1 Lecture - CS301

Important Subjective

1. **What is a data structure?** Answer: A data structure is a way of organizing and storing data in a computer memory so that it can be accessed and manipulated efficiently.
2. **What is the difference between an array and a linked list?** Answer: An array is a fixed-size data structure that stores elements in contiguous memory locations, while a linked list is a dynamic data structure that stores elements in nodes, with each node pointing to the next one.
3. **What is a stack?** Answer: A stack is a data structure that follows the "last-in-first-out" (LIFO) principle, where the last element added is the first one to be removed.
4. **What is a queue?** Answer: A queue is a data structure that follows the "first-in-first-out" (FIFO) principle, where the first element added is the first one to be removed.
5. **What is a tree?** Answer: A tree is a hierarchical data structure that consists of nodes connected by edges, with one node at the top called the root node.
6. **What is a graph?** Answer: A graph is a non-linear data structure that consists of nodes connected by edges, where the edges may be directed or undirected.
7. **What is a hash table?** Answer: A hash table is a data structure that uses a hash function to map keys to their corresponding values, allowing for efficient insertion, deletion, and retrieval operations.
8. **What is a binary search tree?** Answer: A binary search tree is a binary tree where the left subtree of each node contains only elements smaller than the node, and the right subtree contains only elements larger than the node.
9. **What is a heap?** Answer: A heap is a binary tree where each parent node has a value that is greater than or equal to (for a max heap) or less than or equal to (for a min heap) its children.
10. **What is a priority queue?** Answer: A priority queue is a data structure that stores elements with associated priorities, where elements with higher priorities are dequeued first.