



**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY: KAKINADA**  
**KAKINADA – 533 003, Andhra Pradesh, India**

**DEPARTMENT OF CSE - ARTIFICIAL INTELLIGENCE**

I Year – II Semester		L	T	P	C
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DATA STRUCTURES LAB (CS1202)					

**Course Objectives:**

The objective of this lab is to

- Demonstrate the different data structures implementation.

**Course Outcomes:**

By the end of this lab the student is able to

- Use basic data structures such as arrays and linked list.
- Programs to demonstrate fundamental algorithmic problems including Tree Traversals, Graph traversals, and shortest paths.
- Use various searching and sorting algorithms.

**Exercise -1 (Searching)**

Write C program that use both recursive and non recursive functions to perform Linear search for a Key value in a given list.

b) Write C program that use both recursive and non recursive functions to perform Binary search for a Key value in a given list.

**Exercise – 2 (Sorting-I)**

- Write C program that implement Bubble sort, to sort a given list of integers in ascending order
- Write C program that implement Quick sort, to sort a given list of integers in ascending order
- Write C program that implement Insertion sort, to sort a given list of integers in ascending order

**Exercise -3 (Sorting-II)**

- Write C program that implement radix sort, to sort a given list of integers in ascending order
- Write C program that implement merge sort, to sort a given list of integers in ascending order

**Exercise -4 (Singly Linked List)**

- Write a C program that uses functions to create a singly linked list
- Write a C program that uses functions to perform insertion operation on a singly linked list
- Write a C program that uses functions to perform deletion operation on a singly linked list
- Write a C program to reverse elements of a single linked list.

**Exercise -5(Queue)**

- Write C program that implement Queue (its operations) using arrays.
- Write C program that implement Queue (its operations) using linked lists

**Exercise -6 (Stack)**

- Write C program that implement stack (its operations) using arrays
- Write C program that implement stack (its operations) using Linked list
- Write a C program that uses Stack operations to evaluate postfix expression



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**Exercise -7 (Binary Search Tree)**

- a) Write a C program to Create a BST
- b) Write a C program to insert a node into a BST.
- c) Write a C program to delete a node from a BST.
- d) Write a recursive C program for traversing a binary tree in preorder, inorder and postorder.