CPE 323: Laboratory Assignment 1

**Purpose:** To study the 68000 instruction set and the Easy68K simulator; and to utilize them to write M68K assembly programs.

**Getting started:**
To download and learn more about Easy68K visit the following Web site: http://www.monroeccc.edu/ckelly/EASY68K.htm
Read help and become familiar with the simulator I/O operations.

**An example:** The example below prints a string pointed to by the register A1.

```
*-----------------------------------------------------------
* Program Number: 0.1                                     *
* Written by    : A. Milenkovic                           *
* Date Created  : January 2005                            *
* Description   : Display a string pointed to by the register A1*
*-----------------------------------------------------------
NL EQU $0A
CR EQU $0D
START ORG  $1000
LEA  STRG,A1  load address of STRG into A1
MOVE.W  SIZE,D1   load D1 with the string size
MOVE.B #0,D0   load D0 with 0 (print string)
TRAP  #15
STRG dc.b 'Hello World!',CR,NL,'Hello World (again)!',CR,NL
SIZE dc.w  SIZE-STRG         define the size of the string
STOP #$2000
END START
```

We also provide more examples at: http://www.ece.uah.edu/~milenka/cpe421-07F/docs/m68k/examples/.

**Assignment #1:** Write an M68K assembly program that performs the following operations on signed integer arrays A and B:
1: Reads in the integer arrays. Assume that sizeof(int) = 2 bytes. The maximum number of elements in the integer arrays is 512.
2: Displays the stored arrays.
3: Sorts (in ascending order) the arrays and displays the elements of the sorted arrays.
4: Displays the resulting array C = A * B.

Your main loop of the program should provide an interface that will let the user select which one of 4 functions described above should be performed.

**Assignment #2:** Write an M68K assembly program that performs the following operations on a string S.
1: Reads in the string. The string should be delimited by a NULL character ($00). The maximum number of characters in the string is 256.
2: Displays the stored string.
3: Creates and displays a new string with all upper case letters.

Use a similar user interface to the one in the previous assignment.

**Submission:** Check lab submission policy at the course Web site: http://www.ece.uah.edu/~milenka/cpe421-07F/.