Birla Institute of Technology & Science, Pilani
First Semester 2024-2025
Advanced Algorithms and Complexity [CS G256]
Lab #4

Objectives:

1. To implement applications of stack data structure.
2. To implement Binary Tree and it's applications using Stack.

Task 1: Implement the following operations of a stack.

1. Push()
2. Pop()
3. Top()
4. IsEmpty()
5. Size()
6. IsFull()

[Coding Time: 15 mins]

Task 2: A chain of vertices which defines the left side of a polygon is called a left poly chain. A poly chain is called y-monotone if a line perpendicular to y-axis intersects the poly chain at the most once.

Write a program to check if a poly chain is y-monotone. If a chain is not a y-monotone then discard the vertices such that the chain becomes y-monotone. **[Coding Time: 45 mins]**

Task 3: Implement an algorithm to find the maximum element in a Binary Tree. Note that we are talking of Binary Tree and not Binary Search Tree**.** **[Coding Time: 15 mins]**

Task 4: Given a Binary Tree, print the nodes of the tree in a pre-order traversal by implementing the traversal algorithm iteratively. **[Coding Time: 20 mins]**