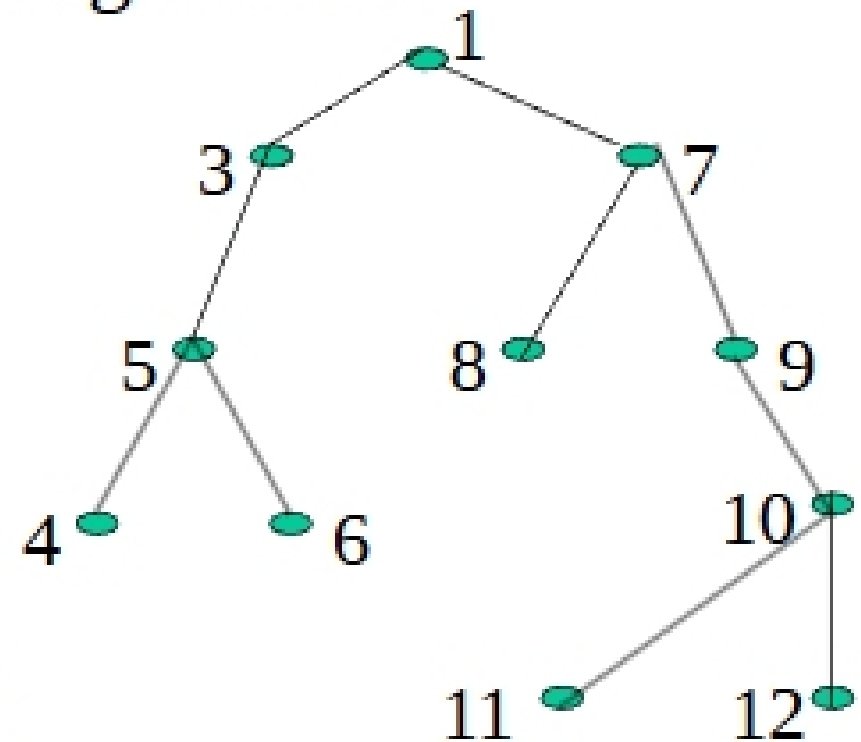


Tree Traversal Techniques; Heaps

- Tree Traversal Concept
- Tree Traversal Techniques: Preorder, Inorder, Postorder
- Full Trees
- Almost Complete Trees
- Heaps

Binary-Tree Related Definitions

- The children of any node in a binary tree are ordered into a left child and a right child
- A node can have a left and a right child, a left child only, a right child only, or no children
- The tree made up of a left child (of a node x) and all its descendants is called the left subtree of x
- Right subtrees are defined similarly



A Binary-tree Node Class

```
class TreeNode {
public:
    typedef int datatype;
    TreeNode(datatype x=0, TreeNode *left=NULL,
            TreeNode *right=NULL){
        data=x; this->left=left; this->right=right; };
    datatype getData( )           {return data;};
    TreeNode *getLeft( )          {return left;};
    TreeNode *getRight( )         {return right;};
    void setData(datatype x)      {data=x;};
    void setLeft(TreeNode *ptr)    {left=ptr;};
    void setRight(TreeNode *ptr)  {right=ptr;};
private:
    datatype data; // different data type for other apps
    TreeNode *left; // the pointer to left child
    TreeNode *right; // the pointer to right child
};
```