Pre-Lab 7

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ECE218-L01

Lab Date: 12 Apr 21

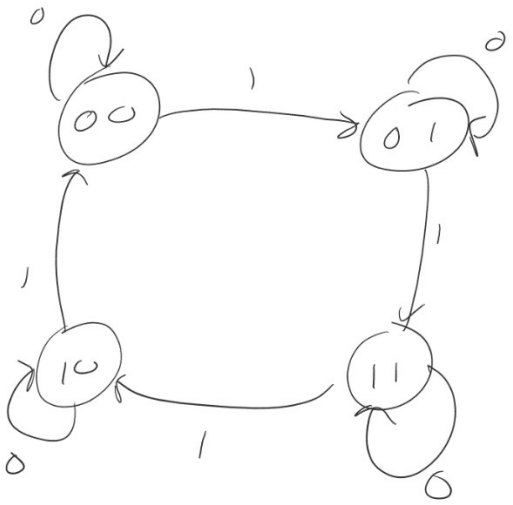
Dr. Borkar

Due Date: 12 Apr 21

TA: Muyu Yang

Preliminary Questions:

1. A 10-bit binary counter goes through 1024 different states.
2.



Present State		Next State (AB)	
a	b	EN=0	EN=1
0	0	00	01
0	1	01	11
1	1	11	10
1	0	10	00

3.

EN\ab	00	01	11	10
0	0	0	1	1
1	0	1	1	0

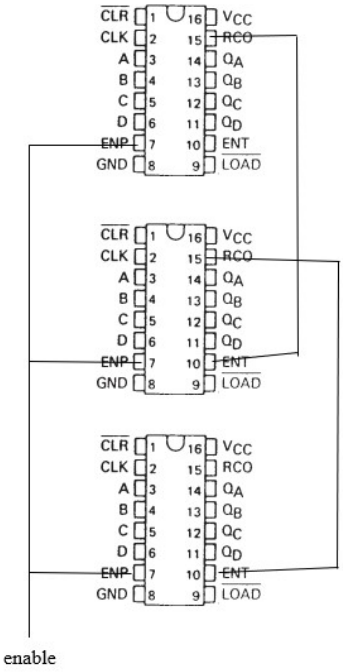
A=ENb + EN'a

EN\ab	00	01	11	10
0	0	1	1	0
1	1	1	0	0

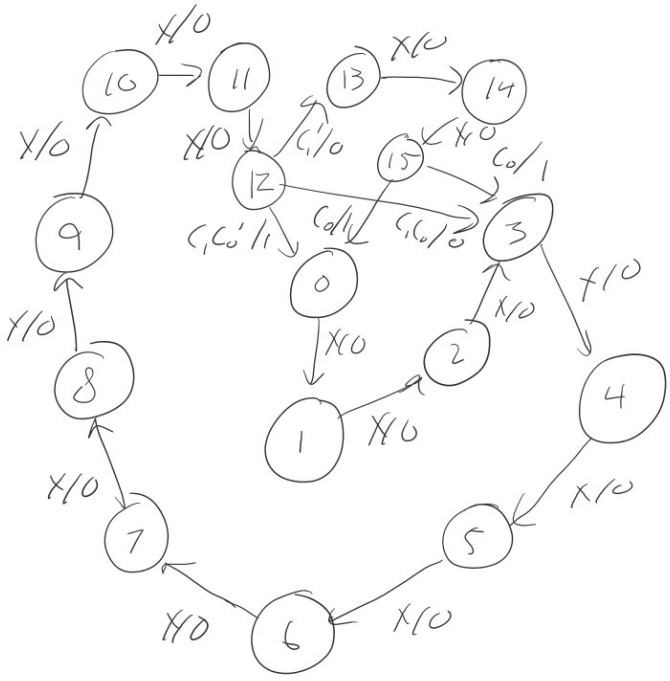
B=EN'b + ENa'

See schematic

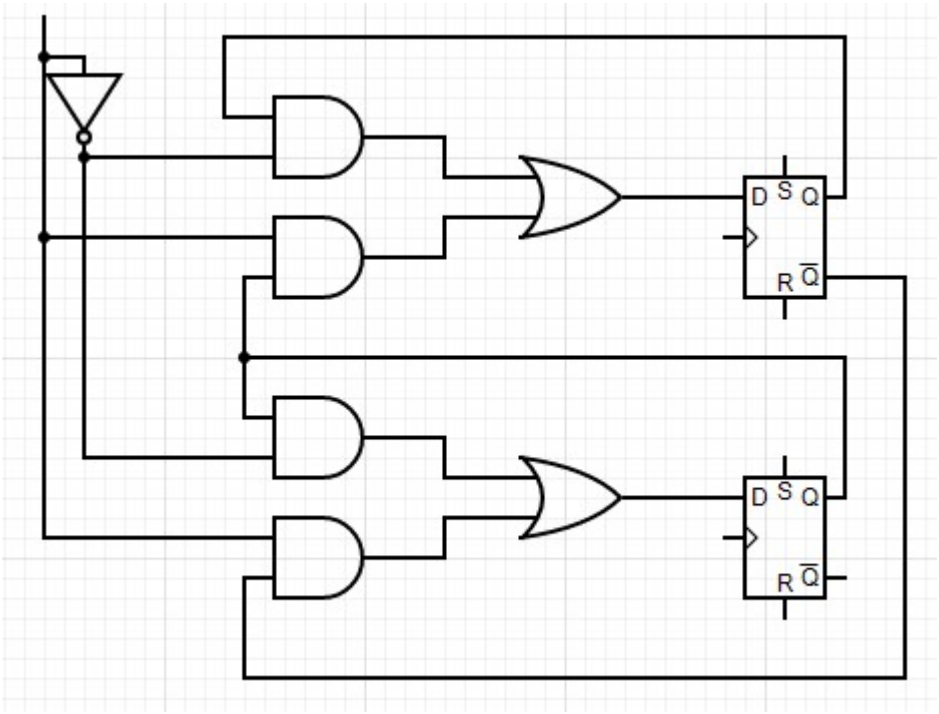
4.


CLR 1 16 VCC
CLK 2 15 RCO
A 3 14 QA
B 4 13 QB
C 5 12 QC
D 6 11 QD
ENP 7 10 ENT
GND 8 9 LOAD
CLR 1 16 VCC
CLK 2 15 RCO
A 3 14 QA
B 4 13 QB
C 5 12 QC
D 6 11 QD
ENP 7 10 ENT
GND 8 9 LOAD
CLR 1 16 VCC
CLK 2 15 RCO
A 3 14 QA
B 4 13 QB
C 5 12 QC
D 6 11 QD
ENP 7 10 ENT
GND 8 9 LOAD
enable

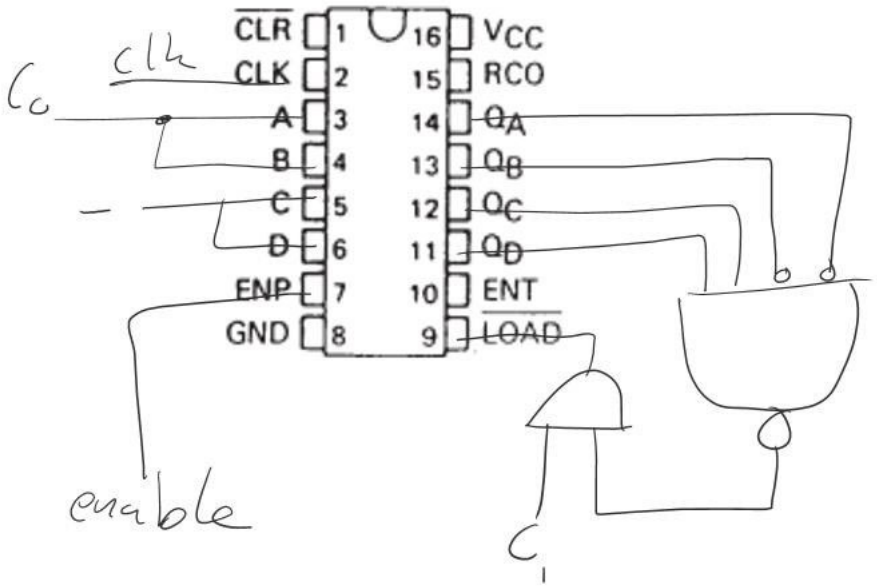
5.


10
11
13
14
12
15
9
3
0
2
8
1
4
7
5
6
X/0
C,1/0
Co/1
C,Co'/1
Co/1
C,Co/0

Schematics

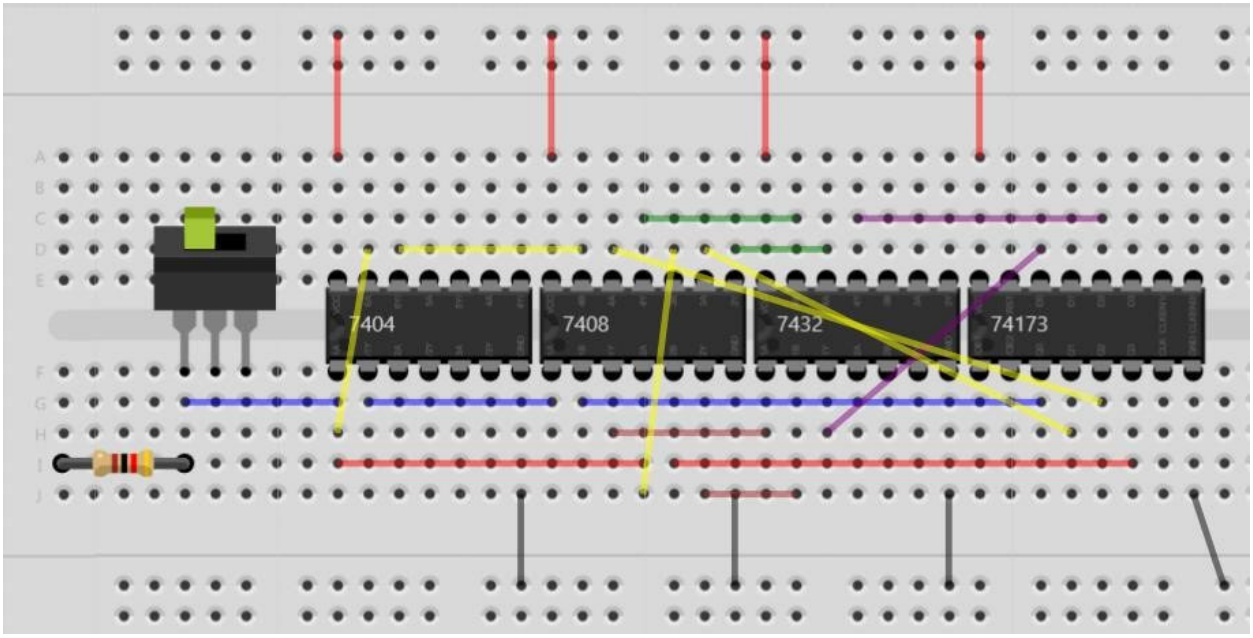


2-Bit Gray Code Counter

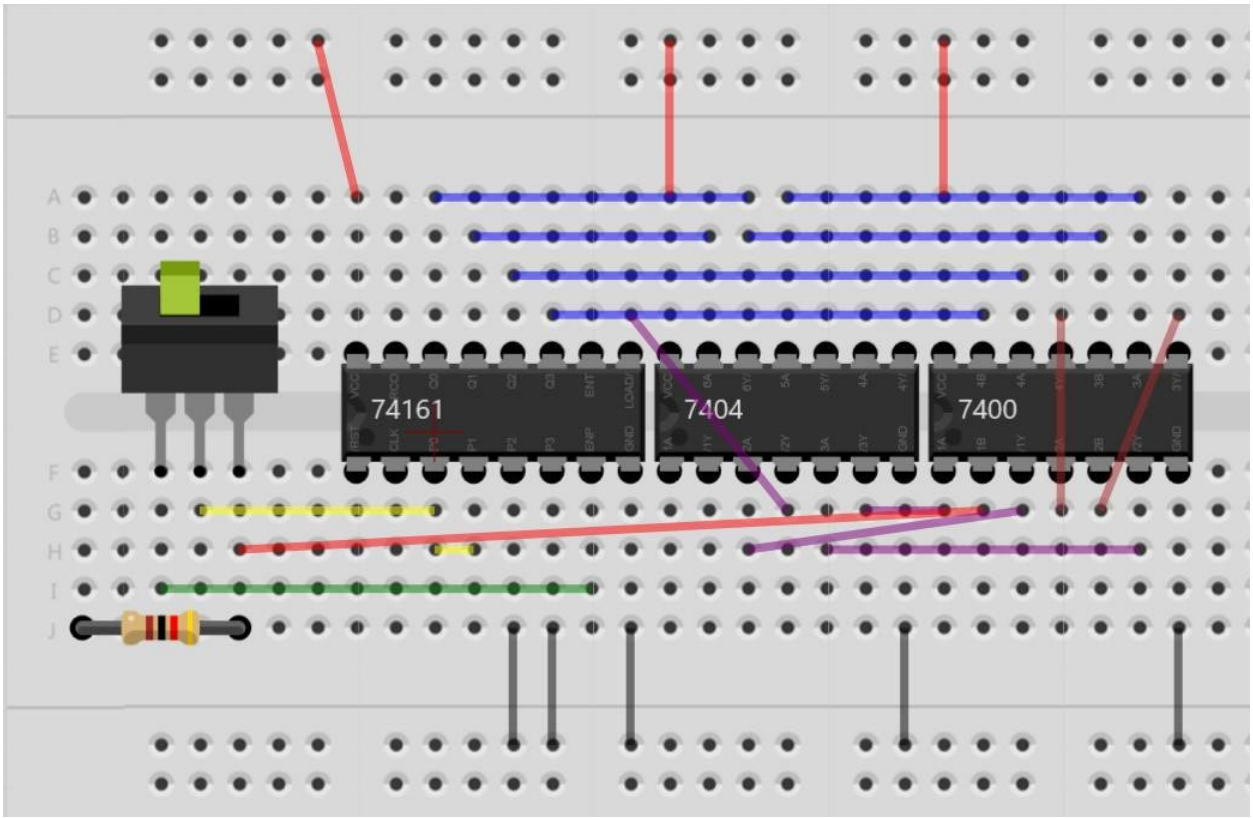


Specialized Counter

Breadboards



2-Bit Gray Code Counter



Specialized Counter

Data Sheet

2-bit Gray Code Counter

Input	Output

C_0	C_1	Input	Output
0	0		
0	1		
1	0		
1	1		