CSCI 2170 Spring 2011
Review for Test 3 (Wednesday, April 6th)

- **Pointer**
  - Understand the difference between static and dynamic allocation of memory for variables
  - Understand the meaning and how to use pointer related operators, such as ***, &, →, ., new, delete**
  - Be able to set up and use pointers to
    - simple data types (int, float, char, …)
    - struct data types
    - 1D and 2D array

- **Linked list**
  - Know how to implement the retrieve/insert/delete operations to/from the beginning/middle/end of an **unsorted linked list**;
  - Know how to implement the retrieve/insert/delete operations to/from the beginning/middle/end of a **sorted linked list;**
  - Implement code that makes a **deep copy** of a linked list
  - Implement code that completely deletes a linked list, i.e., release all the memory spaces.
  - Implement the overloaded = operator and the overloaded [] operator for linked list
  - Recursion with linked list (know how to implement list insertion, list traversal, list delete)
  - Variations on linked list, including circular linked list, doubly linked list, circular doubly linked list, and the advantage of using a dummy head in linked lists
    - Definition of each variation
    - Draw a linked list with 1 node, 2 nodes.
  - Know how to perform insert/delete operations on a circular doubly linked list with a dummy head
  - **Adjacency list--**Understand how to build the adjacency list
  - Be able to describe what are the Pros and Cons of using array based linked list, and what are the Pros and Cons of using pointer based linked list

- **Example Questions:**
  1. Homework questions
  2. Closed lab questions
  3. Text book: page 238-240: ex 3, 4, 5, 7;
  4. Text book: page 240-242: ex 1, 2, 3, 4, 6(**), 10, 11, 17, 19, 20
  5. Show the implementation of the copy constructor of a pointer based implementation of the ADT list
  6. What does a doubly linked list that has 1 node look like? Draw a graph to illustrate the list.
     What does a circular linked list with 2 nodes look like? Draw a graph to illustrate the list.
     What does a circular doubly linked list with dummy head and 2 (or 0) nodes look like? Draw a graph to illustrate the list.
  7. Given an existing circular doubly linked sorted list with dummy head, show the code to :
     a. insert a new node into the middle (or end) of this list.
     b. Delete the first node from the list
     c. Delete the node with key value "keyToDel" from the list.
  8. Write a recursive function that prints the content of a linked list in reverse order.
  9. Write a recursive listClass member function that maybe called by the destructor of listClass to free all dynamically allocated memory.