

## CSSE 250 - Assignments #2

Spring 2009

**Due by 8:15Am, Thursday 4/16/2009**

This assignment has two parts. The first part is paper-based. Bring a hardcopy of the answers to the class. You will receive instruction on how to submit your programs electronically.

### Part 1: Textbook

Exercise 9.4: Questions #4, 5, 9, 10, 11

### Part 2: Programming Assignment

Use **class templates** to implement a generic Queue class. In this Queue class, you **must** use a **circular linked list** (as shown in page 423, it maintains a pointer pointing to the last element in the circular link list) to hold the queue elements.

(1) Implement all the member functions as shown below and overload operator<<.

(2) Write a driver/client program to test the Queue template with different data types such as int, double, char, string, etc.

When you do this problem, you should always keep in your mind the three RULES in class templates!

```
template<typename T>
class MyQueue {
    private:
        class Node {
            public:
                T    data;
                Node* next;
                Node(const T& a, Node* p=NULL) : data(a),
                next(p) { }
        };
        Node*    _last; //pointing to the last node in the circular
linked list

    public:
        MyQueue(); //constructor: to construct an empty queue
        MyQueue(const MyQueue& org); //copy constructor
        const MyQueue& operator=(const MyQueue& right);
        ~MyQueue();
        void enqueue(const T& x); //add x into the tail of the queue
        void dequeue(); //remove the first element in the queue
        T front(); //return the first element in the queue
};

ostream& operator<<(ostream& out, const MyQueue& q);
```