

COP 3502 Suggested Program Edits: Linked Lists (Week 3 Programs)

- 1) Add a function to the file `doublelinklist.c` that takes in a pointer to the front of a doubly linked list as well as a string of characters containing 'R' and 'L' only. 'R' represents moving right (going forward one node) and 'L' represents moving left (going backward one node). The function should print a list of the value at each node visited when walking through the linked list according to the directions in the string. If a direction takes you off the linked list, your program should just stay put at either the left or right end. For example, if the linked list stored the values 3, 2, 9, and 8, and the input string was "RLRRRLR", then the function should print out 3, 2, 3, 3, 2, 9, 8, 9, 8. The second L isn't executed, which is why we stay on the node with 3 (fourth number listed) after our third move.
- 2) Add a function to the file `circularlinklist.c` that takes in a single positive integer, n , and does the following: repeat the following steps n times: look at the number of the current node (initially it's the front of the list) and then move forward that many steps in the list. Your program should return the value of the node landed upon after all the movement. For example, if the list stored 4, 1, 3, 2, 8 and the value of n was $n = 5$, then the five moves would go as follows: move #1 would move from the node with the 4 to the node with the 8, since it's four nodes ahead. Move #2 would go from the 8 to the 3 as it's eight nodes ahead. Move #3 would go from the 3 to the 4, since the 4 is three nodes ahead. Move #4 would go from the four to the 8. Move #5 would go from the 8 to the 3, so 3 should be returned. (Note: There are optimizations to be made to this but those are not necessary to get basic practice on link lists that is the aim of this exercise.)
- 3) Add the facility to delete a single node from the `circularlinklist.c` sample program.
- 4) Add the facility to delete a single node from the `doublelinklist.c` sample program.
- 5) Add the facility to delete an artist from the `cds.c` sample program. (This should free all the associated memory with that artist.)