BCSC0805: DATA STRUCTURES & ALGORITHMS LAB

Objective: *The objective of this course is that students will understand and implement simple data structures, able demonstrate different sorting and searching techniques. and will be familiar with graphs and their applications.*

Credits:01   **L-T-P-J:0-0-2-0**

Module		Lab
I, II and III	• Program to implement various operations in a singly linked list. • Program to implement insertion, deletion and traversal in a doubly linked List. • Program to implement polynomial addition using linked list. • Program to demonstrate the various operations on stack. • Program to convert an infix expression into postfix expression. • Program to evaluate a given postfix expression. • Program to implement Tower of Hanoi problem using Recursion. • Program to demonstrate the implementation of various operations on linear and circular queue. • Program to demonstrate the implementation of insertion and traversals on a binary search tree. • Program to implement Dijkstra's Algorithm to find the shortest path between source and destination. • Program to search a given element as entered by the user using sequential and binary search to search a given element as entered by the user. • Implementation of various sorting algorithms like Selection Sort, Bubble Sort, Insertion Sort, Merge Sort, Quick Sort and Heap Sort.	24

Note: All Code must be done in Java as well as Python

Outcome: After completion of course, student will be able to:
- Iden*tify, implement and use the appropriate data structures for a given problem*
- *Apply algorithmic skills for computing and engineering practice.*
- *Apply design and development principles of data structures and algorithms in the construction of software systems.*