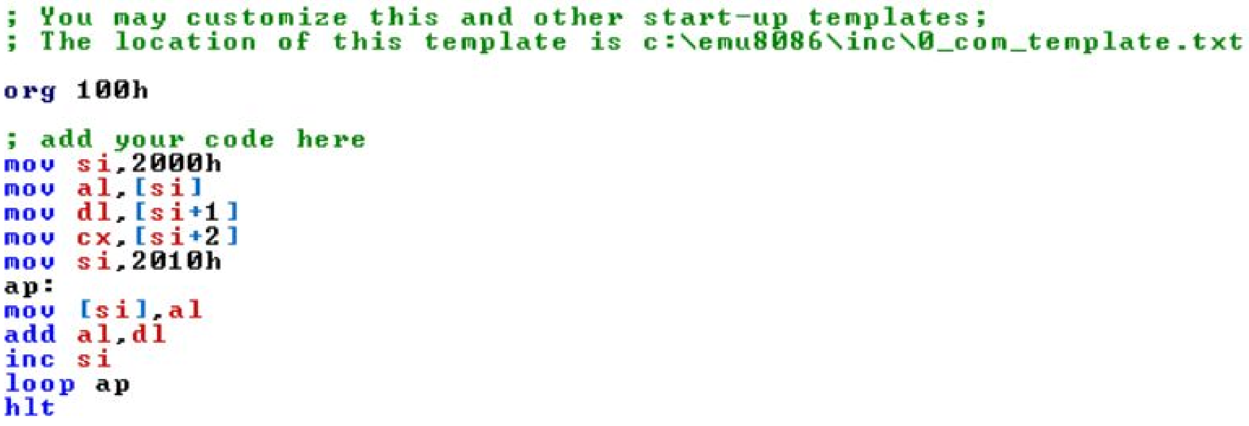
Experiment-5

Aim:- 8086 Assembly Language Programme for generation of an Arithmetic Progression (AP) Series.

Algorithm:

1) Assign source index a value to point at an address in RAM (let's say '0100:2000' or 2000h).
2) Store the value at address in RAM to the AL register (the first term), in next address in RAM to the DL register (common difference between terms) and to adjacent address in RAM to the CX register (number of terms).
3) Assign source index a value to point at an address in RAM to store the value of Arithmetic series (usually next row in memory window).
4) Create a loop 'ap', which begins with storing the value in the AL register to the address in RAM pointed by updated source index.
5) Add the values in AL and DL register and stores the result in AL register.
6) Increase the value of source index, moving to next address in RAM.
7) Loop 'ap' ends when it reaches the value of CX and the program is halted.

Program:

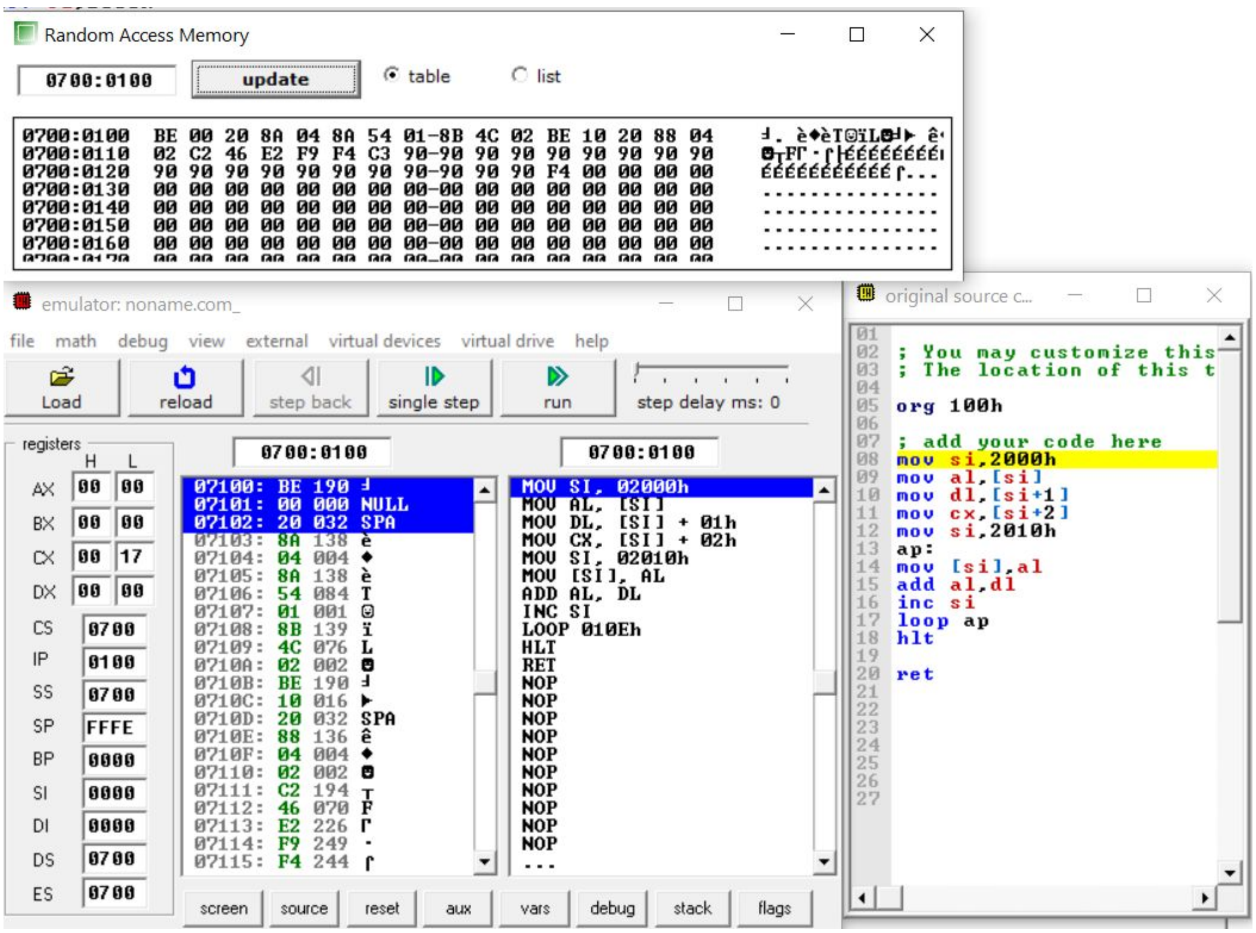


```
; You may customize this and other start-up templates;
; The location of this template is c:\emu8086\inc\0_com_template.txt

org 100h

; add your code here
mov si,2000h
mov al,[si]
mov dl,[si+1]
mov cx,[si+2]
mov si,2010h
ap:
mov [si],al
add al,dl
inc si
loop ap
hlt
```

Observation:



```
0700:0100  BE 00 20 8A 04 8A 54 01-8B 4C 02 BE 10 20 88 04   ╛. è♦èT☺ïL☻╛► ê♦
0700:0110  02 C2 46 E2 F9 F4 C3 90-90 90 90 90 90 90 90 90   ☻┬FΓ·⌠├ÉÉÉÉÉÉÉÉÉ
0700:0120  90 90 90 90 90 90 90 90-90 90 90 F4 00 00 00 00   ÉÉÉÉÉÉÉÉÉÉÉ⌠....
0700:0130  00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00   ................
0700:0140  00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00   ................
0700:0150  00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00   ................
0700:0160  00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00   ................
```

	H	L
AX	00	00
BX	00	00
CX	00	17
DX	00	00

CS	0700
IP	0100
SS	0700
SP	FFFE
BP	0000
SI	0000
DI	0000
DS	0700
ES	0700

```
0700:0100
07100: BE 190 ╛
07101: 00 000 NULL
07102: 20 032 SPA
07103: 8A 138 è
07104: 04 004 ♦
07105: 8A 138 è
07106: 54 084 T
07107: 01 001 ☺
07108: 8B 139 ï
07109: 4C 076 L
0710A: 02 002 ☻
0710B: BE 190 ╛
0710C: 10 016 ►
0710D: 20 032 SPA
0710E: 88 136 ê
0710F: 04 004 ♦
07110: 02 002 ☻
07111: C2 194 ┬
07112: 46 070 F
07113: E2 226 Γ
07114: F9 249 ·
07115: F4 244 ⌠
```

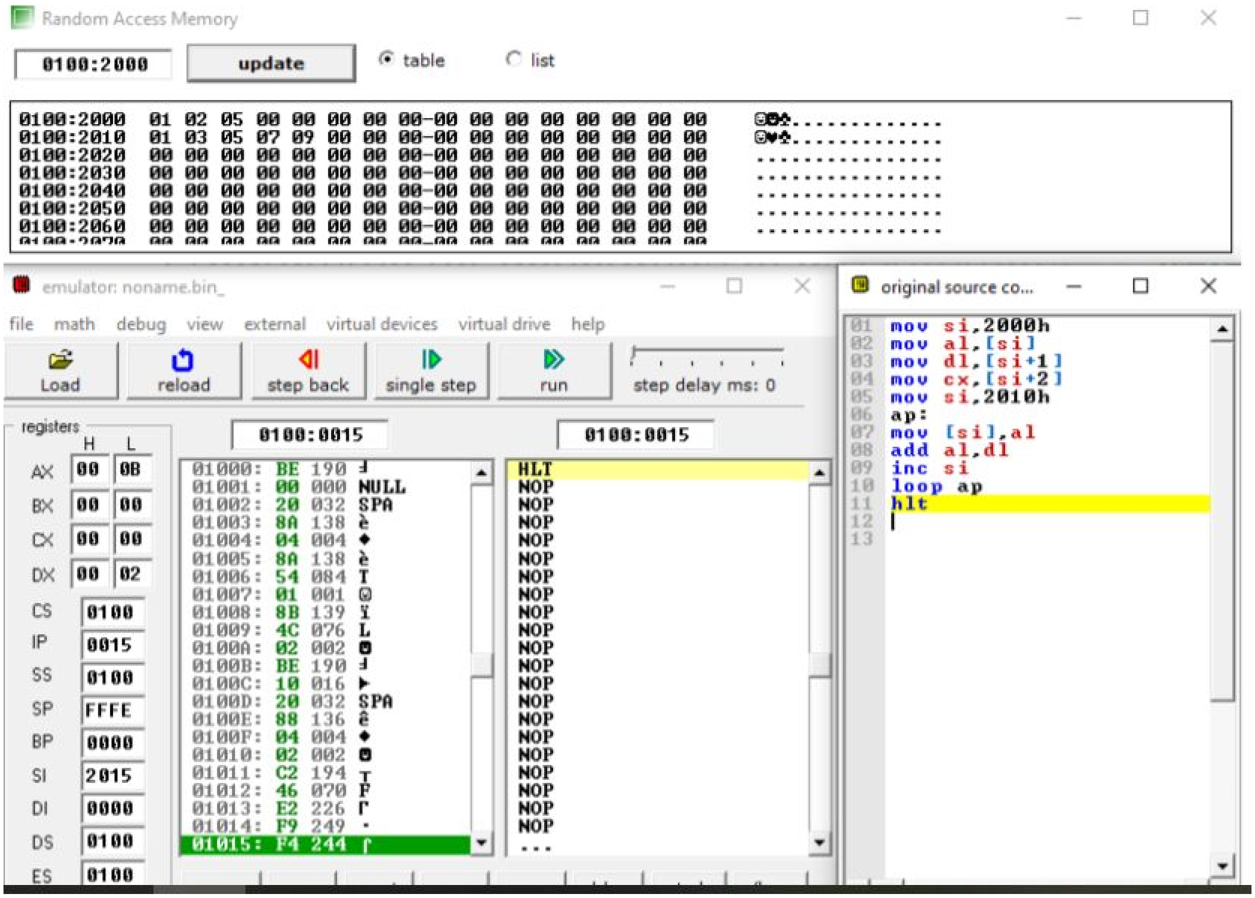
```
0700:0100
MOV SI, 02000h
MOV AL, [SI]
MOV DL, [SI] + 01h
MOV CX, [SI] + 02h
MOV SI, 02010h
MOV [SI], AL
ADD AL, DL
INC SI
LOOP 010Eh
HLT
RET
NOP
NOP
NOP
NOP
NOP
NOP
NOP
NOP
NOP
NOP
...
```

```
; You may customize this
; The location of this t

org 100h

; add your code here
mov si,2000h
mov al,[si]
mov dl,[si+1]
mov cx,[si+2]
mov si,2010h
ap:
mov [si],al
add al,dl
inc si
loop ap
hlt

ret
```



0100:2000 ◉ table ○ list

```
0100:2000  01 02 05 00 00 00 00 00-00 00 00 00 00 00 00 00   ☺☻♠..............
0100:2010  01 03 05 07 09 00 00 00-00 00 00 00 00 00 00 00   ☺♥♠..............
0100:2020  00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00   ................
0100:2030  00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00   ................
0100:2040  00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00   ................
0100:2050  00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00   ................
0100:2060  00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00   ................
```

step delay ms: 0

registers

	H	L
AX	00	0B
BX	00	00
CX	00	00
DX	00	02

CS	0100
IP	0015
SS	0100
SP	FFFE
BP	0000
SI	2015
DI	0000
DS	0100
ES	0100

0100:0015

```
01000: BE 190 ╛
01001: 00 000 NULL
01002: 20 032 SPA
01003: 8A 138 è
01004: 04 004 ♦
01005: 8A 138 è
01006: 54 084 T
01007: 01 001 ☺
01008: 8B 139 ï
01009: 4C 076 L
0100A: 02 002 ☻
0100B: BE 190 ╛
0100C: 10 016 ►
0100D: 20 032 SPA
0100E: 88 136 ê
0100F: 04 004 ♦
01010: 02 002 ☻
01011: C2 194 ┬
01012: 46 070 F
01013: E2 226 Γ
01014: F9 249 ·
01015: F4 244 ⌠
```

0100:0015

```
HLT
NOP
NOP
NOP
NOP
NOP
NOP
NOP
NOP
NOP
NOP
NOP
NOP
NOP
NOP
NOP
NOP
NOP
NOP
NOP
NOP
...
```

```
mov si,2000h
mov al,[si]
mov dl,[si+1]
mov cx,[si+2]
mov si,2010h
ap:
mov [si],al
add al,dl
inc si
loop ap
hlt
```

(Arkajyoti Chakraborty 2k19/EP/022)