**CS 311 Data Structures and Algorithms**

**Assignment 1**

**Due on Wednesday, February 10, 11:59PM.**

1. Assume we use two linked lists that represent Set A and Set B respectively. Implement the following function to calculate A U B and return the result as a new linked list. Note that a SET should not contain duplicate elements (e.g., integers). (50 Points)

*Node \* unionLL (Node \* LA, Node \* LB);*

2. There are two linked lists, LA and LB. Their elements are both in the non-descending order. Implement the following function to merge LA and LB into a new linked list (as the return value). The elements in the new list should still be in the non-descending order. (50 Points)

*Node \* mergeLL (Node \* LA, Node \* LB);*

Example:

LA = (3, 5, 8, 11)

LB = (2, 6, 8, 9, 22, 24)

Then:

unionLL(LA, LB) = (3, 5, 8, 11, 2, 6, 9, 22, 24) // The order of the elements may change.

mergeLL (LA, LB) = (2, 3, 5, 6, 8, 8, 9, 11, 22, 24)

Additional requirements:

1. Create a *main* function and print out the numbers in the linked lists before and after executing each method above.
2. Include your code in a single cpp file and submit it to Cougar Course.
3. At the beginning of your cpp file, add the following comment:

// Name: XXX XXX

// Student ID: XXXXXX

// Email: XXXXXX

1. Assume *Node* is defined as follows:

struct Node{

int num;

Node \* next;

};