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ENEE 350 Homework Set 7
Programming Project 2
(Due: Class 17, Mon., July 2, 2007)

Write, assemble and run successfully on the simulator a Mac-1 subroutine **lgneg(n,x)** that returns in the AC the address of the integer possessing the algebraically largest negative value along the real line among the n integers in the array whose starting address is x. The largest negative value on the real line is the farthest right value to the left of zero. If there are no negative values among the n elements to be processed, then return -1 which is equivalent to the address 32767, clearly not a valid memory address. If there are two are more array entries that equally satisfy the requirements, return the address of the one with the highest address. Your subroutine should be tested with the main program shown below, which defines how the parameters are passed.

```
     /main program                                  |     /continued from below halt
         EXTRN lgneg                                |   data     57
ans1     RES    1                                  |            0
ans2     RES    1                                  |          129
ans3     RES    1                                  |           34
n1        6                                        |            8
n2        10                                       |            3
n3        5                                        |          -29
start   loco   4020                                |          -15
        swap           /initialize sp              |           -2
        loco    n1                                 |         -347
        push           /push address  n1           |           -3
        loco    data                               |            6
        push           /push array start address   |           35
one     call    lgneg                              |         -413
        stod    ans1                               |           END     start
        insp     2                                 |
        loco    n2     /push address  n2           |
        push                                       |
        loco    data                               |
        addd    (4)                                |
        push           /push array start address   |
two     call    lgneg                              |
        stod    ans2                               |
        insp     2                                 |
        loco    n3     /push address  n3           |
        push                                       |
        loco    data                               |
        addd    (9)                                |
        push           /push array start address   |
three   call    lgneg                              |
        stod    ans3                               |
        insp    2                                  |
        halt                                       |
  /data array continues here but                   |
  /  is shown in the above right hand column       |
```

Hand in a copy of the main program symbolic assembly listing, the subroutine symbolic assembly listing, the contents of (macro) memory after "load main sub" (i.e., of main.abs) before execution of the program, and the contents of memory after execution of the program. Highlight and comment upon the final answers. Specify what values are contained in the addresses specified by ans1, ans2, and ans3.