

Tuesday, April 21,
15

Launchpad

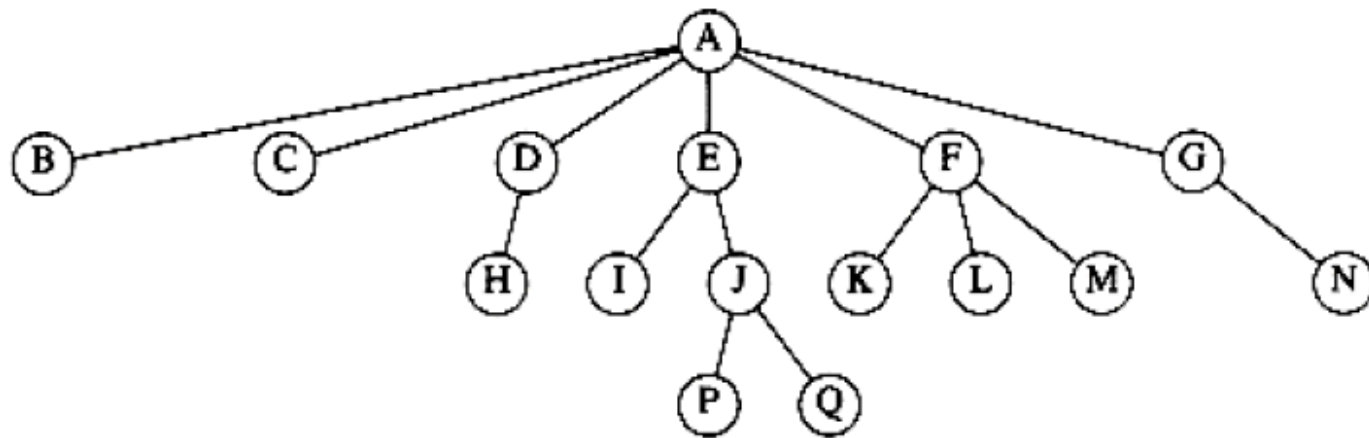
Data Structures
Trees - 1

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Assignment doubts?

Trees!



What is a tree?

In computer science, a tree is an abstract model of a hierarchical structure

A tree consists of nodes with a parent-child relation

Applications:

- Organization charts
- File systems
- Programming environments

Tree Terminologies

- Node
- Root
- Children
- Parent
- Ancestor (grandparent, etc..)
- Descendants (grandchild, etc ..)
- Sibling
- Leaves

How to Implement a Node of a Tree

```
class node {  
    int data;  
    node **children;  
    int children_count;  
    node *parent; //Optional  
    public:  
        int getData();  
        node * getParent();  
        node ** getChildren();  
        void setChildren(node **);  
        void setChildrenCount(int count);  
        void setParent(node *);  
        void setData(int d);  
};
```

Tree Class

```
class Tree {  
    private:  
        node * root;  
    public:  
        int size();  
        boolean isEmpty();  
        node * getRoot();  
};
```

Lets see the
implementation!

Tree Important Properties

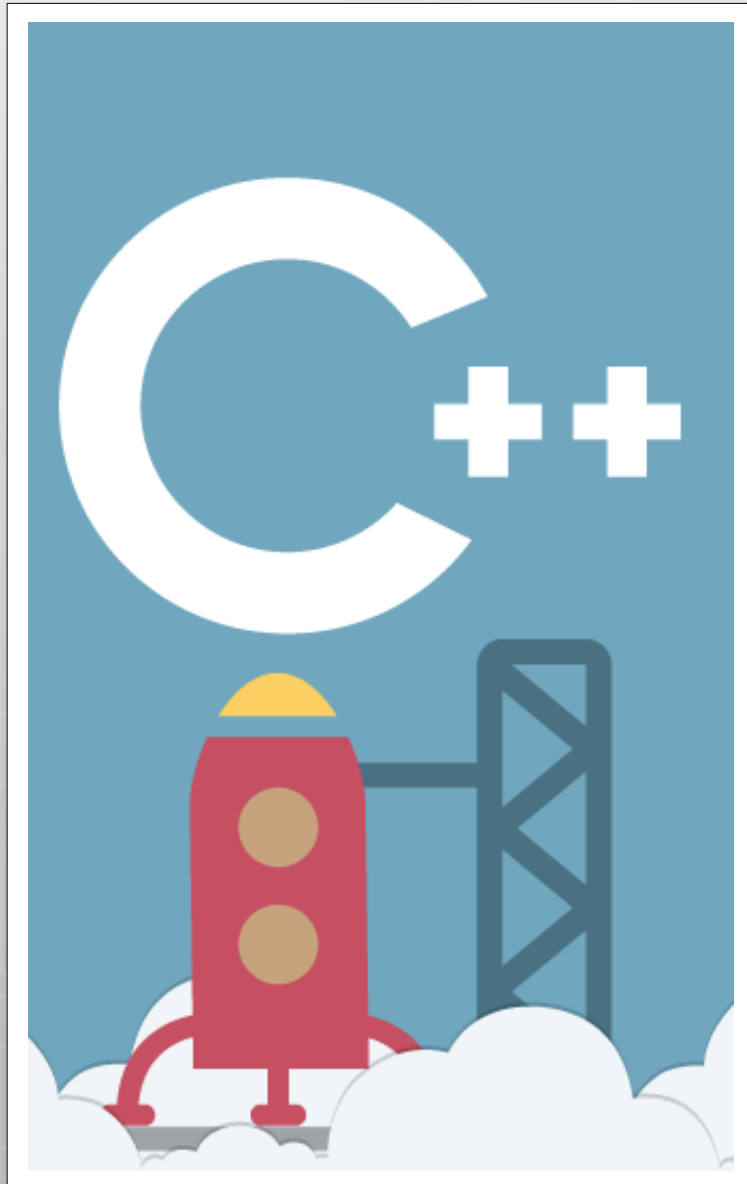
1. Degree of a Node
2. Depth of a Node
3. Height of Tree

Lets discuss few problems

1. Find the node with largest data in a tree
2. Print all the elements at depth K.

Your Turn

1. Find number of Nodes greater than the root
2. Find the node for which sum of the data of all children and the node itself is maximum



Thank You!

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