CSCI-1200 Data Structures — Spring 2023
Lab 10 — Binary Search Trees
& `ds_set` Implementation, part I

Checkpoint 1

Checkpoint 1 will be available at the start of Wednesday's lab.

Checkpoint 2

estimate: 20-35 minutes

Now let's explore the implementation of the `ds_set` class, along with the use of recursive functions to manipulate binary search trees. Download and examine the files:

http://www.cs.rpi.edu/academics/courses/spring23/csci1200/labs/10_trees_I/ds_set.h
http://www.cs.rpi.edu/academics/courses/spring23/csci1200/labs/10_trees_I/test_ds_set.cpp

PART 1: The implementation of `find` provided in `ds_set.h` is recursive. Re-implement and test a non-recursive replacement for this function.

PART 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.

To complete this checkpoint: Show one of the TAs your new code. Be prepared to discuss the running time for the two different versions of `find` for various inputs.

Checkpoint 3

Use the remainder of the lab time to work on Homework 8. Ask the TAs for help! And remember to draw pictures! Make sure your code is making proper use of memory for Homework 8. Run your code with a memory debugger (Dr. Memory or Valgrind) on your own machine.