

HW5: Tree Traversals

CSS 342 – Data Structures, Algorithms, and Discrete Mathematics I
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Summary

The structure of a tree can itself be “information” with which to associate data that it stores. This is typically in the form of hierarchical data, but it can also be thought of as a “subtree” having more in common than another “subtree” in another part of the tree. Explore various ways of doing tree traversals on a set of data stored by your own implementation of a tree.

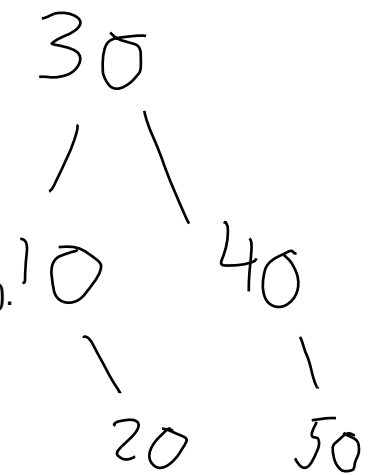
Skills Expected

- Linked Structures
- Tree ADT
- Tree Traversals

Assignment Description

Create a binary tree data structure used to keep track of data (e.g. an int). Implement the following traversal functions:

- Pre-Order Traversal
- Post-Order Traversal
- In-Order Traversal



Grading Criteria

- Implementation
 - [2 Points] Binary Tree (Doesn't have to be sorted) data structure ✓
 - [5 Points] Pre-Order Traversal ✓
 - [5 Points] Post-Order Traversal ✓
 - [5 Points] In-Order Traversal ✓
- Demonstration
 - [1 Point] Written instructions on how to execute your program ✓
 - [1 Point] Screen capture of program execution ✓
 - Three different trees to traverse (containing at least 10 items each) ✓
 - [1 Point] A “left-unbalanced” tree to traverse ✓
 - [1 Point] A “right-unbalanced” tree to traverse ✓
 - [1 Point] A “symmetrical” tree to traverse ✓
 - On each of the three different trees to traverse, demonstrate:
 - [1 Point] Pre-Order Traversal ✓
 - [1 Point] Post-Order Traversal ✓
 - [1 Point] In-Order Traversal ✓
- [3 Points Extra Credit] Breadth-first search (and demonstration)