ANUSHKA GUPTA
19075088
B.TECH CSE

LAB ASSIGNMENT 8

TASK : Write a program to Find GCD Of Two Numbers using 8085 & verify

Algorithm:

1) Load first number in accumulator
2) Load second number in register B
3) Compare B to A. If B==A then A is the output. Therefore jump to address denoted by down and store the result and end the algorithm
4) If carry flag is not set then it implies A>B, in this case jump to address denoted by shift
5) If the carry flag is set then A<=B. In this case swap A and B with the help of register C
6) Now till the time register A >B , subtract B from A
7) If B==A then B is the answer, and store it and end the algorithm
8) If B> A then swap A and B with help of register C and go to step 6.
9) Finally store the contents of the accumulator.

Code:

```
;<Program title>
jmp start
;data
;code
start: nop
LXI H,000AH
MOV A, M
INX H
MOV B,M
CMP B
JZ  down
JNC shift
MOV C,A
MOV A,B
MOV B,C
shift: SUB  B
```

```
CMP B
JZ  move
JNC shift
MOV C,A
MOV A,B
MOV B,C
JMP shift
move: MOV A,B
down: STA 000CH
hlt
```

After execution:

Registers

A	06	
BC	06	06
DE	00	00
HL	00	0B
PSW	00	00
PC	42	27
SP	FF	FF
Int-Reg	00	

Flag

S	0
Z	**1**
AC	0
P	**1**
C	0

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

Start 00 OK

Address (Hex)	Address	Data
0004	4	0
0005	5	0
0006	6	0
0007	7	0
0008	8	0
0009	9	0
000A	10	18
000B	11	24
000C	12	6
000D	13	0
000E	14	0
000F	15	0

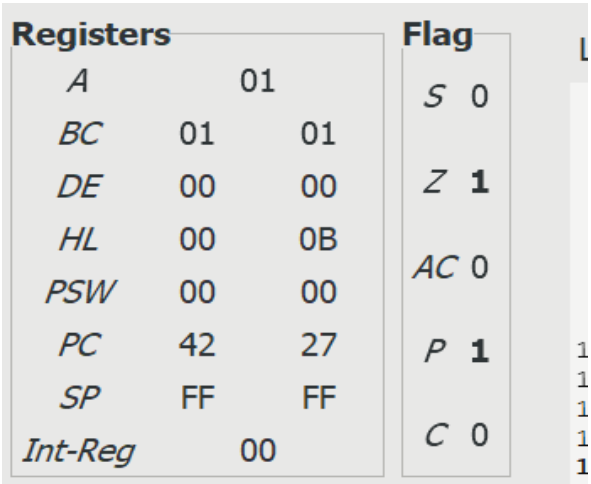
Line No	Assembler Message
0	Program assembled successfully

Input: (address in hex format)
Address -> values
000A -> 18
000B-> 24

Output: (address in hex format)
Address -> values
000C -> 6 //GCD stored here

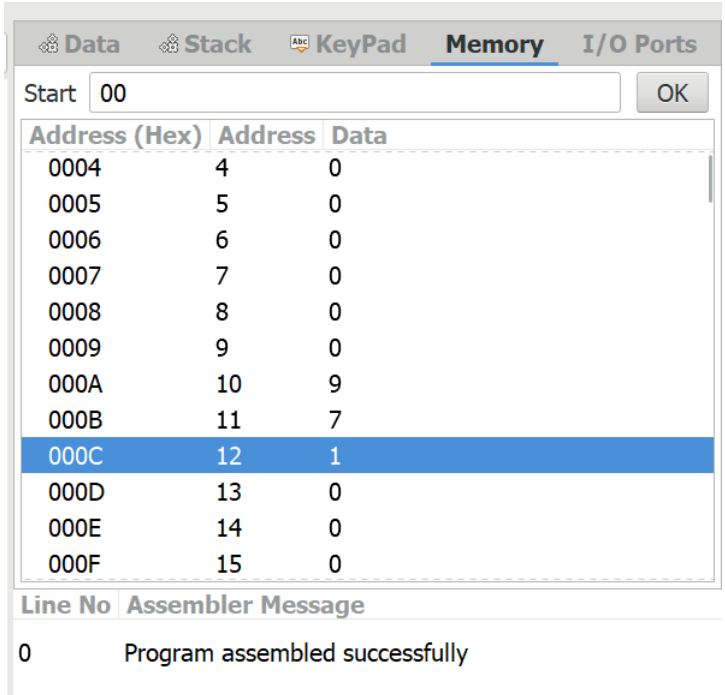
Verification: GCD of 18 and 24 is 6 as it is the largest number which divides both. The program gives the same output which is 6. Hence the GCD program is verified.

After execution (2):



Registers		
A	01	
BC	01	01
DE	00	00
HL	00	0B
PSW	00	00
PC	42	27
SP	FF	FF
Int-Reg	00	

Flag	
S	0
Z	**1**
AC	0
P	**1**
C	0



Input: (address in hex format)
Address -> values
000A -> 9
000B-> 7

Output: (address in hex format)
Address -> values
000C -> 1 //GCD stored here

Verification: GCD of 9 and 7is 1 as 7 and 9 are coprime. The program gives the same output which is 1. Hence the GCD program is verified.