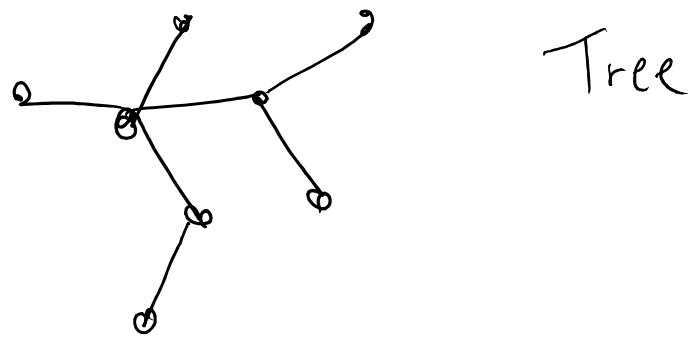
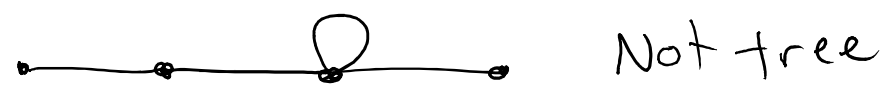
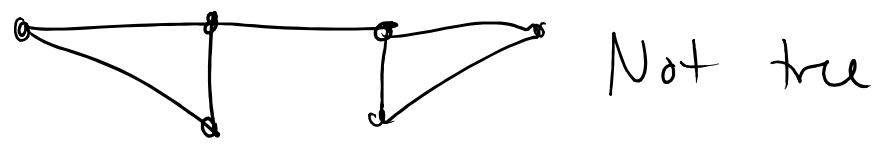


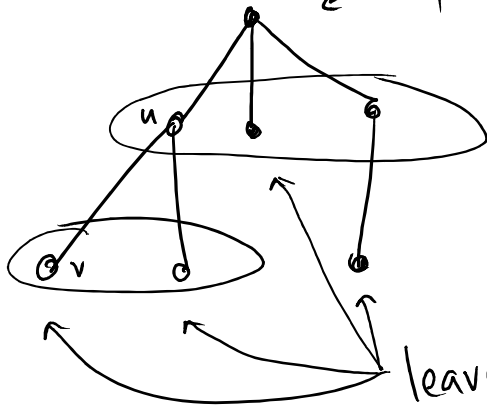
Trees - connected graph with no cycle or self loops



# Rooted tree

special vertex is called root

$\{u, v\} \in E$ , if  $u$  closer to root,  $u$  is "parent" of  $v$ ,  $v$  is "child" of  $u$ .

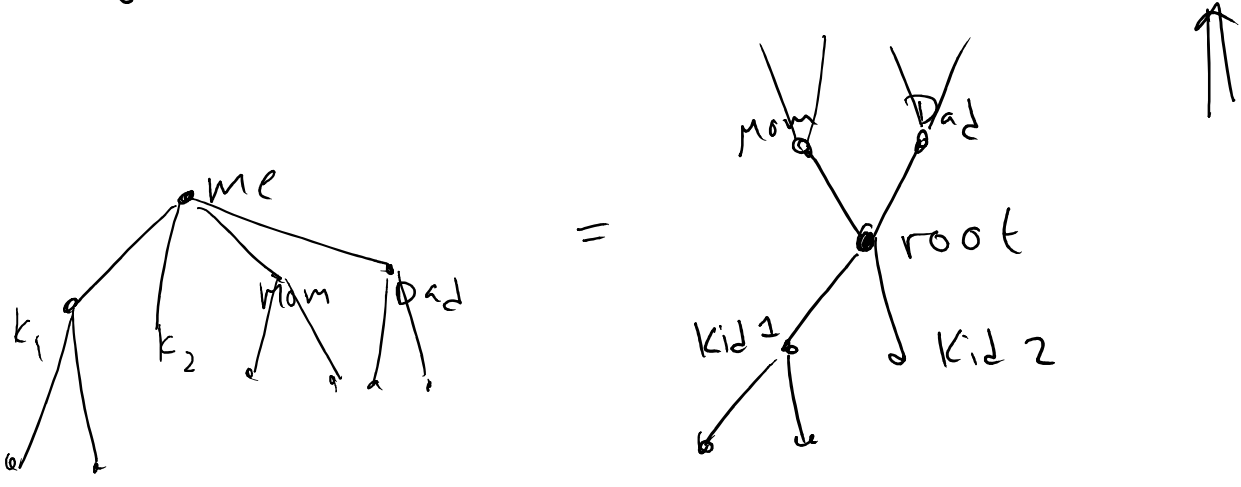


distance 1 = children of root

leaves = nodes without children

Q: Consider family tree. If I am the root, which nodes are child nodes of me?

- A) My children
- B) My Parents
- C) Children & Parents



def: An k-ary tree is a rooted tree where every node has at most k children.

Most Famous in Computer Science: Binary Tree  
||  
2-ary tree.

- Applications:
- Data structures
  - Codes