LSU EE 3755   **Homework 4**   **Due: 16 November 2012**

This assignment is to be completed on the ECE Linux workstations, please follow the instructions at `http://www.ece.lsu.edu/ee3755/proc.html`. *Accounts will be distributed in class.*

Problem 1: Add comments to the routine `char_table_init` that will be helpful to a competent MIPS assembly language programmer. To be helpful, a comment should describe what an instruction does in the context of the routine, **not** what an instruction does in isolation. For example, the following is a good comment:

```
beq $t0, $0, WV_DONE   # Exit the loop if at end of input string.
```

while the following **is a bad comment**:

```
beq $t0, $0, WV_DONE   # Branch to WV_DONE if $t0 equals zero.
```

The comment above is bad because a competent MIPS programmer already knows what a `beq` instruction does.

   Use the following description to help understand what the routine does: The routine `char_table_init` has two input arguments: input `a0` is the address of a C-style string and input `a1` is the address of what we will call a *character table*. The character table is a 256-element array of characters (one-byte integers). Each element is initially zero (before the routine is called). Routine `char_table_init` will read each character of the string pointed to by `a0` and use it as an index into the character table where it will write a one. For example, if the character read from the string were an 'A' (ASCII value 65) then table entry 65 would be written with a 1. (A 1 is the only value that's written by `char_table_init` to an entry.) The routine returns the length of the string.

Problem 2: Complete `word_count` so that it operates as follows. Routine `word_count` is called with two input arguments: input `a0` is the address of a C-style string and input `a1` is the address of a character table (prepared by `char_table_init`). When routine `word_count` returns `v0` should be set to the number of words in the input string. A *word* is one or more consecutive word characters (ordinarily A-Z), the first character of the word follows a non-word character and the last character is followed by a non-word character. For this definition consider the characters before the string starts and after it ends to be non-word characters. The routine will use the character table to whether a character is a word character.

   Please run and test your code. If there are no assembly or execution errors the results of calling your routine will be shown.