S.P.P.U. External Practical Viva Questions and Answers

Name: HK

Viva Questions and Answers (BFS Traversal of Binary Tree)

1. What is the objective of your project?

Answer:

The objective is to perform Breadth-First Search (BFS) traversal on a binary tree and print the nodes level by level.

2. What is a binary tree?

Answer:

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

3. What is BFS (Breadth-First Search)?

Answer:

BFS is a tree traversal technique where all nodes at the current depth level are visited before moving on to nodes at the next depth level.

4. How is BFS implemented in your code?

Answer:

- Using a queue data structure.
- Start by pushing the root node into the queue.

- Then repeatedly dequeue the front node, print it, and enqueue its left and right children (if they exist).

5. Why is a queue used for BFS?

Answer:

A queue helps in traversing the tree level-by-level by ensuring that nodes are visited in the order they are discovered (First In First Out).

6. What happens if the tree is empty?

Answer:

The program checks if the root is NULL and prints "Tree is empty!" without attempting traversal.

7. How is data inserted into the binary tree?

Answer:

- If the tree is empty, a new node is created as the root.
- Otherwise, if the new data is less than current node's data, it is inserted into the left subtree; otherwise into the right subtree (Binary Search Tree insertion logic).

8. What is the time complexity of BFS traversal?

Answer:

O(n), where n is the number of nodes in the tree, because each node is visited exactly once.

9. What will happen if you don't check for NULL before enqueuing children?

Answer:

The program would try to access NULL pointers during traversal, leading to segmentation faults or crashes.

10. How can you extend this program?

Answer:

- By performing level-order traversal with level separation.

- By implementing DFS (Depth-First Search) traversals like inorder, preorder, postorder.

Best of Luck, HK!