

Data Structures

Homework 5

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Teaching, Training and Coaching since more than a decade!

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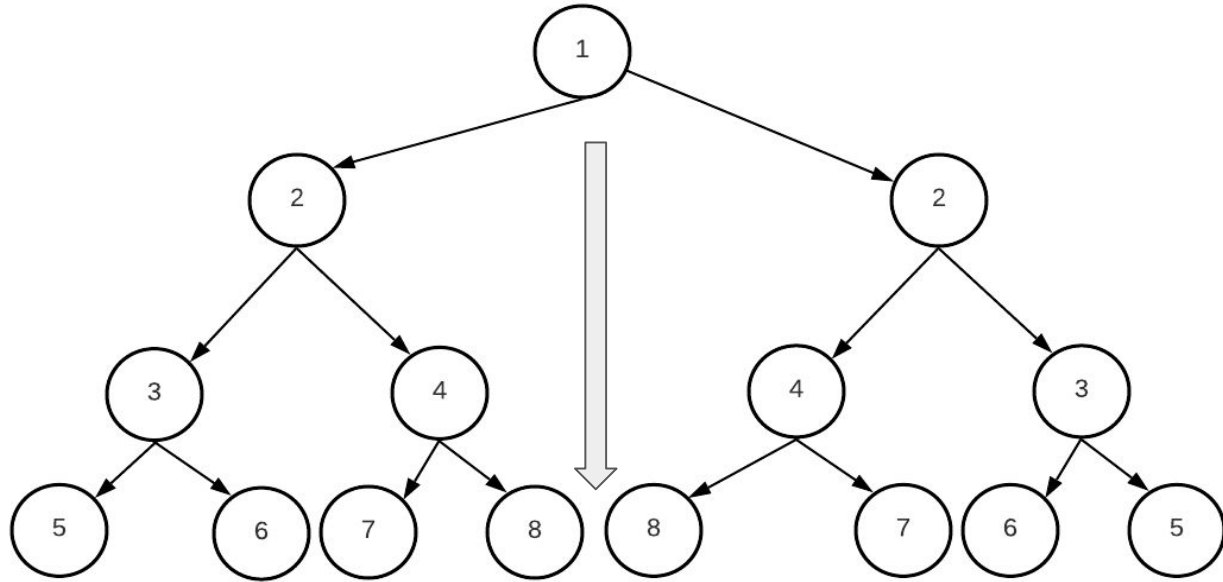
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Problem #1: Symmetric Tree

- A tree is symmetric if it mirror around its center
- Observe 3rd level
 - 5 6 7 8
 - Then
 - 8 7 6 5
- A tree is mirror if root->left & root->right are mirror

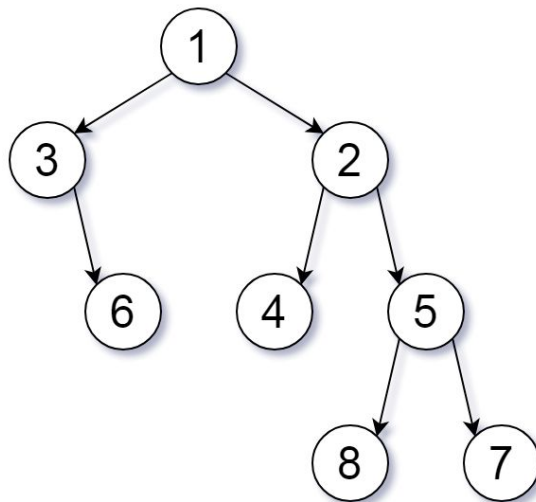
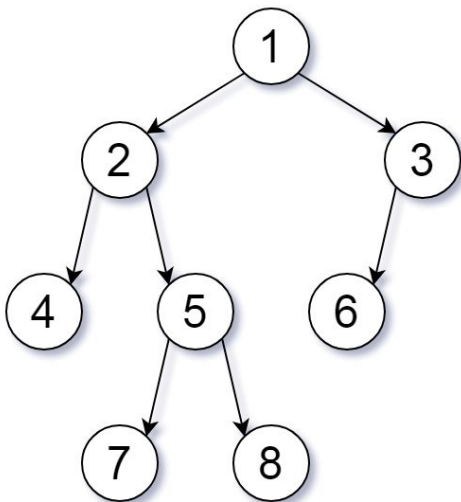


Problem #1: Symmetric Tree

- Given a tree, develop 2 methods
 - 1) Based on recursion to compare subtrees together
 - `bool is_mirror(BinaryTree* first, BinaryTree* second)`
 - 2) Based on parenthesize a tree then compare the left & right branches directly
- What is your time complexity?

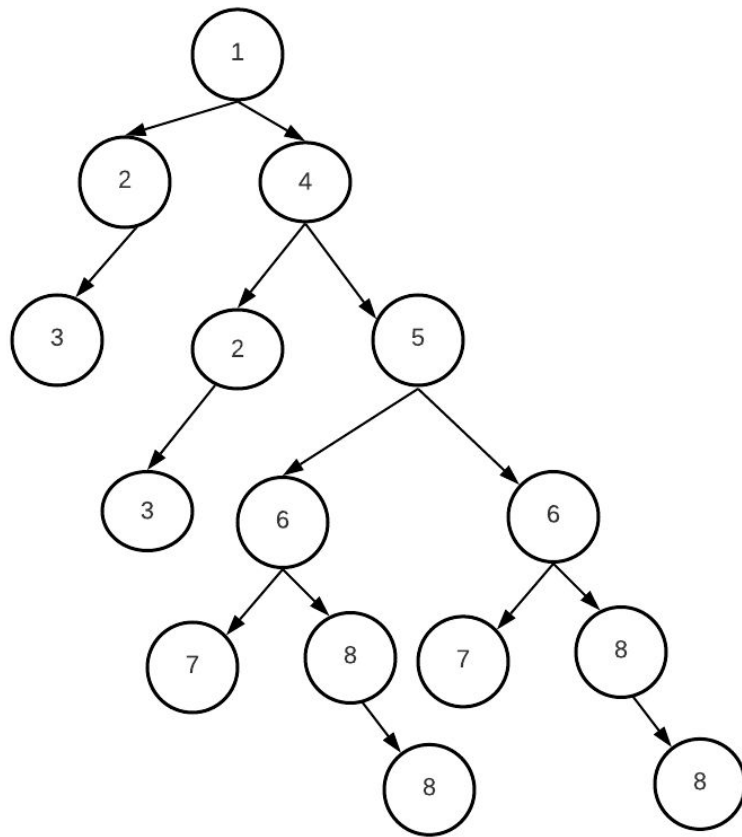
Problem #2: Flip Equivalent Binary Trees

- `bool is_flip_equiv(BinaryTree* other)`
- Given a tree, can we make some swappings to some left/right children to convert it to another tree?



Problem #3: Print all duplicate subtrees

- Given a binary tree, print all duplicate subtrees of 2+ nodes.
 - Duplicates = Same structure & values
- There are 3 sub-trees
 - Root 2, Root 6, Root 8
- Output parentheses
 - (2(3()())())
 - (6(7()())(8()(9()())))
 - (8()(9()()))



“Acquire knowledge and impart it to the people.”

“Seek knowledge from the Cradle to the Grave.”