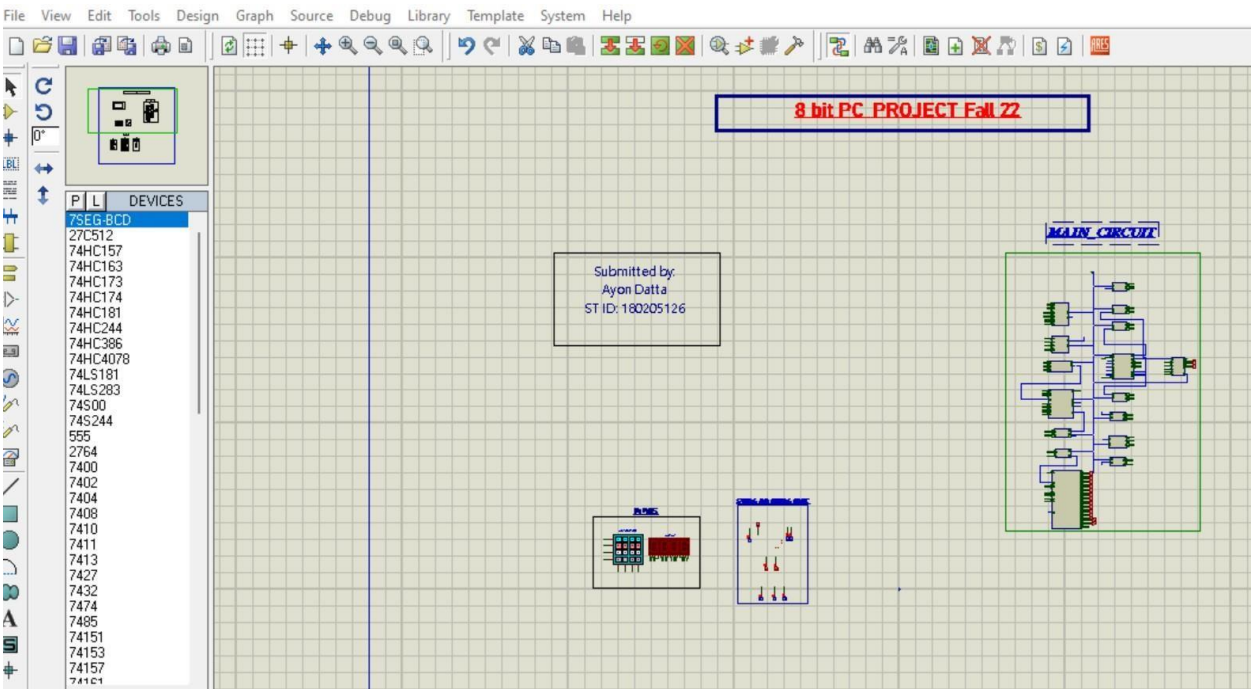
Modified Simple As Possible Computer (MSAP)

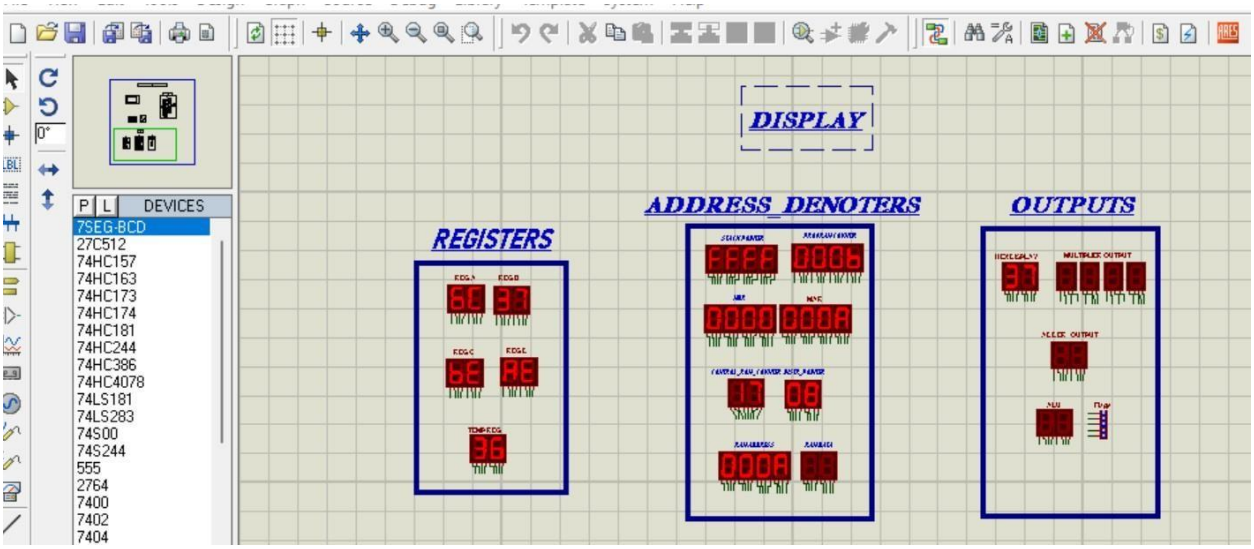
According to my Student ID (180205126), My assigned group is ‘H’ . Point to be noted that I took ‘MOV C,BE’ in 6th line instruction instead of the given one to avoid any overlapping issue during the simulation.

180205126	H

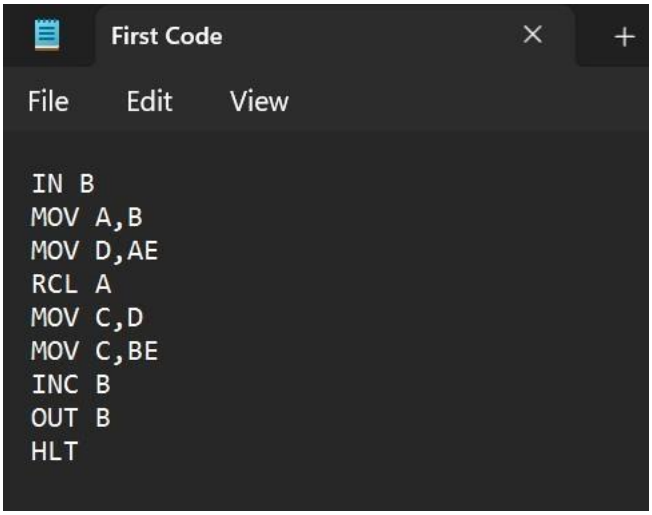
Group - H

Opcode	Instruction
00	IN B
01	MOV A, B
02	MOV D, byte
03	RCL A
04	MOV C, D
05	MOV D, byte
06	INC B
07	OUT B
08	HLT


File View Edit Tools Design Graph Source Debug Library Template System Help
8 bit PC PROJECT Fall 22
Submitted by:
Ayon Datta
ST ID: 180205126
MAIN_CIRCUIT
P L DEVICES
7SEG-BCD
27C512
74HC157
74HC163
74HC173
74HC174
74HC181
74HC244
74HC386
74HC4078
74LS181
74LS283
74S00
74S244
555
2764
7400
7402
7404
7408
7410
7411
7413
7427
7432
7474
7485
74151
74153
74157


DISPLAY
REGISTERS
ADDRESS_DENOTERS
OUTPUTS
P L DEVICES
7SEG-BCD
27C512
74HC157
74HC163
74HC173
74HC174
74HC181
74HC244
74HC386
74HC4078
74LS181
74LS283
74S00
74S244
555
2764
7400
7402
7404

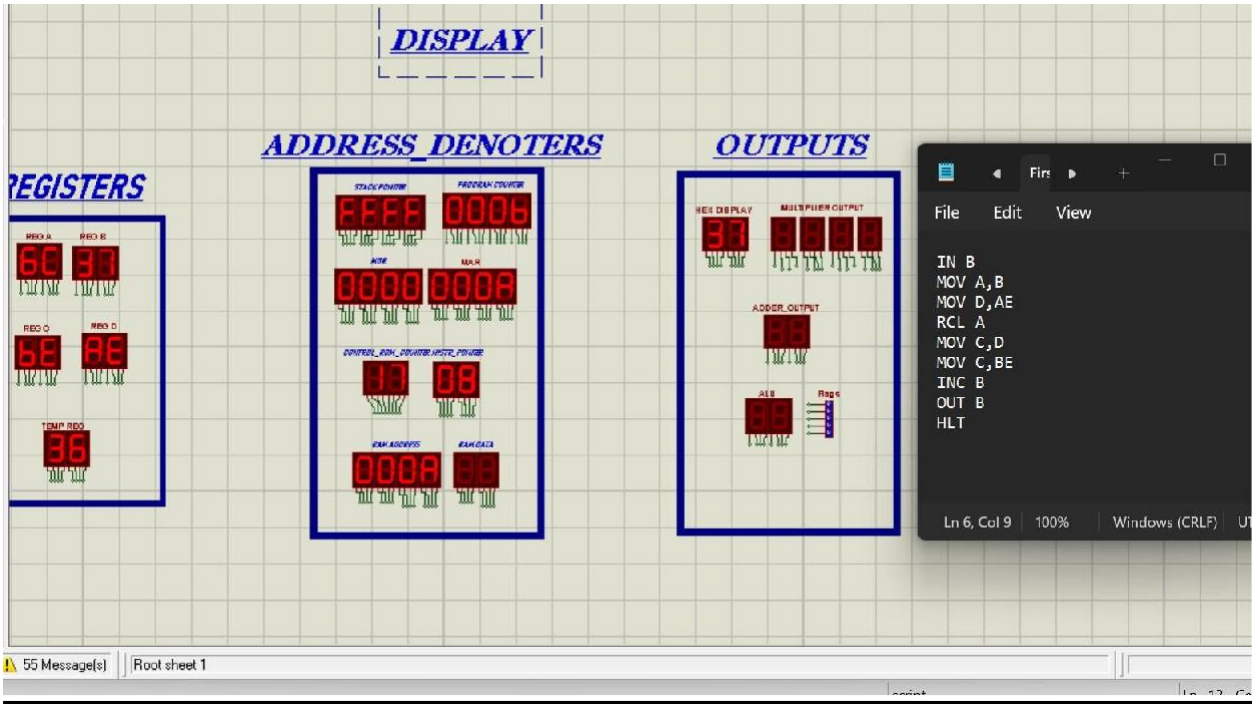
For input 36



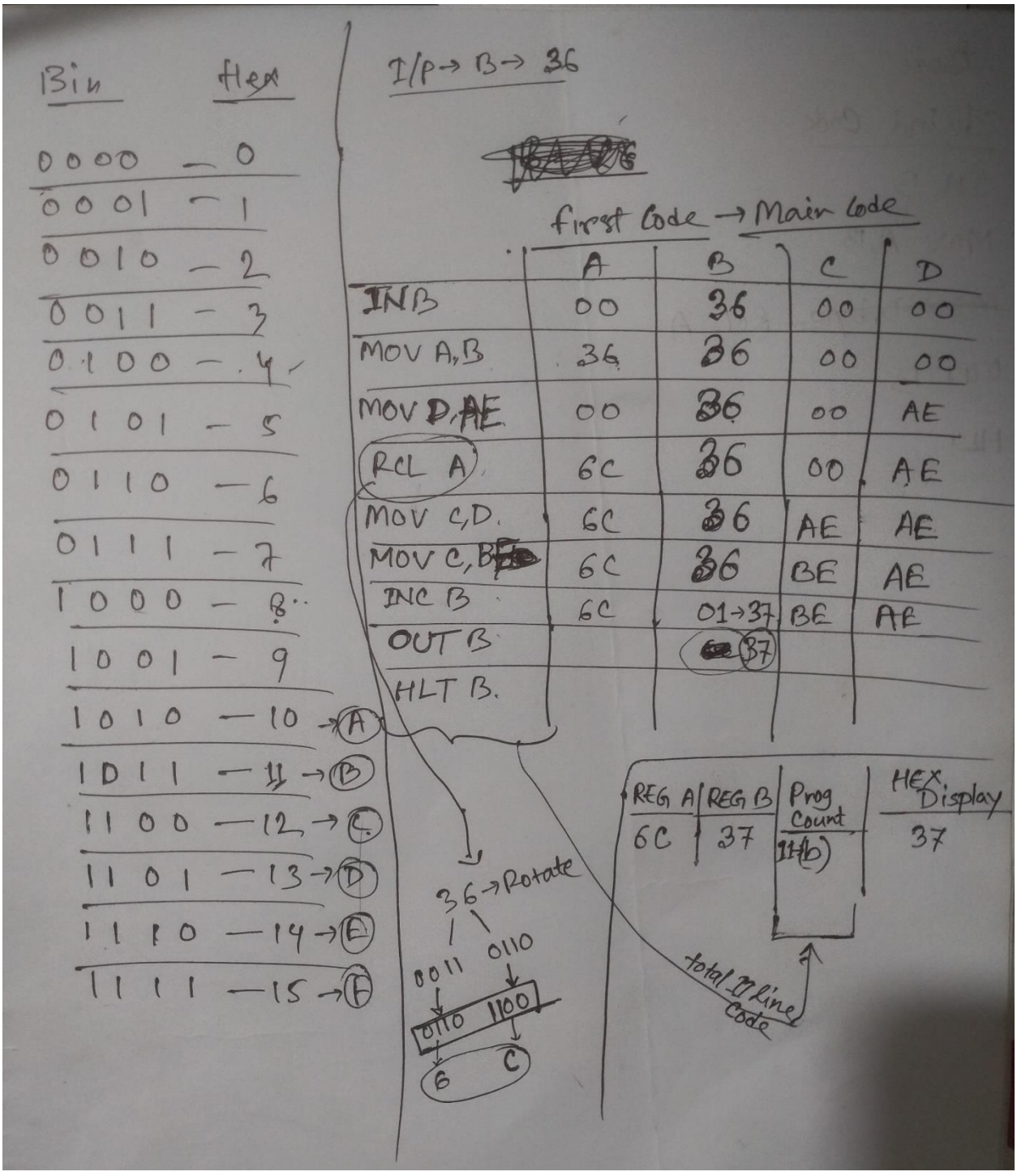
Registers values for input B=36

Instructions	*A*	*B*	*C*	*D*
IN B	00	36	00	00
MOV A, B	36	36	00	00
MOV D, AE	00	36	00	AE
RCL A	***6C***	36	00	AE
MOV C,D	6C	36	AE	AE
MOV C,BE	6C	36	BE	AE
INC B	6C	37	BE	AE
OUT B		***37***		
HLT				

For the final output 37 :-



As this is total 11 line instruction(code), so ‘Program Counter’ is showing ‘B (1011)’.

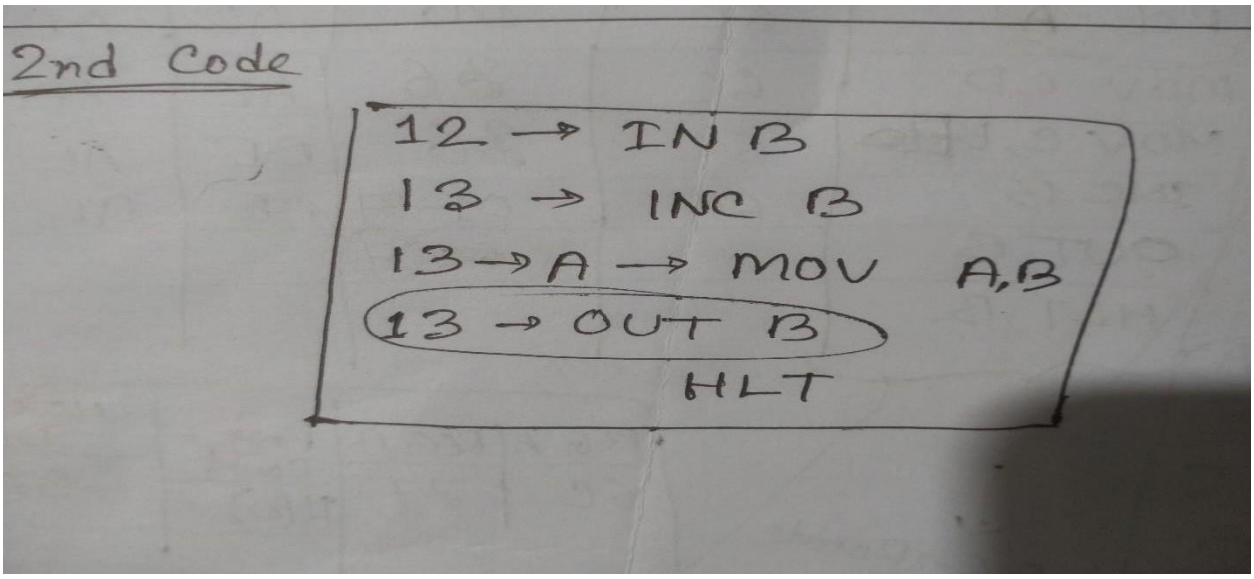

Bin Hex
0000 – 0
0001 – 1
0010 – 2
0011 – 3
0100 – 4
0101 – 5
0110 – 6
0111 – 7
1000 – 8
1001 – 9
1010 – 10 → A
1011 – 11 → B
1100 – 12 → C
1101 – 13 → D
1110 – 14 → E
1111 – 15 → F
I/P → B → 36
first Code → Main Code
A B C D
INB 00 36 00 00
MOV A,B 36 36 00 00
MOV D,AE 00 36 00 AE
RCL A 6C 36 00 AE
MOV C,D 6C 36 AE AE
MOV C,B 6C 36 BE AE
INC B 6C 01→37 BE AE
OUT B 37
HLT B.
REG A REG B Prog Count HEX Display
6C 37 11(b) 37
total 11 line Code
36 → Rotate
0011 0110
0110 1100
6 C

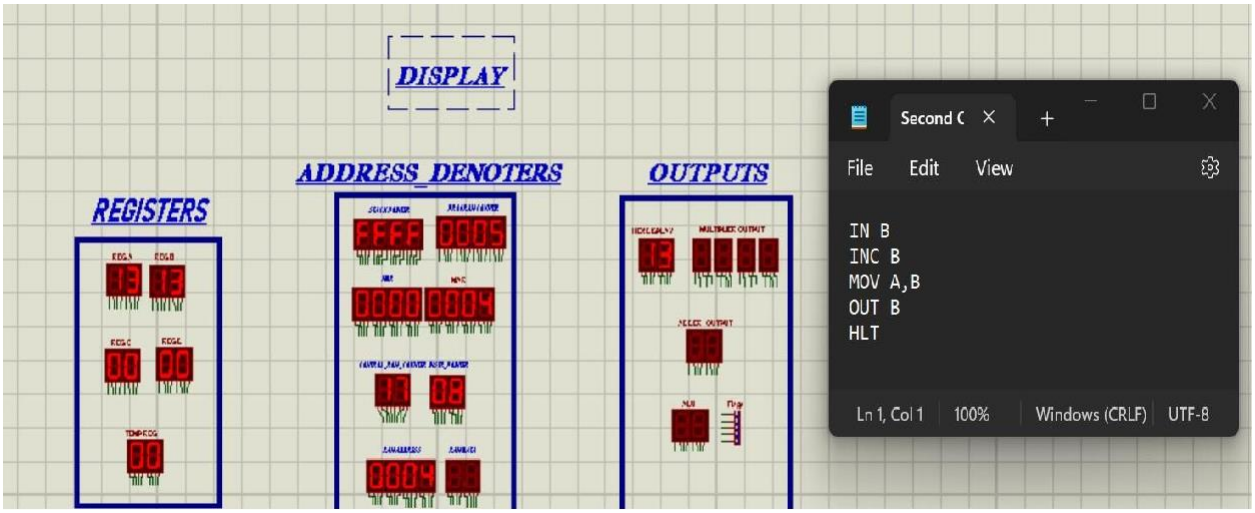
For input 12

Second Code

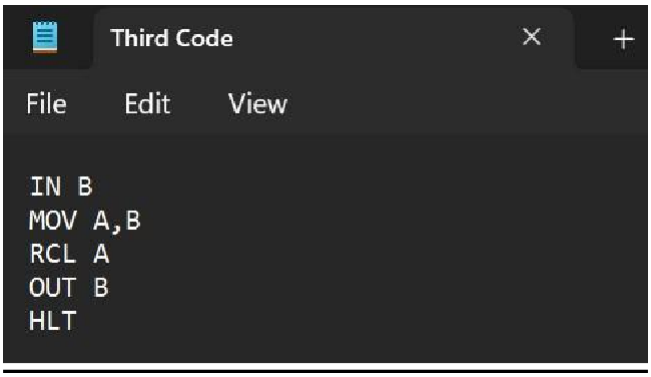
File Edit View

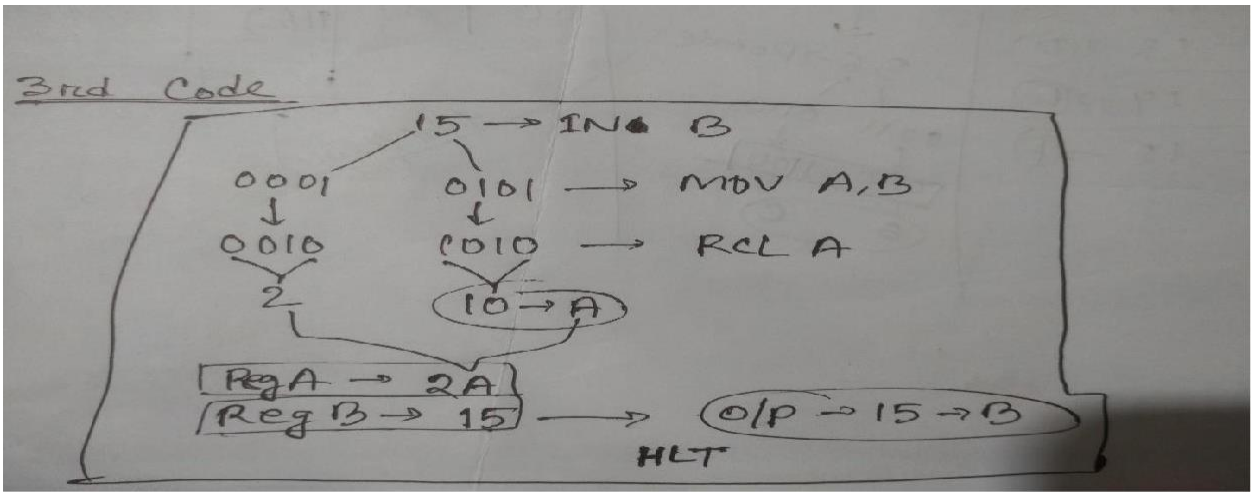
```
IN B
INC B
MOV A,B
OUT B
HLT
```

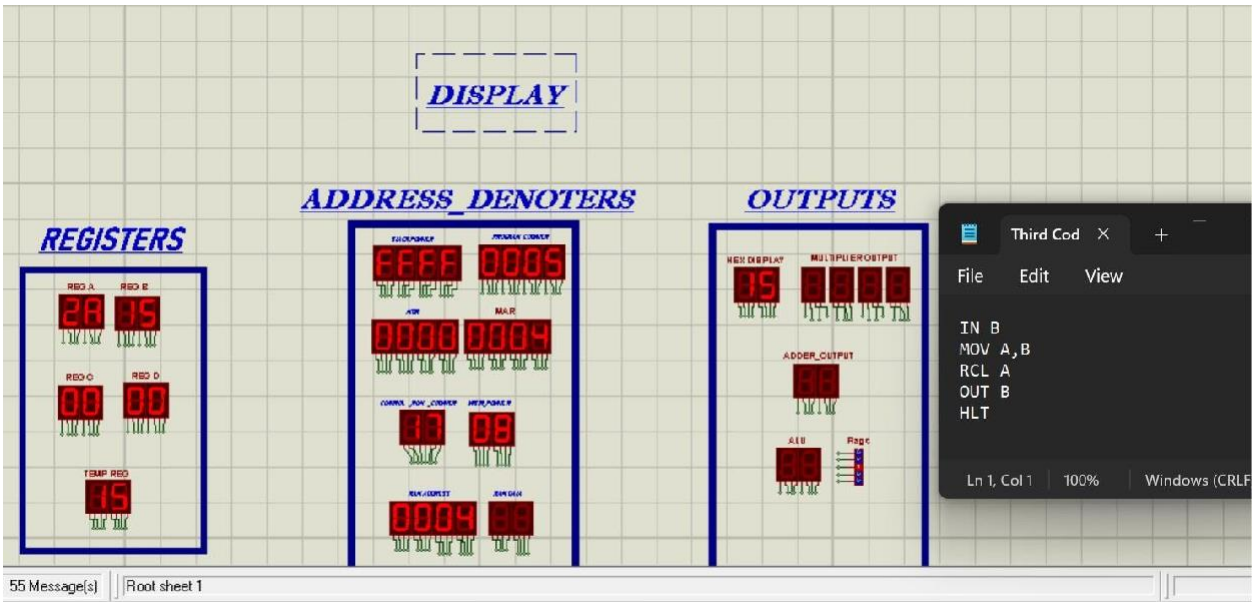




For input 15







So this is how all three inputs are verified.