EXPERIMENT – 5

Program – 1

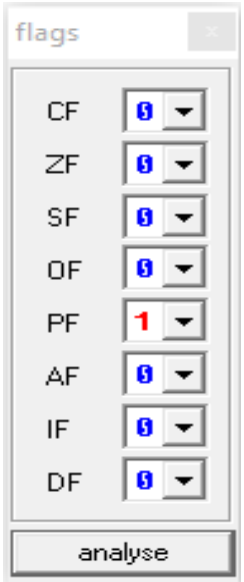
Aim: Write a program which sets the parity bit.

Code:

```
.model prog-5.1
.data
  var db 0100b ; setting the flags so PF is at the last third position so it sets Parity Flag

.code
  mov ax, @data
  mov ds, ax
  mov ah, var
  sahf; load from register to flag
  ; lahf- loads flag to register
 end
```

Input/Output:

Input: var – 0100b
Output: PF: 1



EXPERIMENT – 5

Program – 2

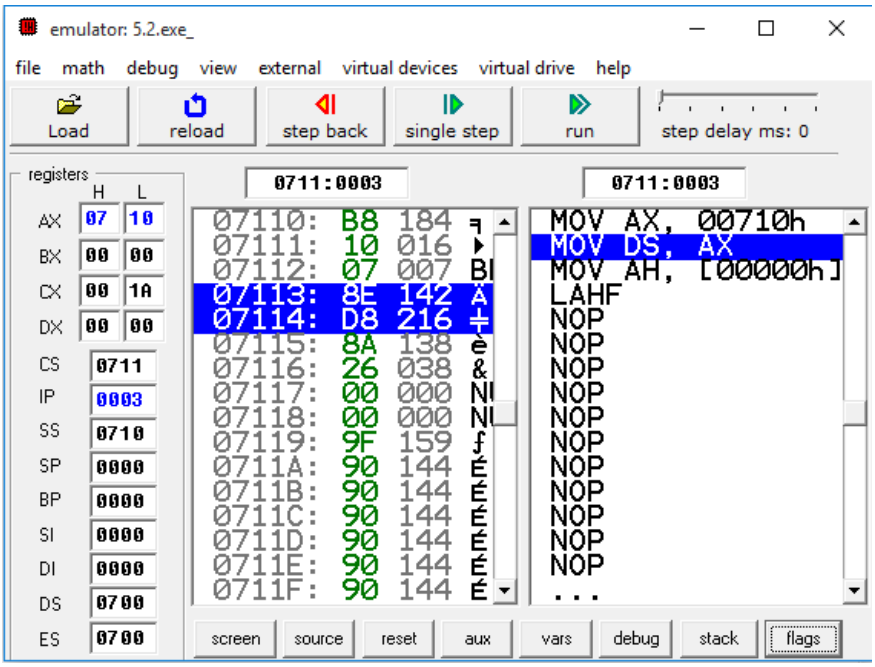
Aim: Write a program which transfers content of Flags to Register

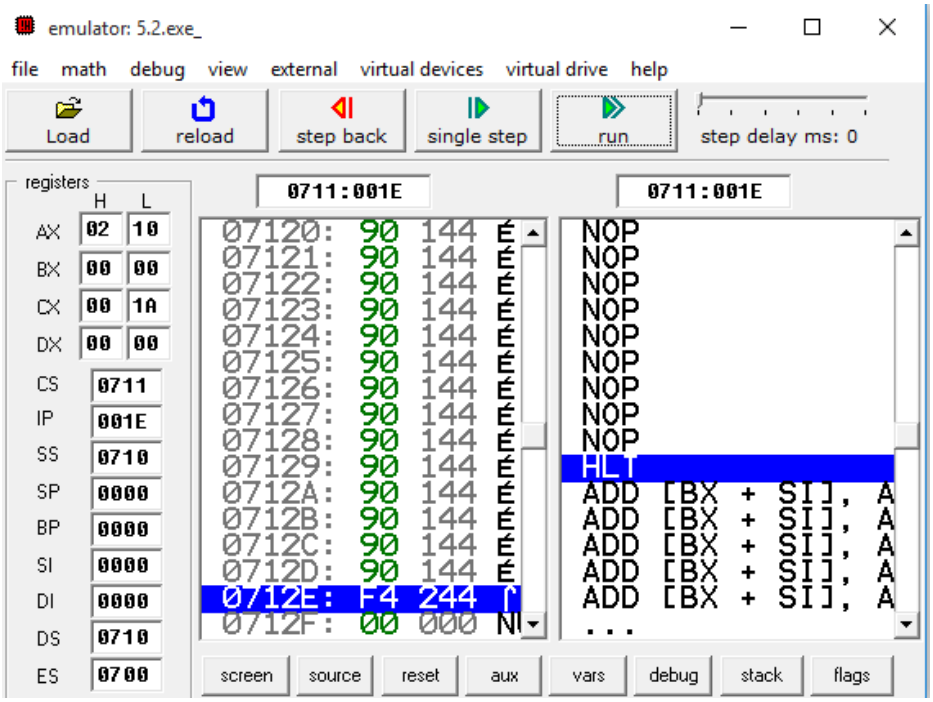
Code:

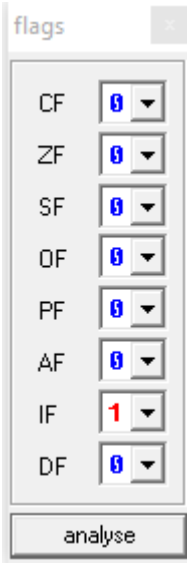
```
.model prog-5.2

.data
   var db 0111b

.code
   mov ax, @data
   mov ds, ax
   mov ah,var ; 7 is initially stored in variable
   lahf; loads flags value in AH

end
```

Input/Output:

Input: var – 0111b , ah - 7
Output: ah – 02h




emulator: 5.2.exe_
file math debug view external virtual devices virtual drive help
Load reload step back single step run step delay ms: 0
registers
H L
AX 02 10
BX 00 00
CX 00 1A
DX 00 00
CS 0711
IP 001E
SS 0710
SP 0000
BP 0000
SI 0000
DI 0000
DS 0710
ES 0700
0711:001E
0711:001E
07120: 90 144 É
07121: 90 144 É
07122: 90 144 É
07123: 90 144 É
07124: 90 144 É
07125: 90 144 É
07126: 90 144 É
07127: 90 144 É
07128: 90 144 É
07129: 90 144 É
0712A: 90 144 É
0712B: 90 144 É
0712C: 90 144 É
0712D: 90 144 É
0712E: F4 244 ⌠
0712F: 00 000 NU
NOP
NOP
NOP
NOP
NOP
NOP
NOP
NOP
NOP
HLT
ADD [BX + SI], A
ADD [BX + SI], A
ADD [BX + SI], A
ADD [BX + SI], A
ADD [BX + SI], A
...
screen source reset aux vars debug stack flags


flags
CF 0
ZF 0
SF 0
OF 0
PF 0
AF 0
IF 1
DF 0
analyse

EXPERIMENT – 5

Program – 3

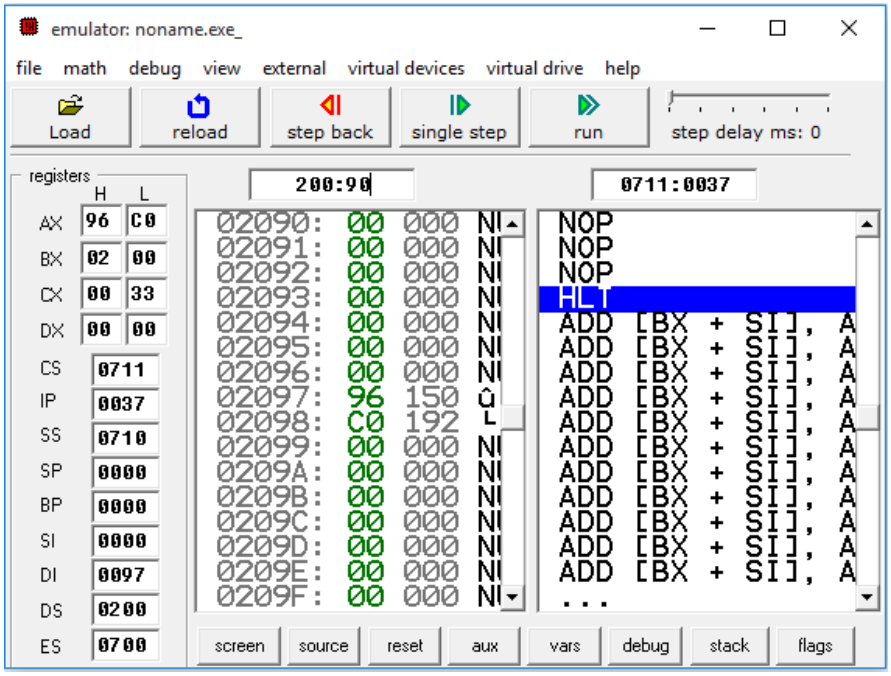
Aim: Write a program to add the two Hex Numbers 7AH and 46H and to store the sum at memory location 2098 and flags status at 2097 location.

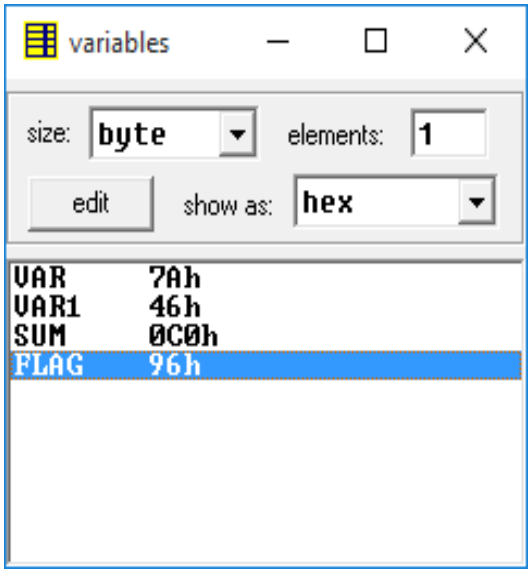
Code:

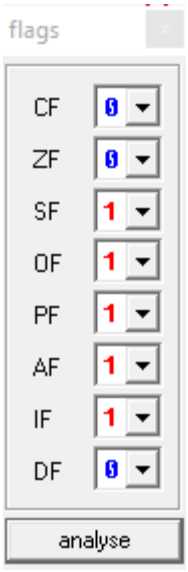
```
.model prog-5.3

.data
   var db 7Ah
   var1 db 46h
   sum db 1 DUB(?)
   flag db 1 DUB(?)

.code
   mov ax, @data
   mov ds, ax

   mov al, var
   add al, var1 ; adds two variables
   mov sum, al  ; result is transfered in sum variable
   lahf         ; flag is stored ah register

   mov flag, ah

   mov bx, 200h
   mov ds, bx

   mov di, 0098h
   mov [di], al ; sum result stored in 2098h

   mov di, 0097h
   mov [di], ah ; flag is stored in 2097h
end
```

Input/Output:

Input: var - 7Ah , var1 – 46h
Output: sum – 0C0h, flag – 96h







EXPERIMENT – 5

Program – 5

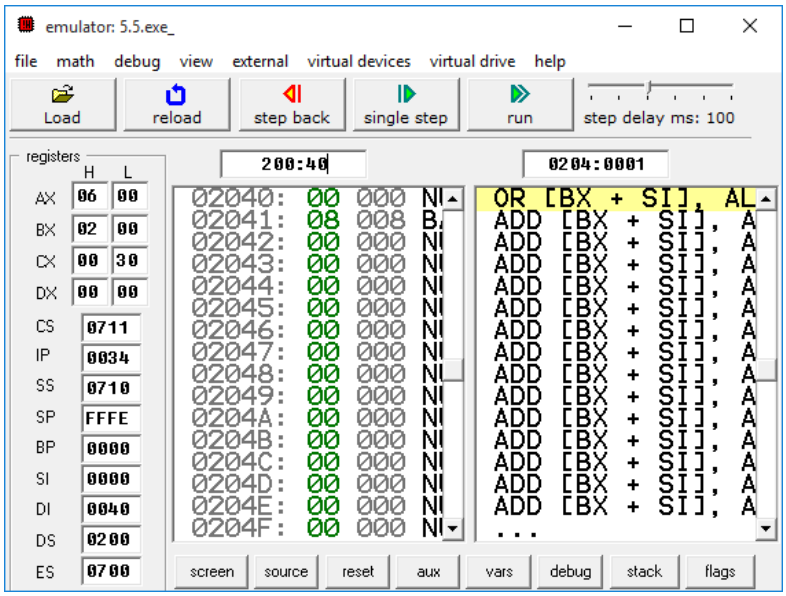
Aim: Using a Subroutine, write a program which adds two hex number 10H and F0H and store result at 2040H location in memory. At the end of subroutine, clear the flag Z without affecting other flags and return to main program.

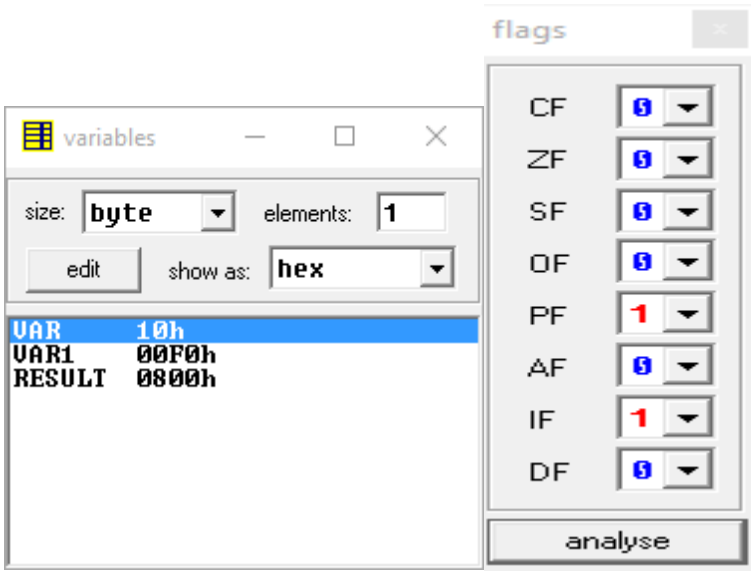
Code:

```
.model prog-5.5

.data
   var db 10h
   var1 dw 00F0h
   result dw 1 DUP (?)

.code
   mov ax, @data
   mov ds, ax

   call sum ; clals procedure

   sum proc ; declare a procedure
      mov al, var
      add ax, var1 ; addition of two variables
      mov result, ax

      mov bx, 200h
      mov ds, bx
      mov di, 0040h ; stores result at 2040h
      mov [di], ax

      lahf
      and ah, 10111111b; clears the zero flag without affecting other flag

   sum endp ; end a procedure

end
```

Input/Output:

Input: var – 10h , var1 – 00F0h
Output: result – 0800h





EXPERIMENT – 5

Program – 6

Aim: Write a program which set and resets zero flag at next iteration. (take number of iteration equal to 5)

Code:

```
.model prog-5.6

.code

   mov bx, 0
   mov cx, 5

   mov ax, 0111111b
   sahf ; loads from register to flag

   next:

   and ah, ax  ; initial value of ah and ax
   loop next

end
```

Input/Output:

Input:
Output:

EXPERIMENT – 5

Program – 8

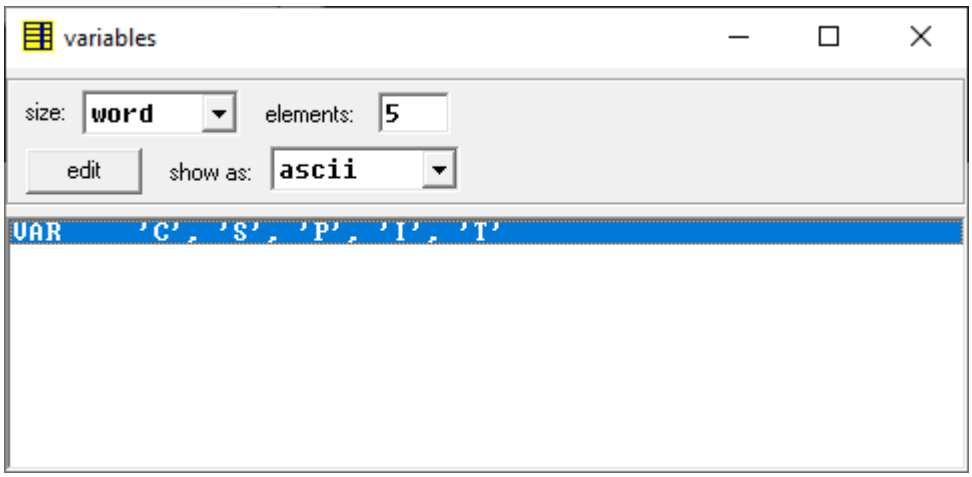
Aim: Implement a program to reverse a string using stack operations and stored in same memory area.

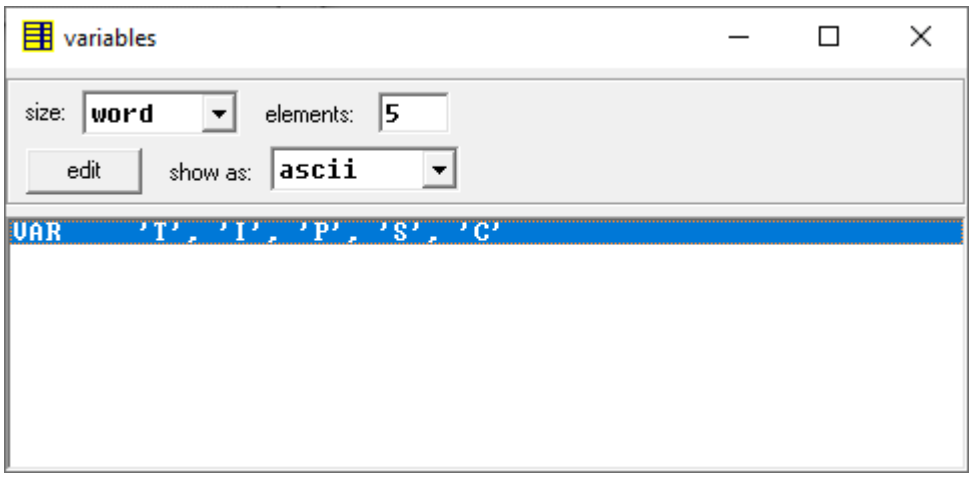
Code:

```
.model prac5-8

.data
   var dw 'C','S','P','I','T'

.code
   mov ax,@data
   mov ds,ax
   mov cx,10
   mov bx,0
   Next:
      mov ax,var[bx]
      push ax         ;pushing single elements into stack
      inc bx
   loop Next
   mov cx,10
   mov bx,0
   Rev:
      pop ax
      mov var[bx],ax  ;poping the elements from the stack and
      inc bx          ;placing them into same variable
   loop Rev
end
```

Input/Output:

Input: var-CSPIT
Output: var-TIPSC





EXPERIMENT – 5

Program – 9

Aim: Calculate the sum of series of even numbers from the list of numbers. The length of the list is in memory location 2200H and the series itself begins from memory location 2201H.
Assume the sum to be 8 bit number so you can ignore carries and store the sum at memory location 2210H.

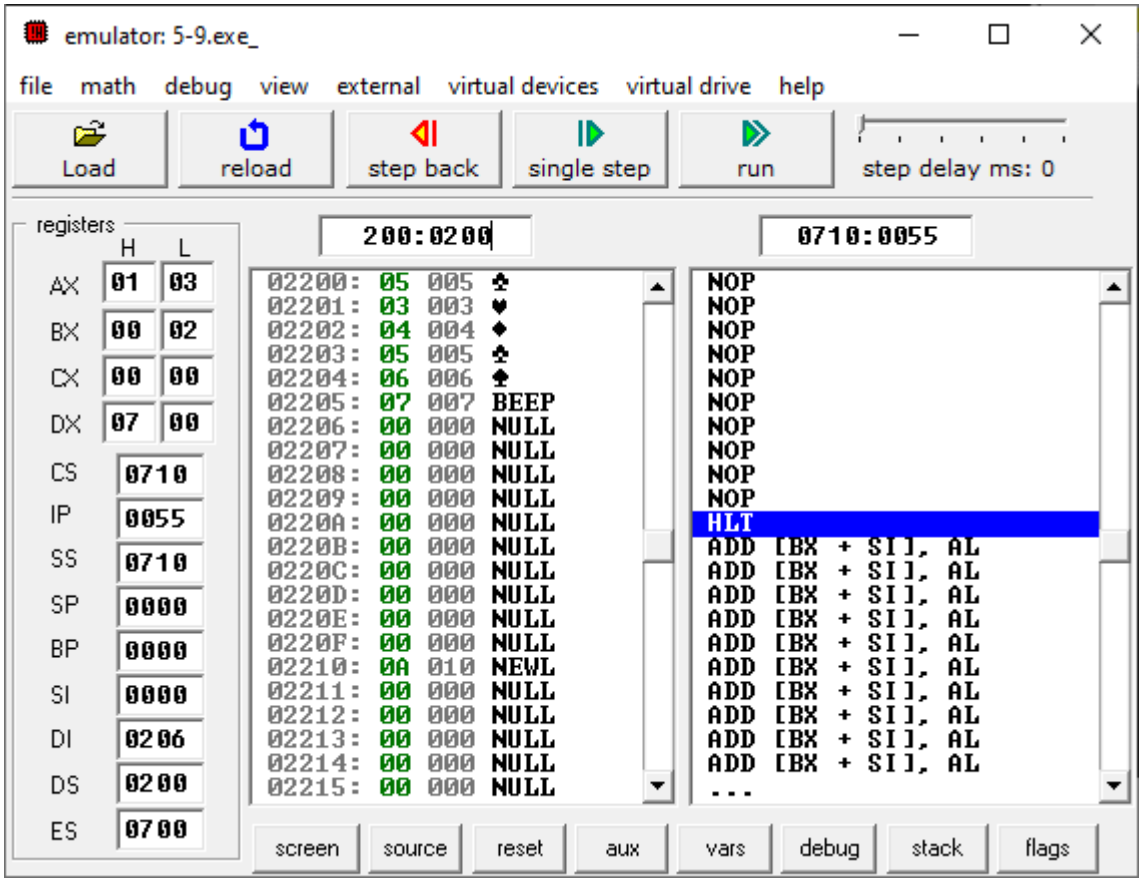
Code:

```
.model prac5.9

.code
mov bx,200h
mov ds,bx
mov bx,5

mov [200h],bx
mov di,201h
mov bx,0
mov [222h],bx

mov bx,3;
mov cx,5

next:
mov [di],bx
inc bx
inc di

loop next

mov di,201h;
mov cx,5 ; counter set to 5

check:
mov bl,2 ; check for even numbers
mov al,[di]
mov dh,[di]

div bl
cmp ah,[222h]
jz sum
jnz end
```

```
sum:
add [210h],dh ; for addition
jmp end


end:
inc di
loop check


end
```

Input/Output:

Input: cx- 1,2,3,4,5
Output: al-3, bl-2



EXPERIMENT – 5

Program – 10

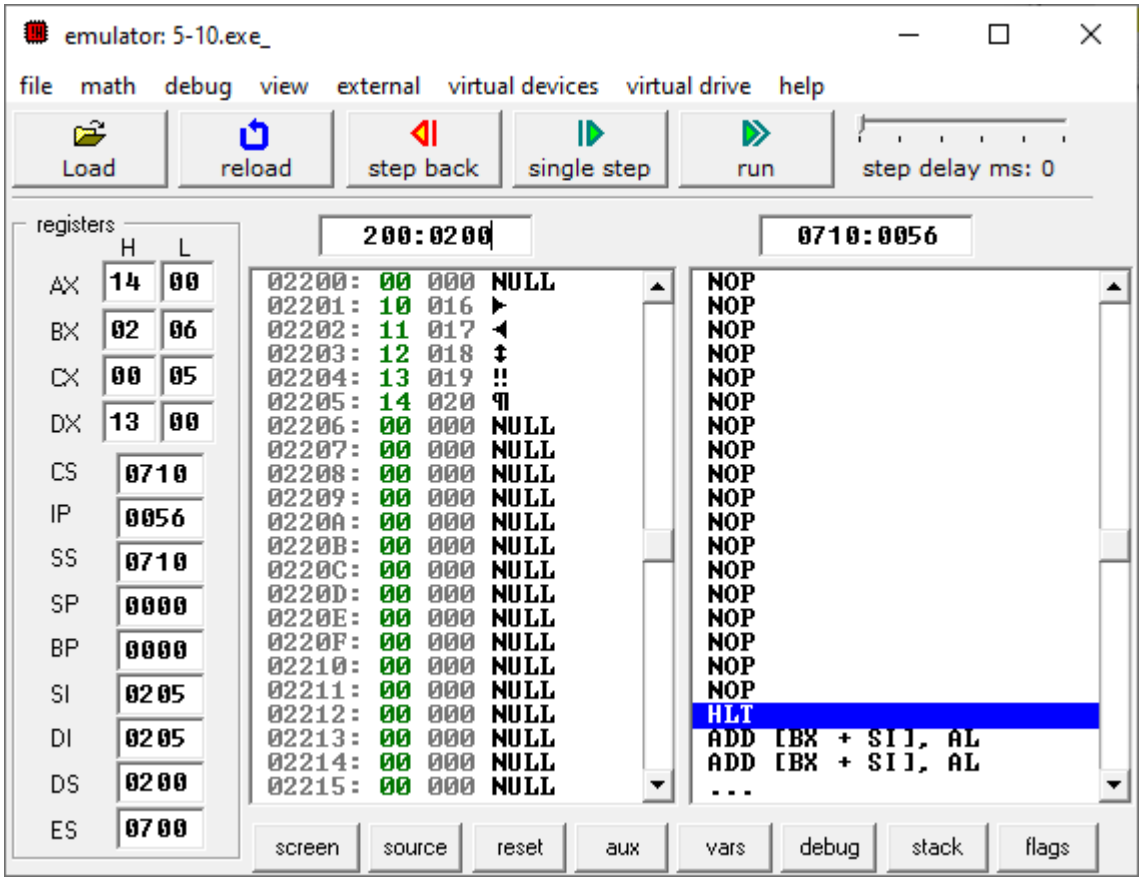
Aim: Write an assembly language program to arrange an array of 10 data in ascending order. The length of the list is in memory location 2200H and the series itself begins from memory location 2201H

Code:

```
model prac5-10

.code
   mov bx,200h
   mov ds,bx
   mov di,201h
   mov bx,20
   mov cx,5

   giving:
      mov [di],bx
      dec bx
      inc di

      loop giving

      mov di,201h
      mov bx,201h
      mov cx,5
   outerloop:

    innerloop:
         mov ah,[di]
         mov dh,[bx]  ;compare and if greater then go
         cmp dh,ah    ; for change
         jc change
         jnc exit

    change:
         mov dh,[bx]
         mov [bx],ah  ;swaping elements
         mov [di],dh

    exit:
         mov si,205h
cmp si,bx    ;storing the value
         jz abc
```

```
        inc bx
        jmp innerloop

    abc:
        inc di
        mov bx,di
        inc bx
        mov si,205h
        cmp si,di
        jnz outerloop

end
```

Input/Output:



EXPERIMENT – 5

Program – 11

Aim: Write an assembly language program to fill the memory locations starting from 3000h, with n Fibonacci numbers.

Code:

```
.model prac5-11
.code
mov bx,300h
mov ds,bx
mov di,00h
mov cx,100
mov [di],0
mov [di+1],1
giving:
   mov ax,[di]
   mov bx,[di+1]
   adc ax,bx       ;adding the last and next number
   mov [di+2],ax   ;storing the value at next location
   inc di
loop giving
end
```

Input/Output: