

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