31 Lecture - CS301

Important Mcqs

- 1. What is the time complexity of BuildHeap algorithm?
 - a) O(n log n)
 - b) O(n^2)
 - c) O(n)
 - d) O(log n)

Answer: c) O(n)

2. Which data structure is created by BuildHeap algorithm?

- a) Array
- b) Linked List
- c) Tree
- d) Heap

Answer: d) Heap

3. What is the maximum number of swaps required in BuildHeap algorithm?

- a) n-1
- b) n
- c) n/2
- d) log n

Answer: b) n

4. Which sorting algorithm uses BuildHeap internally?

- a) Insertion Sort
- b) Merge Sort
- c) Quick Sort
- d) Heap Sort

Answer: d) Heap Sort

5. What is the worst-case time complexity of HeapSort?

- a) O(n log n)
- b) O(n^2)
- c) O(n)
- d) O(log n)

Answer: a) O(n log n)

6. Which property does a heap satisfy?

- a) All nodes are greater than their parent nodes
- b) All nodes are less than their parent nodes

- c) All nodes are equal to their parent nodes
- d) None of the above

Answer: a) All nodes are greater than their parent nodes

- 7. What is the index of the last non-leaf node in a binary heap?
 - a) (n-1)/2
 - b) (n-2)/2
 - c) n/2
 - d) n-2

Answer: b) (n-2)/2

- 8. Which operation is used to remove the root element from a heap?
 - a) Delete
 - b) ExtractMin/ExtractMax
 - c) Pop
 - d) Remove

Answer: b) ExtractMin/ExtractMax

- 9. Which data structure is best suited for implementing a priority queue?
 - a) Stack
 - b) Queue
 - c) Heap
 - d) Linked List

Answer: c) Heap

10. What is the worst-case time complexity of inserting an element in a heap?

- a) O(log n)
- b) O(n)
- c) O(n log n)
- d) O(1)

Answer: a) O(log n)