PVP SIDDHARTHA INSTITUTE OF TECHNOLOGY, KANURU, VIJAYAWADA
(AUTONOMOUS)
INFORMATION TECHNOLOGY
Data Structures Lab
(Common to CSE & IT)

Course Code	20ES1356	**Year**	II	**Semester**	I
Course Category	ES Lab	**Branch**	IT	**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.	**L2**
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 correlations (3:Substantial, 2: Moderate, 1:Slight)

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

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Syllabus

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