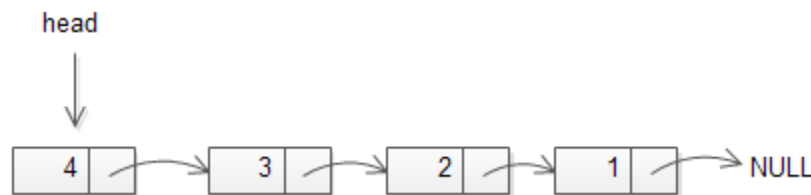


Laboratory Assignment 4

Objectives

Main objective of this lab session is to understand the concept of Linked list and Linked list based implementation of List.

- A linked list is a dynamic data structure
- A linked list grow and shrink during their life time.
- Link list elements are not physically adjacent in memory



1. Write a C program to create and display a Singly Linked List.

Test Data :

Input the number of nodes: 3

Input data for node 1 : 15

Input data for node 2 : 9

Input data for node 3 : 12

Output:

Data entered in the list:

Data =15

Data = 9

Data = 12

Create a node with two members

```
struct node
{
    int num;
    struct node *nextptr;
}*stnode;
```

void createNodeList(int n); // function to create the list

void displayList(); // function to display the list

2. Write a C program to maintain a Linked list based ordered list.
 - a. Add three elements to the list. Implement the ***createNodeList()*** function.
 - b. Display the list node. Implement the ***displayList()*** function.
 - c. Search the given node from the list. Implement the ***FindElement(int)*** function.
 - d. Insert a node at the beginning of the linked list. Implement the ***NodeInsertatBegin(int)*** function.
 - e. Display the list.
 - f. Insert a node at the end of the linked list. Implement the function ***NodeInsertatEnd(int)*** function.
 - g. Display the list.
 - h. Count the number of nodes of the linked link. Implement the ***int NodeCount()***function.
 - i. Insert a node at middle of the list. Implement the ***insertNodeAtMiddle(int num, int pos)*** function.
 - j. Display the list.
 - k. Delete the first node of the linked list. Implement the ***FirstNodeDeletion()***function.
 - l. Display the list.
 - m. Count the number of nodes of the linked link.

3. Write a program in C to create and display a doubly linked list.
Function's prototype are:

```
void DListcreation(int );  
void displayDList();
```