Electrical and Computer Engineering Department
University of Maryland
College Park, MD 20742-3285
Glenn L. Martin Institute of Technology ♦ A. James Clark School of Engineering
Dr. Charles B. Silio, Jr.
Telephone 301-405-3668
Fax 301-314-9281
silio@umd.edu

ENEE 350 Homework Set 7

Programming Assignment 2

(Due: Class 17, Tues., Apr. 1, 2014)

Write, assemble and run successfully on the simulator a Mac-1 subroutine **minod(n,x)** that returns in the AC the address of the integer possessing the algebraically smallest odd value (zero and multiples of 2 are even) among the n integers in the array whose starting address is x. If there are no odd values in the array being processed, return -1 which as an unsigned address is 65535, a clearly out of bounds address in the 4096 word memory. If there are two or more equal minod values, return the largest of the addresses. 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 minod                                  |   data     58
ans1     RES    1                                    |            0
ans2     RES    1                                    |          128
ans3     RES    1                                    |          -34
n1        5                                          |            8
n2        10                                         |            3
n3        7                                          |          -29
start   loco   4020                                  |           -2
        swap            /initialize sp               |           -3
        loco    n1                                   |          347
        push            /push address  n1            |          -15
        loco    data                                 |            6
        push            /push array start address    |           35
one     call    minod                                |         -413
        stod    ans1                                 |           END     start
        insp     2                                   |
        loco    n2      /push address  n2            |
        push                                         |
        loco    data                                 |
        addd    (3)                                  |
        push            /push array start address    |
two     call    minod                                |
        stod    ans2                                 |
        insp     2                                   |
        loco    n3      /push address  n3            |
        push                                         |
        loco    data                                 |
        addd    (7)                                  |
        push            /push array start address    |
three   call    minod                                |
        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.