

# CGS 3460 Computer Programming Using C, Spring 2008

## Homework 3

Due ~~Wednesday, February 20 2008~~ Thursday, February 21 2008, before 11:59:59pm

### Notes

- All submissions must be done electronically via the Courseworx system linked from the website.
  - Create a separate C source file for each problem. Problem 1 must be in `p1.c` and Problem 2 in `p2.c`.
  - Use `tar` to combine all the files into the file `H3.tar`. To do this, type `tar -cvf H3.tar p1.c p2.c` on the command line. You must only upload `H3.tar` to Courseworx.
  - Once you've uploaded the file, download the file and untar it using the command `tar -xvf <filename>`. Display each extracted file to verify your programs are intact.
  - Submit C source files only (files with `.c` extension). We will compile and run them.
  - The first three lines of each C source file must contain your Full Name, UFID and Gatorlink ID as comments.
  - Make sure that your code compiles and runs correctly on one of the following CISE machines: `sand.cise.ufl.edu`, `rain.cise.ufl.edu`, `shine.cise.ufl.edu`, `bay.cise.ufl.edu`.
  - When obtaining input, be sure to prompt the user appropriately.
1. Write a C program that allows the user to enter three 2-D vectors, and computes (and displays) their sample covariance matrix and its eigenvalues. (You may only use the library functions `sqrt`, `printf` and `scanf`). Your program must print appropriate prompts and messages.
  2. Write a C program that allows the user to enter two strings `s1` and `s2` and checks if `s2` is a substring of `s1`. If this is the case, it reports the index of `s1` at which an instance of `s2` is present, otherwise it reports that the substring was not found. For example, `cat` and `nate` are two substrings of `concatenate`. (The only library functions you are allowed to use are `printf` and `scanf fgets`). Your program must print appropriate prompts and messages.