16 Lecture - CS301

Important Mcqs

1. **In a BST, which node is deleted when the node to be deleted has no children?**
   a) The root node
   b) The node to be deleted
   c) The parent of the node to be deleted
   d) None of the above

Answer: b) The node to be deleted

2. **When deleting a node with one child in a BST, which child of the deleted node replaces it?**
   a) The left child
   b) The right child
   c) It depends on the node's value
   d) None of the above

Answer: c) It depends on the node's value

3. **When deleting a node with two children in a BST, which node is used to replace the deleted node**?
   a) The left child of the deleted node
   b) The right child of the deleted node
   c) The smallest node in the right subtree of the deleted node
   d) The largest node in the left subtree of the deleted node

Answer: c) The smallest node in the right subtree of the deleted node

4. **Which traversal algorithm is commonly used to delete a node in a BST?**
   a) Inorder traversal
   b) Preorder traversal
   c) Postorder traversal
   d) Level-order traversal

Answer: a) Inorder traversal

5. **In a BST, what is the time complexity of deleting a node with one child?**
   a) O(1)
   b) O(log n)
   c) O(n)
   d) It depends on the height of the tree

Answer: b) O(log n)

6. **What is the time complexity of deleting a node with two children in a BST?**
   a) O(1)
   b) O(log n)
   c) O(n)
   d) It depends on the height of the tree

Answer: d) It depends on the height of the tree

7. **What happens when a leaf node is deleted in a BST?**
   a) The node is deleted and the tree is balanced
   b) The node is deleted and the tree is left unbalanced
   c) The tree becomes a binary tree
   d) None of the above

Answer: a) The node is deleted and the tree is balanced

8. **In a self-balancing BST, what type of rotation is performed when deleting a node with one child?**
   a) Left rotation
   b) Right rotation
   c) Double rotation
   d) No rotation is performed

Answer: d) No rotation is performed

9. **When deleting a node in a BST, what is the worst-case time complexity if the tree is unbalanced?**
   a) O(1)
   b) O(log n)
   c) O(n)
   d) It depends on the size of the tree

Answer: c) O(n)

10. **In a BST, what is the minimum number of children a node can have?**
    a) 0
    b) 1
    c) 2
    d) There is no minimum number of children

Answer: a) 0