EEL 3801 - Computer Organization
Summer 2013
Project #1

Due date: Wed June 19, 2013 (11:59 P.M.)

The project code and report must be submitted online through WebCourses as specified.

Literature

- Patterson and Hennessy: Chapters 2
- Slides on MIPS assembly language MIPS Simulator

Introduction

In this project, you can use one of the following simulators to run your assembly language program.

1. MARS (preferred)
   [Online] http://courses.missouristate.edu/KenVollmar/MARS/download.htm
2. PCSpim
   [Online] ftp://ftp.cs.wisc.edu/pub/spim/
   The file `pcspim.exe` is used to install the simulator on a PC.
3. QtSpim
   [Online] http://pages.cs.wisc.edu/~larus/spim.html
   It supports Windows, Linux, and Mac OS X.
4. Mipsit

Project Description

Bubble sort is a method to sort a list in an ascending order. In this method, the largest number in the list is first moved to the very end of the list by a series of compare and exchange operations. This process is repeated for all numbers in the list until the list is sorted.

Write an assembly program that reads a list of characters from the keyboard and writes the sorted list in ascending order to the console screen. Any lowercase letter should be translated to the corresponding uppercase letter, while other characters should remain unchanged. The ASCII table on page 122 of the textbook provides ASCII values of characters.

For example, if the user enters following list of characters by keyboard:

aZSYBcdWxE

Then, the program should output the list in the following manner

ABCDESWXYZ

Observe the following requirements overall:

- Your program should handle an input list of length 10 characters.
- It is not required to implement any error handling. Thus, the input can be assumed to be only English letters keys (not numeric or special characters).
- The input should come from the keyboard, although you can initially fix inside your code to make the algorithm work.
- You are free to choose data-types or input format.

Turn in the written project report using the format given.

Project Report Format

Name:
Date:
Introduction: An introduction explaining the lab assignment and what are the goals of the assignment (what is the code implementing).
Code Description: This section describes how the program implemented met the requirements of the task assignment. Specifically, describe the roles of various registers you used to implement the program and the overall flow of the program.
Test Procedure: This is a step by step procedure that tells how to test each element of the program. It must be detailed enough so the user can follow each step. This is similar to the steps in a cookbook. Include the screenshots of your program's output.

What you need to submit?

1. Project report in **.pdf** format
2. Commented assembly code **.s** file (or .asm file) for the program written for the project.