

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.

Answer: c) To ensure efficient search operations.

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

Answer: c) Double left 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.

Answer: a) When the left 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.

Answer: a) When the right 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.

Answer: b) To maintain balance when a single rotation is not enough.