Tree Algorithms

Tree Traversal

Systematic method to process every node in a tree

- Preorder:
  - visit node,
  - recursively visit left subtree,
  - recursively visit right subtree

- Inorder:
  - recursively visit left subtree,
  - visit node,
  - recursively visit right subtree

- Postorder:
  - recursively visit left subtree,
  - recursively visit right subtree,
  - visit node

- Level order:
  - visit nodes in order of increasing depth in tree
Recursive Implementation

Preorder
Algorithm preorder(T,v)
  visit node v
  for each child w of v do
    preorder(T,w)

Recursive Implementation

Postorder
Algorithm postorder(T,v)
  for each child w of v do
    postorder(T,w)
  visit node v

Recursive Implementation

Inorder (assume binary tree)
Algorithm inorder(T,v)
  for left child w of v do
    inorder(T,w)
  visit node v
  for right child x of v do
    inorder(T,x)
Summary

- Definitions of depth and height
- Methods of tree traversal
  - preorder
  - inorder
  - postorder
  - level order