Mumbai Education Trust's

INSTITUTE OF ENGINEERING, NASHIK.

COMPUTER ENGINEERING DEPARTMENT

Subject : DSA **ASSIGNMENT NO – 04** **Unit - IV**

1. Explain the **Symbol Table in details.**
2. Demonstrate **Deletion Operation in AVL** with example.
3. Explain following terms w.r.t. **height balance tree LL, RR, LR, RL.**
4. Construct an **AVL Tree by inserting numbers from 1 to 8.**
5. Define **Red Black tree**. List its properties. Give example of it.
6. Write **functions for RR and RL rotation with respect to AVL tree.**
7. Explain the following :

   (i) **Static and dynamic tree tables** with suitable example.

   (ii) **Dynamic programming with principle of optimality**.
8. **Explain the following trees using suitable example :**

   (i) Red-black tree

   (ii) Splay tree

   (iii) K-dimensional tree

   (iv) AA Tree
9. **Construct an AVL Tree for following data :**

   a. **50, 25, 10, 5, 7, 3, 30, 20, 8, 15**

   b. **1, 2, 3, 4, 8, 7, 6, 5, 11, 10**

   c. **MAR, MAY, NOV, AUG, APR, JAN, DEC, JULY**
10. What is OBST in data structure? and what are advantages of OBST?
11. **What is OBST? List binary search tree with 3 words (w1, w2, w3) = (do, if, stop) words occurs with probabilities (P1, P2, p3) = (0.4,0.5,0.1) find expected access time in each case.**
12. Build AVL tree for given sequence of data. Show balance factor of all nodes and name the rotation used for balancing the tree 40,60,80,50,45,47,44,42,75,46,41.

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13. Construct the **AVL tree** for the following data by inserting each of the following data item one at a time :

Example-1 : 10, 20, 15, 12, 25, 30, 14, 22, 35, 40

Example-2 : 30, 50, 110, 80, 40, 10, 120, 60, 20, 70, 100, 90

14. Write a pseudo **C/C++ code for LR and RL rotation** in AVL Tree.

15. Difference between **AVL Vs RBT tree.**

16. **Construct OBST** for given data using dynamic programming approach. Explain stepwise.

Index	0	1	2	3
Data	10	20	30	40
Frequency	4	2	6	3

17. Find the Optimal Binary Search Tree for the :

Identifier set {a1, a2, a3} = {do, if, while}

Where n = 3 and Probabilities of successful search as {p1, p2, p3} = {0.5, 0.1, 0.05} and Probability of unsuccessful search as {q0, q1, q2,q3} = {0.15, 0.1, 0.05, 0.05}

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********** **Best of Luck** **********