

Computer Science II — CSci 1200

Lab 9

Binary Search Trees and Recursion

Introduction

This lab explores binary search trees and their implementation in the `cs2set` class, along with the use of recursive functions to manipulate binary search trees. Once you have a basic understanding of trees, the actual code that you have to write for the lab is quite short. Review the notes from Lectures 16 and 17 prior to starting.

Download the files:

<http://www.cs.rpi.edu/academics/courses/spring07/cs2/lab09/cs2set.h>

http://www.cs.rpi.edu/academics/courses/spring07/cs2/lab09/test_cs2set.cpp

Then, turn off all network connections.

Examine the code in `cs2set.h` and `testset.cpp`. The former contains the implementation discussed in Lectures 16 and 17, including the functions implemented in lecture as exercises. The latter contains code for testing the implementation. Some of this has been commented out because all the functions have not yet been implemented.

Checkpoints

1. The implementation of `find` provided in `cs2set.h` is recursive. Implement and test a non-recursive replacement for this function.
2. The implementation of the copy constructor and the assignment operator is not yet complete because each depends on a private member function called `copy_tree`, the body of which has not yet been written. Write `copy_tree` and then test to see if it works by “uncommenting” the appropriate code from the main function.