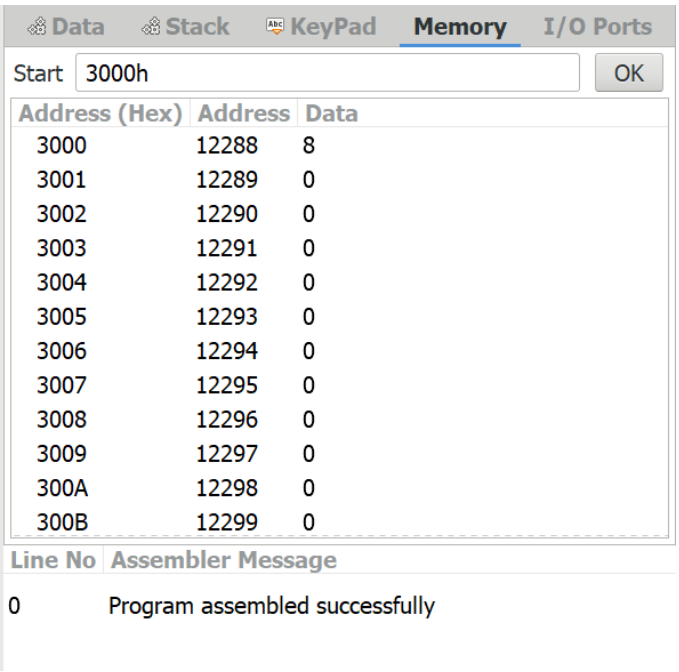
MIT ASSIGNMENT – 3

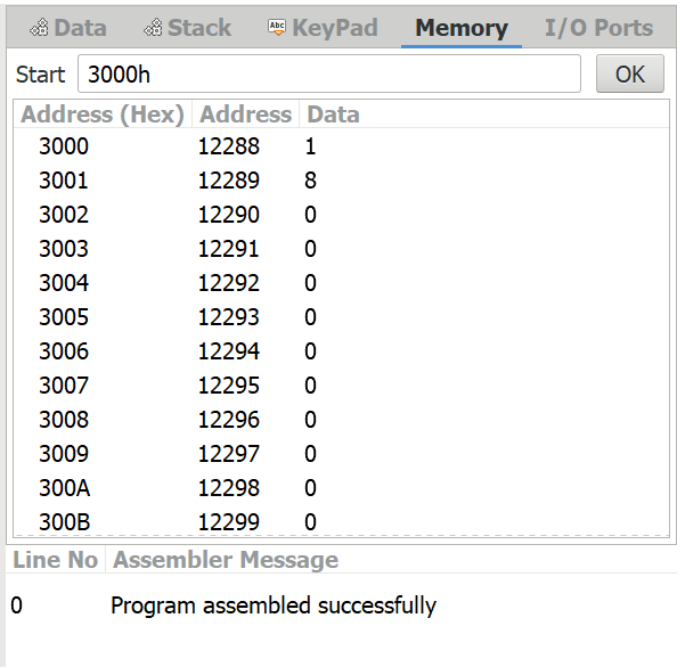
1. **Write a program to load the data byte A8H in register C. Mask the high-order bits(D7-D4), and display the low-order bits (D3-D0) at an output port.**

```
;Program1
;Masking higher order bits
mvi c,0A8h
mov a,c
ani 0Fh
sta 3000h
hlt
```



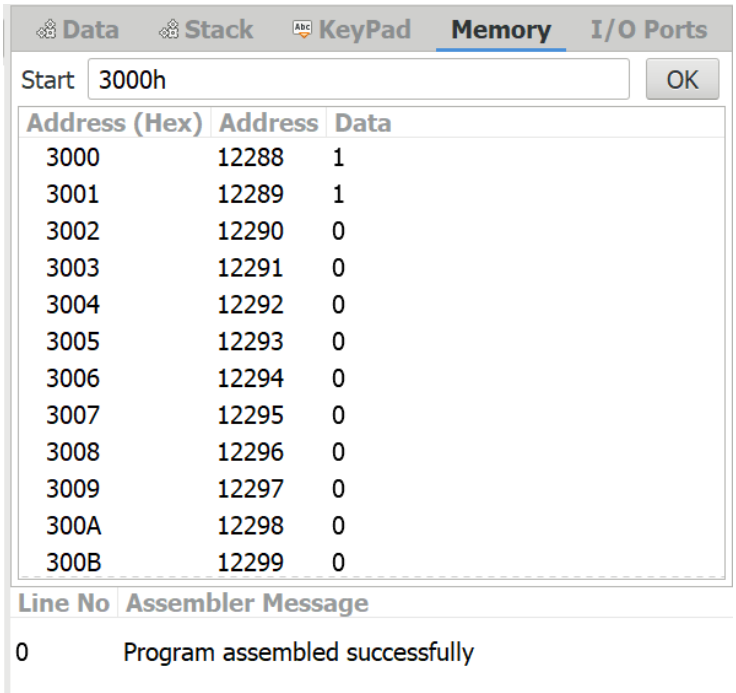
2. **Write a program to load the data byte 8EH in register D and F7H in register E. Mask the high-order bits (D7-D4) from both the data bytes, Exclusive-OR the low-order bits (D3-D0) and display the answer.**

```
;Program2
mvi d,8Eh
mvi e,0F7h
mov a,d
ani 0Fh
xri 0Fh
sta 3000h
mov a,e
ani 0Fh
xri 0Fh
sta 3001h
hlt
```



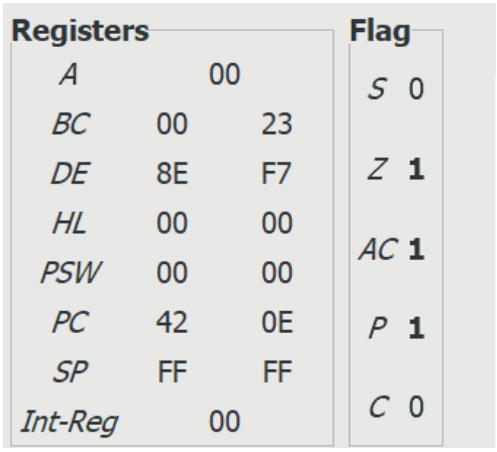
3. **Write a program to load the bit pattern 91H in register B and 87H in register C. Mask all the bits except D0 from registers B and C.**

```
;Program3
mvi b,91h
mvi c,87h
mov a,b
ani 01h
sta 3000h
mov a,c
ani 01h
sta 3001h
hlt
```

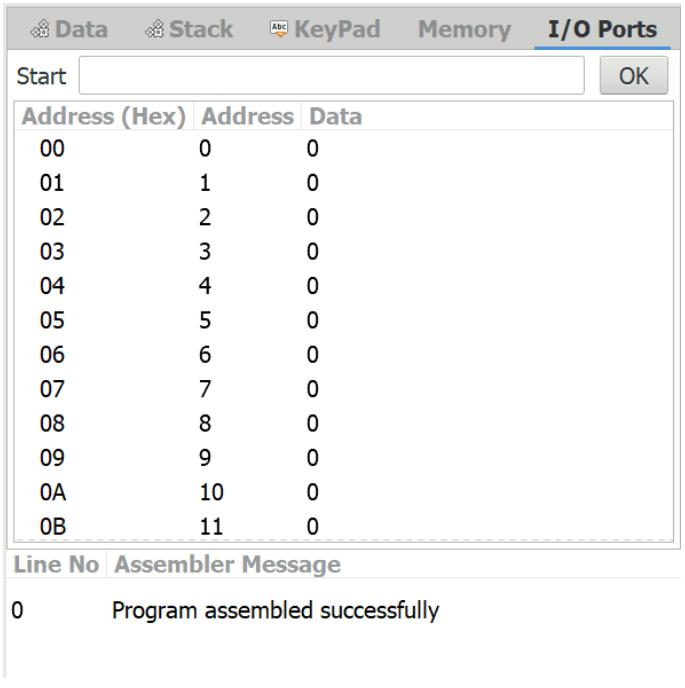


4. **Write a program to clear the CY flag, to load number FFH in register B, and increment B. If the CY flag is set, display 01 at the output port, otherwise, display the contents of register B.**

```
;Program4
stc
cmc
mvi b,0FFh
inr b
jnc carryZero
mvi b,01h
carryZero: mov a,b
out 01h
hlt
```



Registers			Flag	
A	00		S	0
BC	00	23	Z	1
DE	8E	F7	AC	1
HL	00	00	P	1
PSW	00	00	C	0
PC	42	0E		
SP	FF	FF		
Int-Reg	00			



Data | Stack | KeyPad | Memory | I/O Ports

Start OK

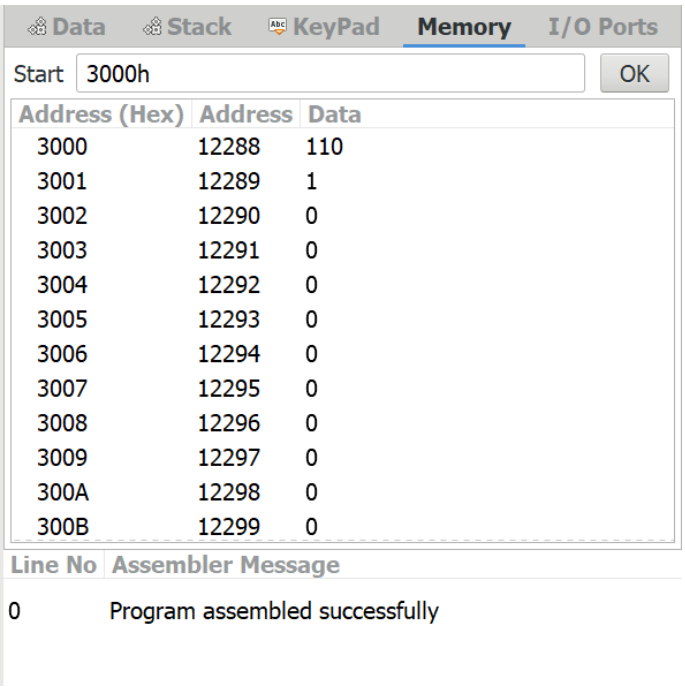
Address (Hex)	Address	Data
00	0	0
01	1	0
02	2	0
03	3	0
04	4	0
05	5	0
06	6	0
07	7	0
08	8	0
09	9	0
0A	10	0
0B	11	0

Line No	Assembler Message
0	Program assembled successfully

5. **Write a program to mask lower bit of an 8-bit number.**

```
;Program5
mvi b,6Fh
mov a,b
```

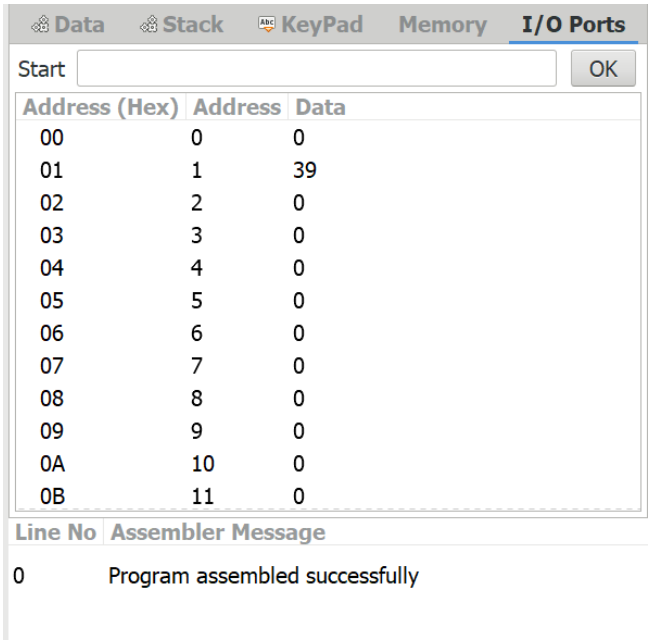
```
ani 0FEh
sta 3000h
hlt
```



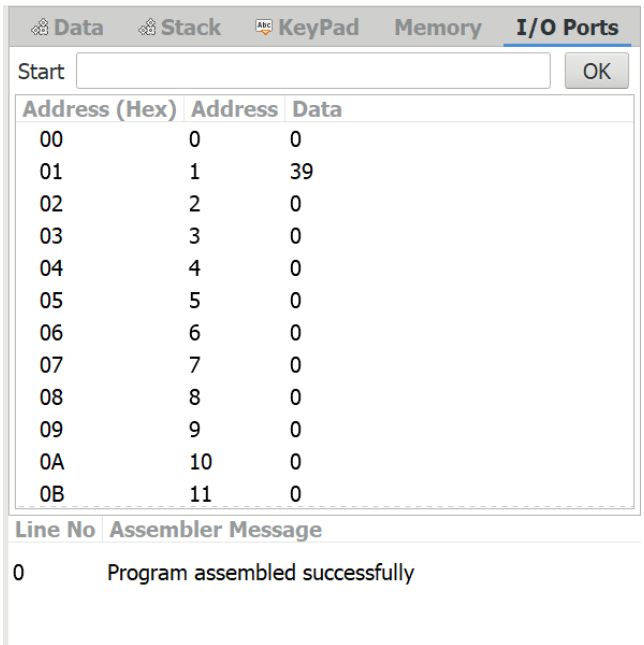
Data in b was 01101111 (6Fh). After masking lowest bit number becomes 01101110 which is 110 in decimal.

6. **Write a program Load two unsigned numbers in register B and register C, respectively. Subtract C from B. If the result is in 2's complement, convert the result in absolute magnitude and display it at PORT 1, otherwise, display the positive result. Execute the program with the following sets of data.**
   Set1:B=42H,C=69H
   Set2:B=69H,C=42H
   Set 3: B=F8H, C = 23H

```
;Program6
mvi b,42h
mvi c,69h
mov a,b
cmp c
jc isNegative
sub c
jmp exit
isNegative: sub c
cma
adi 01h
exit: out 01h
hlt
```




```
;Program6
mvi b,69h
mvi c,42h
mov a,b
cmp c
jc isNegative
sub c
jmp exit
isNegative: sub c
cma
adi 01h
exit: out 01h
hlt
```



```
;Program6
mvi b,0F8h
mvi c,23h
mov a,b
cmp c
jc isNegative
sub c
jmp exit
isNegative: sub c
cma
adi 01h
exit: out 01h
hlt
```