CS211 - A Functional syllabus

Overview

CS211 is a second level programming course using C++.

Among other things, it aims to

- review, refine and exercise the material from CS111
- review i/o in C++
- further develop your ability to test and debug C++ programs
- further develop your ability to abstract problems and to express them in C++
- develop consequences of the idea that a "program =algorithm + data structure"
- develop your ability to work with pointers
- develop your ability to understand, analyze, and create recursive programs
- present the C++ memory models
- develop your ability to work with dynamic memory in C++
- introduce the basic standard library containers: vector, deque, list, and the container adapters stack and queue and use them in programs
- introduce you to object based programming, including
    - general concepts of object based and object oriented programming
    - classes and structs
    - operator overloading
    - function templates and template classes
- use the above to implement new data types and containers such as
    - rational and imaginary number classes
    - "big integer" number class
    - a bounds-checked array container
    - a vector container
    - a list container
    - a queue container
    - a deque container
    - a stack container.

Projects

Between the lecture and the lab, there will be about 25 projects assigned. **Don't panic!!!** ☺ Many of these will be quite small and simple, just to exercise the lecture and lab material. Some projects will be more substantive and challenging but there should be enough time and help available for you to get these done without too much difficulty.

Quizzes

There will be a quiz each week, during the first lab of that week. The quiz will cover the material of the previous week's lecture and lab. They will also include material based on the projects that are then current.

Exams

There will be two exams; a midterm and a final.

Grading

final grade = max(mid, final)*40% + min(mid, final)*30% +projects (scaled to 20%) + quizzes(scaled to 10%)

Textbooks and course materials

There are no required texts for the course. As the course progresses, various "handouts" will be posted on the course web site. The following are some resources that you might find useful:

1. C++ Without Fear: A Beginner's Guide That Makes You Feel Smart (3nd Edition) Paperback – Publisher: Prentice Hall, Date December 2015,

   ISBN-13: 978-0134314303
   ISBN-10: 0134314301

2. Schaum's Outline of Programming with C++ *by* John R. Hubbard, J. R. Hubbard, Publisher: McGraw-Hill, Date: May 2000, ISBN-13: 9780071353465
3. http://cplusplus.com/

Course website
   http://venus.cs.qc.edu/~waxman/211/