

COMP 2611 – Data Structures

Lab 2

1. Using only the *createNode* and *printList* functions from `LinkedList.cpp` (posted last week), write a program to do the following:
 - (a) Create a linked list with four nodes: 10, 20, 30, and 50, in that order. The variable *top* should point to the first node in the list, i.e., the node containing 10. After creating the linked list, call *printList* to ensure that the nodes have been properly connected.
 - (b) Write code to delete the second node in the linked list. So, the linked list should now contain three nodes, 10, 30, and 50. Again, call *printList* to ensure that this is the case.
 - (c) Write code to insert a new node with the value 40, before the last node. So, the linked list should now contain four nodes, 10, 30, 40, and 50. Call *printList* to ensure that the nodes are properly connected.
 - (d) Write code to delete the first node in the linked list. So, the linked list should now contain three nodes, 30, 40, and 50. Call *printList* to ensure that the nodes are properly connected.
 - (e) Write code to find the sum of the values in the linked list. The sum should be 120.
2. Using the full version of `LinkedList.cpp`, write **recursive** functions to do the following:
 - (a) Find the largest element in a list.
 - (b) Find the sum of the elements in a list.
 - (c) Determine if two linked lists have the same elements in corresponding positions.
 - (d) Append two linked lists; the elements in the second list must be added to the end of the first list. What happens to the two original lists?
3. Write the code for a Stack using LinkedList operations.
4. Write the code for a Queue using LinkedList operations.