2/4 B.Tech - SECOND SEMESTER

IT4L3 ADVANCED DATA STRUCTURES LAB Credits: 2

Internal assessment: 25 marks

Lab: 3 Periods/week Semester end examination: 50 marks

Objectives:

- To implement Linear and Non linear data structures.
- To arrange and manipulate data using different graph techniques.
- To use different hashing & String matching techniques.

Outcomes:

Students will be able to

- Understand and Implement functions of dictionary using hashing.
- Implement data structures programs on trees and graphs.
- Develop Pattern matching algorithms.
- Apply Knowledge on files.

Prerequisites:

C programming, Classic Data Structures.

Exercise 1.

To implement functions of Dictionary using Hashing (division method, Multiplication method, Universal hashing)

Exercise 2.

To perform various operations like insertions and deletions on AVL trees

Exercise 3.

To perform various operations like insertions and deletions on Red-Black trees

Exercise 4.

To perform various operations i.e., insertions and deletions on 2-3 trees.

Exercise 5.

To implement operations on Binary Heap.

Exercise 6.

To implement Prim's algorithm to generate a min-cost spanning tree.

Exercise 7.

To implement Krushkal's algorithm to generate a min-cost spanning tree.

Exercise 8.

To implement Dijkstra's algorithm to find shortest path in the graph.

Exercise 9.

To implement Warshall's algorithm to find shortest path for the given graph.

Exercise 10.
To implement pattern matching using Boyer-Moore algorithm.

Exercise 11.
To implement Knuth-Morris-Pratt algorithm for pattern matching.

Exercise 12.
To implement a file program, Copy the contents of a file to another file, count and print how many bytes were copied.

Reference Books:

1. File Structures : An Object oriented approach with C++, 3rd Edition, Michel J Folk, Greg Riccardi, Bill Zoellick
2. C and Data Structures: A Snap Shot oriented Treatise with Live examples from Science and Engineering, NB Venkateswarlu & EV Prasad, S Chand, 2010.
3. Data Structures A Pseudo code approach with C, Richard F. Gilberg and BehrouzA. Forouzan, Thomson, 2005.
4. Data Structures & Program Design in C, Robert Kruse & Bruce Leung, Pearson Education, 2007.