

CS 241 Data Organization using C

Linked Lists and Binary Trees

Fall 2014

This assignment is designed to let you work with linked lists and binary trees.

Problem specification

I have provided header files defining some functions related to linked lists and binary trees. I have also provided you with files to test these functions and a makefile to build it all.

Linked Lists

In a file named `linkedlist.c`, implement all the functions declared in `linkedlist.h` and make sure they work with `listtest.c`.

Binary Trees

In a file named `binarytree.c`, implement all the functions declared in `binarytree.h` and make sure they work with `treetest.c`.

1 Grading Rubric (total of 25 points + 2 bonus)

-2 point : The programs do not start with a comment stating the students first and last name and/or the source files are not named correctly.

-2 points : Programs compile with warnings on moons.cs.unm.edu using `/usr/bin/gcc` with no options (using the makefile)

-5 points : Programs leak memory when tested with `valgrind`.

5 points : All code follows the CS-241 standards (including comments).

10 points : Output of running `listtest` matches `listtestout.txt`.

+1 bonus point : Don't create or destroy any nodes in the `reverseList` function. (This would also include indirectly creating/destroying nodes via the stack manipulation functions.) In other words, reverse the list in place by changing the pointers. (We went over this on the board in class on the day I talked about trees.)

10 points : Output of running `treetest` matches `treetestout.txt`.

+1 bonus point : Only traverse the tree once in the `isBalanced` function. (The naive implementation using `maxDepth` does not meet this requirement.)