CS270 Programming Assignment 7

"Dynamic Memory Allocation: Car Database"

Program due Tuesday, May 7 via RamCT by 1 PM.

Goals

To modify a program with dynamic memory allocation so that it implements a doubly linked list. You will learn how to work with data structures that exist in the heap.

Program Structure Specification

The text book gives an example program (Figures 19.5, 19.6, 19.7, 19.9. 19.11) that implements a car database using a linked list that uses dynamic memory allocation. Modify this program so that it implements a doubly linked list, thus at each node there is a pointer pointing to the previous node (make this the first member of the struct carType and call it **previous**) in addition to the one pointing to the next node.

If the vehicle ID starts with 0 to 4, start searching starting with the head node. If it starts with 5 to 9, start searching starting from the tail node.

Also include a function PrintCars, which will print out the values of previous, vehicleID and next for the entire database, one line for each node.

Testing

Test it by inserting and deleting entries in the middle and at the ends. Include the output generated by this test case as a comment at the end.

Add 7800 Jaguar X30 2004 12999.99
Add 1408 Maserati QEGT 2008 74900.25
Add 7598 Lexus LS400 1998 11492.00

Delete 1408

Print the cars

Submission Instructions

- Include all the functions in the same file called pa7.c file, and submitted directly using RamCT.

Reminders:

1. Include appropriate information at the top of the code.
2. Adds comments appropriately.

Grading Criteria

To grade the assignment, we will examine and run program (30 points), and we will verify that your computation gets the right answers on the example data and our own test data (35 points). In addition points will be given for coding style and comments (15 points), following assignment directions (20 points). The grading factors we consider for coding style include having clear and concise comments, consistent indentation, and the minimal amount of code to solve the problem.

Late Policy

There is a 25% penalty for late submission. They cannot be more than 24 hours late.