31 Lecture - CS301

Important Subjective

1. What is the purpose of the BuildHeap algorithm?

Answer: The purpose of the BuildHeap algorithm is to convert an array of elements into a heap data structure, which satisfies the heap property.

2. What is the time complexity of the BuildHeap algorithm?

Answer: The time complexity of the BuildHeap algorithm is O(n).

3. How does the BuildHeap algorithm work?

Answer: The BuildHeap algorithm works by repeatedly swapping elements in the array until the entire array satisfies the heap property.

4. What is the heap property?

Answer: The heap property is a property of a binary tree where each node is greater than or equal to its children nodes.

5. How many swaps are required to convert an array of n elements into a heap using the BuildHeap algorithm?

Answer: At most n swaps are required to convert an array of n elements into a heap using the BuildHeap algorithm.

6. Is the BuildHeap algorithm stable?

Answer: No, the BuildHeap algorithm is not stable.

7. What is the space complexity of the BuildHeap algorithm?

Answer: The space complexity of the BuildHeap algorithm is O(1), as the algorithm does not require any extra space beyond the input array.

8. What is the difference between a max heap and a min heap?

Answer: In a max heap, the value of each node is greater than or equal to the value of its children, whereas in a min heap, the value of each node is less than or equal to the value of its children.

9. What is the time complexity of HeapSort algorithm?

Answer: The time complexity of HeapSort algorithm is O(n log n).

10. Can the BuildHeap algorithm be used to create a priority queue?

Answer: Yes, the BuildHeap algorithm can be used to create a priority queue, as a heap data structure can be used to implement a priority queue.