ICS 233 – Fall 2010

Computer Architecture and Assembly Language

Programming Assignment 1

Problem 1: Searching a string

Write a MIPS assembly language program to do the following:

Read a string and store it in memory. Limit the string length to 100 characters. Then, ask the user to enter a character. Search and count the number of occurrences of the character in the string. The search is not case sensitive. Lowercase and uppercase letters should be equal. Here is a sample run:

```
Enter a string of at most 100 characters: MIPS programming is nice
Enter a character: i
Number of occurrences = 4
Repeat (Y/N)? n
```

Problem 2: Counting words in a text file

Write a MIPS assembly language program to do the following:

Open a text file and read all characters into an array. Limit the size of the array to 10,000 characters. The maximum number of characters to be read should not exceed 10,000 characters. MARS provides the system calls for opening a file, reading from a file, etc.

Traverse the array character by character. Count the words only. A word begins with a letter and ends with a letter. Do not distinguish between a capital and lowercase letter. You should not count digits, spaces, or any other symbol which is not a letter. Here is a sample run:

```
Enter the name of a text file: input.txt
Number of words = 73
Repeat (Y/N)? n
```

Submission Guidelines:

All submissions will be done through WebCT. Submit the source code of the program. Make sure that your program is well documented.

Late Policy:

The programming assignment should be submitted on the due date by midnight. Late submissions are accepted for a maximum of 3 late days, but will be penalized. Assignments submitted after 3 late days will not be accepted.