

# Data Structures - Trees & Graphs

## Data Structures: Trees and Graphs

### Trees

- **Binary Tree**: A tree where each node has at most two children.
- **BST (Binary Search Tree)**: Left child < Parent < Right child.
- **AVL Tree**: Self-balancing BST.

### Traversal Methods

1. Inorder (Left, Root, Right)
2. Preorder (Root, Left, Right)
3. Postorder (Left, Right, Root)

### Graphs

- **Definition**: A collection of nodes (vertices) and edges.
- **Types**: Directed, Undirected, Weighted, Unweighted.

### Algorithms

- **BFS (Breadth-First Search)**: Uses Queue.
- **DFS (Depth-First Search)**: Uses Stack (or recursion).
- **Dijkstra's Algorithm**: Shortest path in weighted graph.