**ECE 1111: Engineering Computation I**

**Homework No. 12: Application Programming – Windowed Grep**

**Goal:** Locating text in a file is one of those extremely fundamental capabilities that Unix excels at with commands such as grep. In this assignment, you will write a simple version of grep that provides some flexibility for how the output is presented.

**Description:** Write a program that has the following user interface:

**mygrep.exe -w “word” -n num\_lines file1.txt file2.txt ...**

The program cycles through all the files specified on the command line and searches each line for a match to *“word”*. The match should be case-insensitive.

When you find a match, output the lines immediately before and after the match. For example, suppose you specify the options *“-n 2 -w bOB foo.txt”* and the file foo.txt contains:

**See Jane run.**

**See Mike run.**

**See Mary run.**

**See Bob run.**

**See Alice run.**

**See Tom run.**

**See Barbara run.**

The output should be:

**===**

**File: foo.txt**

**See Mike run.**

**See Mary run.**

**SEE BOB RUN.**

**See Alice run.**

**See Tom run.**

**===**

In other words, you should print the filename that produced the match, line that matched and the preceding two lines and following two lines because *“n = 2”*. Print the line that matched in upper case and make sure the match is case-insensitive (note the mixed case in my example).

Do not read the entire file into memory. You can use fgets to read the file, but you must use a streaming data approach (meaning buffering the data in a buffer of *2n+1* lines). Time your code on a set of text files that have one million lines of text in them.

To submit this assignment, I want you to send me a compressed tar file (\*.tar.gz) that contains all the code necessary to compile, link and run your main program. This will presumably include a Makefile, a header file, an implementation file and a main program. The comments in your main program should include information on timing your program.

The filename your submission must have is lastname\_firstname\_hw12.tar.gz. It must be an attachment in your email. No other input format, such as zip or rar, will be accepted.