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ECE 427: Microcomputer Architecture Lab

Task #5

Bubble Sort Program

Performed: 10/29/2013

Submitted: 11/5/2013

Objective:

- Write a program that uses a bubble sort algorithm to order the items in a list.

Word Description:

In this lab I was able to process through a list of numbers, and rearrange the items in ascending order.

Code & Screenshots:

```
org 100h

.DATA
    LIST DB 7,6,1,3,9,1,8,2,4,3,5 ;Length 11

.CODE
    ;Loop Start
AGAIN:  MOV DI,OFFSET LIST ;Prep the pointer
    MOV CX,10 ;LIST LENGTH - 1
    MOV AX,0 ;IF AX = 0, no changes, but if AX = 1, there was an exchange

NEXT:   MOV BH,[DI]
    MOV BL,[DI+1]
    CMP BH,BL
    JBE SKIP ;No exchange needed

    ;Exchange Needed...
    MOV AX,1 ;Set a flag
    ;Replace in reverse order
    MOV [DI],BL
    MOV [DI+1],BH
SKIP:   INC DI
    LOOP NEXT ;Iterate through all elems

    CMP AX,1
    JE  AGAIN
ret
```
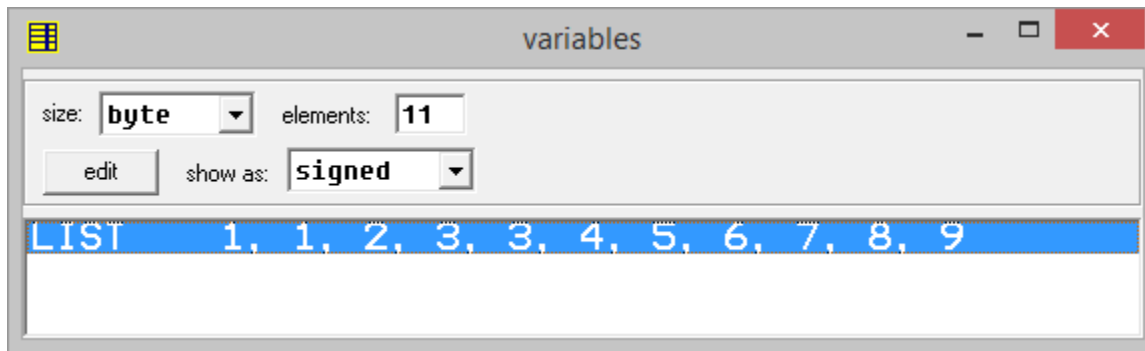
Data Results:

Conclusion & Comments:

      In this lab, I was able to sort a list of numbers, using a bubble sort algorithm. As I was already familiar with bubble sorting, this lab was very easy, but did provide an excellent opportunity to refresh myself on the concepts of bubble sorts, and also provided additional experience with assembly, specifically compare and looping operations.