#include<iostream>

using namespace std;

struct node

{

int data; //data part

node \*next; //next part

node \*prev; //pre part

};

void addnode();

void delnode();

void display();

void show();

void search();

node \*start=NULL, \*temp1, \*temp2, \*temp3;

int main()

{

char ch;

do

{

char i;

cout<<"\nPress\n'a' to add node.\n'd' to delete.";

cout<<" \n's' for search.\n'v' for display.\n'e' for backward display.\n"<<endl;

cin>>i;

switch (i)

{

case'a':

addnode();

break;

case'd':

delnode();

break;

case'v' :

display();

break;

case's':

search();

break;

case'e':

show();

break;

default:

cout<<"Bad input"<<endl;

break;

}

cout<<"want to process more y/n"<<endl;

cin>>ch;

}

while(ch!='n');

return 0;

}

void addnode() //adding node

{

char r;

temp1=new node;

cout<<"enter int to store"<<endl;

cin>>temp1->data;

cout<<"press 's' to add in start,'m' for midd , 'e' for end"<<endl;

cin>>r;

switch (r)

{

case's': //add start

if(start==NULL)

{

start=temp1;

temp1->next=NULL;

temp1->prev=NULL;

}

else

{

temp2=start;

temp1->next=temp2;

temp1->prev=NULL;

start=temp1;

temp2->prev=temp1;

}

break;

case'e': //add end

if(start==NULL)

{

start=temp1;

temp1->next=NULL;

temp1->prev=NULL;

}

else

{

temp2=start;

while(temp2->next!=NULL)

temp2=temp2->next;

temp2->next=temp1;

temp1->prev=temp2;

temp1->next=NULL;

}

break;

case'm': //add mid

int num;

cout<<"enter node after which you want to enter"<<endl;

cin>>num;

temp2=start;

for(int i=0;i<num;i++)

{

if(start==NULL)

cout<<"given node not found"<<endl;

else

{

temp3=temp2;

temp2=temp2->next;

}

}

temp1->next=temp2;

temp3->next=temp1;

temp1->prev=temp3;

temp2->prev=temp1;

break;

}

}

void display() //displaying

{

temp3=start;

if(start==NULL)

cout<<"no node to display"<<endl;

else

{

while(temp3->next!=NULL)

{

cout<<"Data stored is "<<temp3->data<<" at "<<temp3<<endl;

temp3=temp3->next;

}

cout<<"Data stored is "<<temp3->data<<" at "<<temp3<<endl;

}

}

void search() //searching

{

int p;

cout<<"enter no to search"<<endl;

cin>>p;

temp1=start;

while(temp1->next!=NULL)

{

if(temp1->data==p)

{

cout<<temp1->data<<" is stored in "<< temp1->next<<endl;

}

temp1=temp1->next;

}

}

void delnode() //deleting

{

char d;

cout<<"press 's' to delete from start,'m' for midd , 'e' for end"<<endl;

cin>>d;

switch (d)

{

case's': //delete start

if(start==NULL)

{

cout<<"no node to delete"<<endl;

}

else

{

temp1=start;

start=start->next;

start->prev=NULL;

delete temp1;

}

break;

case'e': //delete end

if(start==NULL)

{

cout<<"no node to delete"<<endl;

}

else

{

temp1=start;

while(temp1->next!=NULL)

{

temp2=temp1;

temp1=temp1->next;

}

delete temp1;

temp2->next=NULL;

}

break;

case'm': //delete mid

int num;

cout<<"enter node you want to delete"<<endl;

cin>>num;

temp1=start;

for(int i=1;i<num;i++)

{

if(start==NULL)

cout<<"given node does not exist"<<endl;

else

{

temp2=temp1;

temp1=temp1->next;

}

}

temp3=temp1->next;

temp2->next=temp3;

temp3->prev=temp2;

delete temp1;

break;

}

}

void show() //backward display

{

cout<<"backward display"<<endl;

temp3=start;

if(start==NULL)

cout<<"no node to display"<<endl;

else

{

while(temp3->next!=NULL)

{

temp3=temp3->next;

}

while(temp3->prev!=NULL)

{

cout<<"Data stored is "<<temp3->data<<" at "<<temp3<<endl;

temp3=temp3->prev;

}

cout<<"Data stored is "<<temp3->data<<" at "<<temp3<<endl;

}

}