Computer Science 210 –Computer Organization

Homework Exercise 10
Due on Github 11:59 PM, Friday 15 April

Your turnin will consist of a C language source file **filestats.c**.

1. In this exercise, you will complete a program that processes a text file. The program gathers statistics about the file, including the number of lines, number of words, and number of characters in it. The program outputs, either to the display or to a text file, the file's contents with each line numbered, as well as the statistics. Specifically,

   - The program takes two optional command line arguments.
   - If no arguments are present, the program prints instructions on its usage.
   - If one argument is present, this is the name of the program's input file.
   - If a second argument is present, this is the name of the program's output file.
   - If the input file does not exist, the program prints an error message.
   - If the second argument does not exist, the program echoes the contents of the input file, with numbered lines, to the display. Otherwise, the second argument does exist and the program outputs this content to the named text file.
   - The program also outputs the statistics, including the number of lines, words, and characters, in labeled format.

   You should compile and run the program in **filestats.c**. Run it with no arguments, one argument, and two arguments. For example, the command

   ```
   ./filestats filestats.c filestats.lst
   ```

   will generate a listing of your source program in the given output file. ***Warning: don't ever make your source program the output file!***

   Your program should contain a **`main`** function and two other functions, named **`processfile`** and **`wordCountInLine`**. You should add code to the first function to gather the statistics and output them after the listing. The second function expects a string as a parameter and returns the number of words in that string. Separators between words are the space and tab characters. You should use this function to count the words in each line of text as you input it.