CSCE 121(505-508) **Homework 7**
Due 11:59 p.m., 3/25/14 [100 points]

This Homework assignment is meant to (a) help you understand some principles of object-oriented programming, and (b) give you experience with the graphing/GUIs that were discussed.

All work should be turned into CSNet by the deadline. **In addition, please bring a hardcopy printout of your code to class the next day.** For programs, you need to turn in only the source code (not object or executable code). Your code will be tested using g++: you are welcome to develop in Visual Studio, but please make sure your code also runs in g++.

0) Create a text file, README, in which you:
   - State the Aggie Honor statement, or else explain why you cannot do so.
   - List any resources used, outside the textbook and discussions with the Instructor, TA, or Peer Teacher
   - List any known problems with the assignments you are turning in. For example, if you know your code does not run correctly, state that. This does not need to be a long explanation.
   - For places where you may have done some additional work, put in a brief summary detailing what you did.

1) [40 points] This question is to be written out (no programming). There will be two scenarios presented. In each case, you are to do the following:
   - State what different classes you would create (the scenarios are a little open-ended, so you might not have to specify every possible thing, but be sure to cover the main classes)
   - Indicate which classes (if any) inherit from which other classes
   - Indicate whether each class should be an abstract class or not
   - For the functions listed, note which class(es) the function should be defined in, and whether the function is:
     - Public, Protected, or Private
     - Pure Virtual, Virtual, or "standard"
   - Come up with at least one additional function that you could provide for this scenario that would fit into a different category than others listed (i.e. if you have no public function for some class, then give an example of a public function you could add to that class).

   Here are the two scenarios:

   a) You are putting together a system that can be used to store medical records. The records can include things including immunizations given, doctor's notes from examinations, results of lab tests, images and scan results from X-ray/MRI/etc., bills and payments for services, and so on. You want to be able to find things out such as:
      i. the date of the record
      ii. A string that can be printed out of the diagnosis, or immunization, or bill, or whatever
      iii. The amount of a particular bill or payment
      iv. The charge for the examination, test, etc.

   b) You are putting together a system to manage shipping for a large agricultural producer. You want to be able to deal with different methods of transporting cargo, including by ship, train, truck, and air. You will be transporting products including fresh produce, liquids (such as milk, corn syrup, or vegetable oil), canned fruits, fresh meats, processed meats, etc. You want to be able to find out things like:
      i. The speed and cost per mile of transporting cargo by various means
      ii. The capacity of particular methods of transportation
      iii. The amount of some product in a shipment (could be measured by volume or weight, or whatever is appropriate).
      iv. The value of a product.
      v. The specific type of product.

2) [60 points] Using the concepts described in chapters 15 and 16, put together a program that plots sin functions. It should do the following:
   - Allow the user to set the amplitude, period, and offset of the function. That is, you should graph the function A sin (B x + C), where the user can specify what A, B, and C are.
   - Allow the user to change the color and line drawing method.

- The user should be able to draw more than one plot at a time, on the same axes.
- Clear the plot (remove all the sin plots)
- Note that you should draw labeled axes for the plot.