#include <iostream>

using namespace std;

class node

{

public:

int data;

node \*next;

}\*start;

class SLL

{

public:

SLL()

{

start=NULL;

}

void accept();

void display();

void search();

void insert\_beginning();

void insert\_after();

void insert\_end();

void delete\_start();

void delete\_end();

void delete\_after();

};

node \*createnode()

{

node \*ntemp;

ntemp=new node;

cout<<"Enter Data: ";

cin>>ntemp->data;

ntemp->next=NULL;

return ntemp;

}

void SLL::accept()

{

int n,i;

node \*trav;

start=NULL;

cout<<"\nHow Many Nodes You Want To Enter:"<<endl;

cin>>n;

for(i=0;i<n;i++)

{

class node \*ntemp=createnode();

if(start==NULL)

{

start=ntemp;

}

else

{

trav=start;

while(trav->next!=NULL)

{

trav=trav->next;

}

trav->next=ntemp;

}

}

}

void SLL::display()

{

node \*trav=start;

while(trav!=NULL)

{

cout<<trav->data<<"->";

trav=trav->next;

}

cout<<"NULL";

}

void SLL::search()

{

node \*trav;

int serno,flag=0;

trav=start;

cout<<"\nWhich number do you want to search";

cin>>serno;

while(trav!=NULL)

{

if(serno==trav->data)

{

flag=1;

break;

}

trav=trav->next;

}

if(flag==0)

{

cout<<"Number not found";

}

else

{

cout<<"Number found";

}

}

void SLL::insert\_beginning()

{

cout<<"\nAdd Node To The Beginning:"<<endl;

node \*ntemp=createnode();

ntemp->next=start;

start=ntemp;

display();

cout<<"\n\n"<<endl;

}

void SLL::insert\_after()

{

cout<<"Enter Data To Insert After:"<<endl;

node \*ntemp=createnode();

node \*trav;

int serno;

cout<<"After Which Node You Want To Insert?"<<endl;

cin>>serno;

trav=start;

while(trav->data!=serno)

{

trav=trav->next;

}

ntemp->next=trav->next;

trav->next=ntemp;

display();

cout<<"\n\n"<<endl;

}

void SLL::insert\_end()

{

cout<<"Which Node You Want To Insert At End"<<endl;

node \*ntemp=createnode();

node \*trav=start;

while(trav->next!=NULL)

{

trav=trav->next;

}

trav->next=ntemp;

display();

cout<<"\n\n"<<endl;

}

void SLL::delete\_start()

{

cout<<"First Element Of Node Is Deleted:"<<endl;

node \*trav;

trav=start;

start=start->next;

trav->next=NULL;

delete(trav);

display();

cout<<"\n\n"<<endl;

}

void SLL::delete\_end()

{

cout<<"End Element Of Node Is Deleted:"<<endl;

node \*trav;

node \*old;

trav=start;

while(trav->next!=NULL)

{

old=trav;

trav=trav->next;

}

old->next=NULL;

delete(trav);

display();

cout<<"\n\n"<<endl;

}

void SLL::delete\_after()

{

node \*trav,\*old;

int serno;

cout<<"Which Node You Want To Delete?"<<endl;

cin>>serno;

trav=start;

while(trav->data!=serno)

{

old=trav;

trav=trav->next;

}

old->next=trav->next;

trav->next=NULL;

delete(trav);

display();

}

int main()

{

SLL s;

s.accept();

s.display();

int c;

cout<<"\n\t\t\*\*\*\*\*\*\*\*\*\*\*MENU\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*"<<endl;

cout<<"\tEnter 1 For Searching"<<endl;

cout<<"\tEnter 2 For Insert Element At Beginning Of Node"<<endl;

cout<<"\tEnter 3 For Insert Element At Specified Location"<<endl;

cout<<"\tEnter 4 For Insert Element At End"<<endl;

cout<<"\tEnter 5 For Delete Element At Start Of Node"<<endl;

cout<<"\tEnter 6 For Delete Element At Specified Location"<<endl;

cout<<"\tEnter 7 For Delete Element At End"<<endl;

cout<<"\tEnter 0 For Exit"<<endl;

cout<<"\t\n Enter Your Choice:"<<endl;

while (c!=0)

{

cout<<"\nEnter Input :"<<endl;

cin>>c;

switch(c)

{

case 1:

s.search();

break;

case 2:

s.insert\_beginning();

break;

case 3:

s.insert\_after();

break;

case 4:

s.insert\_end();

break;

case 5:

s.delete\_start();

break;

case 6:

s.delete\_after();

break;

case 7:

s.delete\_end();

break;

case 0:

cout<<"Thanks For Using!"<<endl;

break;

default:

cout<<"Invalid Input!!! Thanks For Using!"<<endl;

}

}

return 0;

}