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SCHOOL OF COMPUTER APPLICATIONS AND TECHNOLOGY BCA SEM- III

ASSIGNMENT 2

1. Discuss the Master Theorem for solving recurrence relations. In which situations Master Theorem is not applicable.

ANSWER - The Master Theorem provides a way to analyze the asymptotic behavior of ( T(n) ) based on the relationship between ( f(n) ) and ( n^{\log\_b a} ), where ( \log\_b a ) is the logarithm of ( a ) base ( b ). The theorem consists of three cases

**Situations Where the Master Theorem is Not Applicable**

1. Non-Polynomial Growth of ( f(n) )
2. Irregular Subproblem Sizes
3. Multiple Recurrences
4. Non-Standard Growth Rates
5. Non-Polynomially Bounded
6. Solve the recurrence using Master Theorem:



1. If the maximum height of binary tree is n, then explain how many number of nodes are there.

ANSWER -

1. Generate a binary search tree by following integers: 50, 15, 62, 5, 20, 58, 91, 3, 8, 37, 60, 24.
2. Describe the algorithm for inorder, Preorder & Postorder traversal of a binary tree. Explain how the algorithm works.
3. Make a BST by inserting 7, 5, 1, 8, 3, 6, 0, 9, 4, 2 into an initially empty BST. Find the in-order, pre-order and post-order traversal sequence of the tree.
4. Generate the resultant binary tree

postorder traversal: 8, 9, 6, 7, 4, 5, 2, 3, 1.

inorder traversal: 8, 6, 9, 4, 7, 2, 5, 1, 3.

1. Write an algorithm to find the minimum key in a BST.
2. Write Pseudocode for following operations on a Binary Tree:

a) Search an element b) Insert an element c) Delete an element