Assigned: Jan 12 (SecB-Riley); Jan13 (SecC-Anderson); Jan14 (SecA-Hamblen) **ECE3055**

Project 1 – MIPS Assembly Language

Due: Jan 19 (Sec B-Riley); Jan 20 (Sec C-Anderson); Jan 21 (Sec A-Hamblen) **Spring Semester, 2004**

Lab Assignments MUST be turned in on time! Late assignments will not be graded

For this project, we will use the MIPS simulator (*SPIM*) to write and debug two simple assembly language subroutines. A skeleton assembly language program is provided (prog1.s) on the class web page, with the two required subroutines missing. The two subroutines are:

1. Subroutine `Compute`. This subroutine is given the address of an array in register `a0`. The array contains a variable number of *unsigned integers* (32 bits each). An array entry of 0 terminates the array and is not part of the array. The `Compute` subroutine scans the values of the array elements and calculates the sum, average, minimum value, maximum value, and count of items, and stores these in global variables.

2. Subroutine `PrintResults`. This subroutine prints out the sum, count, average, minimum, and maximum as shown below:

   ```
   Sum is xxx
   Number entries is xxx
   Average is xxx
   Minimum is xxx
   Maximum is xxx
   ```

   The average printed is an *integer* average, which is actually the *floor* function of real average.

Resources. The *SPIM* reference manual is posted in PDF format on the class web page. It contains everything you need to write and debug your program. It has all MIPS instructions, and descriptions of the operating system calls used to print values on the terminal window. A sample program, `sample.s` is also linked from the class web page, that does some simple assembly language operations. The complete source code for *SPIM* is posted, which you can compile on any unix system, as well as a binary for Windows platforms. The TA's and the instructors are also available for support.

Computing Resources The *SPIM* simulator is pre–installed on every Windows system in the ECE labs on the third floor of the CoC building. Additionally, source code for *SPIM* is available on the class web page for those using Unix or Linux.

Turning in your Project. This project will be turned in by using `WebCT` at `webct.gatech.edu`. After turning in your assignment, you must demonstrate it to one of the three Teaching Assistants assigned to ECE3055. In order to ease the burden, each of the three sections of ECE3055 have different due dates. The schedule of lab hours for the TA's is posted on the class web page. The labs are in College of Computing, third floor. Assignments *MUST* be turned in on time, as we will be discussing the solution in class and therefore you must have completed it prior to then.