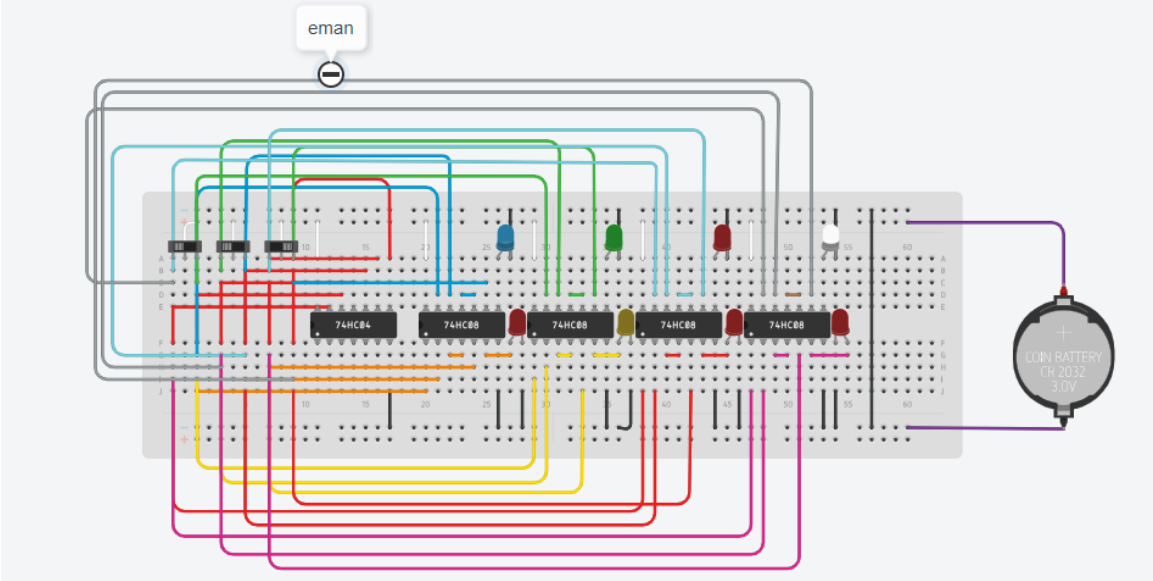

Eman Asfour
A'
A
B
B'
74HC04
74HC08
74HC08
74HC08
COIN BATTERY
CR 2032
3.0V

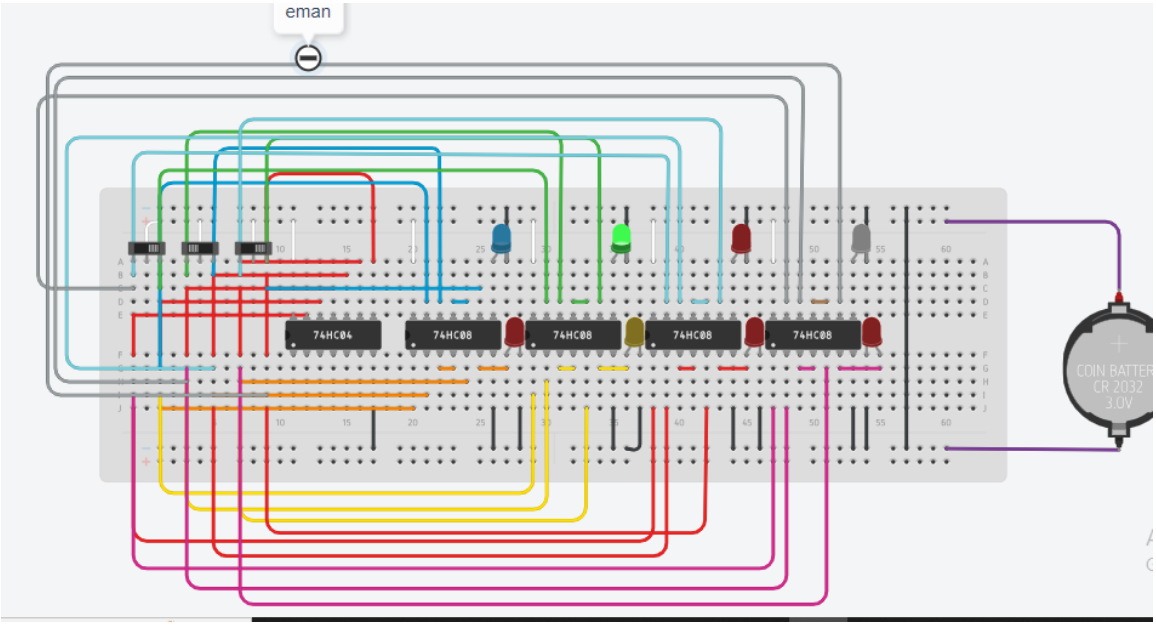

Eman Asfour
A'
A
B
B'
74HC04
74HC08
74HC08
74HC08
COIN BATTERY
CR 2032
3.0V


Eman Asfour
A'
A
B
B'
74HC04
74HC08
74HC08
74HC08
COIN BATTERY
CR 2032
3.0V


Eman Asfour
A'
A
B
74HC04
74HC08
74HC08
74HC08
COIN BATTERY
CR 2032
3.0V

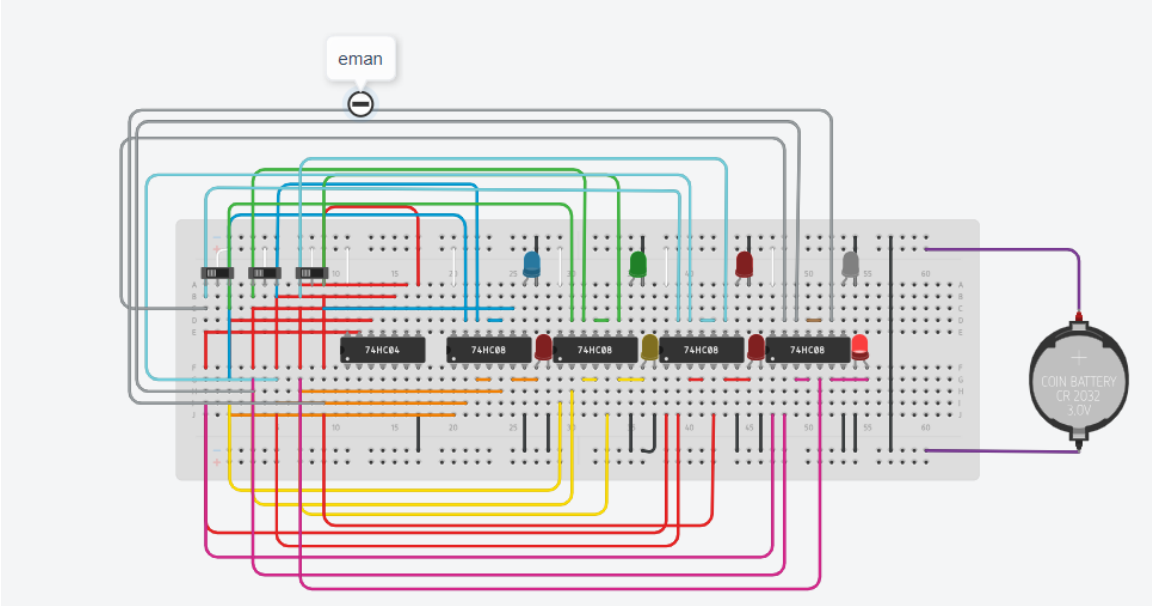
2. How to use that to implement a 3x8 decoder using chips in Figure 1

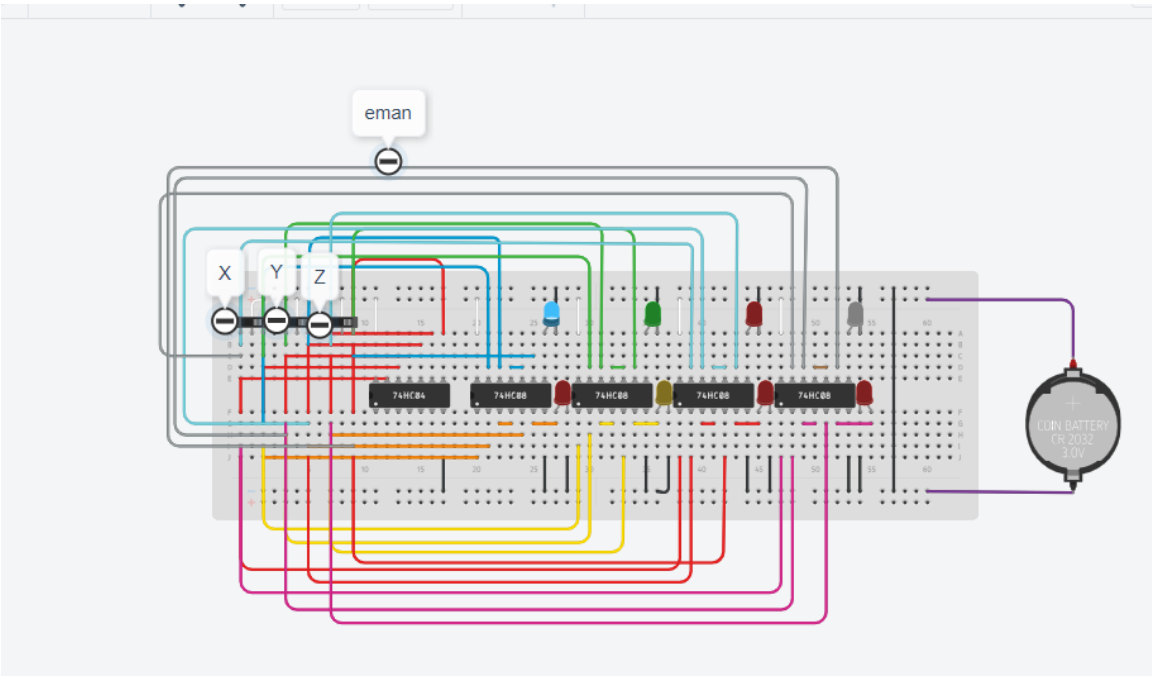




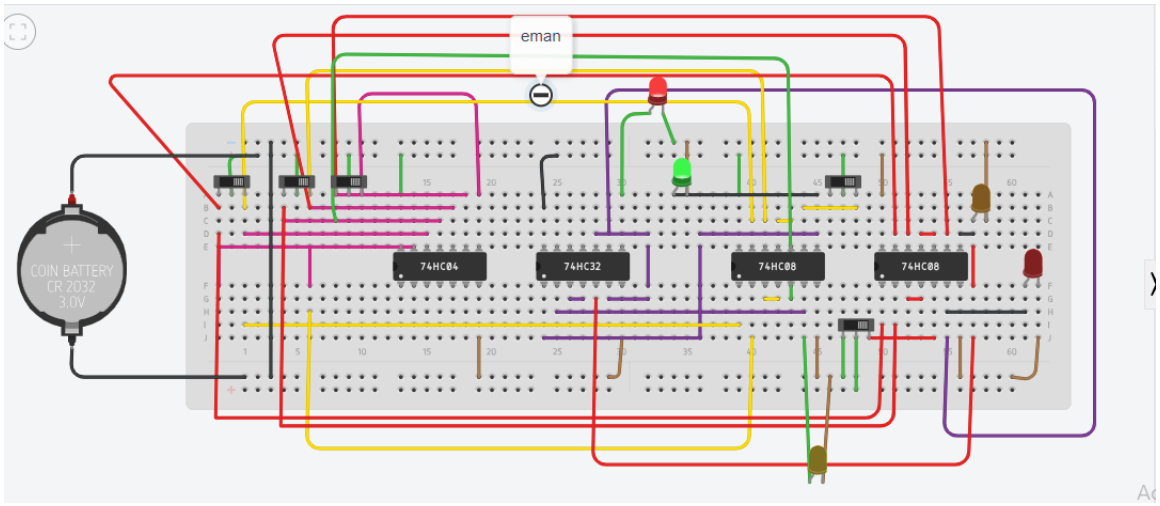
D0 = X'Y'Z' D1=X'Y'Z D2= X'YZ' D3=X'YZ D4= XY'Z'

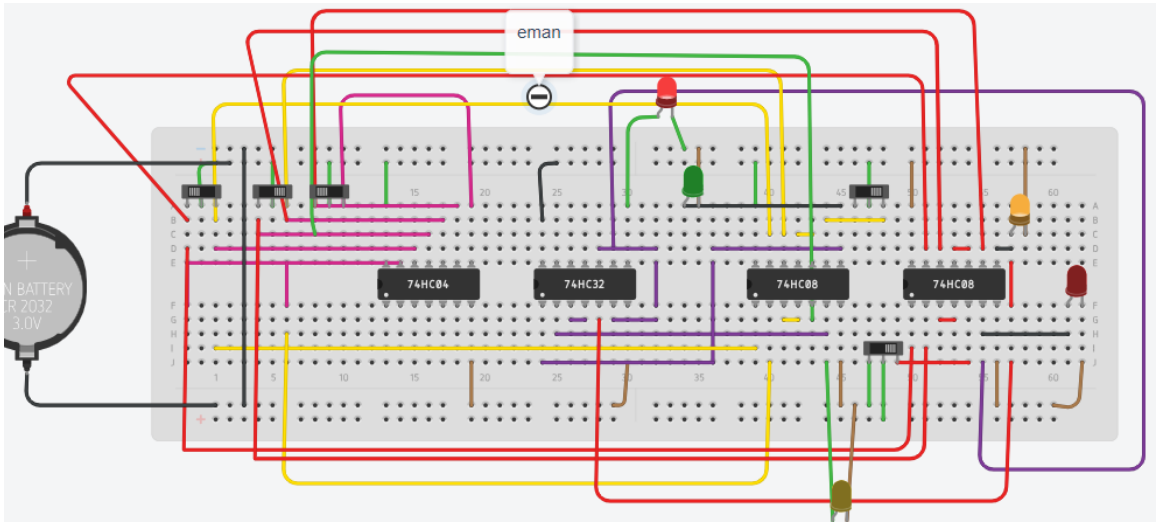
D5=XY'Z D6=XYZ' D7=XYZ


eman
74HC04
74HC08
74HC08
74HC08
74HC08
COIN BATTERY
CR 2032
3.0V


eman
X
Y
Z
74HC04
74HC08
74HC08
74HC08
74HC08
COIN BATTERY
CR 2032
3.0V

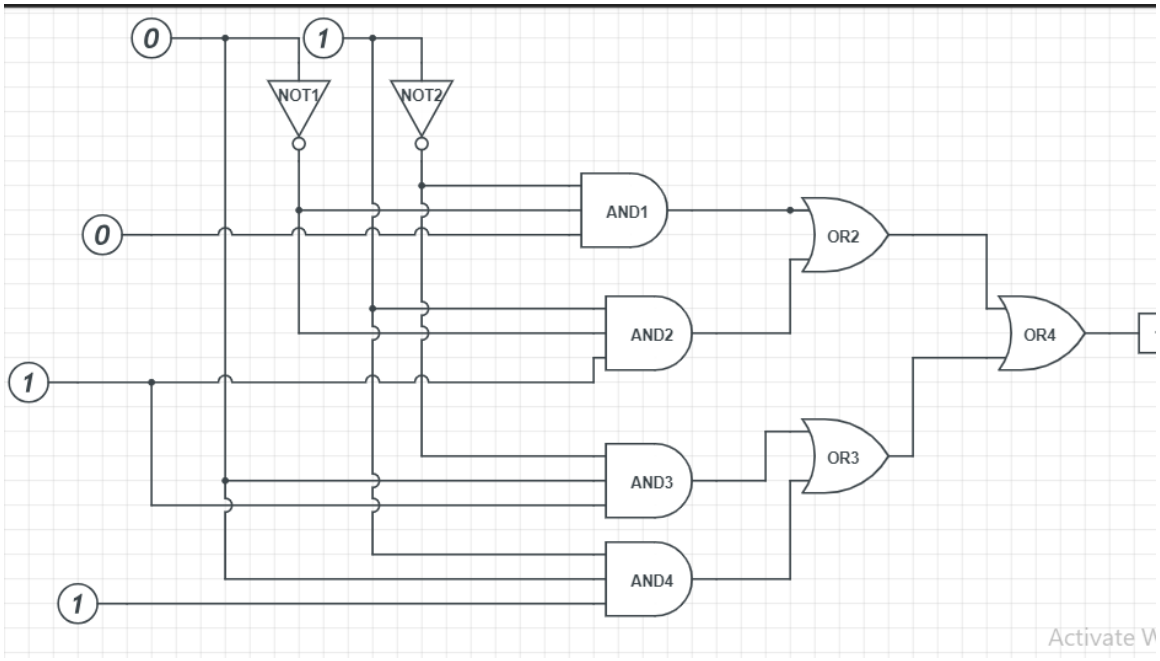
3. Use the just constructed 4x1 multiplexer to design a three inputs network that gives 1 if the majority of its inputs are 1 and outputs a zero otherwise (Design Only using chips in Figure 1)

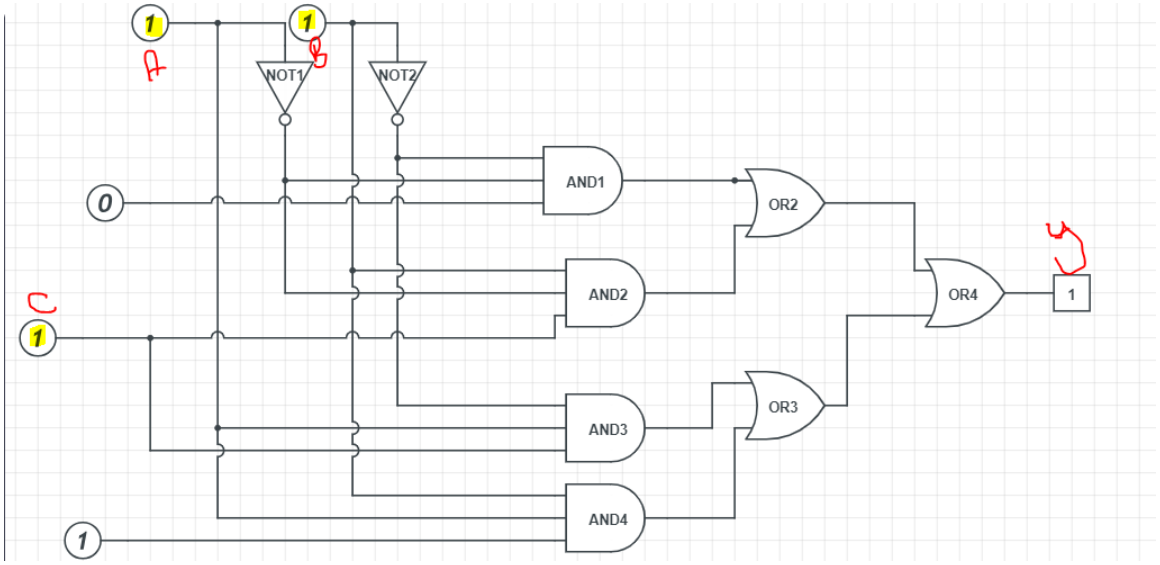


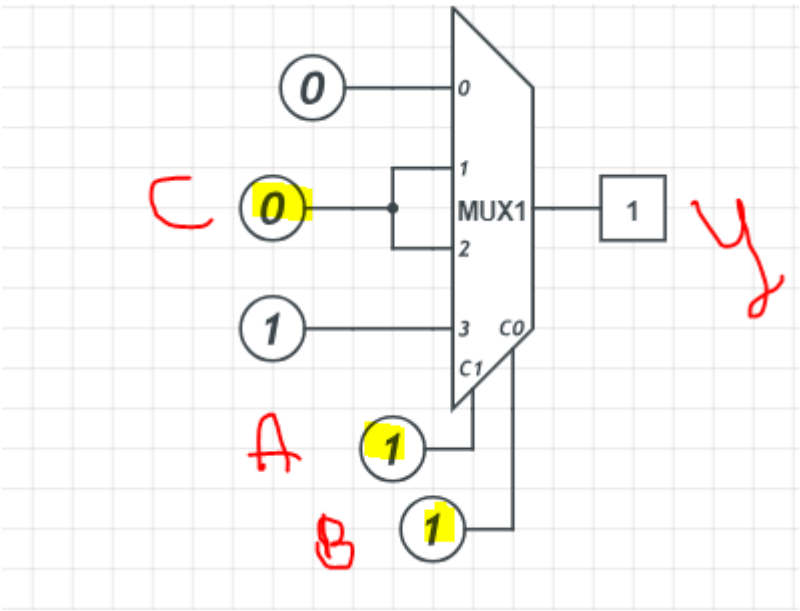


A	B	C	Y
0	0	0	0
0	0	1	0
0	1	0	0
0	1	1	1
1	0	0	0
1	0	1	1
1	1	0	1

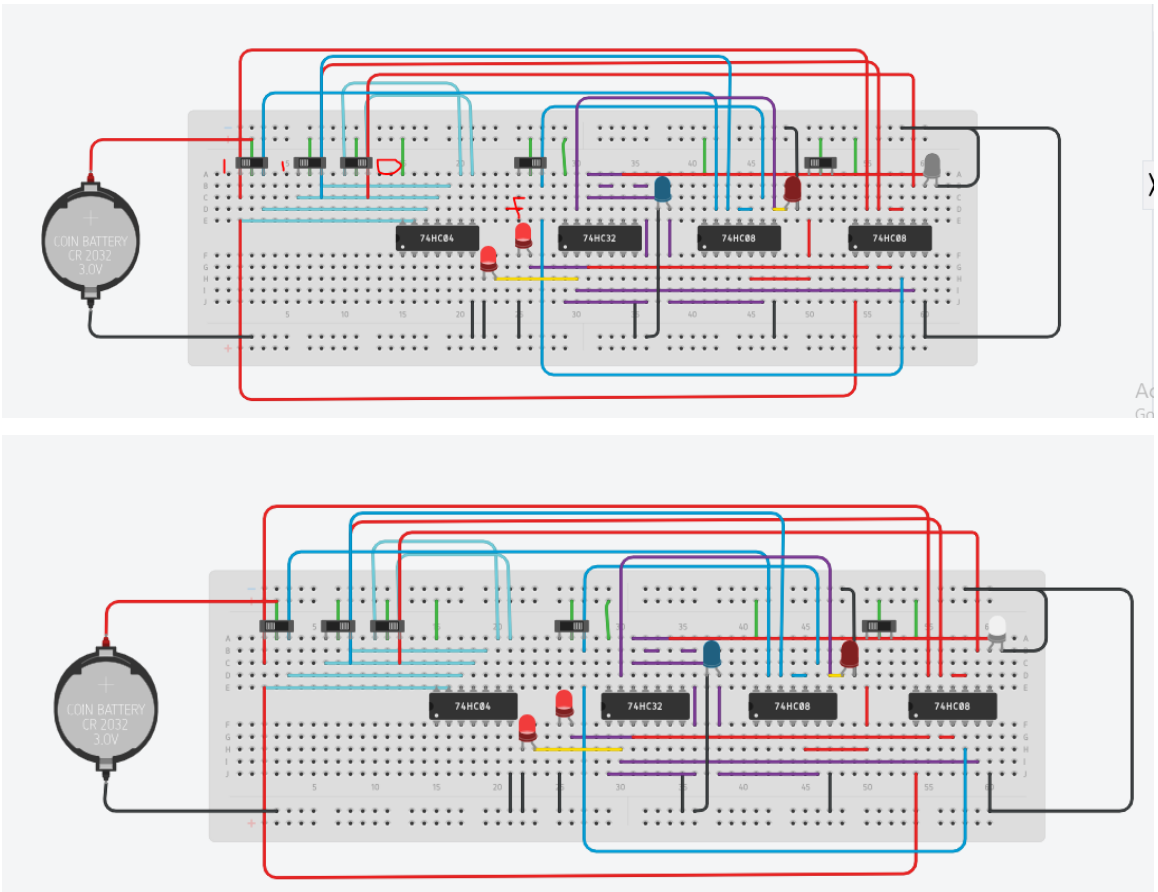
1	1	1	1

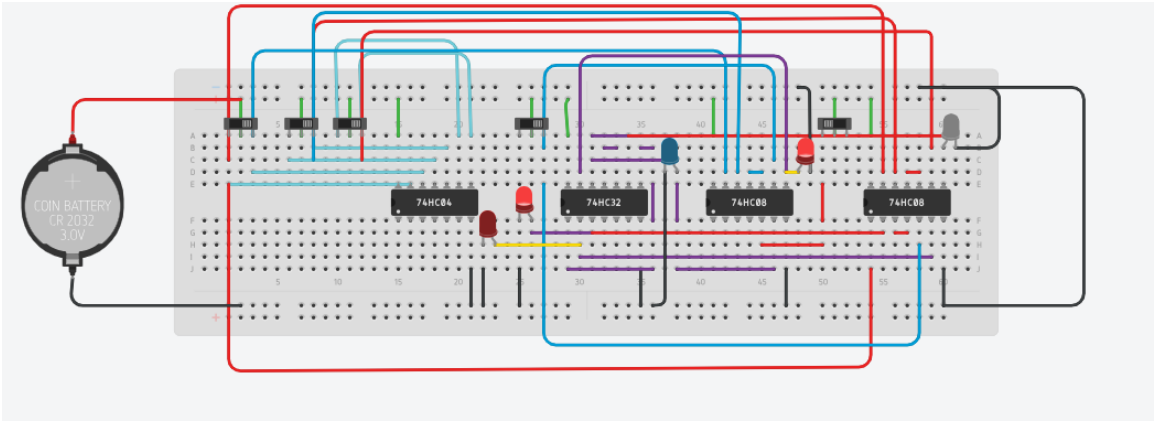

0
1
NOT1
NOT2
AND1
0
OR2
AND2
OR4
1
OR3
AND3
AND4
1
Activate W


1
1
A
B
NOT1
NOT2
AND1
0
OR2
AND2
C
1
OR4
1
OR3
AND3
AND4
1

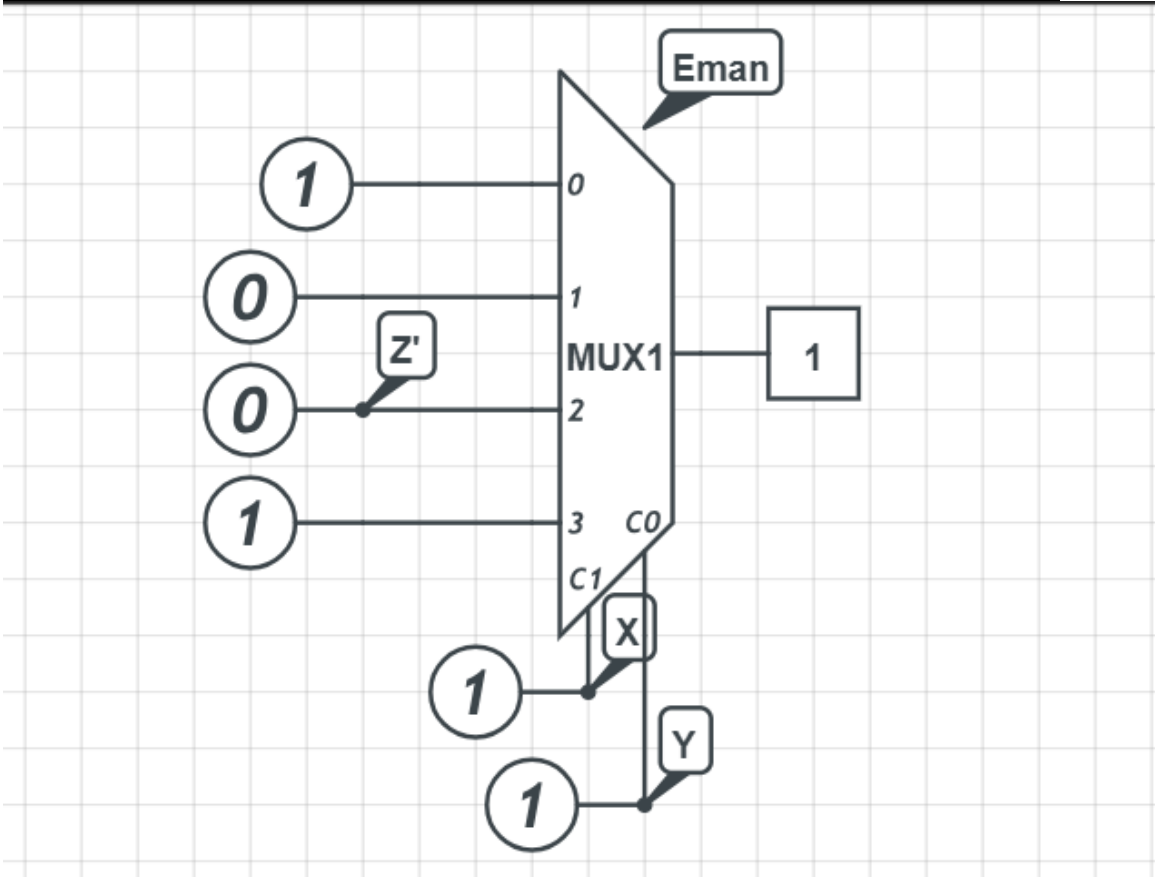


4. Implement f(x, y, z) = m(0, 1, 4, 6, 7), using 4x1 MUX using chips in Figure 1.



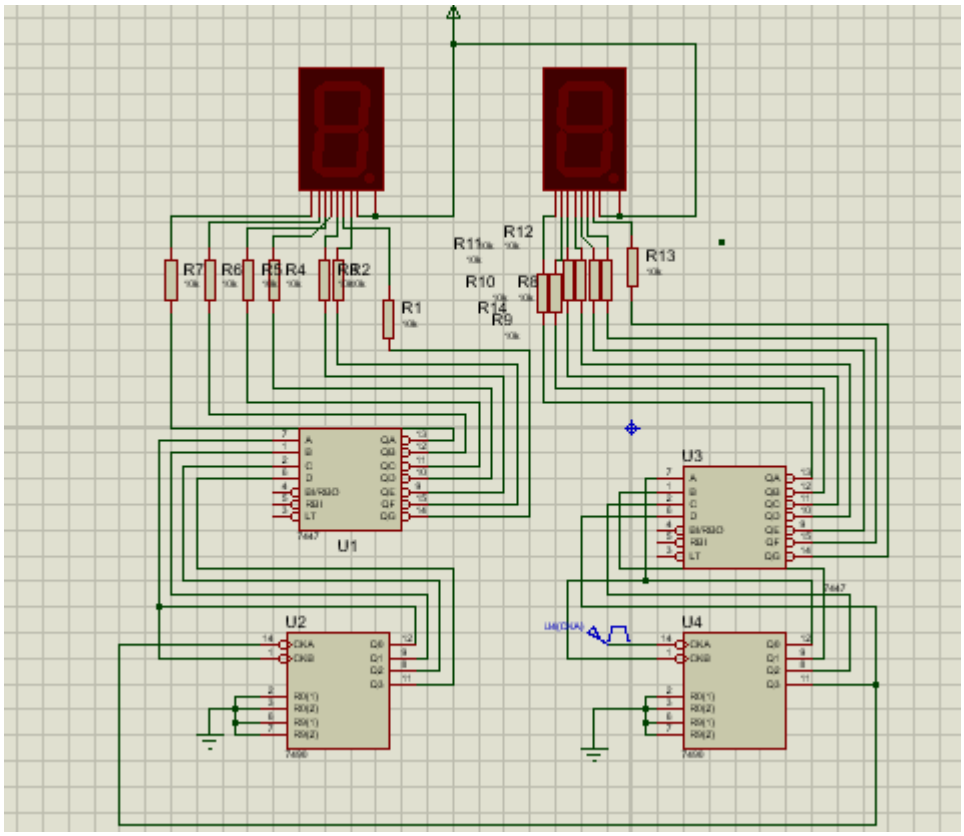


x	y	z	f
0	0	0	1
0	0	1	1
0	1	0	0
0	1	1	0
1	0	0	1
1	0	1	0
1	1	0	1
1	1	1	1

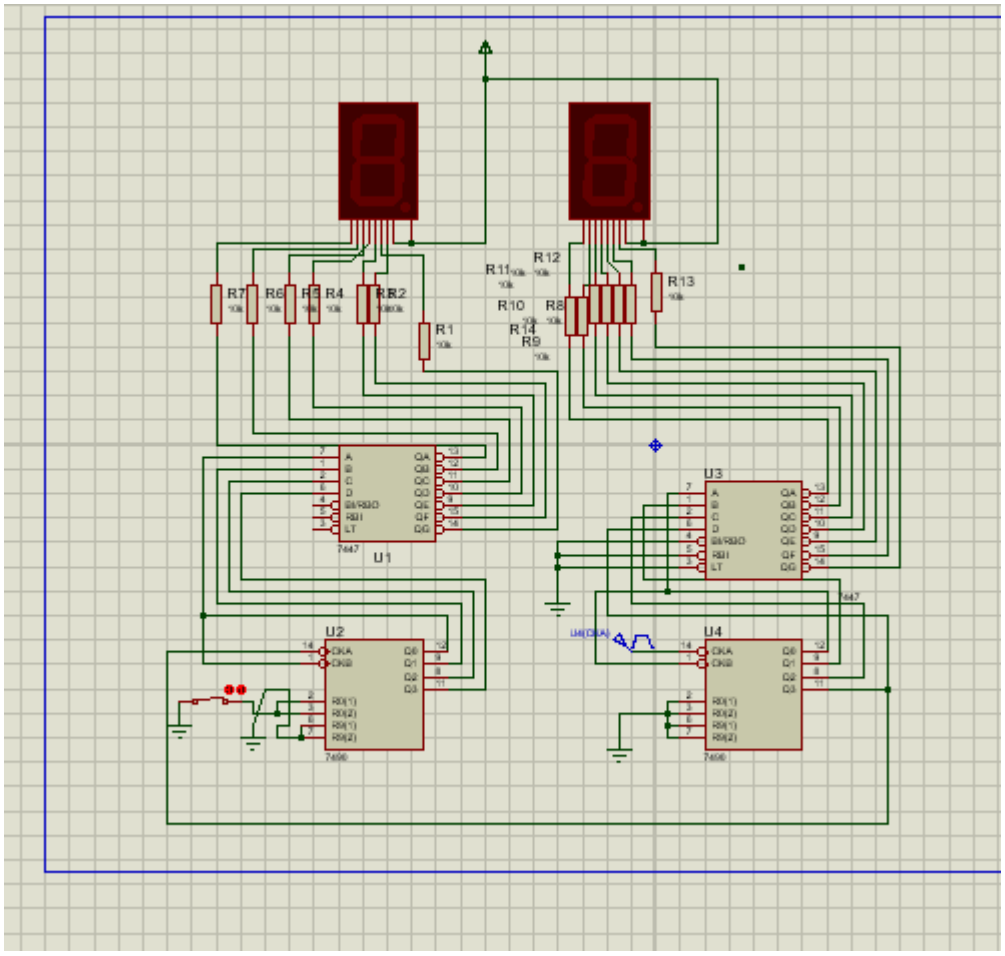


5. Post Lab6

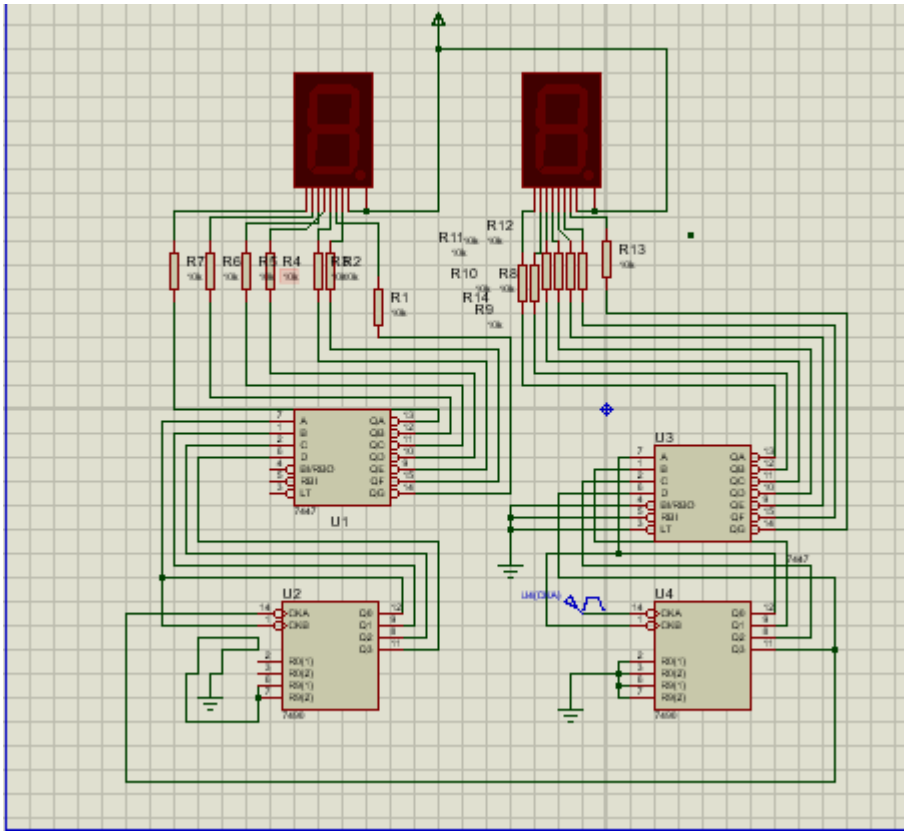
Design a two-decade counter that counts from 00 to 99



Add additional input to your design that can be used to reset the counter



Modify the counter to count to 59 (without Reset).


R7
R6
R5
R4
R3
R2
R1
R11
R12
R10
R8
R14
R9
R13
U1
U2
U3
U4
7447
7490