11 Lecture - CS301

Important Mcqs

1. **Which of the following data structures is commonly used to implement a Priority Queue?**
   a) Linked List
   b) Queue
   c) Binary Heap
   d) Stack
   Solution: c) Binary Heap

2. **Which of the following operations is commonly supported by a Priority Queue?**
   a) Enqueue
   b) Dequeue
   c) Insert
   d) All of the above
   Solution: d) All of the above

3. **What is the time complexity of inserting an element into a binary heap?**
   a) O(1)
   b) O(log n)
   c) O(n)
   d) O(n log n)
   Solution: b) O(log n)

4. **What is the time complexity of deleting the highest-priority element from a binary heap?**
   a) O(1)
   b) O(log n)
   c) O(n)
   d) O(n log n)
   Solution: b) O(log n)

5. **Which of the following is an advantage of using a Fibonacci Heap to implement a Priority Queue?**
   a) Faster insert operation than a binary heap
   b) Lower memory usage than a binary heap
   c) Faster delete operation than a binary heap
   d) All of the above
   Solution: c) Faster delete operation than a binary heap

6. **Which of the following algorithms makes use of a Priority Queue?**
   a) Dijkstra's shortest path algorithm
   b) Binary search algorithm
   c) Bubble sort algorithm
   d) Linear search algorithm
   Solution: a) Dijkstra's shortest path algorithm

7. **Which of the following data structures is commonly used to implement a Priority Queue in C++?**
   a) std::queue
   b) std::vector
   c) std::list
   d) std::priority_queue
   Solution: d) std::priority_queue

8. **Which of the following operations is not supported by a Priority Queue?**
   a) Changing the priority of an element
   b) Inserting an element
   c) Removing an element with the lowest priority
   d) Removing an element with the highest priority
   Solution: c) Removing an element with the lowest priority

9. **Which of the following is an application of Priority Queues?**
   a) Sorting large datasets
   b) Implementing a stack
   c) Implementing a queue
   d) Task scheduling in an operating system
   Solution: d) Task scheduling in an operating system

10. **Which of the following is a disadvantage of using a binary heap to implement a Priority Queue?**
    a) Slower delete operation than a Fibonacci Heap
    b) Higher memory usage than a Fibonacci Heap
    c) Slower insert operation than a Fibonacci Heap
    d) All of the above
    Solution: a) Slower delete operation than a Fibonacci Heap