

# ECE 109 Problem Session 7

## Adopted from the TA description

We will write a program that manipulates data in a list that is a fixed length long. Below is the program we will write.

Assume the start of a list is x4000.  
Assume that the list ends after 50 entries.

The list will have 50 values in it. The program will search for the smallest value in the list. The address containing the smallest value will be placed in R2, and the smallest value will be placed in R3 at the end of the program. We will assume only positive numbers are in the list.

Pseudo-code:

- 1) Initialize a counter to 50 in R5
- 2) Load list starting address, x4000, into R6.
- 3) Set value in R2 equal to list starting address
- 4) Set value in R3 equal to starting list value
- 5) If value in R5 == 0 then goto Step 11
- 6) Load value from memory in address from R6
- 7) If loaded value is less than R3
  - a. Set R2 = R6
  - b. Set R3 = loaded value
- 8) Increment R6
- 9) Decrement R5
- 10)Goto Step 5
- 11)End Program

Start off with the shell of the program. (Steps 1-4).

```
.ORIG x3000
    LD R5,COUNTER      ; Load in starting counter value
    LD R6,LISTSTART    ; Load starting address into R6
    ADD R2,R6,#0       ; Put starting address in R2
    LDR R3,R2,#0       ; Put starting list value in R3

    ;; Fill in code here

DONE HALT

COUNTER .FILL #50      ; Counter is 50
LISTSTART .FILL x4000  ; Points to address where list starting address is stored.
.END
```