Name:

Do your work in this directory:

/data/courses/ece\_1111/current/quizzes/qu\_05/lastname\_firstname/p01

Make sure your parent directory has the correct permissions and you have the standard files (*Makefile,* *p01.cc*, *p01.h*, *p01.o*, *p01\_00.cc*, *p01.exe*) in your */p01* directory. There will be a zero tolerance for deviations from this on this quiz.

In this quiz, you will write a C program that generates a sum of sinewaves plus additive noise. Use the function *drand48()* to generate a noise signal that ranges between . The interface to your program should be:

This will generate a signal that is mathematically defined this way:

The first command line argument is what we call the sample frequency. The second argument is the number of values you compute and print out. The third argument is the amplitude of the noise signal. The fourth and fifth arguments are the amplitude and frequency of the first sinewave. The remaining arguments are the amplitude and frequency of the additional sinewaves.

Print the output to *stdout* using a format that looks exactly like this:

...

Your signal values should be right-aligned and use spaces. The index of the signal should be printed with a fixed width of characters.

The program should use a function call named “*mysin()*” to compute the sinewave. It should take as arguments the time (an integer index), the sample frequency and the frequency of the sinewave. It should return a 32-bit float. The prototype should be declared in the header file. The implementation should be in *p01\_00.cc*.

You can only use concepts we have covered in class thus far. Programs must only use the C programming language (not C++). If you use code that is more advanced, and uses constructions we haven’t covered yet, such as floating-point arrays, you will receive a score of zero.