Lab 5

Write Assembly language program to sort the following numbers, using bubble sort, in signed ascending order:

-15, -30, -12, -50, 10, 20, 55, 40, 7, 0

That is, at the end of your program, the numbers must be in the following order:

-50, -30, -15, -12, 0, 7, 10, -20, 40,55

Mechanism to Conduct Lab:

Students and teacher communicate through Skype/Adobe Connect. Students will write code using Notepad or Programmer's Notepad and will share code and screen output.

Nasm: https://vulms.vu.edu.pk/Courses/CS401/Downloads/AssmSoft.zip

DosBOX: http://sourceforge.net/projects/dosbox/files/dosbox/0.74-2/DOSBox0.74-2-win32-installer.exe/download

Programmers Notepad: https://github.com/simonsteele/pn/releases/download/v2.4.2/portable-pn2421440.zip

Solution:

program to sort the numbers, using bubble sort, in signed descending order

```
[org 0x0100]
jmp start
data: dw -15, -30, -12, -50, 10, 20, 55, 40, 7, 0
swap: db 0
start:      mov bx, 0 ; initialize array index to zero
 mov byte [swap], 0 ; rest swap flag to no swaps
loop1:    mov ax, [data+bx] ; load number in ax
cmp ax, [data+bx+2] ; compare with next number
jle noswap ; no swap if already in order
mov dx, [data+bx+2] ; load second element in dx
mov [data+bx+2], ax ; store first number in second
mov [data+bx], dx ; store second number in first
mov byte [swap], 1 ; flag that a swap has been done

noswap:

 add bx, 2 ; advance bx to next index

cmp bx, 18 ; are we at last index

jne loop1 ; if not compare next two

cmp byte [swap], 1 ; check if a swap has been done

je start ; if yes make another pass

mov ax, 0x4c00 ; terminate program

int 0x21
```