Lab Assignment 6

CS 301 – Data Structures

Traversals are tools

Problem 1

Your are given the root nodes of two binary trees. Determine if these trees are equivalent. That is, determine if both trees have exactly the same structure and the exact same values on the corresponding nodes.

Problem 2

Your are given the root nodes of two binary trees. Imagine that you lay one of them over the other. Some nodes of the two trees overlap while others do not. Merge both trees into a new binary tree as it would be seen when laying one tree over the other. If two nodes overlap, the sum their values becomes the value of the corresponding node in the new tree. Otherwise, the new node has the same value as the node of the original tree.

Implementation

You are given a file *Lab6.java* (which you can download from canvas). The file contains a class `Lab6` with the two functions `problem1` and `problem2`. Implement your solutions in the corresponding functions. **Do not make any changes outside of these two functions (e. g. by adding helper functions); such changes will be undone.** Do not output anything to the terminal.

The program already implemented in the file *Lab6.java* randomly generates test cases. This file contains a small number of test cases. The seed of the random number generator is set to ensure the same test cases whenever to program is executed. Note that the purpose of the tests is for you to avoid major mistakes. **Passing all given tests *does not* imply that your algorithm is correct, especially that is has the expected runtime.**

Note. The test for Problem 2 uses the implementation of Problem 1 to determine if the given answer is correct. Therefore, make sure that you **first implement Problem 1** correctly before doing Problem 2.

Submission

For your submission, upload the file *Lab6.java* with your implementation to canvas.

This is an individual assignment. Therefore, a submission is required from each student.

Deadline: *On Canvas*