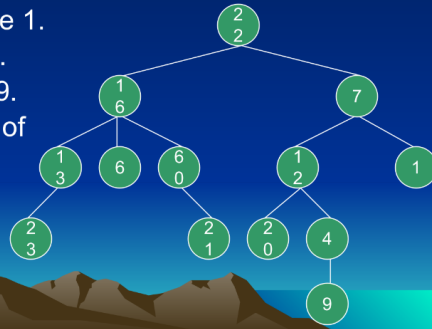


Short Quiz on Trees (cont'd.)

Given the tree to the right, identify the ff.:

6. Children of node 16.
7. Parent of node 1.
8. Siblings of 23.
9. Ancestors of 9.
10. Descendants of 16.
11. Leaves.
12. Non-leaves.

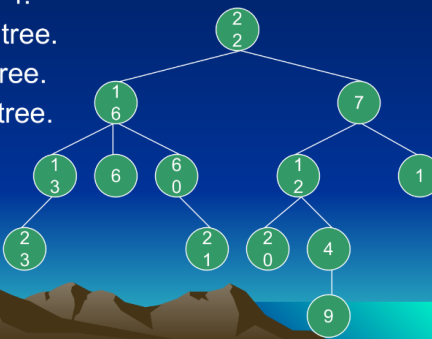


6. $V = \{13, 6, 60\}$
7. $V = \{7\}$
8. None
9. $V = \{22, 7, 12, 4\}$
10. $V = \{13, 6, 60, 23, 21\}$
11. $V = \{23, 6, 21, 20, 9, 1\}$
12. $V = \{22, 16, 7, 13, 60, 12, 4\}$

Short Quiz on Trees (cont'd.)

Given the tree to the right, identify the ff.:

13. Depth of node 4.
14. Degree of the tree.
15. Height of the tree.
16. Weight of the tree.
17. Is the tree a binary tree?

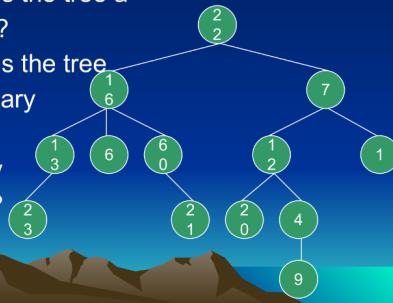


13. The depth of this tree is 3.
14. The degree of this tree is 3.
15. The height of this tree is 4.
16. The weight of this tree is 6.

Short Quiz on Trees (cont'd.)

Given the tree to the right, identify the ff.:

18. Removing 6, is the tree a full binary tree?
19. Removing 6, is the tree a complete binary tree?
20. Is a full binary tree complete?



18. No, because node 4 only has one child, which is node 9.
19. Yes, because every other node is completely filled.
20. No, because a full binary tree can be defined wherein all the nodes have 0 or two children while a complete binary tree is a binary tree in which all the levels are completely filled except possibly the lowest one so there might be nodes who have only one child node.

Short Quiz on Trees (cont'd.)

Given the tree to the right, identify the ff.:

21. Is a complete binary tree full?
22. How many leaves does a complete n -ary tree of height h have?
23. What is the height of a complete n -ary tree with m leaves?
24. What is the number of internal nodes of a complete n -ary tree of height h ?
25. What is the total number of nodes a complete n -ary tree of height h have?

21. No, because a complete binary tree has all completely filled except possibly the lowest one so there might be nodes who have only one child node.

22. n^h

23. $\log_n m$

$$24. 1 + n + n^2 + \dots + n^{h-1} = \sum_{i=0}^{h-1} n^i = \frac{n^h - 1}{n - 1} ; 2^h - 1$$

$$25. n = [(k^{(h+1)}) - 1] / (h - 1)$$