Data Structures Lab

Course Code	20ES1356	Year	II	Semester	I
Course Category	ES Lab	Branch	CSE	Course Type	Practical
Credits	1.5	L-T-P	0-0-3	Prerequisites	Programming for Problem Solving
Continuous Internal Evaluation:	15	Semester end evaluation	35	Total Marks	50

Course Outcomes		
Upon successful completion of the course, the student will be able to		
CO1	Apply Linear and non-linear data structures for solving problems.	L3
CO2	Implement programs as an individual on different IDEs	L3
CO3	Develop an effective report based on various programs implemented	L3
CO4	Apply technical knowledge for a given problem and express with an effective oral communication	L3
CO5	Analyze outputs using given constraints/test cases	L4

Contribution of Course Outcomes towards achievement of Program Outcomes & Strength of correlati ns (3:Substantial, 2: Moderate, 1:Slight)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1													3	
CO2					2				1					
CO3										2				
CO4	2									2				
CO5			3											

Syllabus		
Unit No.	**Contents**	**Mapped CO**
1.	Demonstrate recursive algorithms with examples.	**CO1,CO2,CO3,CO4,CO5**
2.	Implement various searching techniques.	**CO1,CO2,CO3,CO4,CO5**
3.	Develop programs for different sorting techniques	**CO1,CO2,CO3,CO4,CO5**
4.	Implement and perform different operations on Single, Double and Circular Linked Lists.	**CO1,CO2,CO3,CO4,CO5**
5.	Develop a program to perform operations of a Stack using arrays and linked Lists.	**CO1,CO2,CO3,CO4,CO5**
6.	Develop programs to implement Stack applications.	**CO1,CO2,CO3,CO4,CO5**
7.	Develop a program to perform operations of Linear Queue using arrays and linked Lists.	**CO1,CO2,CO3,CO4,CO5**
8.	Implement Circular Queues.	**CO1,CO2,CO3,CO4,CO5**
9.	Develop a program to represent a tree data structure.	**CO1,CO2,CO3,CO4,CO5**
10.	Develop a program to demonstrate operations on Binary Search Tree.	**CO1,CO2,CO3,CO4,CO5**
11.	Demonstrate Graph Traversal Techniques.	**CO1,CO2,CO3,CO4,CO5**
12.	Develop a program to find Minimum cost Spanning tree.	**CO1,CO2,CO3,CO4,CO5**

Learning Resources

Text Books

1. Data Structures and Algorithm Analysis in C, Mark Allen Weiss, Second Edition, 2002, Pearson.
2. Introduction to Algorithms, Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, Clifford Stein, Third Edition, 2010, PHI.
3. Data Structures and Algorithms Made Easy by Narasimha Karumanchi, 2020, CareerMonk Publications.

e-Resources & other digital material

1. https://www.cs.usfca.edu/~galles/visualization/Algorithms.html
2. http://www.algomation.com/algorithm/single-linked-list-insert-delete
3. http://www.algomation.com/algorithm/binary-tree-insert-delete-display
4. https://www.youtube.com/watch?v=AfYqN3fGapc
5. https://www.youtube.com/watch?v=7vw2iIdqHlM
6. http://littlesvr.ca/dsa-html5-animations/sorting.php