

MICROPROCESSORS BASED SYSTEMS DESIGN

(UCS617)

8086 LAB ASSIGNMENT

Submitted By:

| | |
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1. Write an assembly language program to add two 16-bit numbers in 8086.

```
MOV AX, 0001h  
MOV BX, 0002h  
ADD AX, BX  
HLT
```

The screenshot shows a 16-bit assembly language debugger interface. On the left, there is a list of registers with their current values:

| register | H | L |
|----------|------|----|
| AX | 00 | 03 |
| BX | 00 | 02 |
| CX | 00 | 00 |
| DX | 00 | 00 |
| CS | 0100 | |
| IP | 0008 | |
| SS | 0100 | |
| SP | FFFE | |
| BP | 0000 | |
| SI | 0000 | |
| DI | 0000 | |
| DS | 0100 | |
| ES | 0100 | |

The assembly code window on the right displays the following instructions:

```
01: MOU AX, 0001h  
02: MOU BX, 0002h  
03: ADD AX, BX  
04: HLT
```

The instruction at address 01008h (F4 244) is highlighted in blue. The assembly code window has tabs for "screen", "source", "reset", "aux", "vars", "debug", "stack", and "flags".

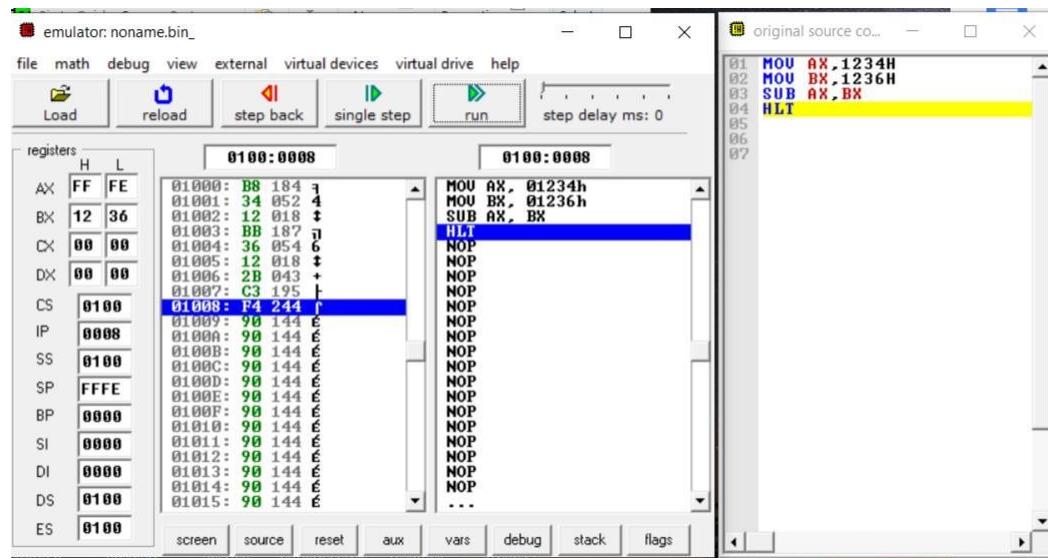
2. Write an assembly language program to subtract two 16-bit numbers in 8086.

MOV AX,1234H

MOV BX,1236H

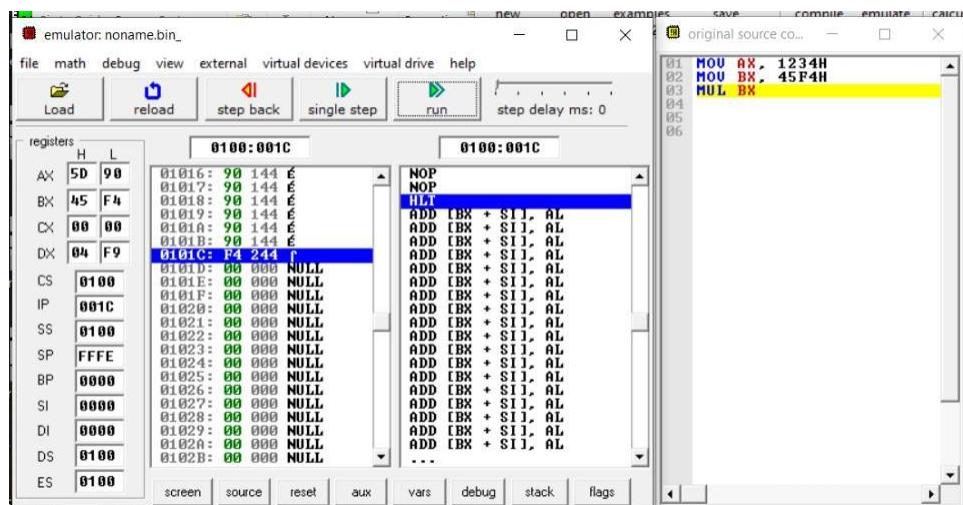
SUB AX,BX

HLT



3. Write an assembly language program to multiply two 16-bit numbers in 8086.

MOV AX, 1234H
MOV BX, 45F4H
MUL BX



4. Write an assembly language program to divide two 16-bit numbers in 8086.

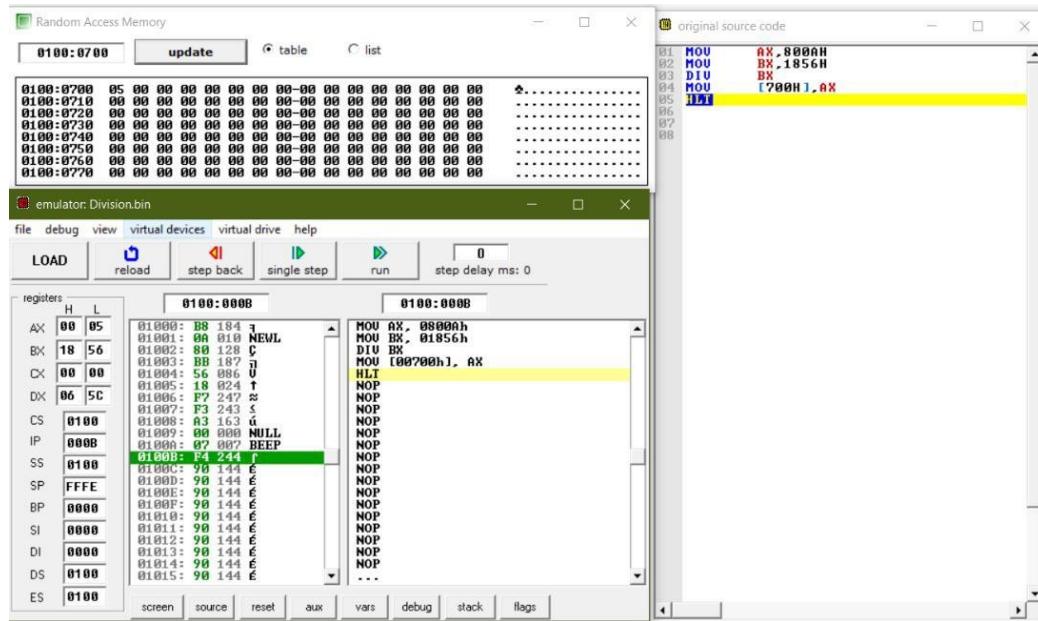
MOV AX,800AH

MOV BX,1856H

DIV BX

MOV [700H],AX

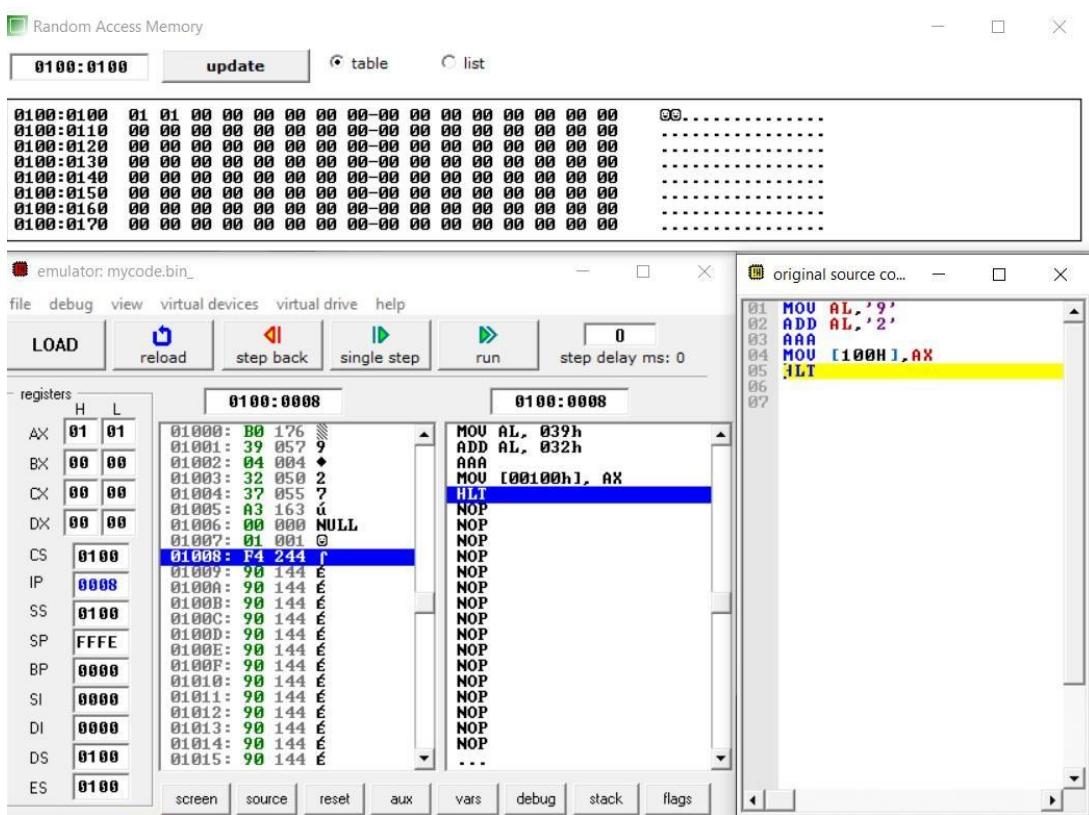
HLT



5. Write an assembly language program to demonstrate AAA, AAS, AAM, AAD, DAA and DAS in 8086.

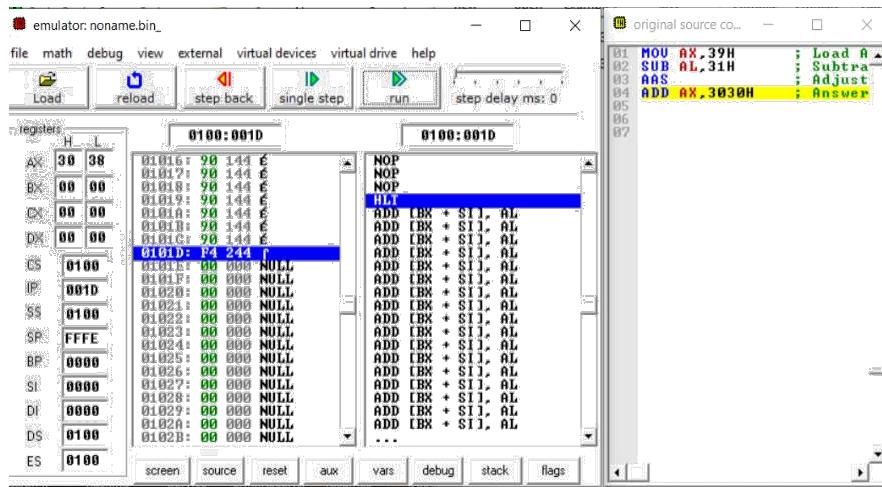
i. AAA

```
MOV AL,'9'  
ADD AL,'2'  
AAA  
MOV [100H],AX  
HLT
```



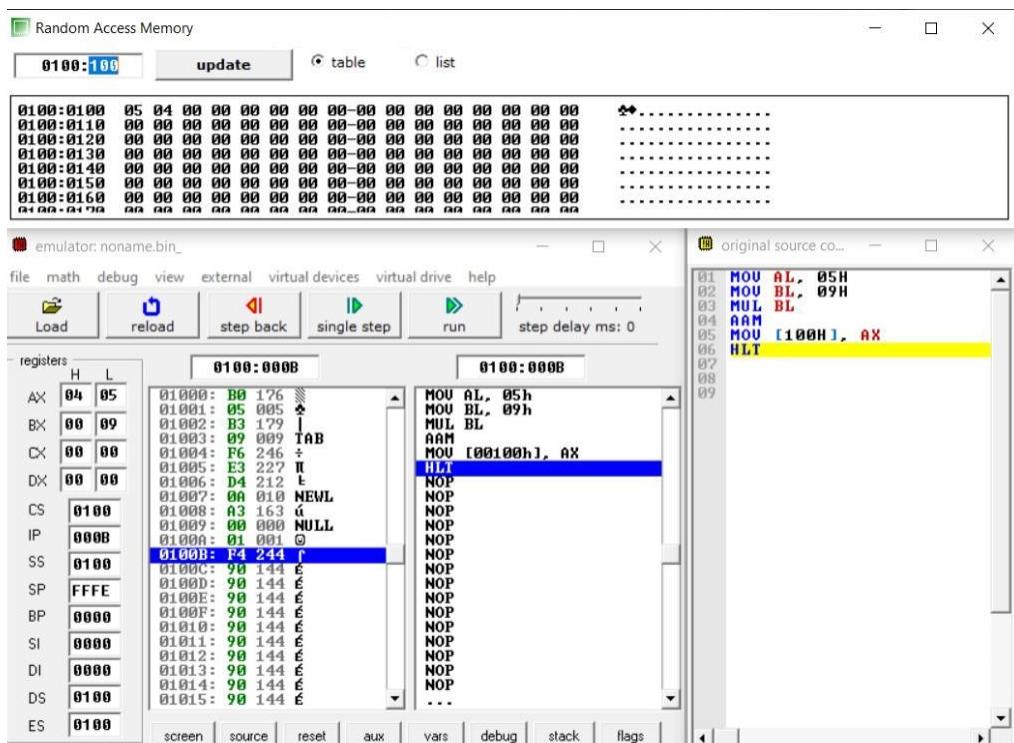
ii. AAS

```
MOV AX,39H ; Load ASCII 9  
SUB AL,31H ; Subtract ASCII 1  
AAS ; Adjust difference  
ADD AX,3030H ; Answer in ASCII
```



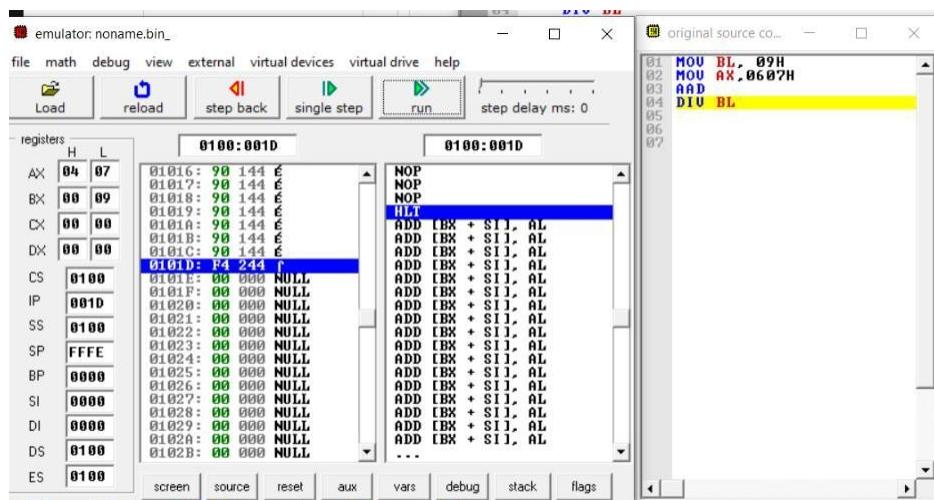
iii. AAM

```
MOV AL, 05H  
MOV BL, 09H  
MUL BL  
AAM  
MOV [100H], AX  
HLT
```



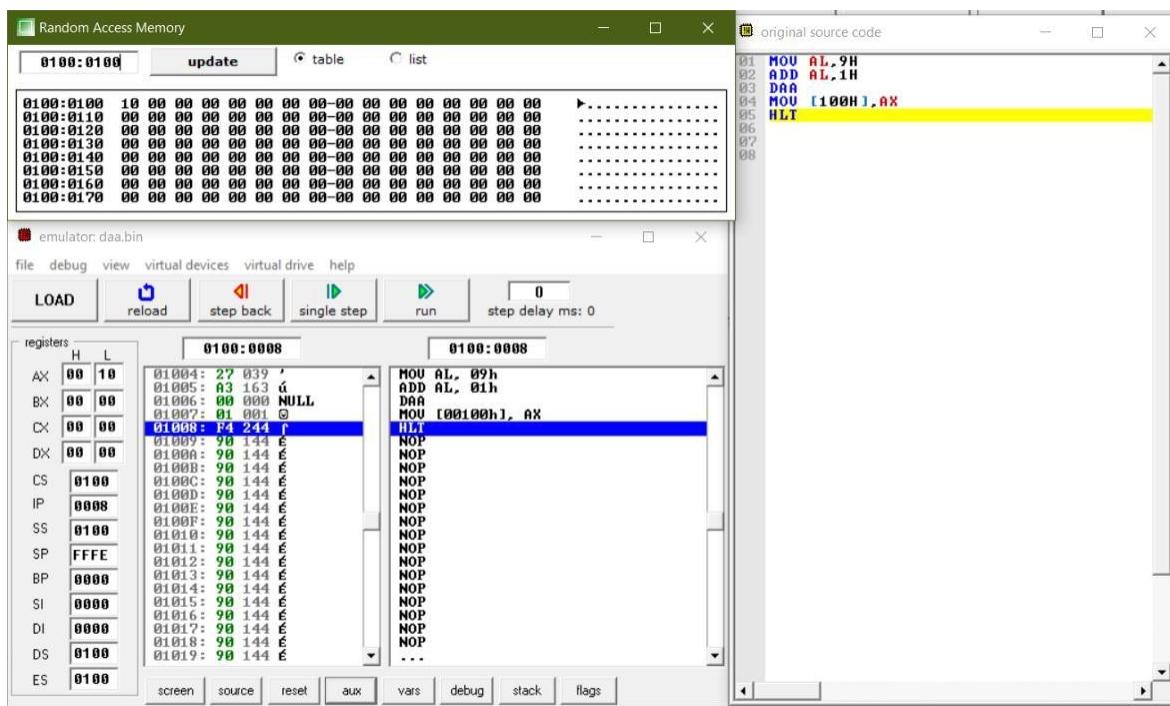
iv. AAD

MOV BL, 09H
MOV AX,0607H
AAD
DIV BL



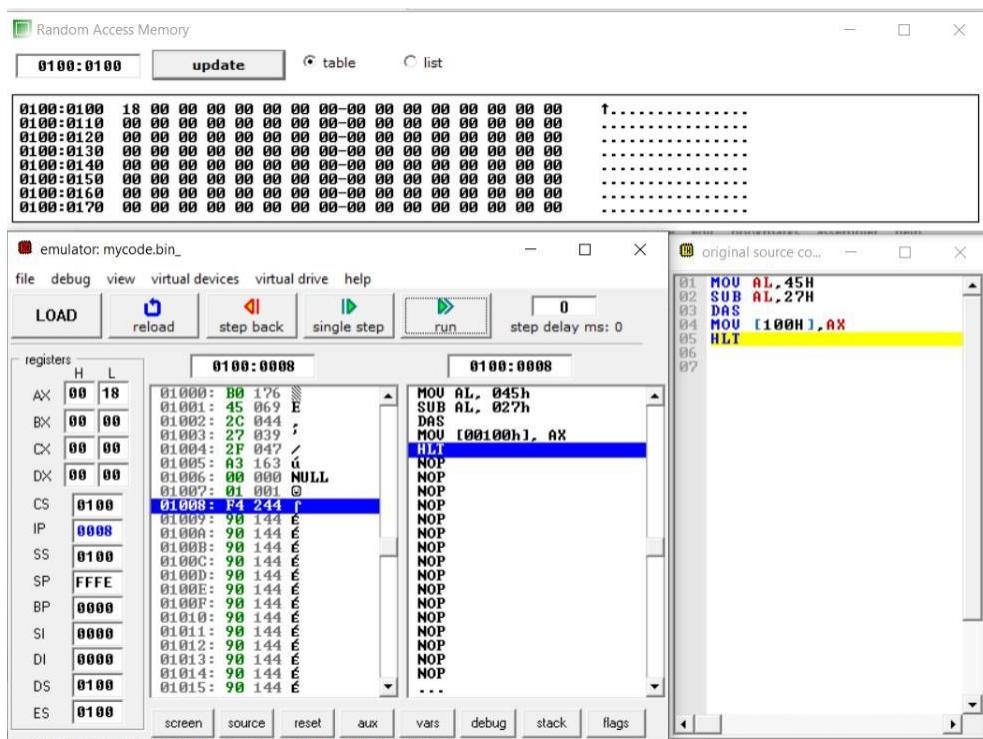
v. DDA

```
MOV AL,9H  
ADD AL,1H  
DAA  
MOV [100H],AX  
HLT
```



vi. DAS

```
MOV AL,45H  
SUB AL,27H  
DAS  
MOV [100H],AX  
HLT
```

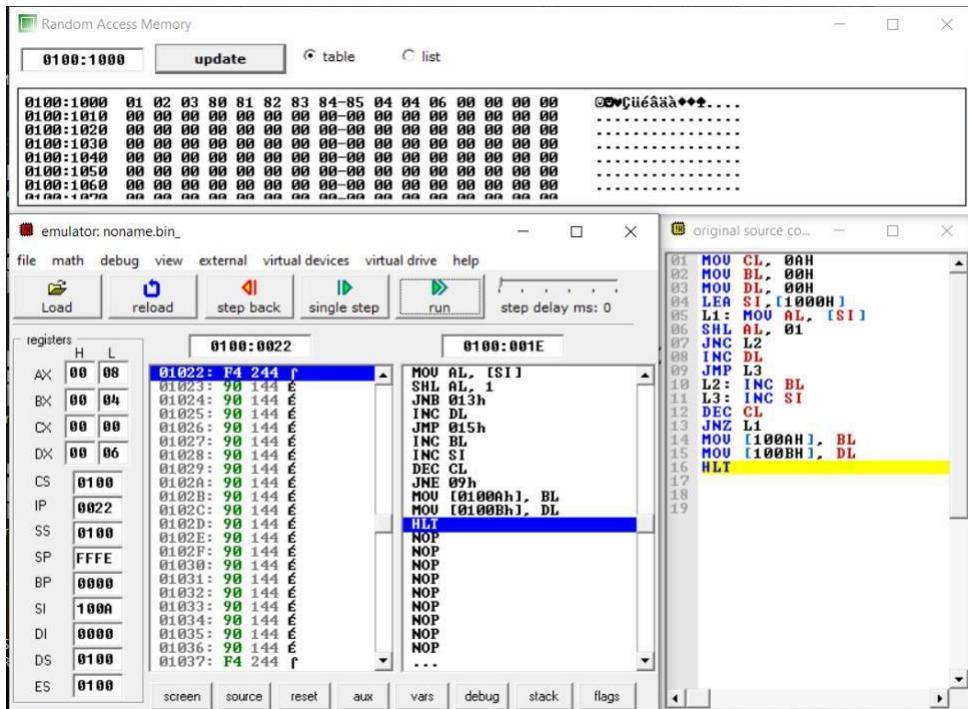


6. Write an assembly language program to find out the count of positive numbers and negative numbers from a series of signed numbers in 8086.

```

MOV CL, 0AH
MOV BL, 00H
MOV DL, 00H
LEA SI,[1000H]
L1: MOV AL, [SI]
SHL AL, 01
JNC L2
INC DL
JMP L3
L2: INC BL
L3: INC SI
DEC CL
JNZ L1
MOV [100AH], BL
MOV [100BH], DL
HLT

```

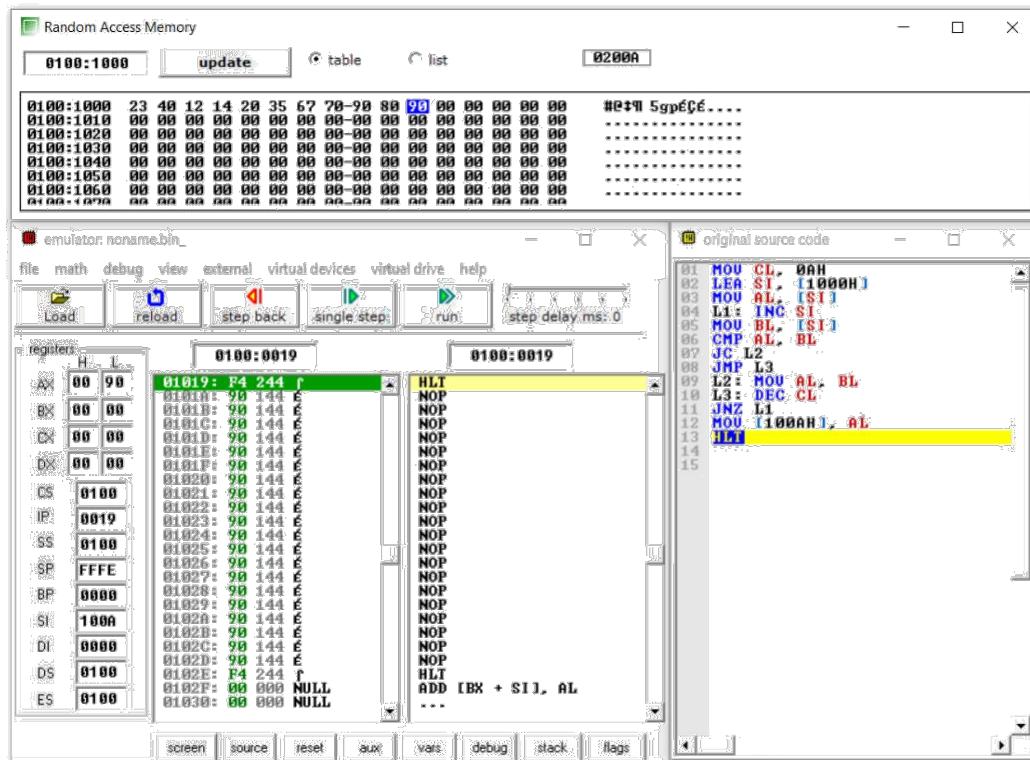


7. Write an assembly language program to convert to find out the largest number from a given unordered array of 8-bit numbers, stored in the locations starting from a known address in 8086.

```

MOV CL, 0AH
LEA SI, [1000H]
MOV AL, [SI]
L1: INC SI
MOV BL, [SI]
CMP AL, BL
JC L2
JMP L3
L2: MOV AL, BL
L3: DEC CL
JNZ L1
MOV [100AH], AL
HLT

```

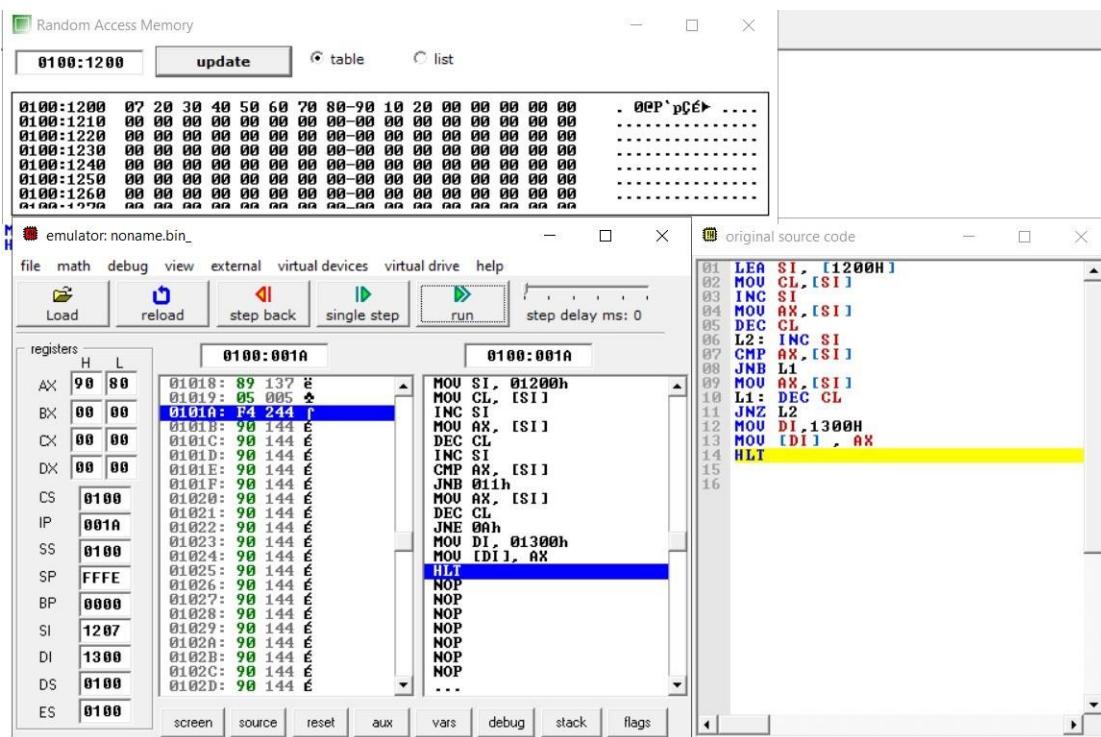


8. Write an assembly language program to convert to find out the largest number from a given unordered array of 16-bit numbers, stored in the locations starting from a known address in 8086.

```

LEA SI, [1200H]
MOV CL,[SI]
INC SI
MOV AL,[SI]
DEC CL
L2: INC SI
CMP AL,[SI]
JNB L1
MOV AL,[SI]
L1: DEC CL
JNZ L2
MOV DI,1300H
MOV [DI] , AL
HLT

```

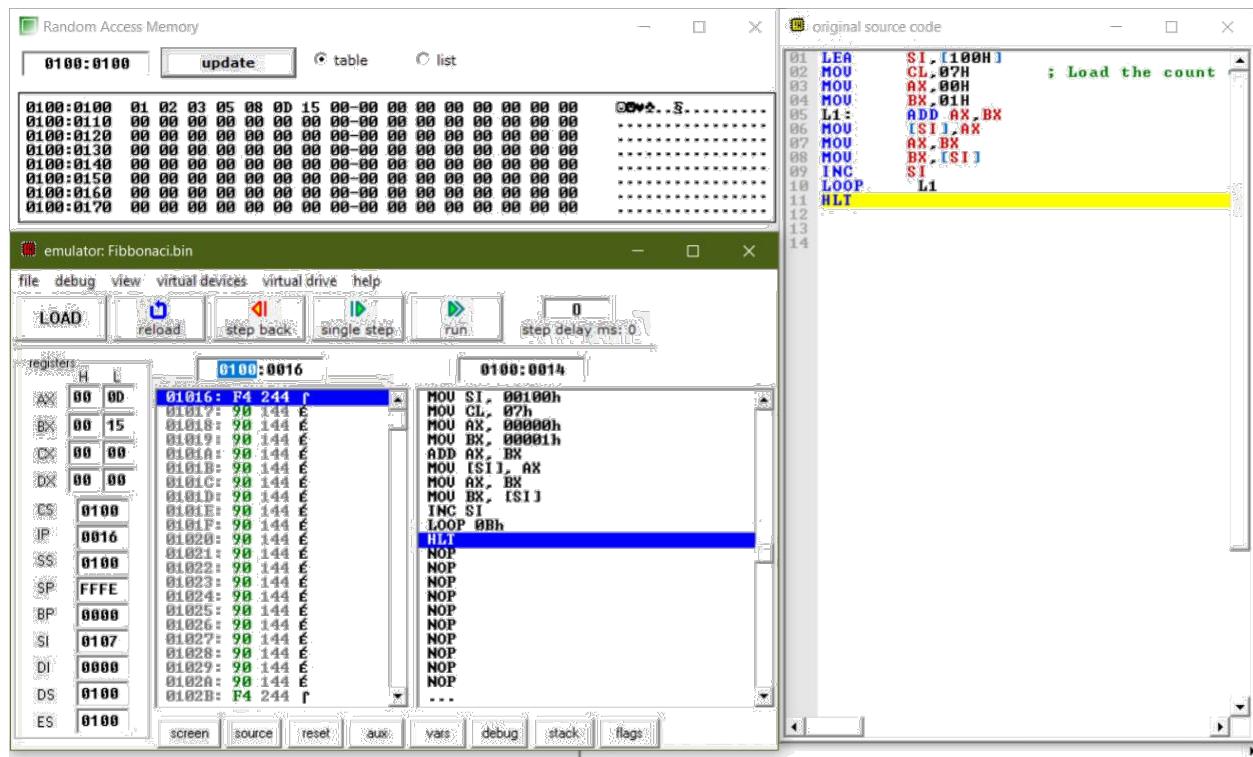


9. Write an assembly language program to print Fibonacci series in 8086. ANS.

```

LEA SI,[100H]
MOV CL,07H      ; Load the count value for CL for looping
MOV AX,00H
MOV BX,01H
L1: ADD AX,BX
MOV [SI],AX
MOV AX,BX
MOV BX,[SI]
INC SI
LOOP L1
HLT

```



10. Write an assembly language program to perform the division 15/6 using the ASCII codes. Store the ASCII codes of the result in register DX.

```

MOV
AX,'15'
ADD BX,'6'
SUB
AX,3030H
SUB
BL,30H
AAD
DIV BL
ADD
AX,3030H
MOV
[100H],AX
HLT

```

