Eli Schmitter
December 9, 2018

1

A. A binary tree is a data structurer where each node has a parent node(except for the root node) and at most two children node.

B. the root is the first node on a tree.

C. a leaf is a node that has two null children

D. a sub tree is a tree of a that has its root node as a child node in another tree

E. siblings are nodes that are on the same level of the tree

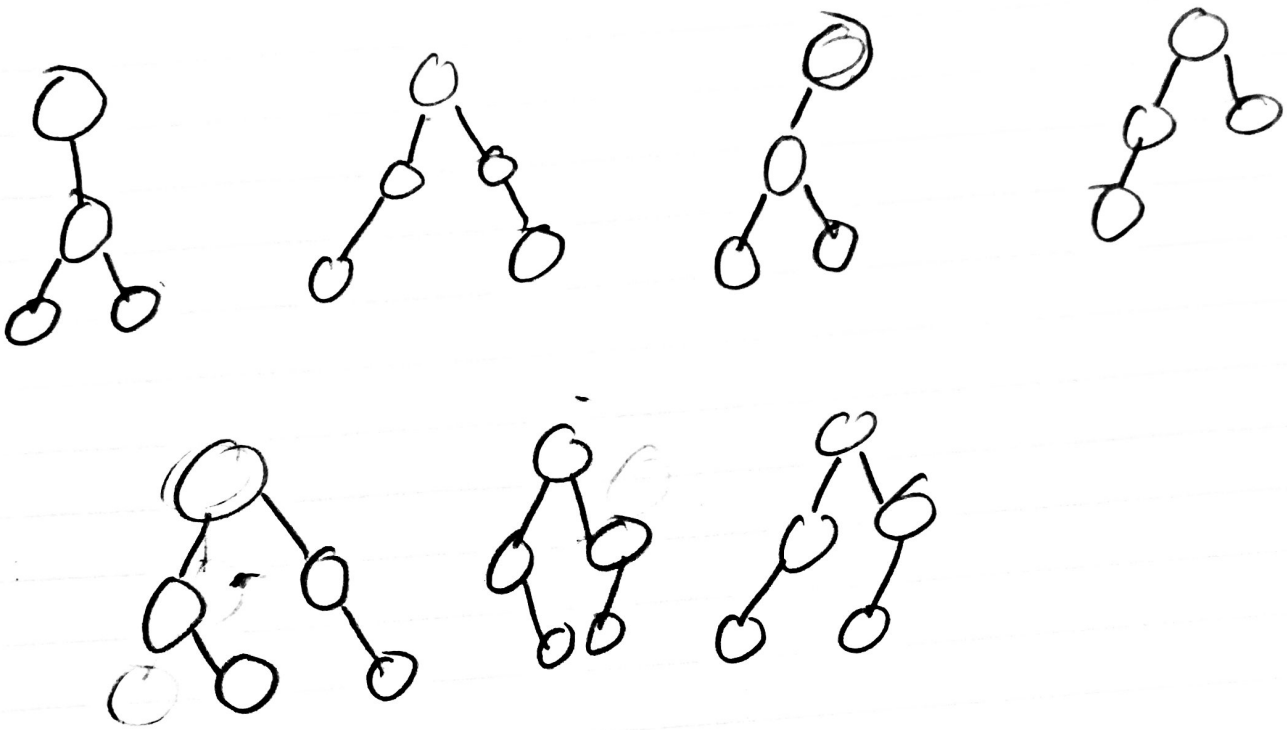
F. parent the node that has children

G. a node that can get to from a parent

H. the number of arguments a function takes.

I. a node with at least one child node.

2



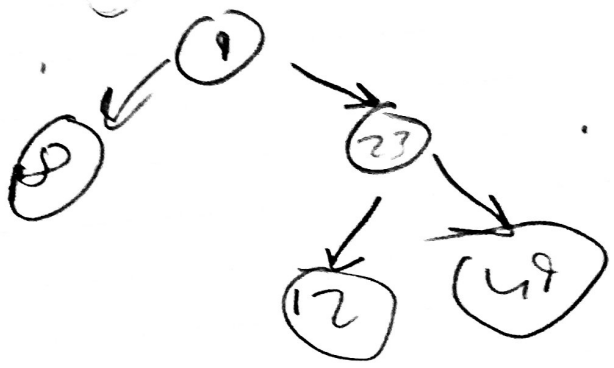
3 R17.4

if there is at least two leafs then there has to be at least one parent node for two children. This goes recursively back to the root.

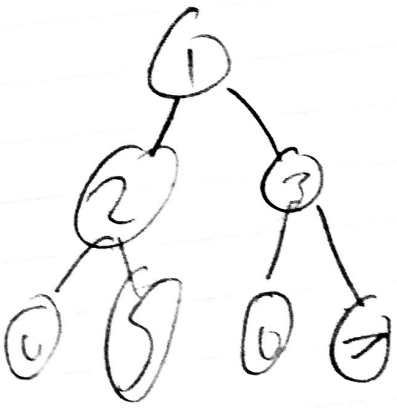
4 R17.1

A binary tree is a unordered where a binary search tree is ordered. The binary search tree is used for searching because the order makes it faster.

BST



BT



5 R17.10

1. start at root
2. move down the leftmost node
3. if k == i then thats k, i is the number of iterations.
4. else move up one
5. i++
6. if a right childed node is there go down it
7. go to 2

6 E17.1

```
public int count(BinaryTree b){
    if (b==null){
        return 0;
    }
    if(b.isLeaf()){
        return 1;
    }
    return  count(b.getLeftChild())+count(b.getRightChild());
}
```