CSC 211 Fall 2019 Final Exam Study Guide

The final exam will mostly focus on content from weeks 11-15. However, you should still have a solid understanding of content from previous weeks and exams.

1. C++ and previously covered topics
   (a) You should be familiar with the following concepts
      - High-level understanding of Compilation/Compilers
      - C++ syntax and semantics
      - Basic control and selection statements
      - The difference between pass-by-value and pass-by-reference
      - Primitive C++ data types including pointers
      - Functions
      - Variable scope
      - C-style arrays and strings
      - The stack and the heap
      - new and delete operators
      - Dynamic memory allocation
      - multi-dimensional arrays, both dynamic and hard-coded
      - 1D representations of multidimensional arrays (Row-major and Column-major)
      - Basic and advanced recursion
      - Binary search
      - Backtracking
      - Structs
      - Command Line Arguments (CLAs)
      - Sorting (low priority)
      - Number systems (low priority)
   (b) Tracing code
      - You should be able to trace C++ code and write the values of variables at various stages of execution
      - Tracing the Call Stack as the program executes
      - Recursion trees
   (c) Writing code by hand
      - You should be capable of writing simple C++ functions and programs by hand, both iterative and recursive
2. Classes
   (a) Know the following terms and understand what they mean:

- Object
- Instance
- Level of access; public vs private
- Encapsulation
- Members and methods
- Getter and Setter
- Constructor and Destructor
- Default Constructor
- Copy Constructor
- Overloading
- Initialization list
- Shallow vs Deep copy
- The *this* pointer
- `. vs ->`
- Scope resolution ::
- Subclass
- Inheritance

(b) You should be able to read examples of code using classes and understand what is happening

(c) You should be able to write a *simple* class as well as write class methods by hand