

**ELEC 2220 Computer Systems**  
**Homework #15**  
**Due: Wednesday, July 8**

**PROGRAM 1**

Write a subroutine that will sort an array of N signed 32-bit numbers into ascending order. The subroutine is to be called, with the size of the array (value of N) and the address of the array passed as arguments to the subroutine on the stack. The main program should call the subroutine two times, once for an array of 8 numbers, and the second time for an array of 12 numbers. The arrays should be defined in a data area, and initialized by a debug initialization file.

Example:

In the data area

Array1:       space 32

Array2:       space 48

**Main Program**

...set up first call to sort Array1

...call the subroutine

...set up the second call to sort Array2

...call the subroutine

Submit the source program and the memory window from the debugger after running the program. In the memory window, show and highlight the two sorted arrays in memory.

**DISCUSS**

Describe what instruction(s) you would change in Program 1 so that the subroutine will sort an array of N unsigned 32-bit numbers into descending order.

(It is not necessary to build and test this program, but you might want to do so for practice.)