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BSCpE 2-1
12/01/2023
Data Structures and Algorithm
Short Quiz on Trees

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1. Name the three properties of a tree. -**connected, acyclic and undirected graph**
2. Is a tree a forest? -**Yes**
3. What do you call the special designated node in a tree? -**Root**
4. What is the minimum number of nodes in a tree? **1**
5. Can a tree have no subtrees at all? **Yes**

Given the tree to the right, identify the ff:

6. Children of node 16 - **13, 6, 60**
7. Parent of node 1 - **7**
8. Siblings of 23 - **None**
9. Ancestors of 9 - **4,7,12,22**
10. Descendants of 16 - **6, 13, 21, 23, 60**
11. Leaves - **1, 6, 9, 20, 21, 23**
12. Non-Leaves - **4, 7, 12, 13, 16, 22, 60**
13. Depth of node 4 - **The depth is 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? - **Yes**
18. Removing 6, is the tree a full binary? - **No**

19. Removing 6, is the tree a complete binary tree? - **No**

20. Is a full binary tree complete? - **No**

21. Is a complete binary tree full? - **Yes**

22. How many leaves does a complete n-ary tree of height h have? = $- n^h$

23. What is the height of a complete n-ary tree with m leaves? - **log m**

24. What is the number of internal nodes of a complete n-ary tree of height h? = $\frac{n^h - 1}{n-1}$

25. What is the total number of nodes a complete n-ary tree of height h have? = $2^h - 1$