**ECE 3822: Software Tools FOr eNGINEERS**

# HOMEWORK No. 6: Real PROgrams

The goal of this homework is simple – create a “print\_signals” program in Unix by writing a C program. Your solution must use a make file, must consist of at least two files (a main program in one file; your functions in a second file), must include a header file (.h file that defines constants and your functions) and must implement the following interface:

print\_signals [-h –numbers –f -i] file1.raw file2.raw file3.raw … file99.raw

cat file1.raw file2.raw | print\_signals [-h –no –x –f -i]

Your output should look something like this:

00000000: […first sample value…]

00000001: […second sample value …]

…..

99999999: […last sample value…]

The “-h” option displays a help message explaining the usage of the command. The “-numbers” option displays line numbers as shown above. By default, the line numbers are not shown, but the sample values are shown in a one value per line format. The “-f” option interprets the data as 4-byte floating point numbers. The “-i” option interprets the data as 16-bit integers. By default (no format option is specified), the data is assumed to be 16-bit integers. Users can specify any number of files to be processed.

Your program should contain the usual debugging stuff. For example, if a file doesn’t exist, an error message should be printed and the program terminated.

I want you to read the data using fopen/fclose/fread for input and fprintf for output. I want you to read the data in 1024 byte chunks, and define this length as a constant in your header file. Your program should work for any value of this constant. This constant should only appear in your header file (in one place). Be sure to take care of the last chunk of data properly, as you might not have exactly 1024 bytes in that last fread.

You can use Audacity to create some data to test your program. You must demonstrate in your report that your program is doing the right thing by displaying values with “od” and showing that your program matches those values.