

In Class Assignment 1

Instructions

You have 80 minutes to complete all questions for the assignment. You may use the internet, all slides provided by the instructor, and any pre-prepared code. You may not copy and paste large sections of code, as the purpose of this is to see how well you understand the C programming language. One or two lines may be used, but any direct copies from online must be cited.

You will submit all code to the submit utility using “submit cmpe311_nelson InClass1 assignment.zip”

Assignment

You will update the given LinkedList.c, LinkedList.h, and InClass1.c files to do the following:

Modify the linked list operation to be doubly linked

This means that the list will have a ‘head’ and a ‘tail’ node, and each node will have a ‘next’ and a ‘previous’ pointer. You need to update all the given functions to allow for that functionality.

Create a print_backwards function

This function should print the list from back to front using the previous pointers so that the operation runs in linear time without having to use a recursive print function.

Create a list of integer linked lists

This will require creating similar functions and structs to the given code to create multiple linked lists and add them into a single larger linked list. You may adapt the given functions to be used by both, or create similar functions with different names.

Create a print ListOfList function

Leverage the print list function to iterate through the list of lists and print the lists.

Demonstrate that all functions work by doing the following

Create these 4 lists {1,2,3,4,5},{5,4,3,2,1},{-1,-2,-3,-4,-5},{-5,-4,-3,-2,-1}.

Print these lists using the PrintList function.

Delete element 0 from list 1, element 1 from list 2, element 3 from list 3, and element 4 from list 4.

Print these lists using the print_backwards function. (should print {2,3,4,5},{5,4,3,1},{-1,-2,-3,-5},{-5,-4,-3,-2})

Place all of these in a lists of linked lists. Print the lists.

Delete list 0 and list 2 from the lists.

Print the lists.