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TOPIC: MP EXPERIMENT 4:
WLAP to perform sorting of numbers in ascending/ descending order

CODE:

```
.8086
.model small
.data
s1 db 0Ah,03h,08h,02h,01h,07h,04h,06h,09h,05h

.code
start:
mov ax , @data
mov ds,ax

mov cl , 0Ah
mov ch , 0Ah
dec cx
lea si,s1

back1:mov al,[si]
      mov ah,[si+1]
      cmp al,[si+1]
      jnc back2
      jc back3

back2:mov [si] , ah
```

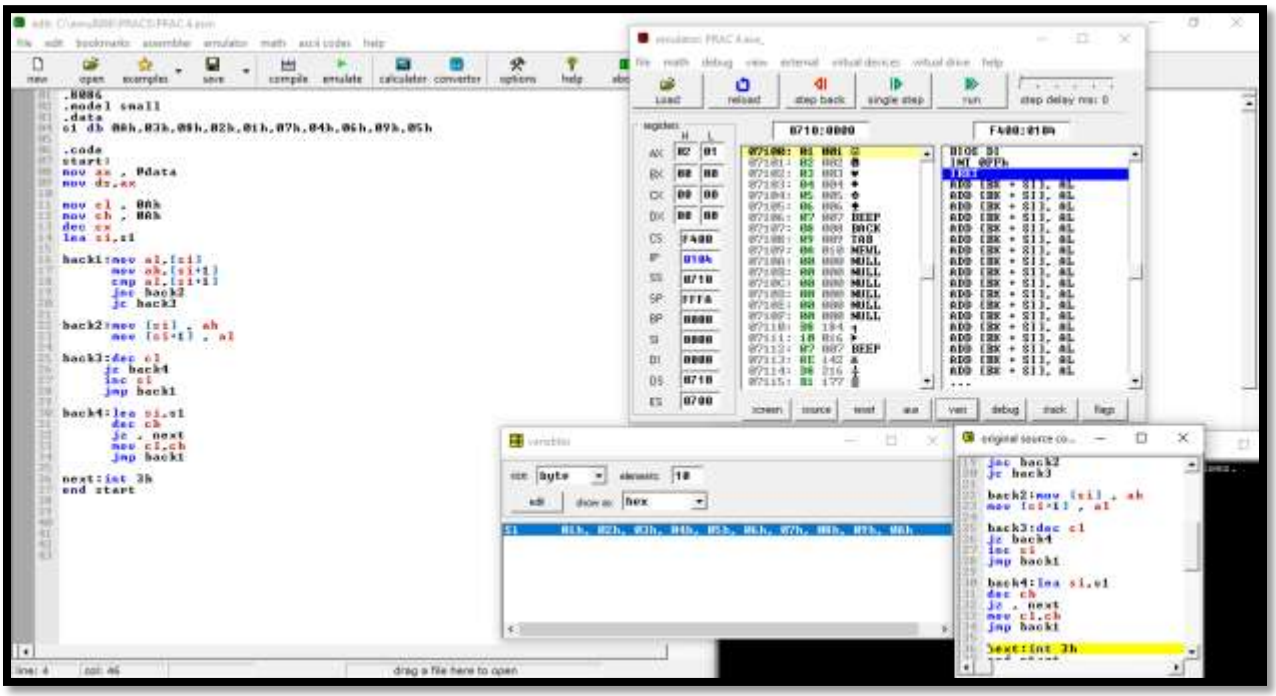
```
      mov [si+1] , al

back3:dec cl
     jz back4
     inc si
     jmp back1

back4:lea si,s1
      dec ch
      jz , next
      mov cl,ch
      jmp back1

next:int 3h
end start
```

OUTPUT:


.8086
.model small
.data
a1 db 08h,03h,08h,02h,01h,07h,04h,06h,09h,05h
.code
start:
mov ax , @data
mov ds,ax
mov cl , 08h
mov ch , 08h
dec cx
lea si,a1
back1:mov al,[si]
mov ah,[si+1]
cmp al,[si+1]
jnc back2
jc back3
back2:mov [si] , ah
mov [si+1] , al
back3:dec cl
jz back4
inc si
jmp back1
back4:lea si,a1
dec ch
jz , next
mov cl,ch
jmp back1
next:int 3h
end start

POSTLAB QUESTIONS:

1. Discuss Control transfer instruction in detail.

Ans: 1) The 8086 provides both conditional and unconditional control transfer instructions to direct the flow of execution.

2) Conditional control transfers depend on the results of operations that affect the flag register.

3) Unconditional control transfers are always executed.

4) JMP, CALL, RET, INT and IRET instructions transfer control from one code segment location to another.

5) The conditional transfer instructions are jumps that may or may not transfer control, depending on the state of the CPU flags when the instruction executes.

2. What is the difference between near jump and far jump?

ANS:

1) A short JMP is the relative JMP that you refer to. It is encoded as a two bytes; the actual OF JMP and the number of bytes +/- relative to the current IP.
2) A near jump allows you to jump within the current "segment" (using real mode terms) or within the currently selected memory area in the CS selector.
3) A long or far JMP additionally includes a sector (or segment in real mode).
4) The biggest difference related to time is caused by the different numbers of bytes that must be read to accomplish the JMP.