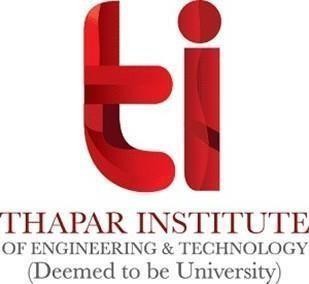
Lab Assignment

8086-Microprocessor Kit Microprocessor-Based System Design (UCS617) By

|  |  |
| --- | --- |
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**Submitted to Dr. Tanvi**

**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING** THAPAR INSTITUTE OF ENGINEERING AND TECHNOLOGY (DEEMED TO BE UNIVERSITY)

PATIALA, PUNJAB (INDIA) JAN – JUNE 2024

INDEX

|  |  |  |
| --- | --- | --- |
| **S.No** | **Name of Experiments** | **Page No.** |
| 1 | Write an assembly language program to add two 16-bit numbers in 8086. | 2 |
| 2 | Write an assembly language program to subtract two 16-bit numbers in 8086. | 4 |
| 3 | Write an assembly language program to multiply two 16-bit numbers in 8086. | 6 |
| 4 | Write an assembly language program to divide two 16-bit numbers in 8086. | 8 |
| 5 | Write an assembly language program to demonstrate AAA, AAS, AAM, AAD, DAA and DAS in 8086. | 10 |
| 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. | 15 |
| 7 | Write an assembly language program 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. | 17 |
| 8 | Write an assembly language program 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. | 19 |
| 9 | Write an assembly language program to print Fibonacci series in 8086. | 21 |
| 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. | 23 |

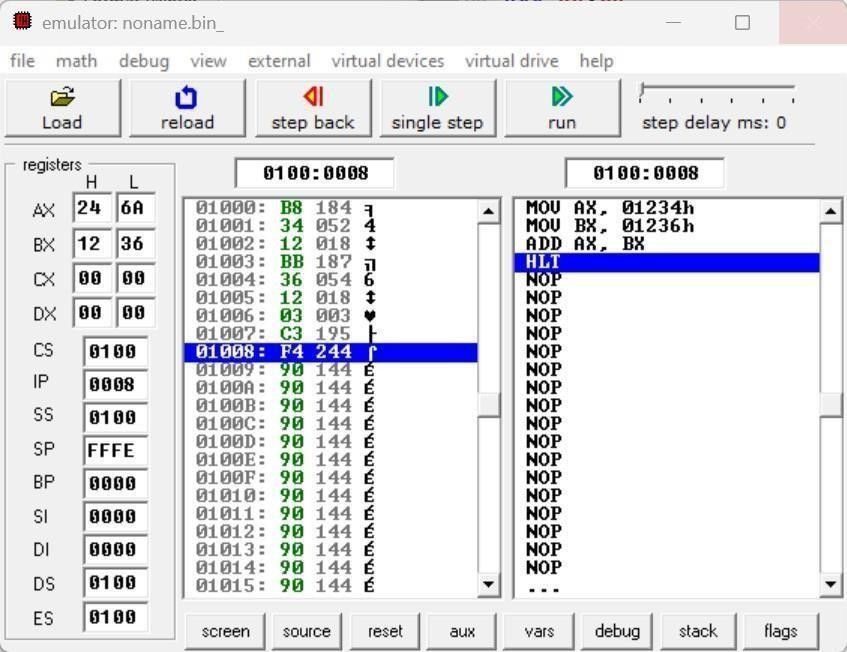
# Experiment 1

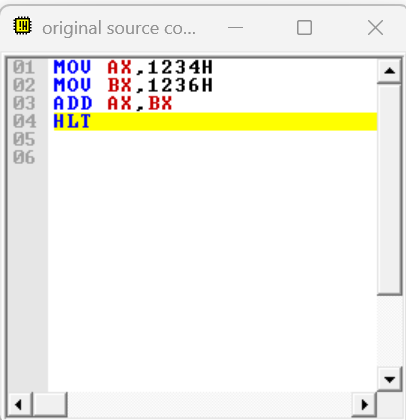
**Q.** Write an assembly language program to add two 16-bit numbers in 8086.

# Soln. -

MOV AX,1234H MOV BX,1236H ADD AX,BX HLT

**Output:**





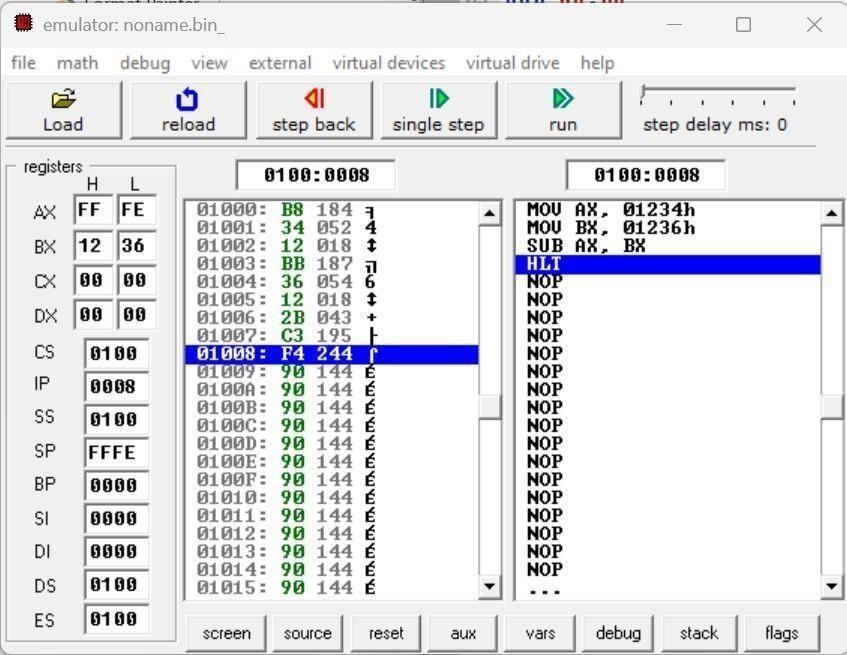
# Experiment 2

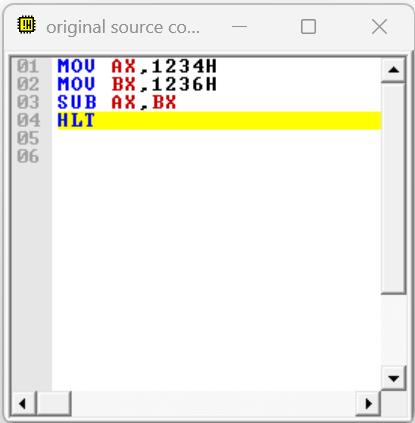
**Q.** Write an assembly language program to subtract two 16-bit numbers in 8086.

# Soln. -

MOV AX,1234H MOV BX,1236H SUB AX,BX HLT

**Output:**





# Experiment 3

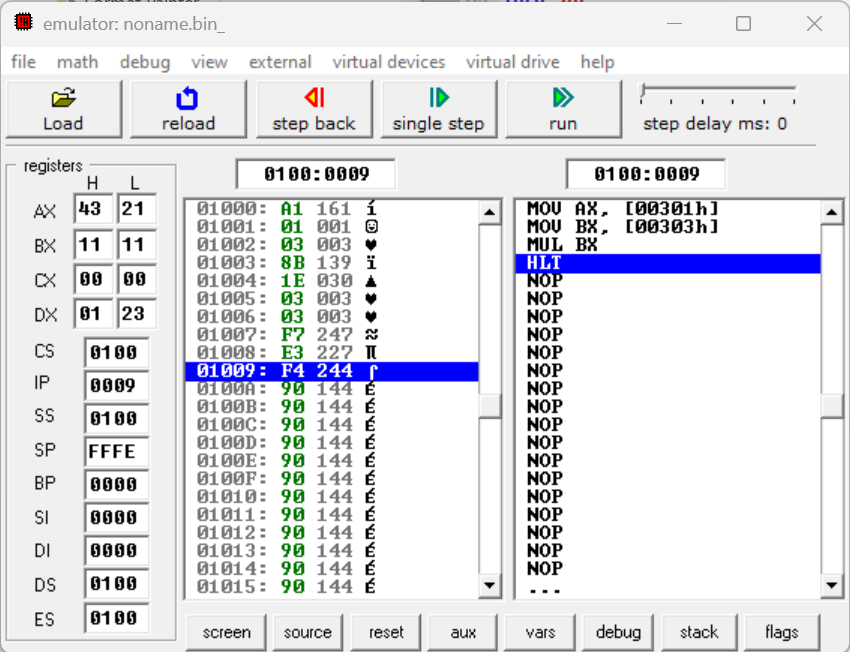
**Q.** Write an assembly language program to multiply two 16-bit numbers in 8086.

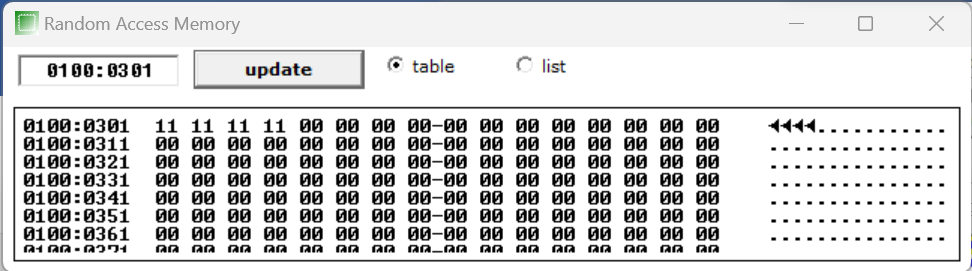
# Soln. -

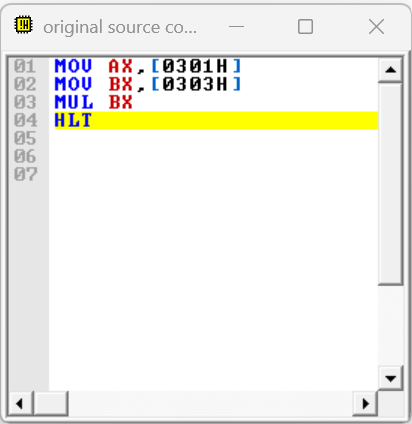
MOV AX,[0301H] MOV BX,[0303H] MUL BX

HLT

**Output:**







# Experiment 4

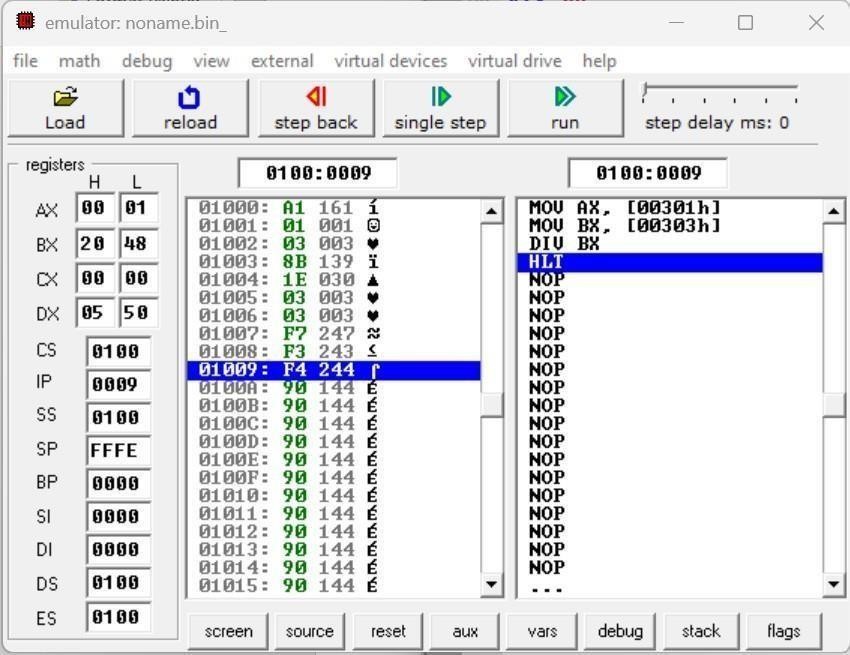
**Q.** Write an assembly language program to divide two 16-bit numbers in 8086.

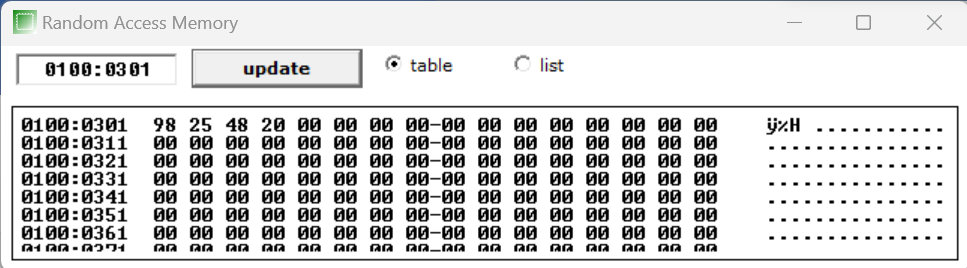
# Soln. -

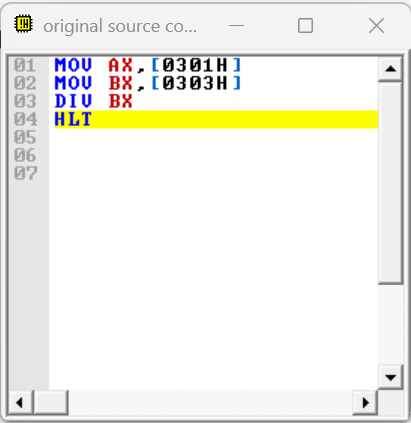
MOV AX,[0301H] MOV BX,[0303H] DIV BX

HLT

**Output:**







# Experiment 5

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

**Soln.**

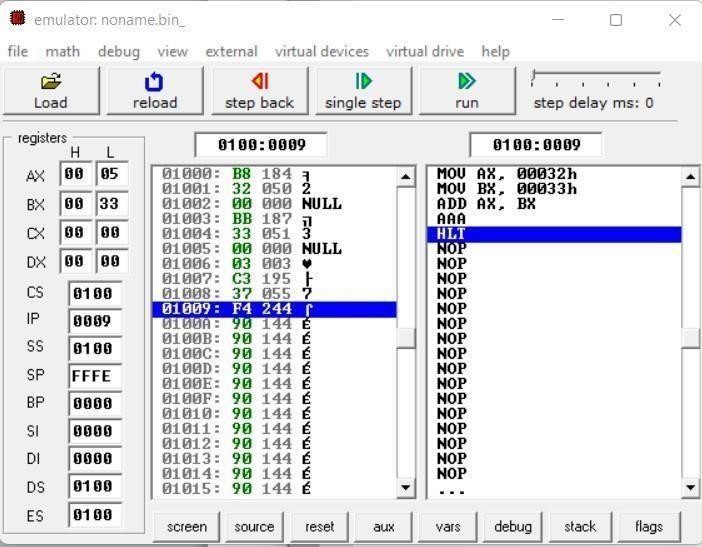
|  |  |
| --- | --- |
| **AAA** | **AAS** |
| MOV AX,0032H | MOV AL,33H |
| MOV BX,0033H | SUB AL,39H |
| ADD AX,BX | AAS |
| AAA | OR AL,30H |
| HLT | HLT |

|  |  |
| --- | --- |
| **AAM** | **AAD** |
| MOV AL,03H | MOV AX,0033H |
| MOV BL,09H | MOV BX,0032H |
| MUL BL | AAD |
| AAM | DIV BX |
| OR AX,3030H | HLT |
| HLT |  |

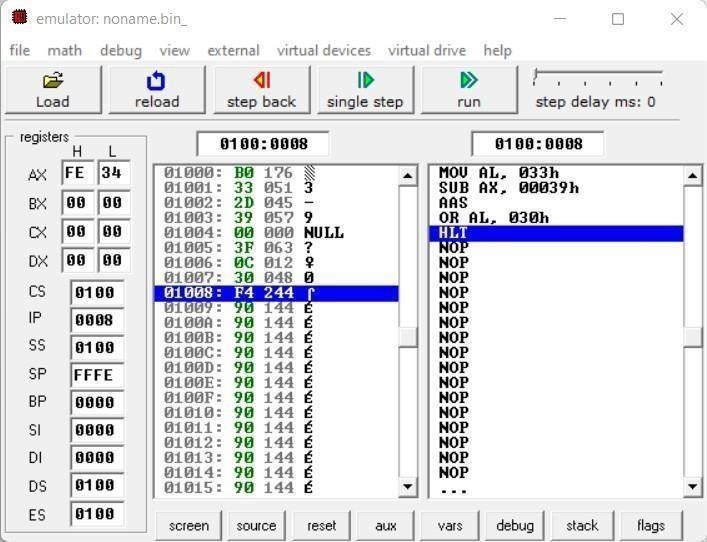
|  |  |
| --- | --- |
| **DAA** | **DAS** |

|  |  |
| --- | --- |
| MOV AL,71H | MOV AL,71H |
| ADD AL,43H' | SUB AL,43H' |
| DAA | DAS |
| HLT | HLT |

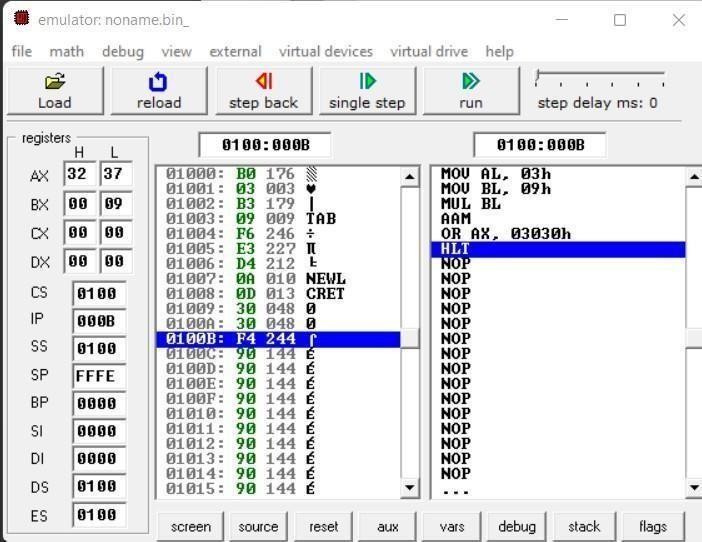
**AAA Instruction**



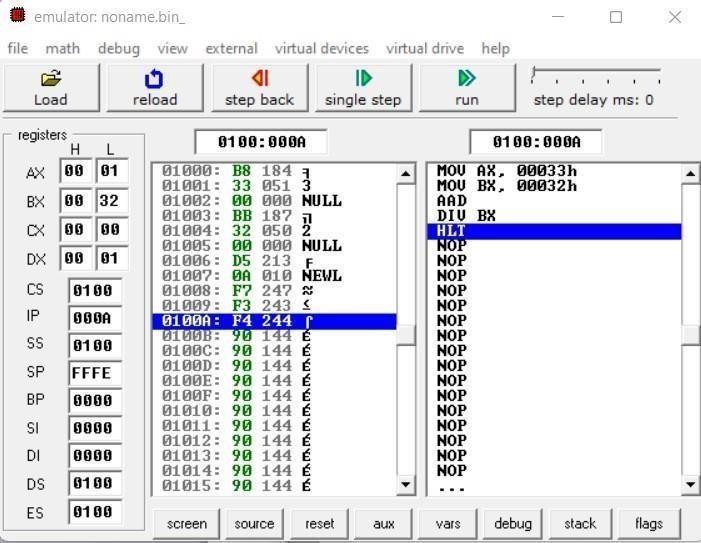
**AAS Instruction**



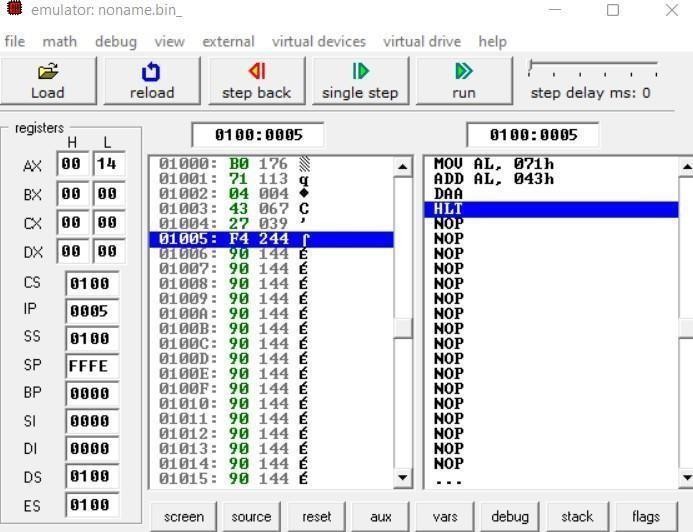
**AAM Instruction**



**AAD Instruction**



**DAA Instruction**



**DAS Instruction**



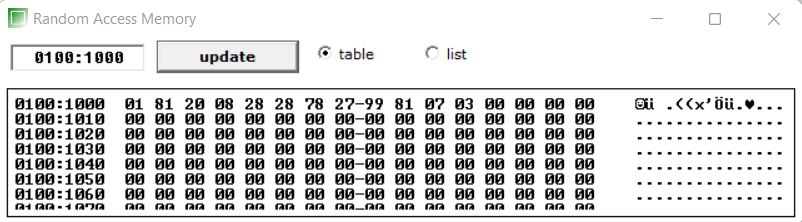
**Experiment 6**

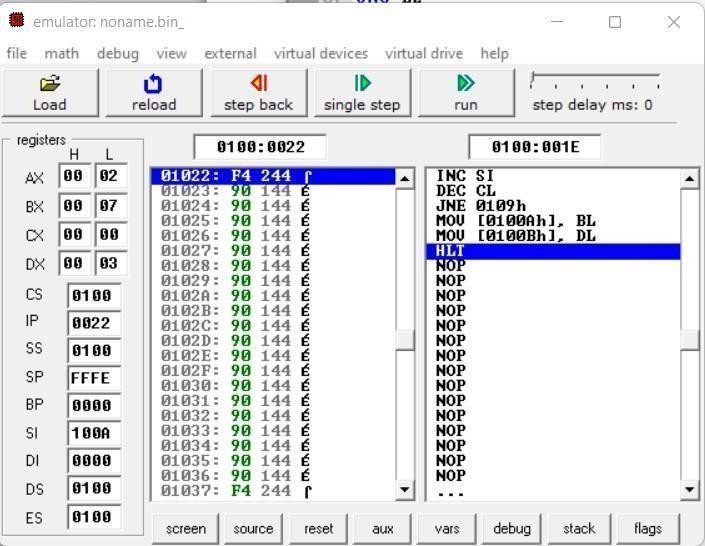
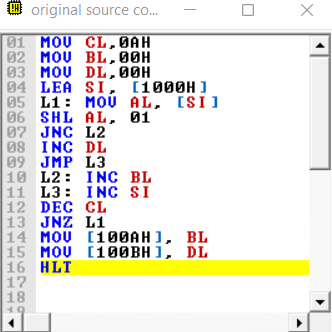
**Q.** Write an assembly language program to find out the count of positive numbers and negative numbers from a series of signed numbers in 8086.

# Soln. -

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



# Experiment 7

**Q.** 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. **Soln. -**

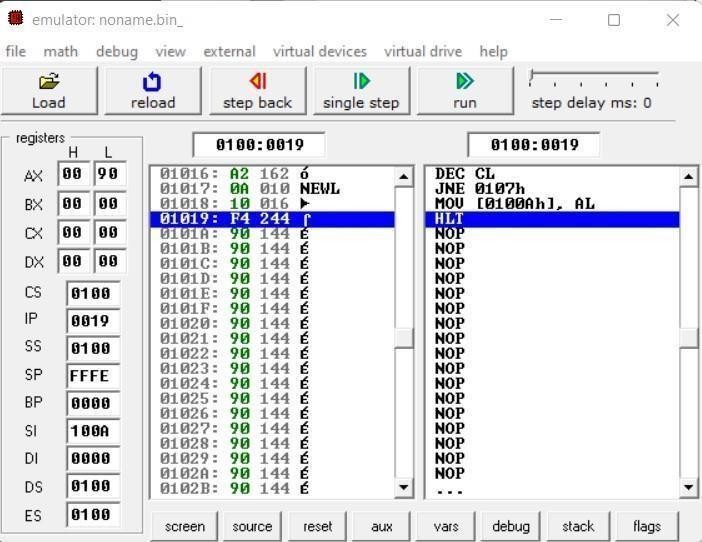
MOV CL, 0AH LEA SI, [1000H] MOV AL, [SI] L1: INC SI MOV BL, [SI] CMP AL, BL JC L2

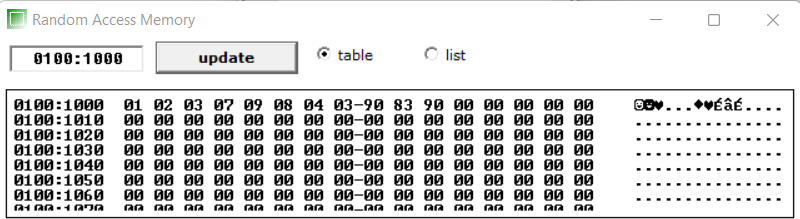
JMP L3

L2: MOV AL, BL L3: DEC CL JNZ L1

MOV [100AH], AL HLT

**Output:-**





# Experiment 8

**Q.** Write an assembly language program 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.

# Soln. -

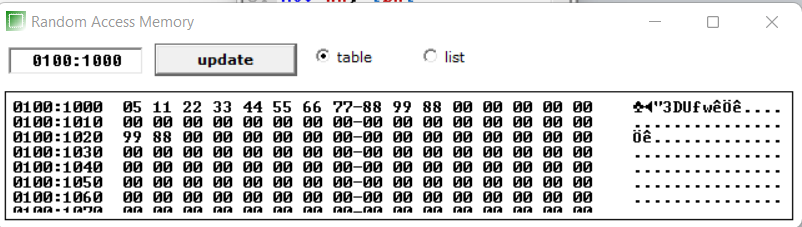
MOV BX, 1000H MOV C L, [BX] INC BX

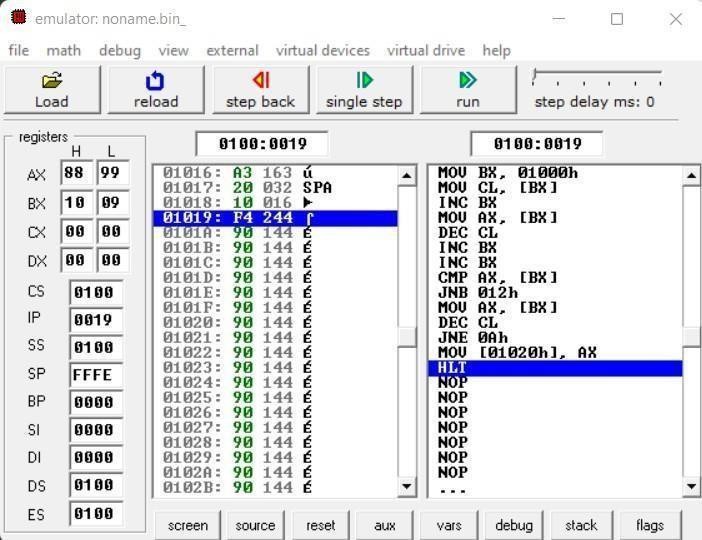
MOV AX, [BX] DEC CL

Back: INC BX INC BX

CMP AX, [BX]

JNC Next MOV AX, [BX] Next: DEC CL JNZ Back

MOV [1020H], AX HLT



# Experiment 9

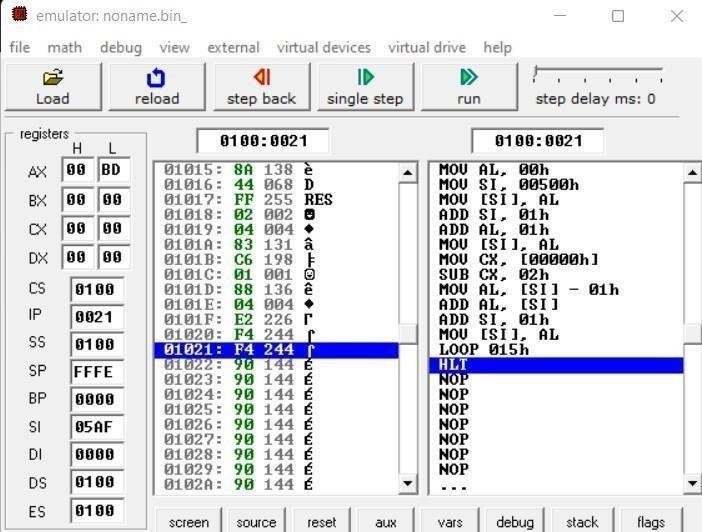
**Q.** Write an assembly language program to print Fibonacci series in 8086.

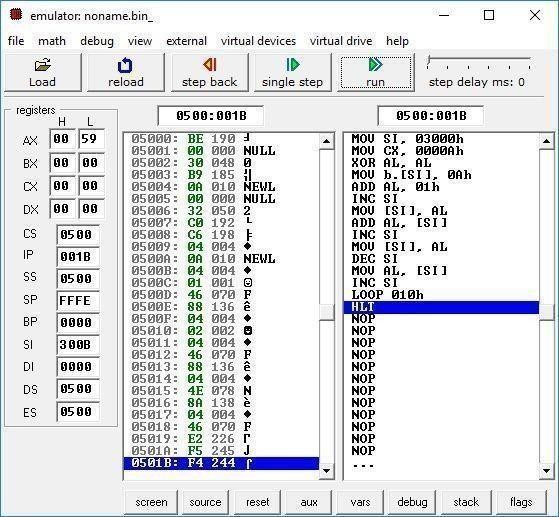
# Soln. -

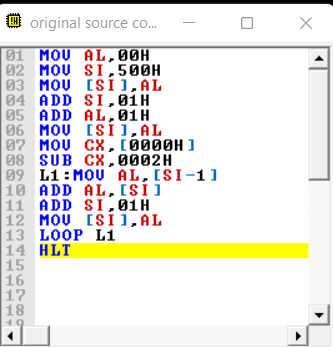
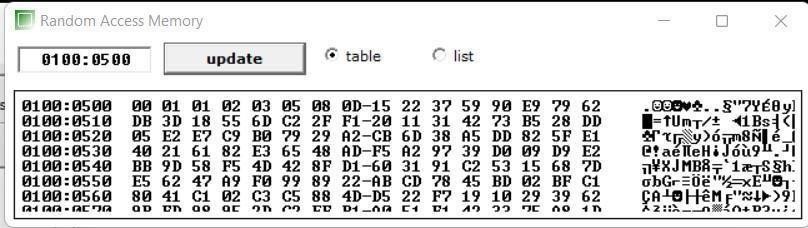
MOV AL,00H MOV SI,500H MOV [SI],AL ADD SI,01H ADD AL,01H MOV [SI],AL MOV CX,[0000H] SUB CX,0002H L1:MOV AL,[SI-1] ADD AL,[SI] ADD SI,01H MOV [SI],AL LOOP L1

HLT

Output:







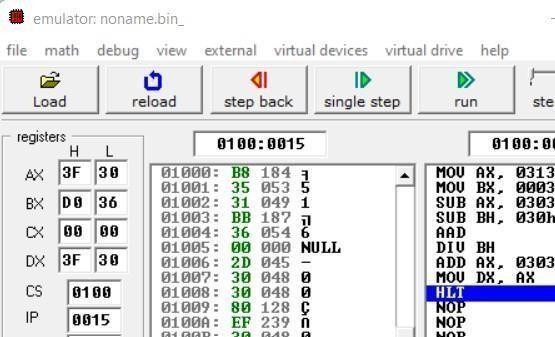
# Experiment 10

**Q.** 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.

# Soln. -

MOV AX,‟15” MOV BX,“6” SUB AX, 3030H SUB BH, 30H AAD

DIV BH

ADD AX, 3030H MOV [SI], AX HL