Name:

Do your work in this directory:

/data/courses/ece\_1111/current/quizzes/qu\_07/lastname\_firstname/p01

Follow our usual procedure of creating a make file, source code file named p01.cc, an implementation file p01\_00.cc that contains the functions described below, and a header file names p01.h.

**Task:** Write a C program that reads this file:

/data/courses/ece\_1111/current/quizzes/qu\_07/picone\_joseph/example.dat

and stores the value stored on each line in a float array in the location specified. For example, the line:

a[3] = -3.0

would be stored in the array in position 3. You must decode the array index and the value. Hint: loop over all lines in the file, use fgets to fetch the line and use sscanf to convert the string to numbers.

Your code should work for a file with any set of indices in the range [0,9999]. Any values of the array not set in the file must be initialized to zero.

You must implement this using a function named “load” that loads the data:

bool load(type??? array, char\* filename);

The function must allocate space for the array inside the function and return that space to the main program (do not use a global variable or allocate space in the main program). You will need to figure out what the type of the first argument must be to make this work.

Next, implement a function that computes the mean and standard deviation:

bool compute\_stats(float\* mean, float\* stdev, float\* array, long N);

Implement these computations manually – do not use a library function. Have your main program print the values to stdout (do not do this from within the function).

When I run your program, it should print out the following:

p01.exe ../../picone\_joseph/example.dat

filename = ../../picone\_joseph/example.dat

mean = -0.5000

stdev = 5.6026

Your program must take the filename as an argument, and it must work for any array specification. Try example\_1.dat in the same directory if you are feeling confident ;)