



THE UNIVERSITY  
OF LAHORE  
**ISLAMABAD  
CAMPUS**

## **DATA STRUCTURE**

### **Lab Report**

Name: SAMI ULLAH  
Registration #: SEU-S17-030  
Lab Report #: 05  
Dated: 25-04-2018  
Submitted To: Mr. Usman Ahmed

Department of Computer Science & Information Technology

## **Experiment # 1**

### **LINK LIST**

#### **Objective**

To understand and implement the LINK LIST .

#### **Software Tool 1.DEV**

C++

## **1 Theory**

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

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 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.

## **2 Task**

### **2.1 Procedure: Task 1**

```
#include<iostream> #include<stdio .h>
#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 " ;
    while(temp!=NULL)
    {
        cout<<" "<<temp->data ;
        temp=temp->next ;
    } cout<<"\n" ;
}
void Delete ( int n)
{
    struct Node* temp1=head ;
    if (n==1)
    {
        head=temp1->next;
        free (temp1 );
        return ;
    }
    int i ;
    for ( i =0;i<n-2;i++)
    { temp1=temp1->next ;
    }
    struct Node* temp2=temp1->next ;
    temp1->next=temp2->next ;
}

```

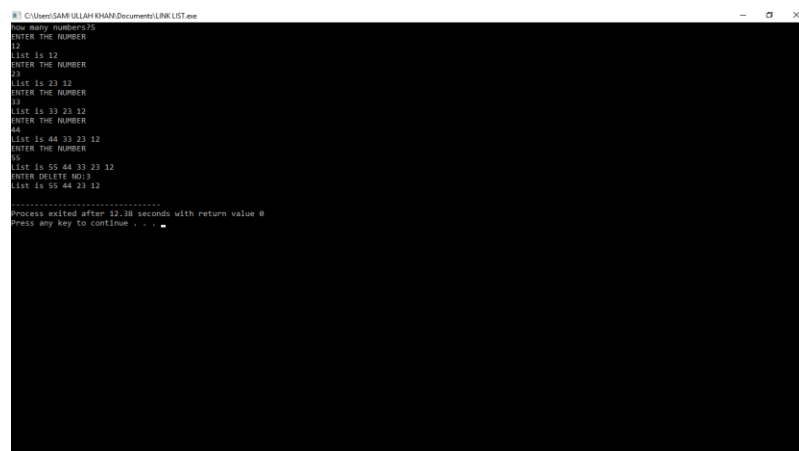
```

        free (temp2 );
    }
    int main()
    {

        head = NULL; cout<<"how many
        numbers?"; int n,i,x,y; cin>>n; for
        ( i =0;i<n; i++)
        {
            cout<<"ENTER _ THE  NUMBER"<<endl ;
            cin>>x; Insert (x ); print ();
        }
        cout<<"ENTER _ DELETE NO:  " ;
        cin>>y; Delete (y ); print ();
        return 0;
    }

```

### 3 OUTPUT



```

C:\Users\SAMIR\Documents\LINKLIST.exe
how many numbers?
ENTER THE NUMBER
12
list is 12
ENTER THE NUMBER
23
list is 23 12
ENTER THE NUMBER
33
list is 33 23 12
ENTER THE NUMBER
44
list is 44 33 23 12
ENTER THE NUMBER
55
list is 55 44 33 23 12
ENTER DELETE NO: 5
list is 55 44 33 12
.....
Process exited after 12.38 seconds with return value 0
Press any key to continue . . .

```

## **4 Conclusion**

In this lab we learn about the application of link list and also how it work and got the idea about the link list and perform them practically on computer in c++ and also perform the deletion method in this lab on link list..