Experiment No. 7

Aim: Arrange the given numbers of series in order of increasing and decreasing magnitude of numbers.

Algorithm:

1) Assign source index a value to point at an address in RAM (let's say '0100:1000' or 1000h).

2) Stores the value at address 2000h in RAM to the CL register (number of terms) decrements value in CL register by 1 (n-1 terms).

3) Assigns source index a value to point at an address '0100:1000' in RAM stores the value at address '0100:1000' in RAM to the CL register (number of terms), decrements value in CH register by 1 (n-1 terms).

4) Assigns source index a value to point at an address '0100:1010' in RAM.

5) Stores the value at address pointed by source index in RAM to the AL register, increments the value of source index. Then compares the value in AL register and at RAM address pointed by source index.

6) Jumps to 'end' section of code depending on the carry flag status ("jc" for increasing, "jnc" for decreasing).

7) Exchanges the value in the AL register and at RAM address pointed by source index, exchanges the value in the AL register and at RAM address pointed by 'si-1'.

8) Decrements value in CH register by 1, jumps of 'inner' section of code (inner loop, L2) as long as the value in CH register is not 0, decrements value in CL register by 1.

9) Jumps of 'outer' section of code (outer loop, L1) as long as the value in CL register is not 0.

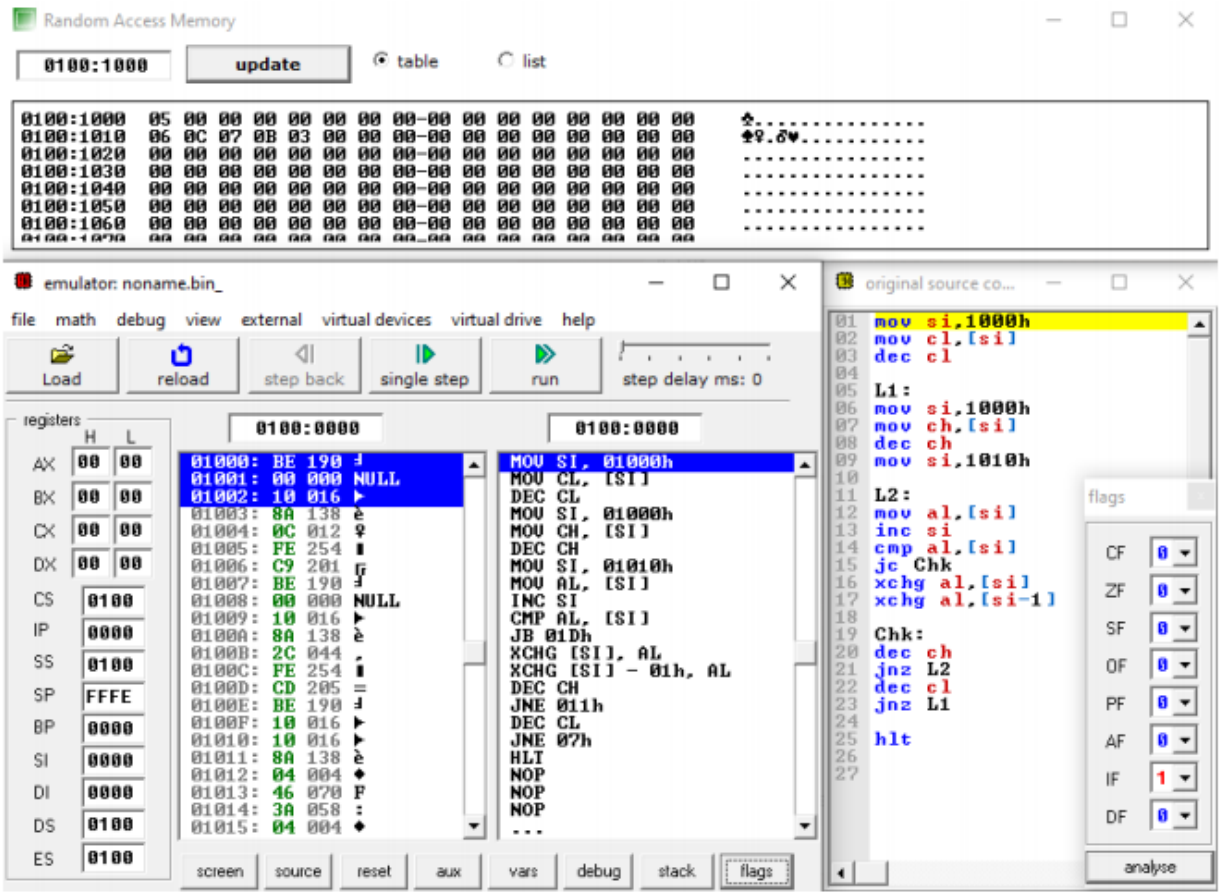
10) The program is Halted.

Code:

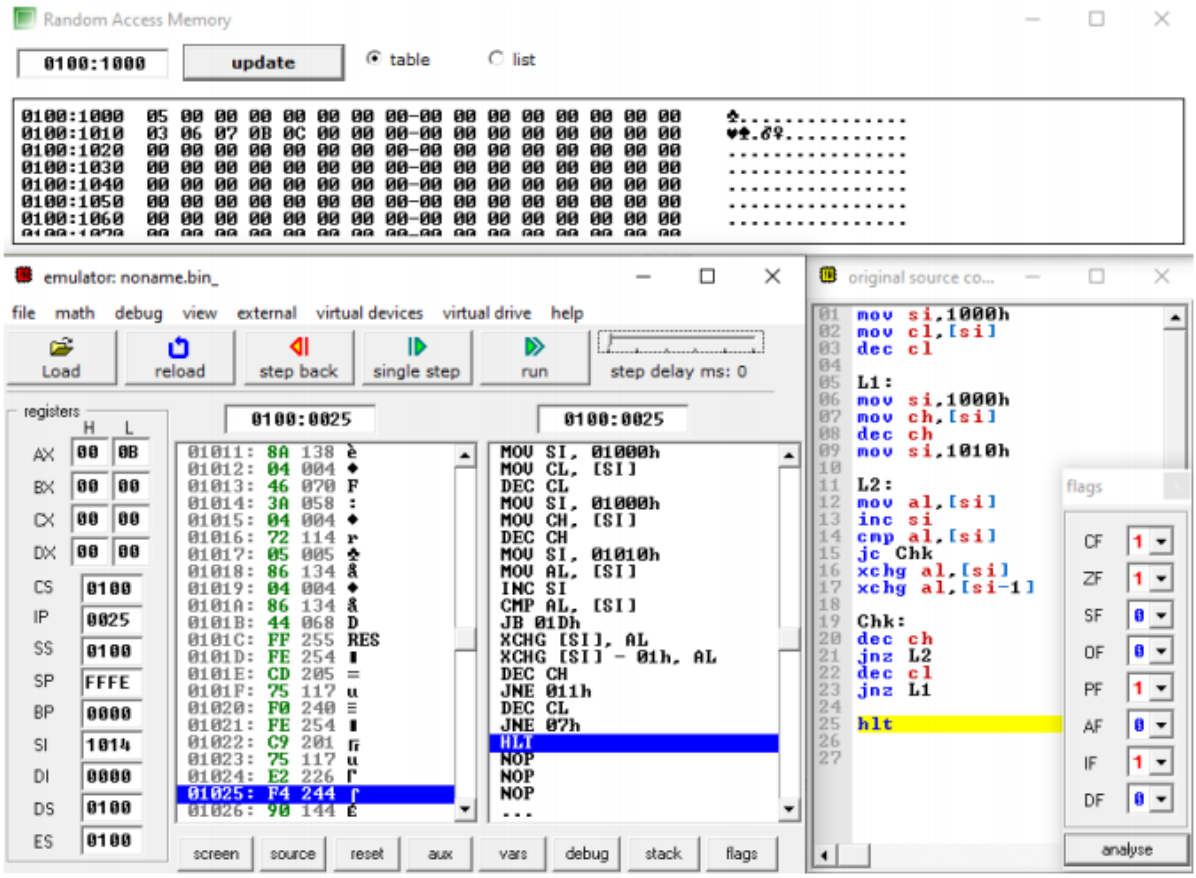
```
;Increasing
mov si,1000h
mov cl,[si]
dec cl
L1:
mov si,1000h
mov ch,[si]
dec ch
mov si,1010h
L2:
mov al,[si]
inc si
cmp al,[si]
jc Chk
xchg al,[si]
xchg al,[si-1]
Chk:
dec ch
jnz L2
dec cl
jnz L1
hlt

ret
```

Output:

Before execution



After execution

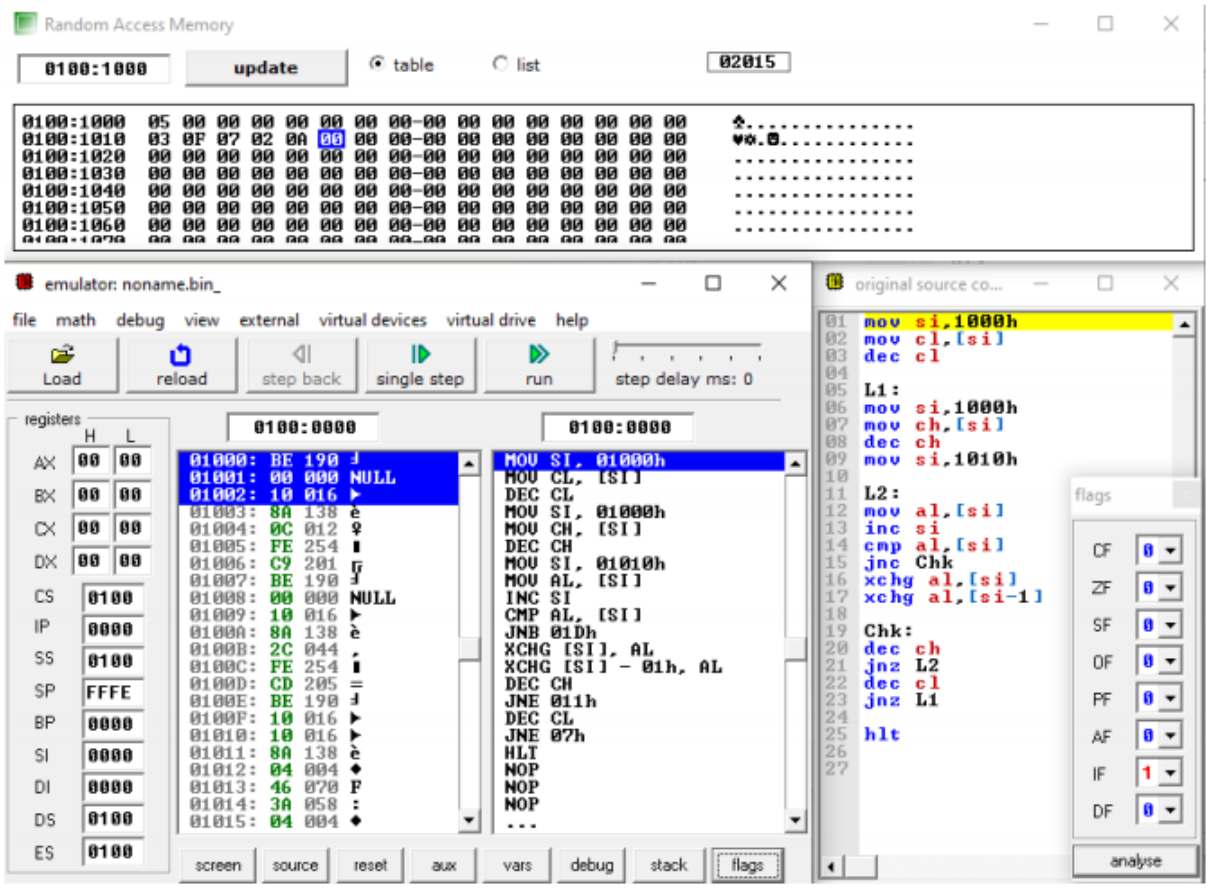


Decreasing:

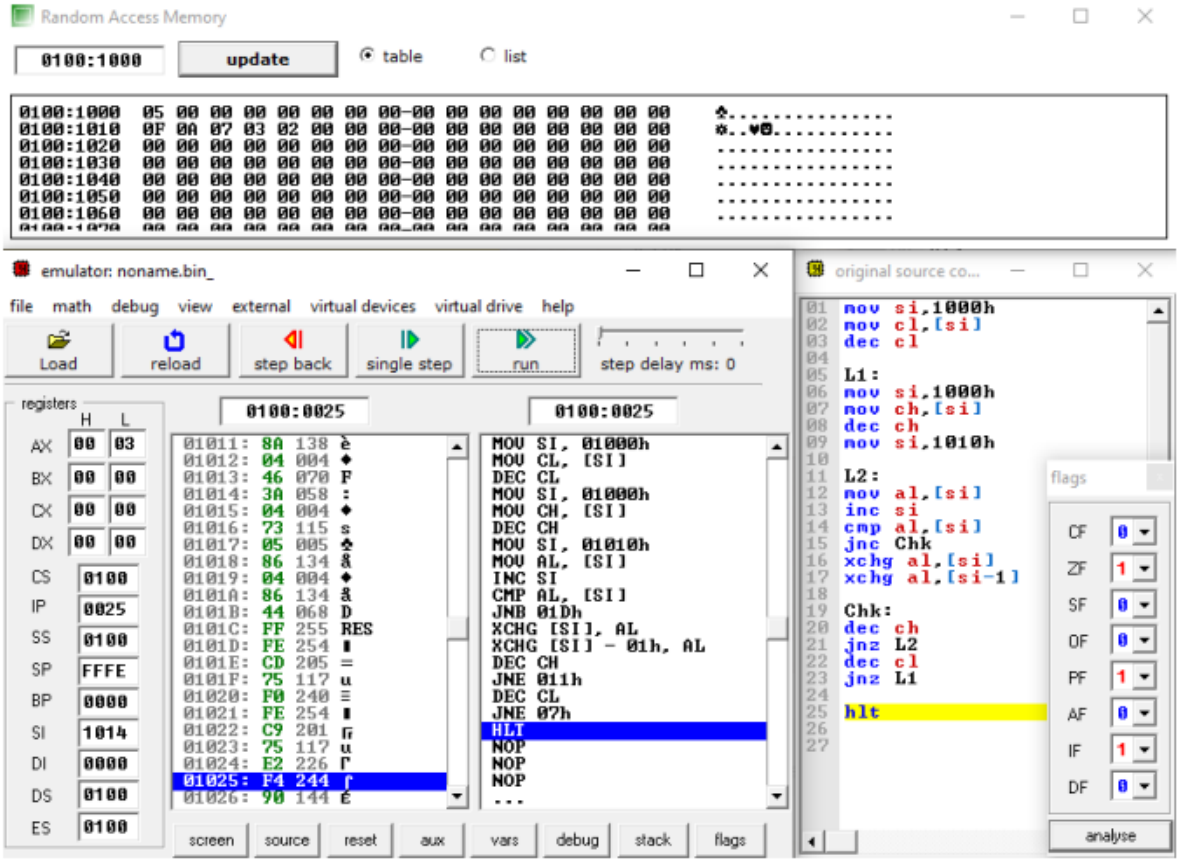
```
;Decreasing
mov si,1000h
mov cl,[si]
dec cl
L1:
mov si,1000h
mov ch,[si]
dec ch
mov si,1010h
L2:
mov al,[si]
inc si
cmp al,[si]
jnc Chk
xchg al,[si]
xchg al,[si-1]
Chk:
dec ch
jnz L2
dec cl
jnz L1
hlt
```

Output:

Before execution



After execution



(ARKAJYOTI CHAKRABORTY 2K19/EP/022)