**Assignment B14**

/\*Department of Computer Engineering has student's club named 'Pinnacle Club'. Students of Second, third and final year of department can be granted membership on request. Similarly one may cancel the membership of club. First node is reserved for president of club and last node is reserved for secretary of club. Write C++ program to maintain club member‘s information using singly linked list. Store student PRN and Name. Write functions to

a) Add and delete the members as well as president or even secretary.

b) Compute total number of members of club

c) Display members

d) Display list in reverse order using recursion

e) Two linked lists exists for two divisions. Concatenate two lists.\*/

**=======================================================================**

#include<iostream>

#include<string.h>

#include<stdlib.h>

using namespace std;

class node

{

int prn;

string name;

struct node \*link;

friend class linkedlist;

};

class linkedlist

{

node \*start;

public:

linkedlist()

{

start=NULL;

}

void insert\_President()

{

node \*tmp;

tmp=new node();

int pr;

string nm;

cout<<"Enter PRN and Name:\n";

cin>>pr>>nm;

tmp->prn=pr;

tmp->name=nm;

tmp->link=NULL;

if(start==NULL)

start=tmp;

else

{

tmp->link=start;

start=tmp;

}

display();

}

void insert\_Secretary()

{

node \*tmp,\*q;

int pr;

string nm;

tmp=new node();

cout<<"Enter PRN and Name:\n";

cin>>pr>>nm;

tmp->prn=pr;

tmp->name=nm;

tmp->link=NULL;

if(start==NULL)

start=tmp;

else

{

q=start;

while(q->link!=NULL)

q=q->link;

q->link=tmp;

}

display();

}

void insert\_Member()

{

display();

int pr;

string nm;

node \*q,\*tmp;

tmp=new node();

int index;

cout<<"Enter PRN and Name:\n";

cin>>pr>>nm;

tmp->prn=pr;

tmp->name=nm;

tmp->link=NULL;

if(start==NULL)

{

start=tmp;

}

else

{

cout<<"\nEnter index after which element to be inserted :\n";

cin>>index;

q=start;

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

{

q = q->link;

if(q==NULL)

{

cout<<"There are less elements\n";

return;

}

}

tmp->link = q->link;

q->link = tmp;

}

display();

}

void del\_President()

{

node \*tmp;

tmp=start;

start=start->link;

delete(tmp);

display();

}

void del\_Secretary()

{

struct node \*q,\*tmp;

q=start;

tmp=start;

while(tmp->link!=NULL)

{

q=tmp;

tmp=tmp->link;

}

q->link=NULL;

delete(tmp);

display();

}

void del\_Member()

{

int pr;

cout<<"enter PRN to be deleted";

cin>>pr;

node \*q,\*tmp;

q=start;

tmp=start;

while(tmp->link!=NULL)

{

if(tmp->prn==pr)

{

q->link=tmp->link;

delete(tmp);

break;

}

q=tmp;

tmp=tmp->link;

}

display();

}

void display()

{

node \*q;

if(start==NULL)

cout<<"Club is empty!!\n";

else

{

cout<<"\*\*\*\* Members in Club \*\*\*\*\n";

q=start;

while(q!=NULL)

{

cout<<q->prn<<" "<<q->name<<endl;

q=q->link;

}

}

}

void count()

{

node \*q;

int i=0;

q=start;

while(q!=NULL)

{

i++;

q=q->link;

}

cout<<"Total no. of members in club"<<i;

}

void reverse1()

{

cout<< "\*\*Members in reverse order\*\*";

reverse(start);

}

void reverse(node \*ptr)

{

if(ptr==NULL)

return;

else

{

reverse(ptr->link);

}

cout<<"\n"<<ptr->prn;

cout<<"\t"<<ptr->name;

}

void concat(linkedlist l1,linkedlist l2)

{

node \*ptr;

ptr=l1.start;

while(ptr->link!=NULL)

ptr=ptr->link;

ptr->link=l2.start;

l1.display();

}

};

int main()

{

linkedlist l1,l2;

int ch;

cout<<"\n\*\*\*\*Linked List\*\*\*\*\*\n";

cout<<"\n1.Insert President \n2.Insert Secretary \n3.Insert Member \n4.Delete President \n5.Delete Secretary \n6.Delete Member \n7.Display \n8.Count \n9.Reverse \n10.Concat \n11.Exit\n";

while(1)

{

cout<<"\nEnter Your Choice :(1.Insert President 2.Insert Secretary 3.Insert Member 4.Delete President 5.Delete Secretary 6. Delete Member 7.Display 8.Count 9. Reverse 10.Concat 11.Exit)\n";

cin>>ch;

switch(ch)

{

case 1:

l1.insert\_President();

break;

case 2:

l1.insert\_Secretary();

break;

case 3:

l1.insert\_Member();

break;

case 4:

l1.del\_President();

break;

case 5:

l1.del\_Secretary();

break;

case 6:

l1.del\_Member();

break;

case 7:

l1.display();

break;

case 8:

l1.count();

break;

case 9:

l1.reverse1();

break;

case 10:

l2.insert\_President();

l2.insert\_Member();

l2.insert\_Secretary();

l1.concat(l1,l2);

break;

case 11:

exit(-1);

default:

cout<<"\nWrong Choice !!\n";

}

}

return 0;

}

\*\*\*\*Linked List\*\*\*\*\*

1.Insert President

2.Insert Secretary

3.Insert Member

4.Delete President

5.Delete Secretary

6.Delete Member

7.Display

8.Count

9.Reverse

10.Concat

11.Exit

Enter Your Choice :(1.Insert President 2.Insert Secretary 3.Insert Member 4.Delete President 5.Delete Secretary 6. Delete Member 7.Display 8.Count 9. Reverse 10.Concat 11.Exit)

1

Enter PRN and Name:

1 a

\*\*\*\* Members in Club \*\*\*\*

1 a

Enter Your Choice :(1.Insert President 2.Insert Secretary 3.Insert Member 4.Delete President 5.Delete Secretary 6. Delete Member 7.Display 8.Count 9. Reverse 10.Concat 11.Exit)

2

Enter PRN and Name:

5 e

\*\*\*\* Members in Club \*\*\*\*

1 a

5 e

Enter Your Choice :(1.Insert President 2.Insert Secretary 3.Insert Member 4.Delete President 5.Delete Secretary 6. Delete Member 7.Display 8.Count 9. Reverse 10.Concat 11.Exit)

3

\*\*\*\* Members in Club \*\*\*\*

1 a

5 e

Enter PRN and Name:

2 b

Enter index after which element to be inserted :

0

\*\*\*\* Members in Club \*\*\*\*

1 a

2 b

5 e

Enter Your Choice :(1.Insert President 2.Insert Secretary 3.Insert Member 4.Delete President 5.Delete Secretary 6. Delete Member 7.Display 8.Count 9. Reverse 10.Concat 11.Exit)

3

\*\*\*\* Members in Club \*\*\*\*

1 a

2 b

5 e

Enter PRN and Name:

3 c

Enter index after which element to be inserted :

1

\*\*\*\* Members in Club \*\*\*\*

1 a

2 b

3 c

5 e

Enter Your Choice :(1.Insert President 2.Insert Secretary 3.Insert Member 4.Delete President 5.Delete Secretary 6. Delete Member 7.Display 8.Count 9. Reverse 10.Concat 11.Exit)

3

\*\*\*\* Members in Club \*\*\*\*

1 a

2 b

3 c

5 e

Enter PRN and Name:

4 d

Enter index after which element to be inserted :

2

\*\*\*\* Members in Club \*\*\*\*

1 a

2 b

3 c

4 d

5 e

Enter Your Choice :(1.Insert President 2.Insert Secretary 3.Insert Member 4.Delete President 5.Delete Secretary 6. Delete Member 7.Display 8.Count 9. Reverse 10.Concat 11.Exit)

4

\*\*\*\* Members in Club \*\*\*\*

2 b

3 c

4 d

5 e

Enter Your Choice :(1.Insert President 2.Insert Secretary 3.Insert Member 4.Delete President 5.Delete Secretary 6. Delete Member 7.Display 8.Count 9. Reverse 10.Concat 11.Exit)

5

\*\*\*\* Members in Club \*\*\*\*

2 b

3 c

4 d

Enter Your Choice :(1.Insert President 2.Insert Secretary 3.Insert Member 4.Delete President 5.Delete Secretary 6. Delete Member 7.Display 8.Count 9. Reverse 10.Concat 11.Exit)

6

enter PRN to be deleted3

\*\*\*\* Members in Club \*\*\*\*

2 b

4 d

Enter Your Choice :(1.Insert President 2.Insert Secretary 3.Insert Member 4.Delete President 5.Delete Secretary 6. Delete Member 7.Display 8.Count 9. Reverse 10.Concat 11.Exit)

8

Total no. of members in club2

Enter Your Choice :(1.Insert President 2.Insert Secretary 3.Insert Member 4.Delete President 5.Delete Secretary 6. Delete Member 7.Display 8.Count 9. Reverse 10.Concat 11.Exit)

9

\*\*Members in reverse order\*\*

4 d

2 b

Enter Your Choice :(1.Insert President 2.Insert Secretary 3.Insert Member 4.Delete President 5.Delete Secretary 6. Delete Member 7.Display 8.Count 9. Reverse 10.Concat 11.Exit)

10

Enter PRN and Name:

11 aa

\*\*\*\* Members in Club \*\*\*\*

11 aa

\*\*\*\* Members in Club \*\*\*\*

11 aa

Enter PRN and Name:

22 bb

Enter index after which element to be inserted :

0

\*\*\*\* Members in Club \*\*\*\*

11 aa

22 bb

Enter PRN and Name:

33 cc

\*\*\*\* Members in Club \*\*\*\*

11 aa

22 bb

33 cc

\*\*\*\* Members in Club \*\*\*\*

2 b

4 d

11 aa

22 bb

33 cc

Enter Your Choice :(1.Insert President 2.Insert Secretary 3.Insert Member 4.Delete President 5.Delete Secretary 6. Delete Member 7.Display 8.Count 9. Reverse 10.Concat 11.Exit)