VISVESVARAYA TECHNOLOGICAL UNIVERSITY

BELAGAVI – 590018, KARNATAKA

DATA STRUCTURE AND APPLICATIONS (BCS304)

Report on,

BINARY SEARCH TREE

Bapuji Educational Association ®

Bapuji Institute of Engineering and Technology, Davangere.

Department of Information Science and Engineering

2024-2025

1. Title of the Activity:

Role Play – Conceptual Understanding of Data Structures through Simulation and Visualization

2. Objective of the Activity:

The objective of the role play activity was to enhance students' conceptual clarity of various data structure topics through collaborative and engaging methods. It aimed at:

- Encouraging active learning through visualization.
- Strengthening the understanding of abstract data structures like Binary Search Trees, Linked Lists, Stacks, Queues, etc.
- Improving teamwork, presentation, and communication skills.
- Providing hands-on experience with algorithmic logic through dramatization and enactment.

3. Topics Covered:

As part of the role play event, different student teams selected key data structure concepts. The topics enacted by different groups included:

Group No.	Topic	Role Play Highlights
1	**Binary Search Tree**	Structure building using props, traversal demonstration, insertion/search algorithm visualized
2	**Stacks and Queues**	Real-time queue (ticketing system), push/pop operations demonstrated with role switching
3	**Linked List (Singly & Doubly)**	Node navigation using physical linking (students as nodes), insertions at various positions
4	**Graph Traversal**	BFS and DFS visualized using stage movement and edge labeling
5	**Heap Structure**	Max-heap and min-heap explained using hierarchical seating arrangements
6	**Hashing and Collision Handling**	Role play showing direct addressing, collision, chaining
7	**Tree Traversals**	Inorder, Preorder, and Postorder dramatized with specific path walking techniques

4. Highlights of the BST Role Play (Group 1):

- The team demonstrated how a Binary Search Tree is built.
- Each student acted as a node with specific values.
- Props such as placards, strings, and arrows were used to show parent-child relationships.
- BST properties were explained live.
- Inorder, Preorder, and Postorder traversal methods were illustrated step-by-step.
- A simple C program for BST was explained interactively.

5. Learning Outcomes:

By the end of the session, students were able to:

- Visually understand data structure logic and structure.
- Explain traversal techniques and operations like insertion, deletion, and search.
- Identify practical applications of abstract structures.
- Work as a team and present technical content creatively.

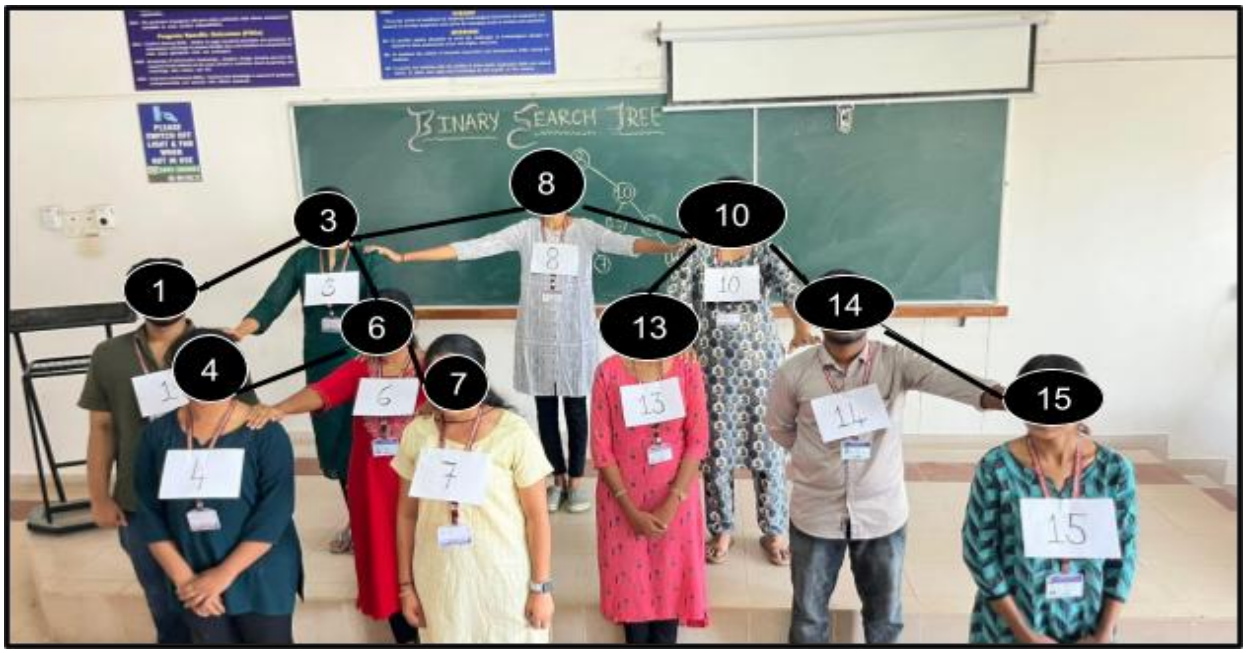
The Binary Search Tree, To Perform Activity

Un-Structured Nodes :

Hierarchical Arrangement Of Nodes :

Node arrangement with their leaf nodes:

A Clear Vision of Binary Tree



Event Coordinator

Program Coordinator