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Data Structures and Algorithms
(CS09203)

Lab Report

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Experiment # 5
Link list-Basic Deletion at desired position

Objective
The objective of this session is to insertion, traversal and deletion at desired position in link list using C++.

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

1 Theory

This section discusses how to insert an item into, and delete an item from, a linked list. Consider the following definition of a node. (For simplicity, we assume that the info type is int. struct nodeType int info nodeType* link; ; We will use the following variable nodeType *head, *p, *q, *newNode; INSERTION:- Algorithms which insert nodes into the linked list come up in various situations. We discuss three of them here. The first one inserts a node at the beginning of the list, the second one inserts a node after a node with a given location, and the third one inserts a node into the sorted list.

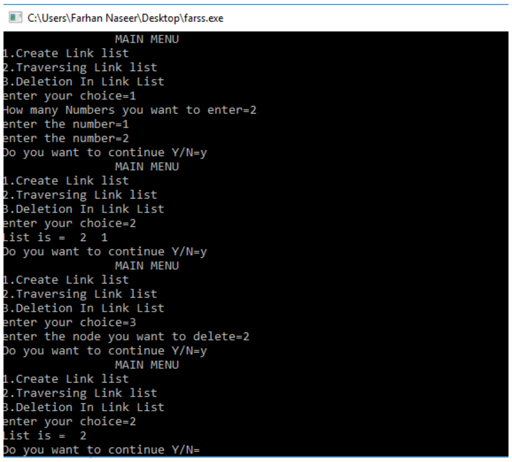
2 Task

2.1 Procedure: Task 5

Write a C++ code using functions for the following operations. 1.Creating a linked List. 2.Traversing a Linked List. 3.Inserting the node at the start of the list. 4.Inserting a node after a given node. 5.Inserting a node in a sorted list.

2.2

```
#include<iostream>
```



C:\Users\Farhan Naseer\Desktop\farss.exe

```
                MAIN MENU
1.Create Link list
2.Traversing Link list
3.Deletion In Link List
enter your choice=1
How many Numbers you want to enter=2
enter the number=1
enter the number=2
Do you want to continue Y/N=y
                MAIN MENU
1.Create Link list
2.Traversing Link list
3.Deletion In Link List
enter your choice=2
List is =  2  1
Do you want to continue Y/N=y
                MAIN MENU
1.Create Link list
2.Traversing Link list
3.Deletion In Link List
enter your choice=3
enter the node you want to delete=2
Do you want to continue Y/N=y
                MAIN MENU
1.Create Link list
2.Traversing Link list
3.Deletion In Link List
enter your choice=2
List is =  2
Do you want to continue Y/N=
```

Figure 1: output

```
#include<stdlib.h>
#include<conio.h>
 using namespace std;
 struct Node{
          int data;
           Node* next;
 };
 struct Node* head;
 void Insert(int x){
          Node* temp=(Node*)malloc(sizeof(Node));
          temp->data=x;
          temp->next=head;
          head=temp;
 }
 void print(){
           Node* temp=head;
          cout<<"List␣is␣=";
          while(temp != NULL){
                   cout<<"␣␣"<<temp->data;
                   temp=temp->next;
          }
          cout<<endl;
 }
 void Delete(int n){
     struct     Node* temp1=head;
          if(n==1){
                head=temp1->next;
                free(temp1);
                return;
        }

        for(int i=0;i<n-2;i++){
                temp1=temp1->next;}
                struct Node* temp2=temp1->next;
                temp1->next=temp2->next;
                free(temp2);
}
int main(){
        head=NULL;
        int size,j,k;
        char ch,choice;

        do{

        cout<<”\t\tMAIN␣MENU\t\t”<<endl;
        cout<<”1.Create␣Link␣list”<<endl;
        cout<<”2.Traversing␣Link␣list”<<endl;
        cout<<”3.Deletion␣In␣Link␣List”<<endl;
        cout<<”enter␣your␣choice=”;
        cin>>choice;
        switch(choice){
                case '1':
                        {
                                cout<<”How␣many␣Numbers␣you␣want␣to␣enter=
                    cin>>size;
                                for(j=0;j<size;j++){
                                cout<<”enter␣the␣number=”;
                                cin>>k;
                                Insert(k);
                        }}
                        break;
                case '2':
                        {
                                        print();
                        }
                        break;
                case '3':
                        {
                                int x;
                                cout<<"enter␣the␣node␣you␣want␣to␣delete="
                                cin>>x;
                                Delete(x);
                        }
                        break;
                        default:
                                cout<<"invalid␣choice␣!!!!!!!!"<<endl;
        }
        cout<<"Do␣you␣want␣to␣continue␣Y/N=";
        cin>>ch;
}
while((ch=='Y')||(ch=='y'));
getch();
return 0;
}
```

3 Conclusion

In today lab we have discussed how we can create a link list and alose learn to delete a node and display it on a screen by having a code.