Mark Hanjin Valenzuela
BSCPE 2-2

Short Quiz on Trees

6. Children of node 16
   - {13, 6, 60}
7. Parent of node 1
   - {7}
8. Siblings of 23
   - Node 23 has no siblings
9. Ancestors of 9
   - {4, 12, 7, 22}
10. Descendants of 16.
    - {13, 6, 60, 23, 21}
11. Leaves
    - {23, 6, 21, 20, 9, 1}
12. Non-leaves
    - {22, 16, 7, 13, 60, 12, 5}
13. Depth of node 4
    - 3
14. Degree of the tree
    - 3
15. Height of the tree
    - 4
16. Weight of the tree
    - 6
17. Is the tree a binary tree?
    - No, it is triary tree
18. Removing 6, is the tree a full binary tree?
    - No, because some nodes only have one degree like nodes {13, 60, 4}
19. Removing 6, is the tree a complete binary tree?
    - No, because some nodes only have one degree like nodes {13, 60, 4}
20. Is a full binary tree complete?
    - No, because a full binary tree can have different heights for each subtree
21. Is a complete binary tree full?
    - Yes
22. How many leaves does a complete n-ary tree of height h have?
    - 81 leaves
23. What is the height of a complete n-ary tree with m leaves?
    - $\log_n m$.

24. What is the number of internal nodes of a complete n-ary tree of height h?

- 40

25. What is the total number of nodes a complete n-ary tree of height h have?

- if n=3 and h=4 then total number of nodes would be 121.
- If it were a complete binary tree with h=3 then total no. of nodes would be 15.