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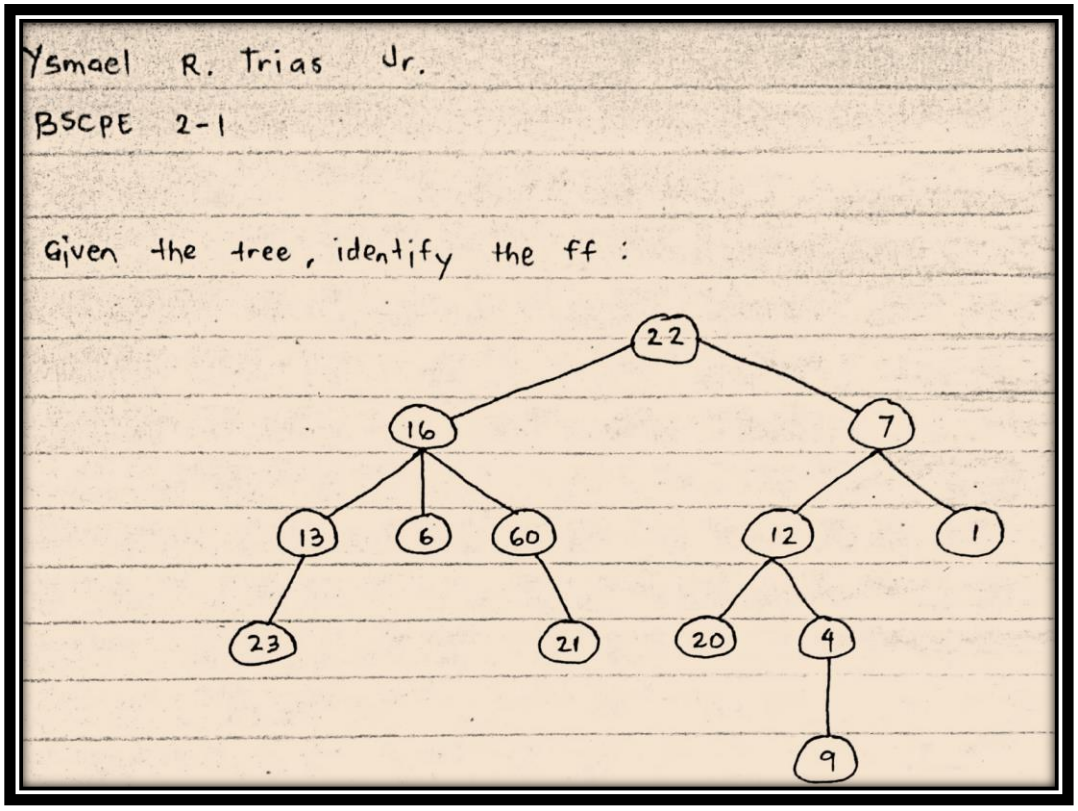
BSCPE2-1

Trees



6. Children of node 16. → 13, 6 and 60
7. Parent of node 1. → 7
8. Siblings of 23. → None
9. Ancestors of 9. → 22, 7, 12 and 4
10. Descendants of 16. → 13, 6, 60, 23 and 21
11. Leaves : → 23, 6, 21, 20, 9 and 1
12. Non-leaves : → 22, 16, 7, 13, 60, 12 and 4
13. Depth of node 4 → depth 3
14. Degree of the tree → degree 3
15. Height of the tree → height 4
16. Weight of the tree → 6

17. Is the tree a binary tree? → No, because a binary tree only contains a maximum of 2 children per node. One of the node has 3.

18. Removing 6, is the tree a full binary tree? → No, because a full binary tree only contains either a leaf or 2 nodes.

19. Removing 6, is the tree a complete binary tree? → No, because other levels are not completely filled.

20. Is a full binary tree complete? → Yes, a full binary tree can be complete if all the nodes are completely filled except the last level.

21. Is a complete binary tree full? → Yes, a complete binary tree can be full if it only contains 0 or 2 nodes.

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?

→ $\log_n m$

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?

→ $\frac{n}{2^{(h+1)}}$