23 Lecture - CS301

Important Mcqs

1. **What is a single right rotation?**
   a) A rotation that balances the right child of a node.
   b) A rotation that balances the left child of a node.
   c) A rotation that balances the entire tree.
   d) A rotation that removes a node from the tree.

Answer: b) A rotation that balances the left child of a node.

2. **When is a single right rotation used?**
   a) When the imbalance occurs in the immediate left child of a node.
   b) When the imbalance occurs in the immediate right child of a node.
   c) When the tree is completely balanced.
   d) When a new node is inserted into the tree.

Answer: a) When the imbalance occurs in the immediate left child of a node.

3. **What is the purpose of a single right rotation?**
   a) To maintain the order of the nodes in the subtree.
   b) To increase the height of the left subtree.
   c) To decrease the height of the right subtree.
   d) To remove a node from the tree.

Answer: a) To maintain the order of the nodes in the subtree.

4. **What is the result of a single right rotation?**
   a) The left child becomes the new root of the subtree.
   b) The right child becomes the new root of the subtree.
   c) The subtree becomes completely balanced.
   d) A node is removed from the tree.

Answer: a) The left child becomes the new root of the subtree.

5. **What is the maximum number of rotations required to balance a node in a binary search tree?**
   a) One
   b) Two
   c) Three
   d) Four

Answer: b) Two

6. **What is the purpose of balancing a binary search tree?**
   a) To reduce the height of the tree.

b) To increase the height of the tree.
c) To ensure efficient search operations.
d) To remove nodes from the tree.

7. **What type of rotation is used when the left child of a node has a right child and the subtree is imbalanced?**
   a) Single left rotation
   b) Single right rotation
   c) Double left rotation
   d) Double right rotation

8. **What is the left-right case?**
   a) When the left child of a node has a right child and the subtree is imbalanced.
   b) When the right child of a node has a left child and the subtree is imbalanced.
   c) When the left child of a node has a left child and the subtree is imbalanced.
   d) When the right child of a node has a right child and the subtree is imbalanced.

9. **What is the right-left case?**
   a) When the right child of a node has a left child and the subtree is imbalanced.
   b) When the left child of a node has a right child and the subtree is imbalanced.
   c) When the right child of a node has a right child and the subtree is imbalanced.
   d) When the left child of a node has a left child and the subtree is imbalanced.

10. **What is the purpose of double rotations in a binary search tree?**
    a) To remove nodes from the tree.
    b) To maintain balance when a single rotation is not enough.
    c) To increase the height of the tree.
    d) To decrease the height of the tree.