ANUSHKA GUPTA
19075088
B.TECH CSE

LAB ASSIGNMENT 6

TASK : Write a Program to Arrange Numbers in Ascending Order Using 8085 & Verify.

Algorithm:

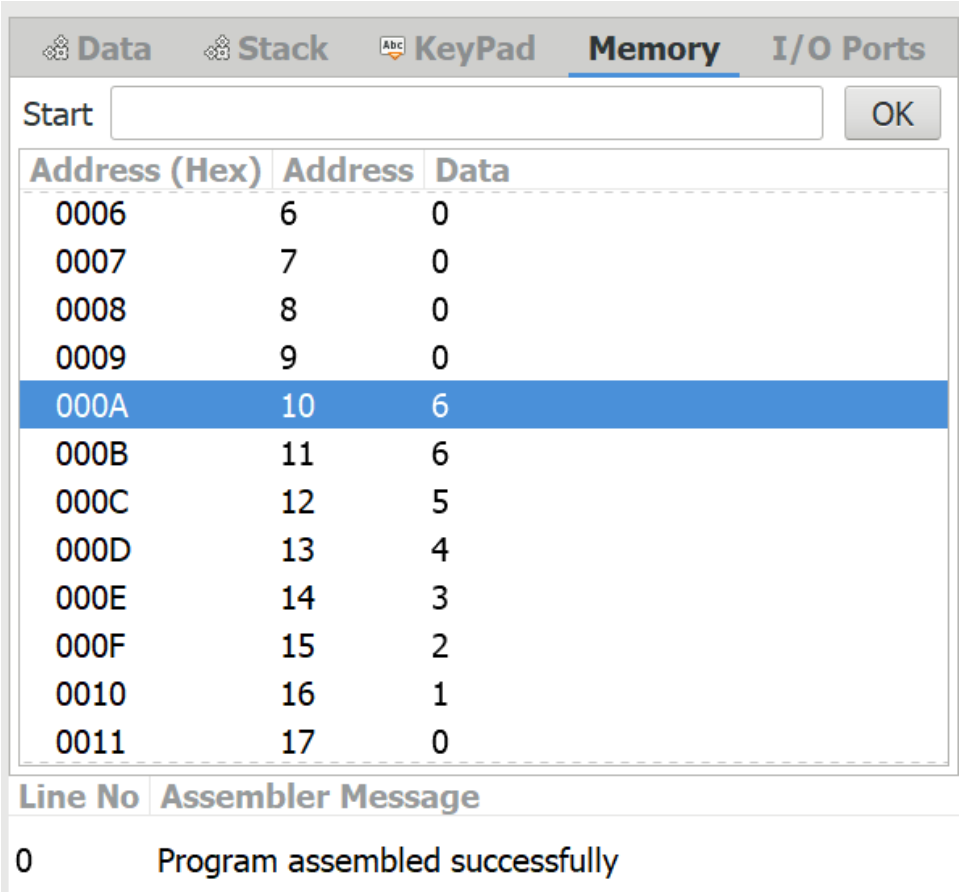
1) Load address of memory containing the total number of elements to be sorted in H-L pair
2) Initialize register D with 0. The D register is used as a flag register
3) Initialize register C with element count. It will also be used for comparison count.
4) While the count is not equal to zero :
    a) Load a number into the accumulator
    b) Compare two consecutive numbers in memory
    c) If content of accumulator < second number , then jump to address denoted by NEXTBYT i.e no exchange is performed
    d) Else : Get second byte for exchange , Store first byte in second location ,Point to first location, store second byte in first location , Get ready for next comparison , Load 1 in D as a remainder for exchange
    e) Decrement comparison count
5) If comparison count not 0, go back to address denoted by CHECK
6) Get value of register D , i.e flag bit in accumulator
7) Place flag bit D0 in carry ,If flag is 1, exchange occurred.
8) Terminate the program

Code:

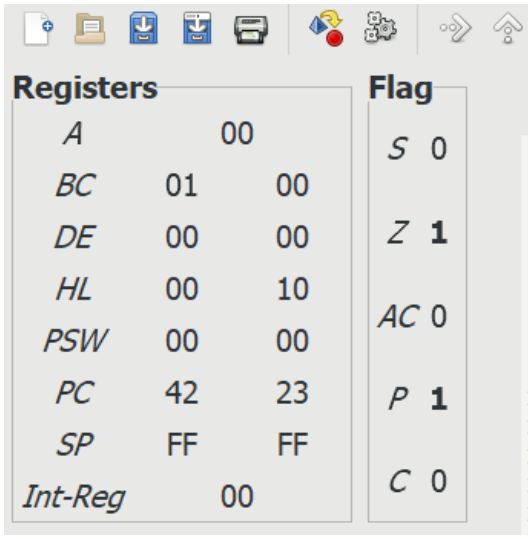
```
;<Program title>
jmp start
;data
;code
start: nop
START: LXI H,000AH
MVI D,00H
MOV C,M
DCR C
INX H
CHECK: MOV A,M
```

```
INX H
CMP M
JC NEXTBYT
MOV B,M
MOV M,A
DCX H
MOV M,B
INX H
MVI D,01H
NEXTBYT: DCR C
JNZ CHECK
MOV A,D
RRC
JC START
hlt
```

Before execution:



After execution:

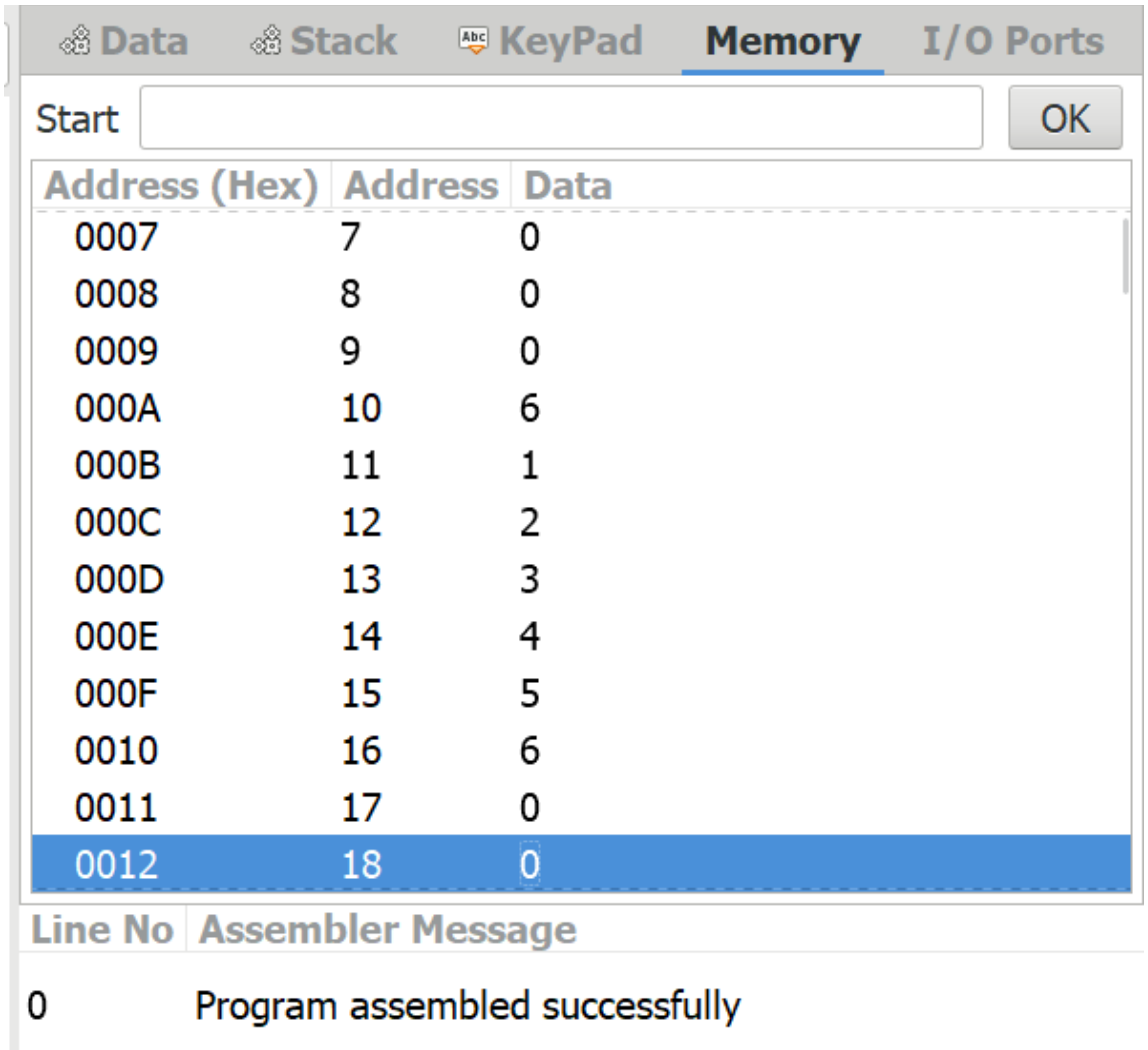


Registers

A	00	
BC	01	00
DE	00	00
HL	00	10
PSW	00	00
PC	42	23
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 [ ] OK

Address (Hex)	Address	Data
0007	7	0
0008	8	0
0009	9	0
000A	10	6
000B	11	1
000C	12	2
000D	13	3
000E	14	4
000F	15	5
0010	16	6
0011	17	0
0012	18	0

Line No	Assembler Message
0	Program assembled successfully

Input: (address in hex format)
Address -> values
000A -> 6
000B -> 6
000C -> 5
000D -> 4
000E -> 3
000F -> 2
0010 -> 1

Output: (address in hex format)
Address -> values
000A -> 6
000B -> 1
000C -> 2
000D -> 3
000E -> 4
000F -> 5
0010 -> 6

Verification: in address 000A we have stored 6 which denoted 6 elements are to be sorted. The given elements are :
6 ,5, 4, 3, 2, 1
After sorting in ascending order we get :
1, 2, 3 ,4 ,5, 6

Through the output we see we have got the sorted order as 1, 2, 3, 4, 5, 6 which is same as the desired ascending order. Hence verified that the elements are arranged in ascending order;