

40 Lecture - CS301

Important Mcqs

1. Which of the following data structures is a probabilistic data structure?

- A) Binary search tree
- B) AVL tree
- C) Skip list
- D) Red-black tree

Answer: C) Skip list

2. In a skip list, what is the maximum number of levels that a node can have?

- A) 1
- B) 2
- C) $\log n$
- D) Unlimited

Answer: D) Unlimited

3. What is the time complexity of searching for an element in a skip list?

- A) $O(n)$
- B) $O(\log n)$
- C) $O(n \log n)$
- D) $O(1)$

Answer: B) $O(\log n)$

4. Which of the following operations cannot be performed on a skip list?

- A) Insertion
- B) Deletion
- C) Searching
- D) Sorting

Answer: D) Sorting

5. Which of the following is the main advantage of using skip lists over balanced trees?

- A) Space efficiency
- B) Time efficiency
- C) Ease of implementation
- D) None of the above

Answer: C) Ease of implementation

6. Which of the following is a disadvantage of using skip lists?

- A) High space complexity
- B) High time complexity
- C) Limited applicability
- D) None of the above

Answer: A) High space complexity

7. In a skip list, what is the probability of a node having $k+1$ levels, given that it has k levels?

- A) 1/2
- B) 1/4
- C) 1/8
- D) 1/16

Answer: B) 1/4

8. **What is the worst-case time complexity of insertion in a skip list?**

- A) $O(n)$
- B) $O(\log n)$
- C) $O(n \log n)$
- D) $O(1)$

Answer: A) $O(n)$

9. **In a skip list, what is the maximum number of nodes that can be present in a level i , given that there are n total nodes in the skip list?**

- A) n
- B) $n/2$
- C) $n/\log n$
- D) $\log n$

Answer: B) $n/2$

10. **Which of the following is a disadvantage of using skip lists over hash tables?**

- A) Lower space complexity
- B) Higher time complexity
- C) Lack of support for efficient range queries
- D) None of the above

Answer: C) Lack of support for efficient range queries