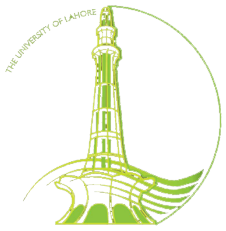

THE UNIVERSITY OF LAHORE
ISLAMABAD CAMPUS

Data Structures and Algorithms
(CS09203)

Lab Report

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Experiment # 4
Link list-Basic Insertion and transversal

Objective
The objective of this session is to understand the various operations on linked list in C++. using C++..

Software Tool
1. I use Code Blocks with GCC compiler.

1 Theory

LINKED LIST:- A linked list is a collection of components, called nodes. Every node (except the last node) contains the address of the next node. Thus, every node in a linked list has two components: one to store the relevant information (that is, data) and one to store the address, called the link, of the next node in the list. The address of the first node in the list is stored in a separate location, called the head or first. Figure 1 is a pictorial representation of a node.

Figure 1

Linked list: A list of items, called nodes, in which the order of the nodes is determined by the address, called the link, stored in each node. The list in Figure 2 is an example of a linked list.

Figure 2

The arrow in each node indicates that the address of the node to which it is pointing is stored in that node. The down arrow in the last node indicates that this link field is NULL. For a better understanding of this notation, suppose that the first node is at memory location

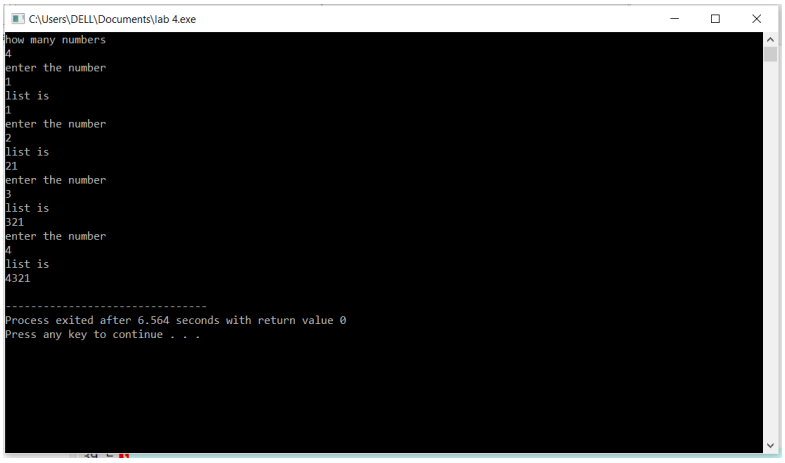

Figure 1: output

2 Task

2.1 Procedure: Task 4

Write a C++ code using functions for the following operations. 1.Creating a linked List. 2.Traversing a Linked List.

2.2

```
#include<iostream>
#include<stdlib.h>
using namespace std;
struct Node{
        int data;
        struct Node*next;

};
struct Node*head;
void insert(int x){
        struct Node*temp=(Node*)malloc(sizeof(struct Node));
        temp->data=x;
```

```
        temp->next=head;
        head=temp;
}
void print()
{
        struct Node*temp=head;
        cout<<"list is"<<endl;
        while(temp!=NULL)
        {
                cout<<temp->data;
                temp=temp->next;

        }
        cout<<endl;
}

int main(){
        head=NULL;
        cout<<"how many numbers"<<endl;
        int n,i,x,y;
        cin>>n;
        for(i=0;i<n;i++){
                cout<<"enter the number"<<endl;
                cin>>x;
                insert(x);
                print();          }
}
```

3 Conclusion

In today lab we have discussed how we can create a link list and display it on a screen.