Binary Trees

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Very Important Conclusions :

Given only a single traversal result be it preorder traversal or inorder traversal or postorder traversal, we can never construct a unique binary tree

In this case,

Number of different possible binary trees that can be constructed

$$= \frac{^{2n}C_n}{n+1}$$

To generate a unique binary tree, at least two traversals are necessary and one of them must be an Inorder.

So,

Given the following combinations, we can always construct a unique binary tree -

i) Inorder Traversal + Preorder Traversal

ii) Inorder Traversal + Postorder Traversal

iii) Inorder Traversal + Preorder Traversal + Postorder Traversal

In general, it is not possible to construct a binary tree from preorder and postorder traversals

But, if the binary tree is full binary tree, then we can construct the binary tree using preorder and postorder traversals without ambiguity.