2] Design and develop an assembly program to sort a given set of 'n' 16-bit numbers in ascending order. Adopt bubble sort algorithm to sort given elements :

```
. model small

Display macro msg
lea  dx , msg
mov  ah , 09h
endm

. data

N DB 5
list db 02H, 01H, 34H, 0F4H, 09H, 05H
         adh,
msg1 db 0ah, "1 >> Ascending order"
msg2 db 0dh, 0ah, "2 >> descending order"
msg3 db 0dh, 0ah, "3: Exit"
msg4 db 0dh, 0ah, "Enter your choice :. $"
msg5 db 0dh, 0ah, "Invalid choice entered --- $"

. code
mov ax, @data
mov ds, ax
mov cl, N
dec cl
display msg1
display msg2
display msg3
display msg4
```

```asm
mov ah, 01h
int 21h
sub al, 30H
cmp AL, 01H
JE AS
cmp al, 02h
JE des
cmp al, 03H
JE final

AS :    outputloop1 : MOV CH, cl
                      MOV SI, 00H

        Inloop 1 : MOV AL, list [SI]
                   inc SI
                   cmp al, list [SI]
                   JC No_exchg1
                   xchg AL, List[SI]
                   mov list [SI-1], al

        No_exch1 : dec ch
                   Jnz inloop1
                   dec cl
                   Jnz outputloop 1
                   mov ah, 4ch
                   int 21h

des :
        outloop 2 : Mov ch, cl
                    mov si, 00h

        inloop 2 : mov al, list [si]
                   inc si
                   cmp al, list [si]
```

```asm
        jnc     no-exchg2
        xchg    al , list [si]
        mov     list [si-1], al

No-exchg2: dec ch
        jnz     inloop2
        dec     cl
        jnz     outloop2
        mov     ah, 4ch
        int     21h

final :  mov    ah, 4ch
         int    21h

end .
```