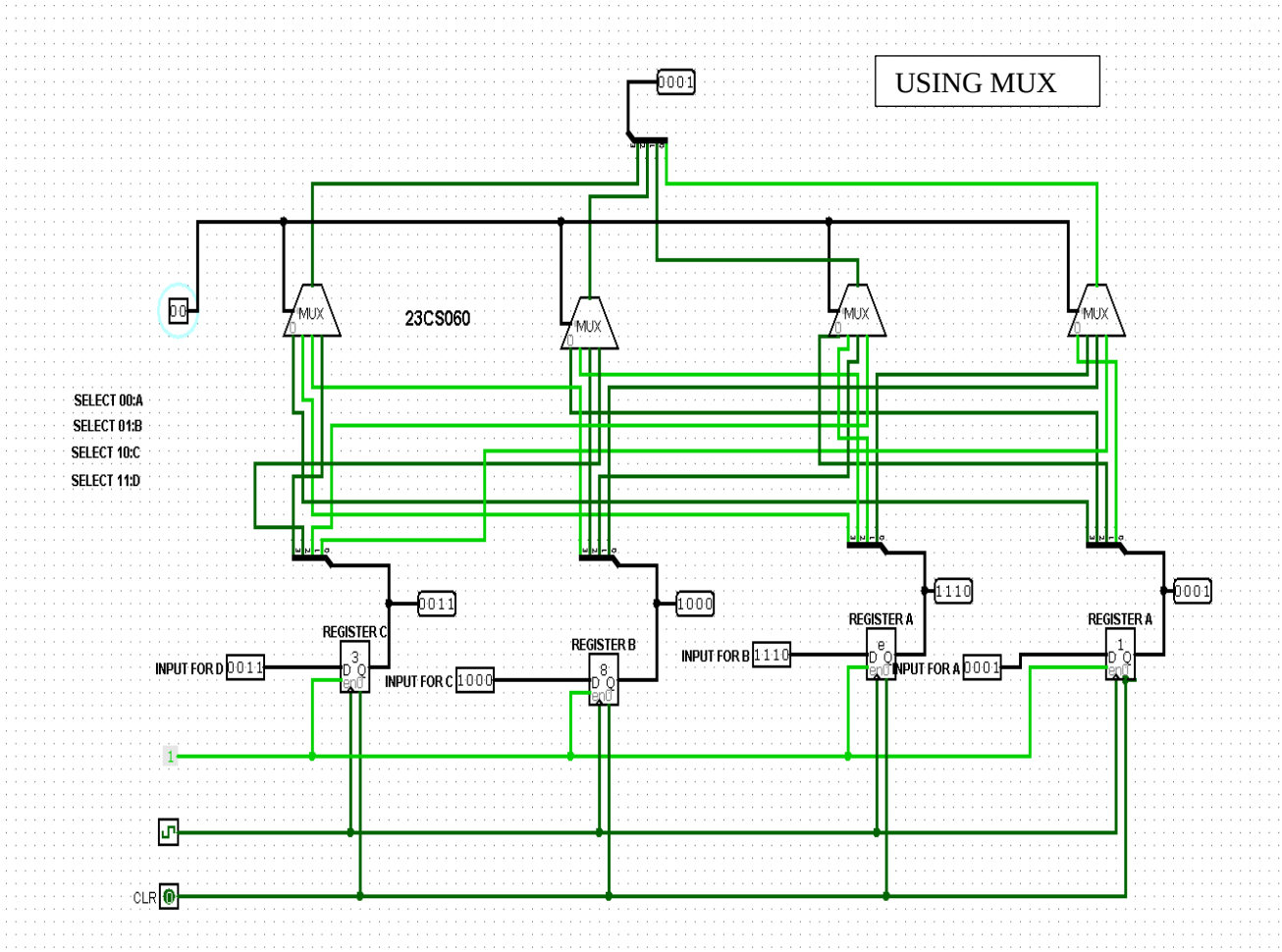
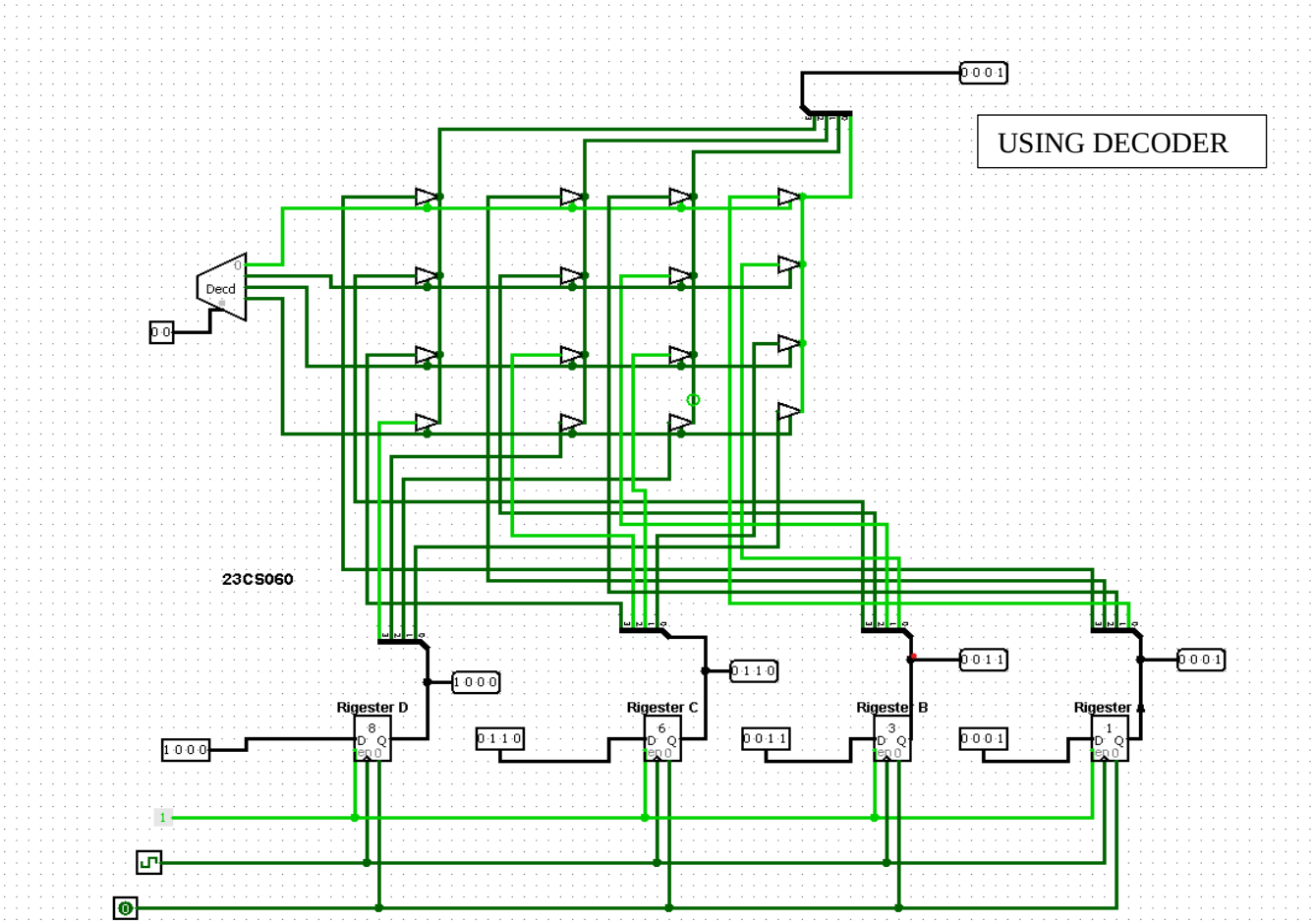
Date:

EXPERIMENT NO. 3

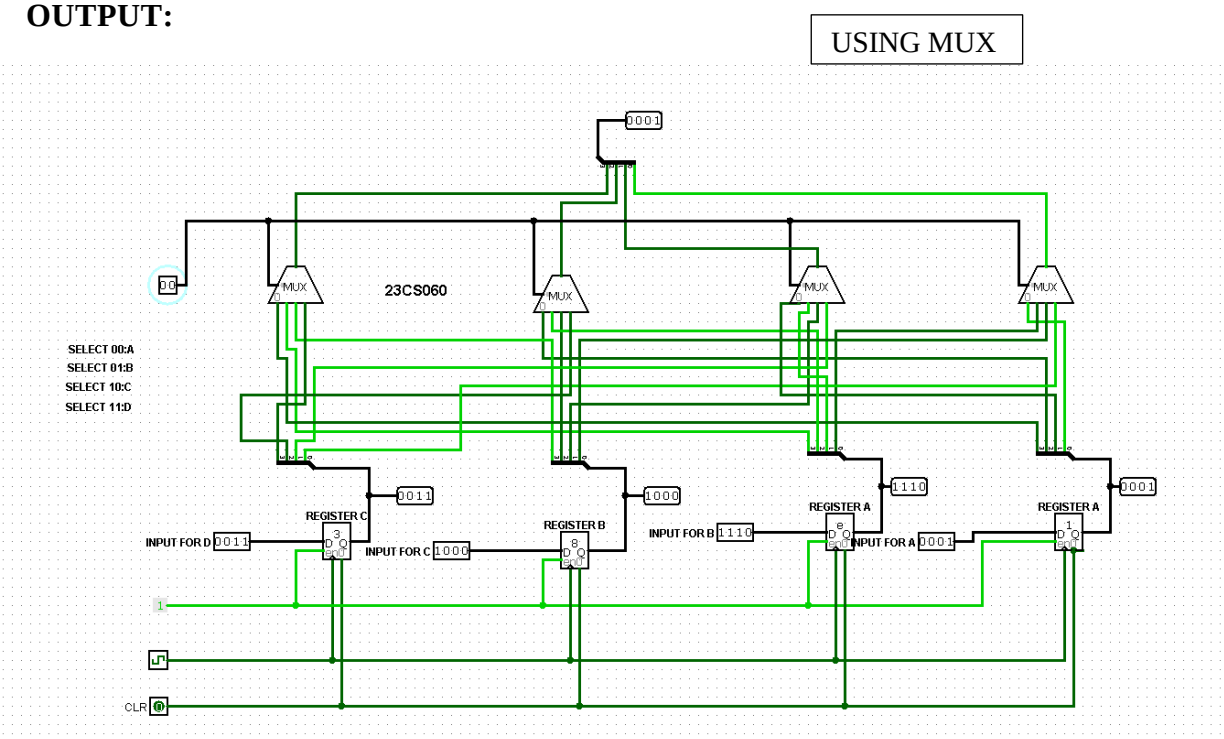
AIM: Implement a 4-bit common bus system to interface four 4-bit registers with a common bus using i. Multiplexer and ii. Decoder and tristate buffers.

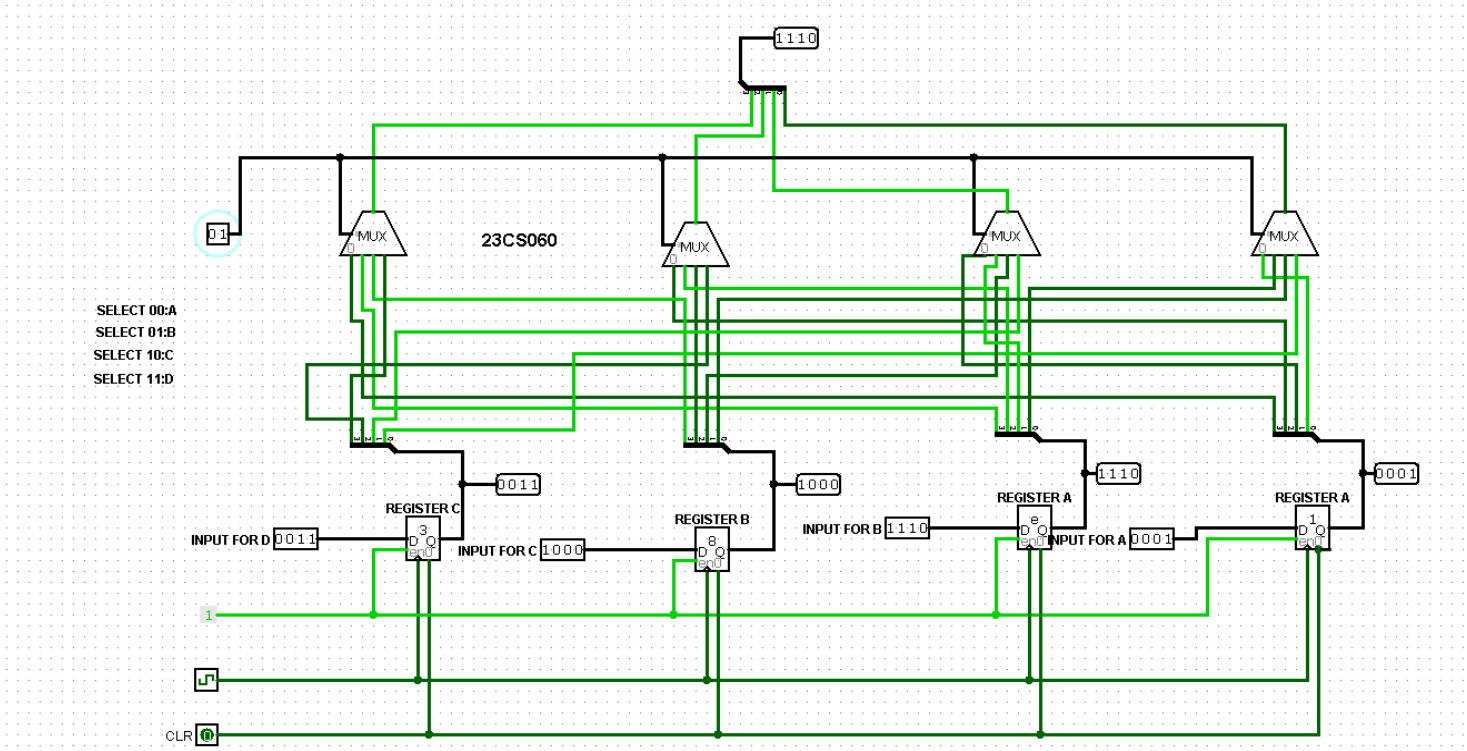
CIRCUITS:

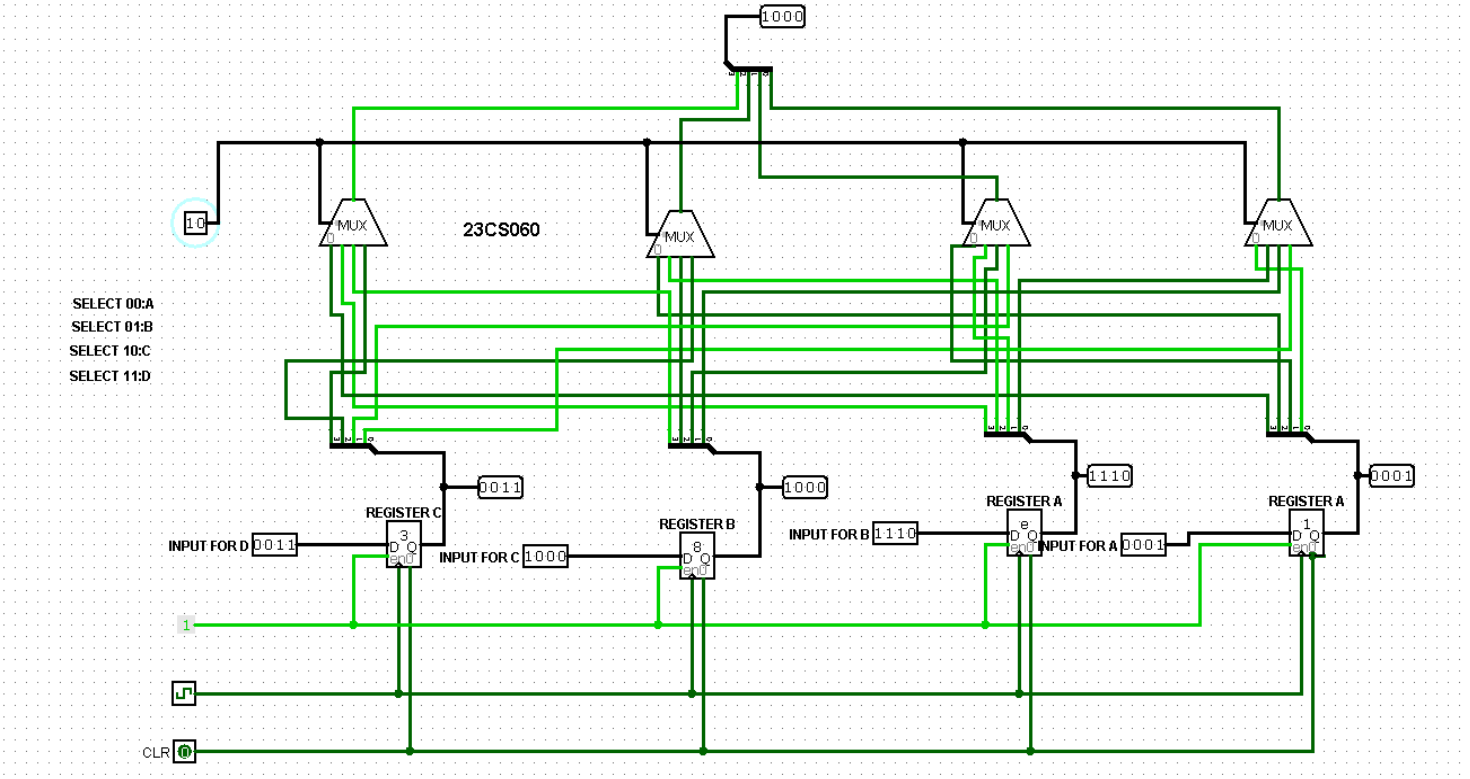


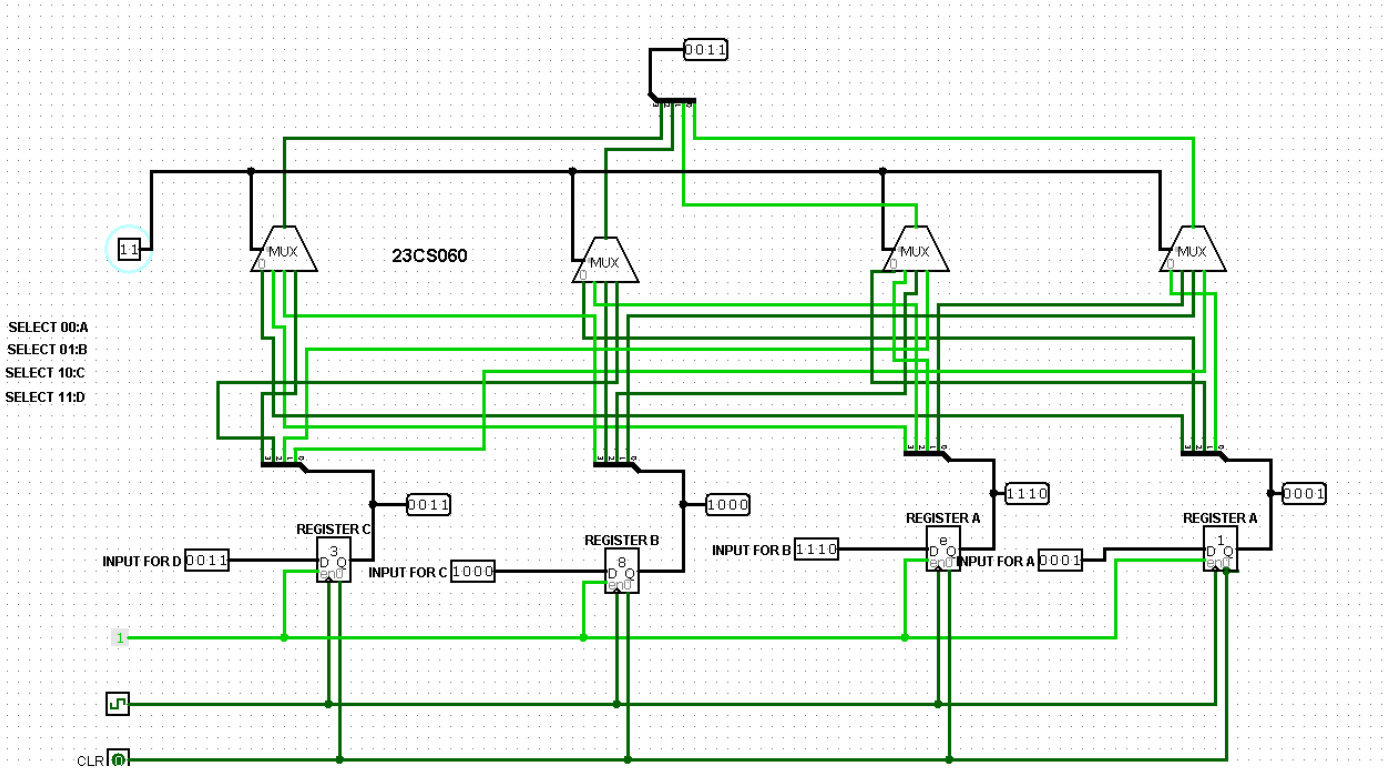

USING DECODER
Decd
23CS060
Rigester D
Rigester C
Rigester B
Rigester A

OUTPUT:

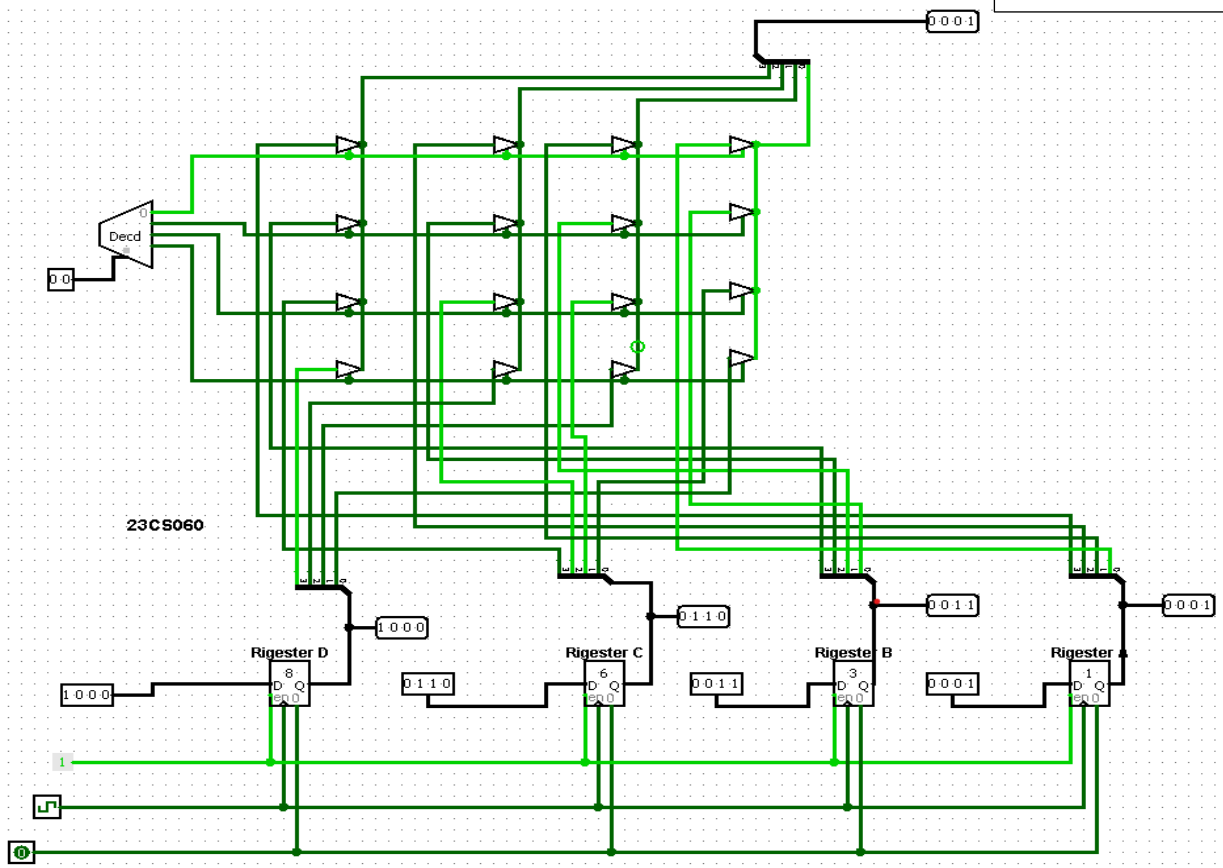

USING MUX
MUX
23CS060
SELECT 00:A
SELECT 01:B
SELECT 10:C
SELECT 11:D
REGISTER C
REGISTER B
REGISTER A
REGISTER A
INPUT FOR D
INPUT FOR C
INPUT FOR B
INPUT FOR A
CLR

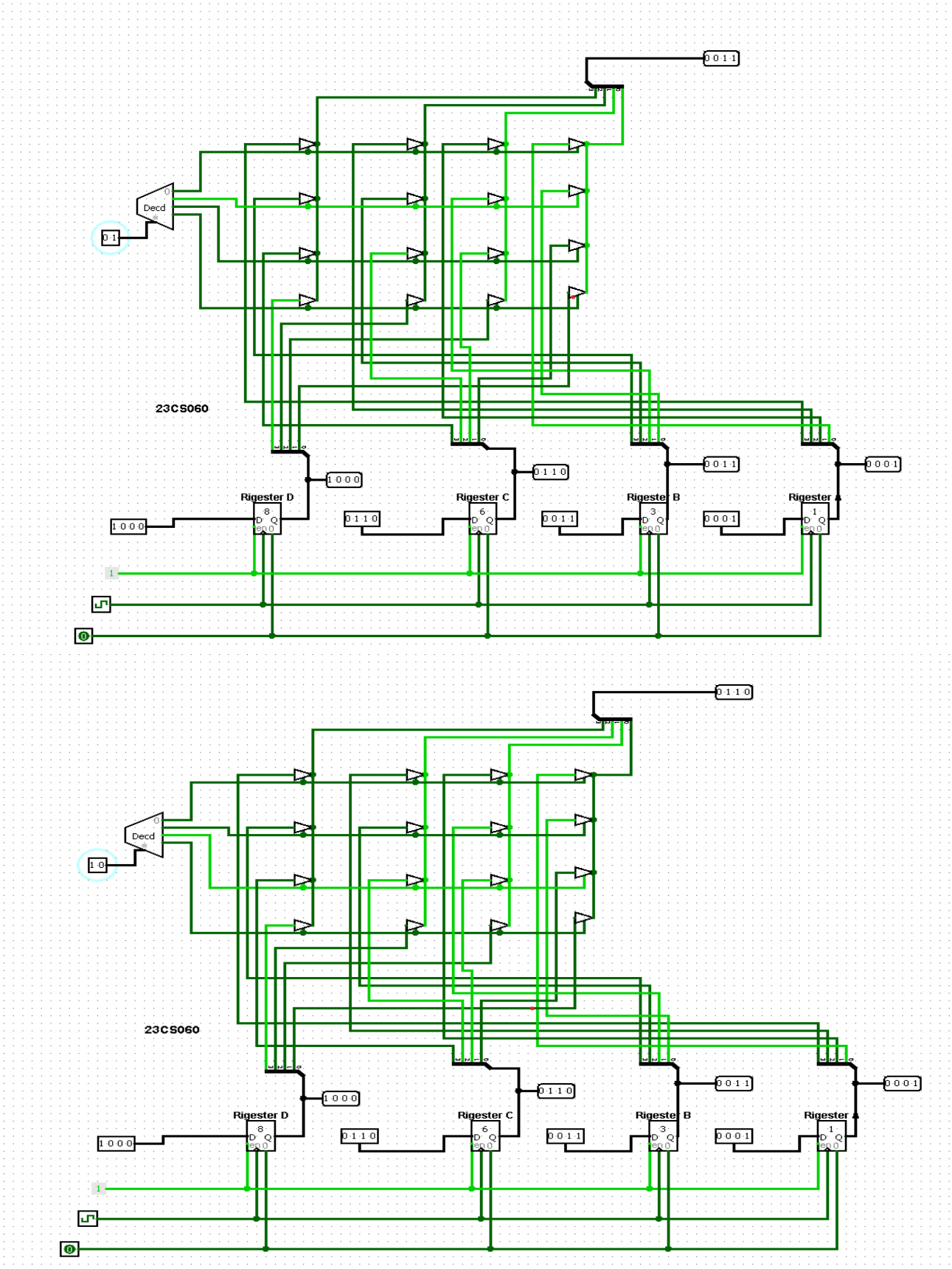

1110
01
MUX
23CS060
SELECT 00:A
SELECT 01:B
SELECT 10:C
SELECT 11:D
0011
1000
1110
0001
REGISTER C
REGISTER B
REGISTER A
REGISTER A
INPUT FOR D 0011
INPUT FOR C 1000
INPUT FOR B 1110
INPUT FOR A 0001
CLR

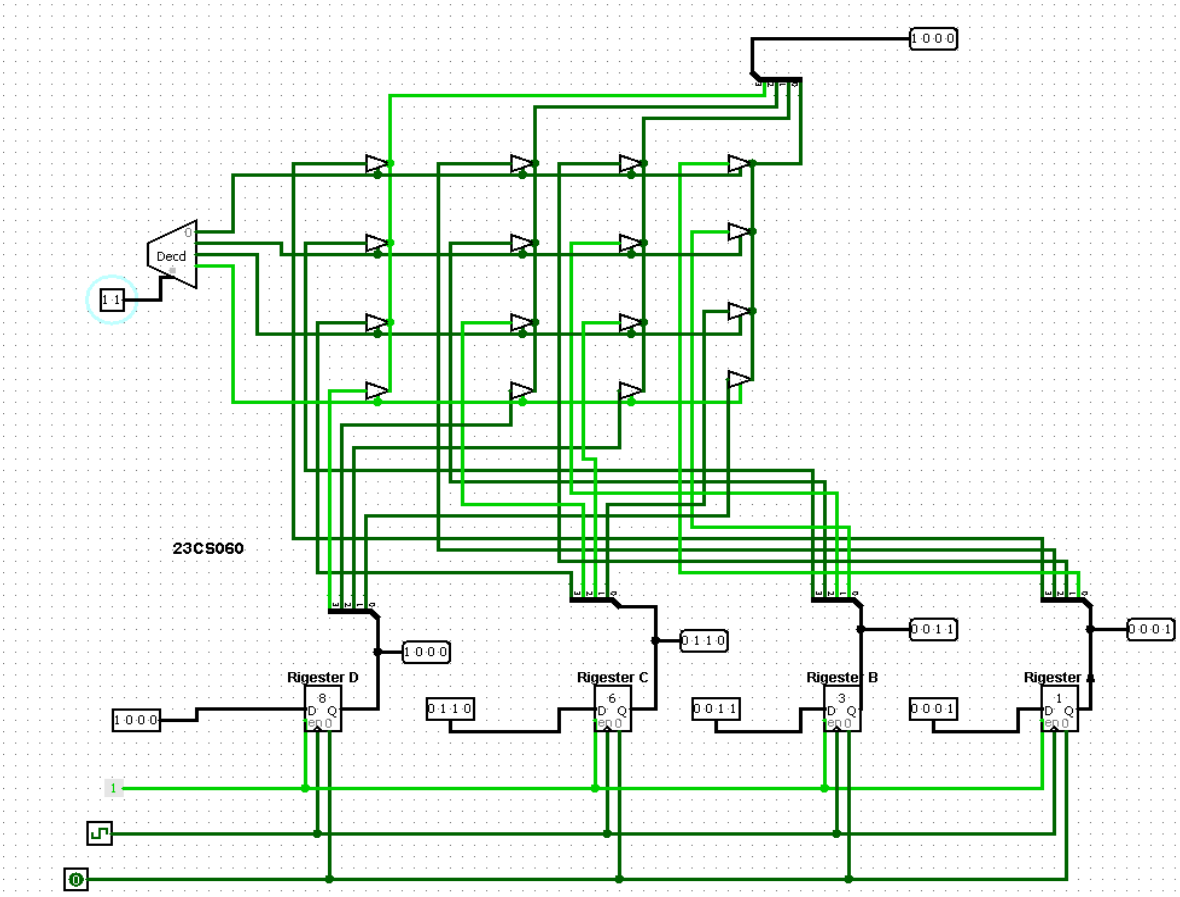

1000
10
MUX
23CS060
SELECT 00:A
SELECT 01:B
SELECT 10:C
SELECT 11:D
0011
1000
1110
0001
REGISTER C
REGISTER B
REGISTER A
REGISTER A
INPUT FOR D 0011
INPUT FOR C 1000
INPUT FOR B 1110
INPUT FOR A 0001
CLR



USING DECOEDR




0011
Decd
01
23CS060
1000
0110
0011
0001
Rigester D
Rigester C
Rigester B
Rigester A
8
6
3
1
1000
0110
0011
0001
1
0110
Decd
10
23CS060
1000
0110
0011
0001
Rigester D
Rigester C
Rigester B
Rigester A
8
6
3
1
1000
0110
0011
0001
1

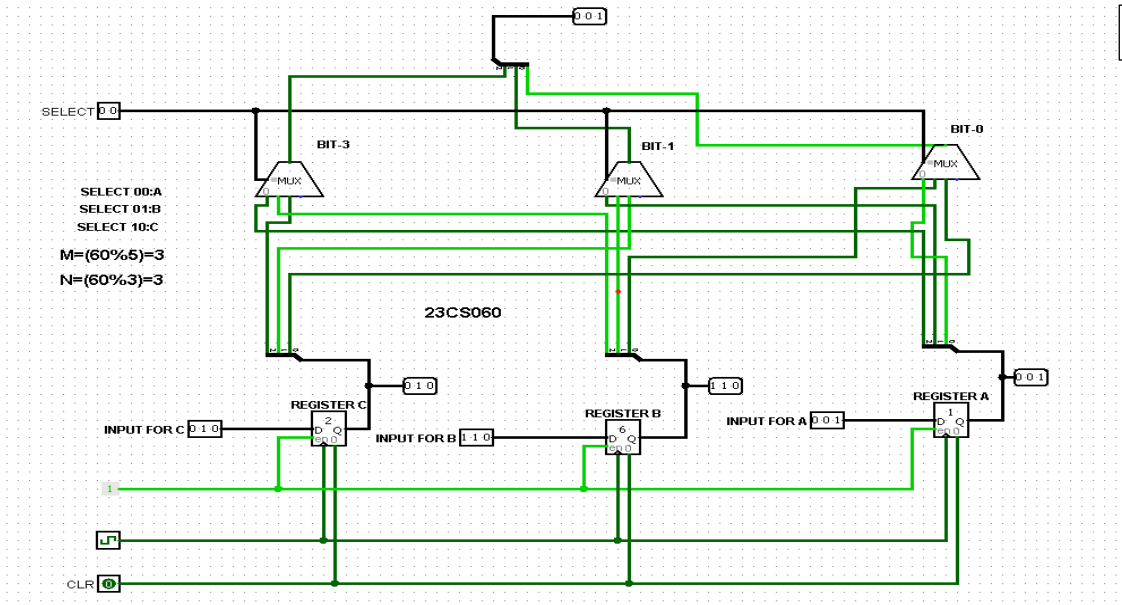


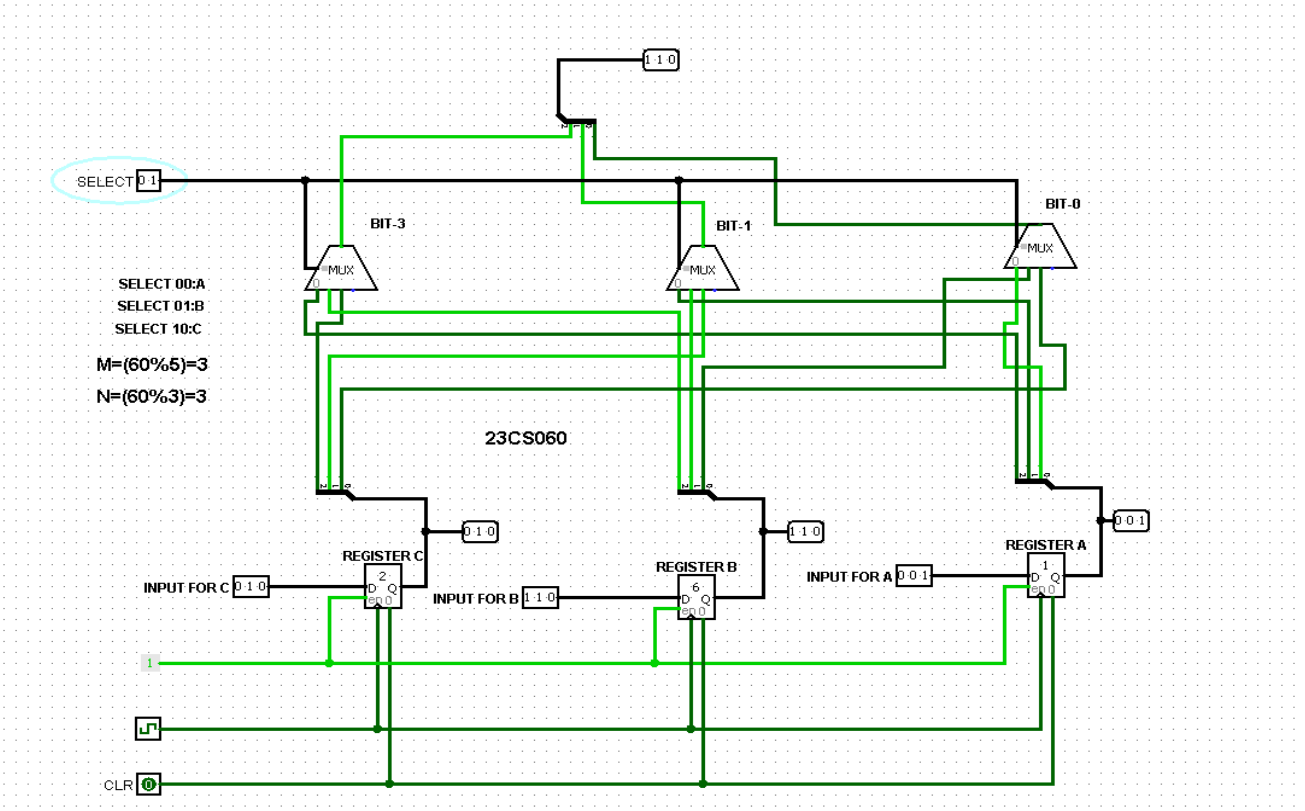
POST SESSION EXCERCISES:

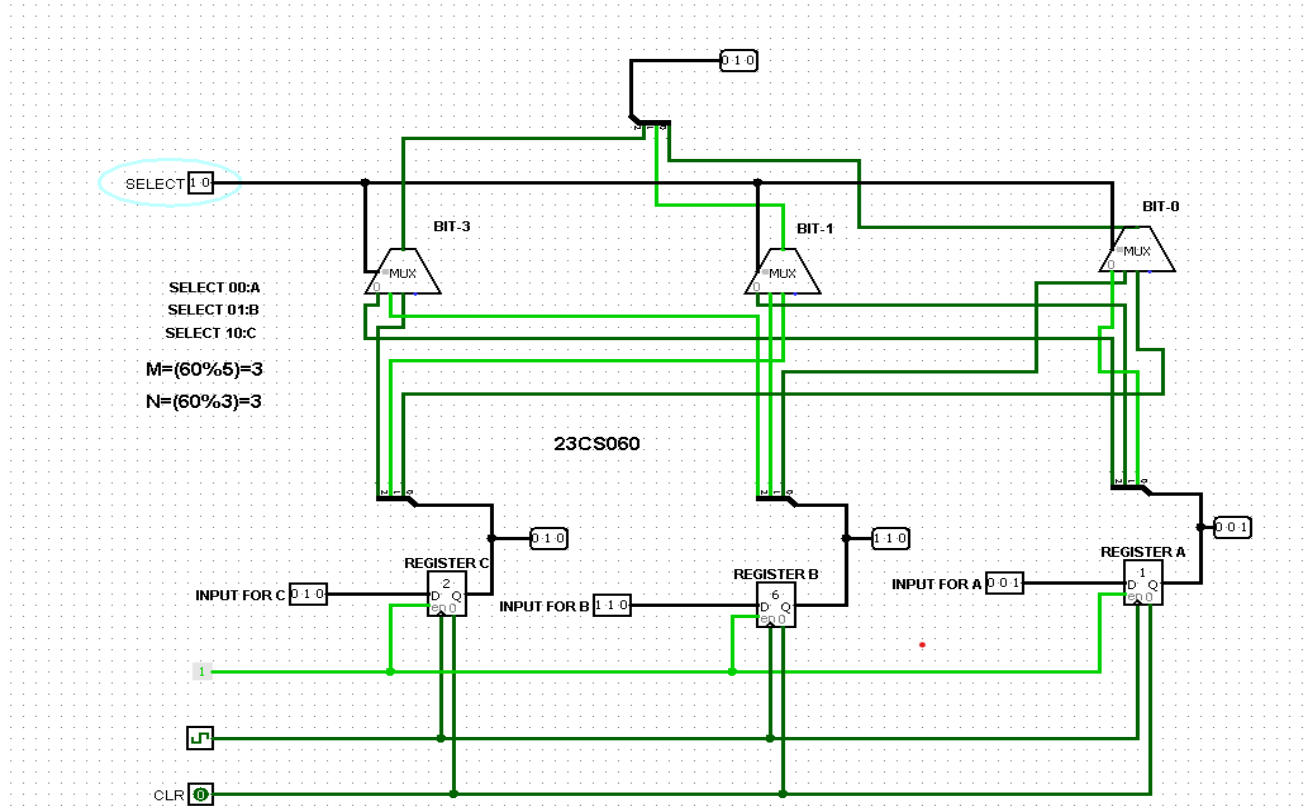
1. Find a number M=(MOD(Last Three Digits of your enrolment number, 5)+3) and find a number N=(MOD(Last Three Digits of your enrolment number, 3)+3). Implement a M-bit common bus system to interface N M-bit registers with a common bus using i. Multiplexer and ii. Decoder and tristate buffers

2. CICUITS WITH OUTPUT:

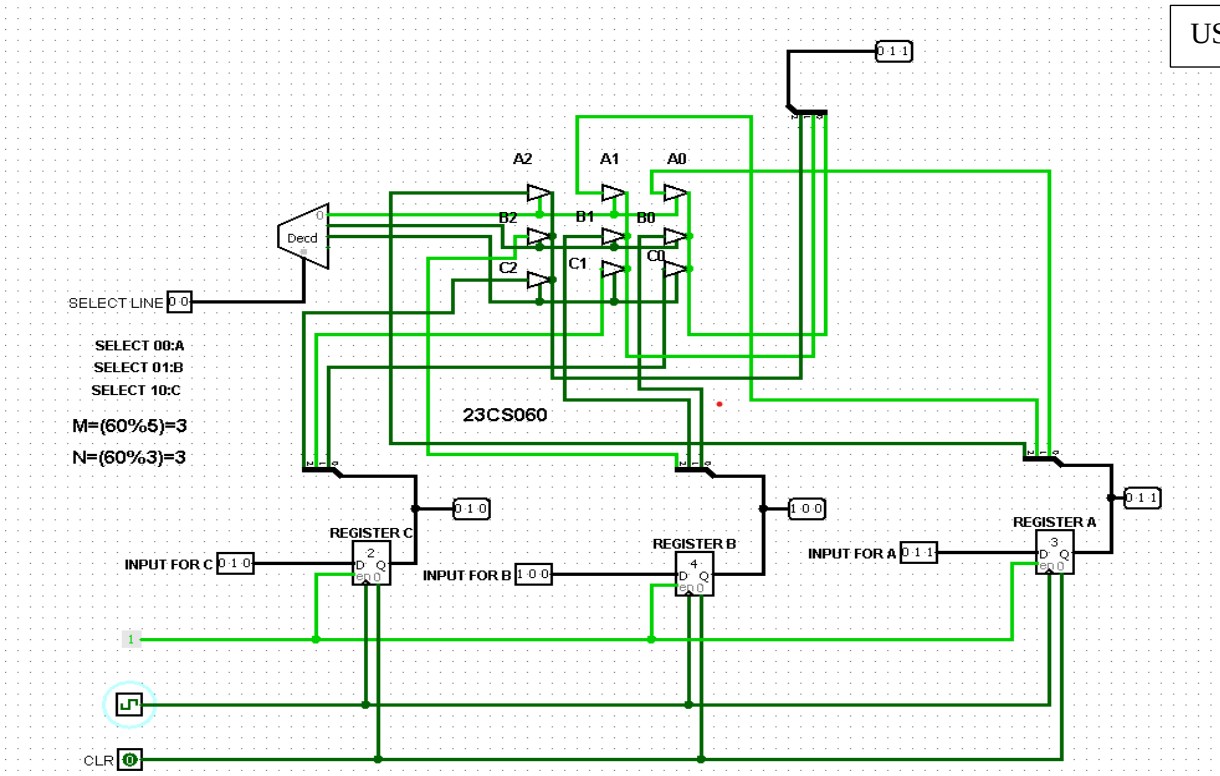
USING MUX

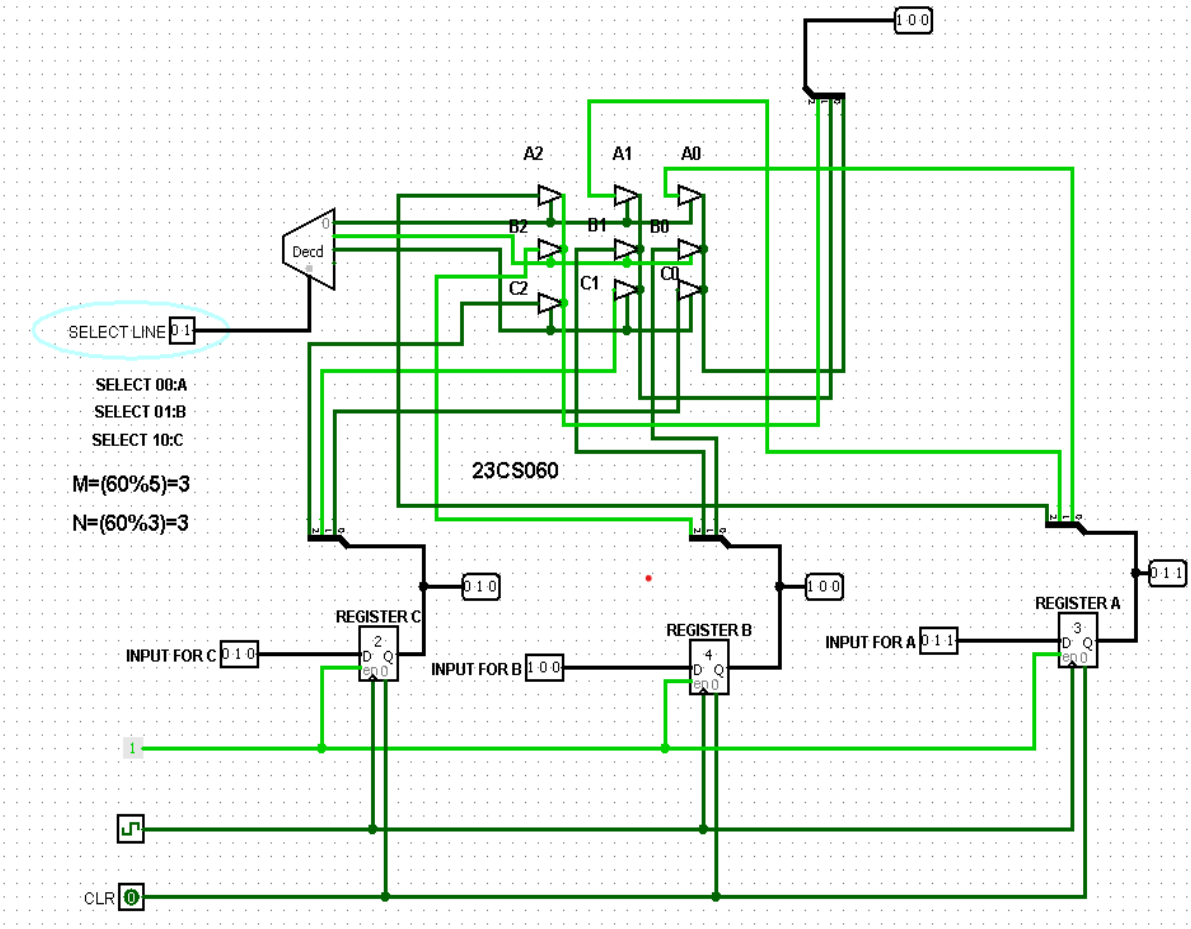


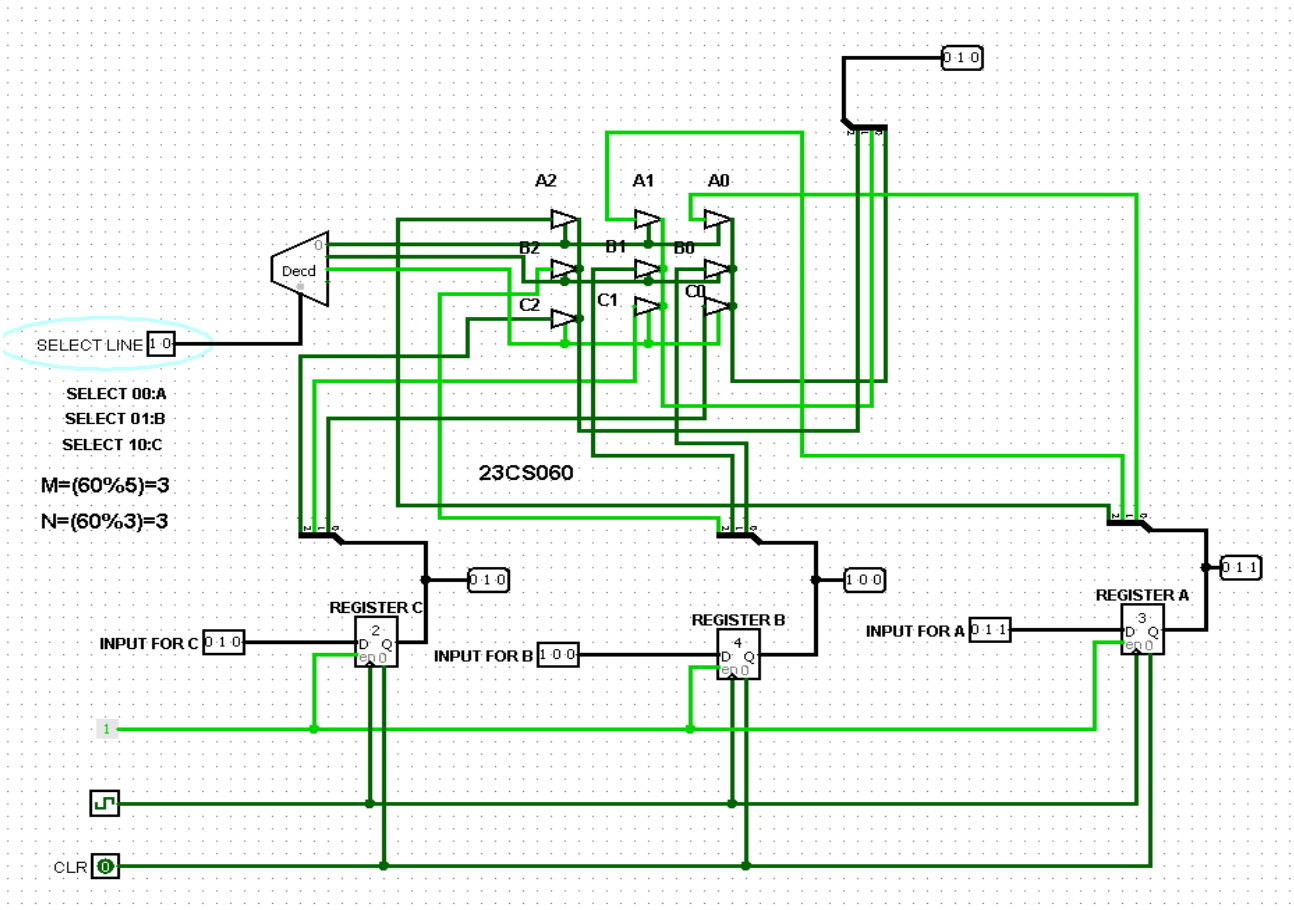

SELECT
BIT-3
BIT-1
BIT-0
MUX
SELECT 00:A
SELECT 01:B
SELECT 10:C
M=(60%5)=3
N=(60%3)=3
23CS060
REGISTER C
REGISTER B
REGISTER A
INPUT FOR C
INPUT FOR B
INPUT FOR A
CLR


SELECT
BIT-3
BIT-1
BIT-0
MUX
SELECT 00:A
SELECT 01:B
SELECT 10:C
M=(60%5)=3
N=(60%3)=3
23CS060
REGISTER C
REGISTER B
REGISTER A
INPUT FOR C
INPUT FOR B
INPUT FOR A
CLR

USING DECODER






A2
A1
A0
B2
B1
B0
C2
C1
C0
Decd
SELECT LINE
SELECT 00:A
SELECT 01:B
SELECT 10:C
M=(60%5)=3
N=(60%3)=3
23CS060
REGISTER C
REGISTER B
REGISTER A
INPUT FOR C
INPUT FOR B
INPUT FOR A
CLR

CONCLUSION