32 Lecture - CS402

Important Subjective

1. **What is a tree in computer science?**
   A tree is a non-linear data structure used to represent hierarchical relationships between elements. It consists of a collection of nodes connected by edges.

   What is a binary tree?
   A binary tree is a tree data structure where each node can have at most two children, referred to as the left child and the right child.

   What is a complete binary tree?
   A complete binary tree is a binary tree in which every level, except possibly the last, is completely filled, and all nodes are as far left as possible.

   What is a balanced binary tree?
   A balanced binary tree is a binary tree in which the left and right subtrees of every node differ in height by no more than one.

   What is a traversal of a tree?
   A traversal of a tree is a process of visiting each node in the tree exactly once in some order.

   What is the preorder traversal of a binary tree?
   The preorder traversal of a binary tree visits each node in the following order: root, left subtree, right subtree.

   What is the inorder traversal of a binary tree?
   The inorder traversal of a binary tree visits each node in the following order: left subtree, root, right subtree.

   What is the postorder traversal of a binary tree?
   The postorder traversal of a binary tree visits each node in the following order: left subtree, right subtree, root.

   What is a binary search tree?
   A binary search tree is a binary tree in which every node's left subtree contains only nodes with keys less than the node's key, and every node's right subtree contains only nodes with keys greater than the node's key.

   What is a heap?
   A heap is a complete binary tree that satisfies the heap property: the key of each node is either greater than or equal to (in a max heap) or less than or equal to (in a min heap) the keys of its children.