CSE 333 13su Exercise 3

out: Monday, July 1, 2013
due: Wednesday, July 3, 2013 by **9:00 am**.

Your job is to write a C program that does the following:

- uses typedef to define a new structured type called **Point3d**, which contains **int16_t** fields for x, y, and z coordinates.
- defines a function called **AllocatePoint3d** that accepts three int16_t values as arguments, mallocs space for a Point3d, assigns those three arguments to the x, y, and z fields, and returns (a pointer to) the malloc'ed Point3d. Think about what to do in the case when malloc fails.
- has a main() that tests AllocatePoint3d. Make sure your main function frees any memory that AllocatePoint3d allocates. Also handle the case that AllocatePoint3d indicates a failure.

Note: we will be using valgrind to test whether your code has a memory leak!

Your code must:

- compile without errors or warnings on CSE Linux machines (lab workstations, attu, or CSE home VM)
- have no crashes, memory leaks, or memory errors on CSE linux machines
- be contained in a single file called "ex3.c" that compiles with the command "gcc -Wall -g -std=gnu99 -o ex3 ex3.c" -- do not submit a Makefile.
- be pretty: the formatting, modularization, variable and function names, and so on must make us smile rather than cry. (Suggestion: check your code with `clint` to see if it discovers any problems.)
- be robust: you should think about handling bogus input from the user, and you should handle hard-to-handle cases (if there are any) gracefully.
- have a comment at the top of your .c file with your name, student number, and CSE or UW email address.

You should submit your exercise using the assignment dropbox linked on the main course web page.