

Practical No. 07 (Group C)

Name : Atharva B. Iparkar

Roll no : S211045

Class : S.E.

Div : A

Batch : A-2

Problem Statement :

Write a C++ program to create a singly linked list to manage a student club's membership information.

Code :

```
#include <iostream>
```

```
#include <string>
```

```
using namespace std;
```

```
struct node {
```

```
    string name;
```

```
    int prn;
```

```
    node *next;
```

```
};
```

```
class member {
```

```
public:
```

```
    node *header1, *header2;
```

```

member() {
header1 = NULL;
header2 = NULL;
}
node* create();
int count(node *x);
void add(node *head);
void del(node *head);
void display(node *head);
void rdisplay(node *cn);
void concatenate();
};

```

```

int member::count(node *x) {
node *cn = x;
int count = 0;
while (cn != NULL) {
count++;
cn = cn->next;
}
return count;
}
node* member::create() {
char ch;

```

```
node *head;

node *nn = new node;

head = nn;

cout << "Enter Name of president : "; cin >>

nn->name;

cout << "Enter PRN of president : ";

cin >> nn->prn;

cout << endl;

do {

nn->next = new node;

nn = nn->next;

cout << "Enter Name of Member : ";

cin >> nn->name;

cout << "Enter PRN of Member : ";

cin >> nn->prn;

cout << endl;

cout << "Do you want to enter another member? (Y or y if yes) : ";

cin >> ch;

cout << endl;

} while (ch == 'Y' || ch == 'y');

nn->next = new node;

nn = nn->next;

cout << "Enter Name of secretary : ";

cin >> nn->name;
```

```
cout << "Enter PRN of secretary : ";
```

```
cin >> nn->prn;
```

```
cout << endl;
```

```
nn->next = NULL;
```

```
cout << "List is created! It has " << count(head) << " members!" << endl
```

```
<< endl;
```

```
return head;
```

```
}
```

```
void member::display(node *head) {
```

```
node *nn;
```

```
nn = head;
```

```
cout << "President : " << nn->name << endl;
```

```
cout << "PRN : " << nn->prn << endl << endl;
```

```
nn = nn->next;
```

```
for (int i = 0; nn -> next != NULL; i++) {
```

```
cout << "Member : " << nn->name << endl;
```

```
cout << "PRN : " << nn->prn << endl << endl;
```

```
nn = nn->next;
```

```

}

cout << "Secretary : " << nn->name << endl;

cout << "PRN : " << nn->prn << endl << endl;

cout << "List has " << count(head) << " members!" << endl << endl;

}

void member::rdisplay(node *cn) {

if (cn == NULL)

return;

rdisplay(cn->next);

cout << cn->name << endl;

cout << cn->prn << endl;

cout << endl;

}

void member::add(node *head) {

int p;

cout << "Enter the position where you want to add : "; cin >> p;


node *nn, *temp;

nn = head;

node *an = new node;

if (p == 1) {

cout << "Enter Name of Member : ";

cin >> an->name;

cout << "Enter PRN of Member : ";

```

```

cin >> an->prn;

cout << endl;

an->next = head;

head = an;

cout << "Member is added! List has " << count(head) << " members now!\n\n";

} else if (p == count(head) + 1) {

for (int i = 0; nn->next != NULL; i++) {

nn = nn->next;

}

cout << "Enter Name of Member : ";

cin >> an->name;

cout << "Enter PRN of Member : ";

cin >> an->prn;

cout << endl;

nn->next = an;

an->next = NULL;

cout << "Member is added! List has " << count(head) << " members now!\n\n";

;

} else if (1 < p && p <= count(head)) {

for (int i = 1; i < p; i++) {

temp = nn;

nn = nn->next;

}

```

```

cout << "Enter Name of Member : ";

cin >> an->name;

cout << "Enter PRN of Member : ";

cin >> an->prn;

cout << endl;

an->next = nn;

temp->next = an;

cout << "Member is added! List has " << count(head) << " members now!\n\n";

} else

cout << "Invalid Position!\n\n";

}

void member::del(node *head) {

int key;

cout << "Enter the PRN of the student which is to be deleted : ";

cin >> key;

cout << endl;

node *nn, *temp;

nn = head;

if (nn->prn == key) {

head = nn->next;

delete (nn);

cout << "Member deleted! List has " << count(head) << " members now!\n\n";

```

```

} else {
while (nn->prn != key) {
temp = nn;
nn = nn->next;
}
if (nn->prn == key && nn->next == NULL) {
temp->next = NULL;
delete (nn);
cout << "Member deleted! List has " << count(head) << "members now!\n\n";
} else if (nn->prn == key) {
temp->next = nn->next;
delete (nn);
cout << "Member deleted! List has " << count(head) << " members now!\n\n";

} else
cout << "Member not found!\n\n";

}
}

void member::concatinate()

{
node *cn = header1;

```



```

while(cn -> next != NULL)

cn = cn -> next;

cn -> next = header2;

cout << "Lists of Division A and Division B are concatenated! Club has total "

<<count(header1) << " members now!\n\n";

}

int main() {

int choice;

member m;

cout << "-----WELCOME TO PINNACLE CLUB-----" << endl << endl;

cout << "Create A division list: " << endl << endl; m.header1 = m.create();

cout << "Create B division list: " << endl << endl; m.header2 = m.create();

while (true) {

cout << endl << "Enter 1 to add a member in division A\nEnter 2 to add a member in division
B\nEnter 3 to delete a member from division A\nEnter 4 to delete a member from division
B\nEnter 5 to display division A list\nEnter 6 to display division B list\nEnter 7 to reverse
display division A list\nEnter 8 to reverse display division B list\nEnter 9 to concatenate
Division A and Division B\nEnter 10 to display concatenated list\nEnter any other key to
exit\nInput: ";

cin >> choice;

cout << endl;

switch (choice) {

case 1:

m.add(m.header1);

break;

case 2:

m.add(m.header2);

```

break;

case 3:

m.del(m.header1);

break;

case 4:

m.del(m.header2);

break;

case 5:

m.display(m.header1);

break;

case 6:

m.display(m.header2);

break;

case 7:

m.rdisplay(m.header1);

break;

case 8:

m.rdisplay(m.header2);

break;

case 9:

m.concatenate();

break;

case 10:

```
m.display(m.header1);
```

```
break;
```

```
default:
```

```
return 0;
```

```
}
```

```
}
```

```
}
```

Output :

```
user@user-VirtualBox: ~/S211045_Atharva
user@user-VirtualBox:~/S211045_Atharva$ g++ Practical7.cpp -o p
user@user-VirtualBox:~/S211045_Atharva$ ./p
-----WELCOME TO PINNACLE CLUB-----

Create A division list:

Enter Name of president : Pratik
Enter PRN of president : 123

Enter Name of Member : Atharva
Enter PRN of Member : 456

Do you want to enter another member? (Y or y if yes) : n

Enter Name of secretary : Anuj
Enter PRN of secretary : 789

List is created! It has 3 members!

Create B division list:

Enter Name of president : Sarthak
Enter PRN of president : 753

Enter Name of Member : Krishna
Enter PRN of Member : 951

Do you want to enter another member? (Y or y if yes) : n

Enter Name of secretary : Nishant
Enter PRN of secretary : 258

List is created! It has 3 members!

Enter 1 to add a member in division A
Enter 2 to add a member in division B
Enter 3 to delete a member from division A
Enter 4 to delete a member from division B
Enter 5 to display division A list
Enter 6 to display division B list
Enter 7 to reverse display division A list
Enter 8 to reverse display division B list
Enter 9 to concatenate Division A and Division B
Enter 10 to display concatenated list
Enter any other key to exit
Input: 3
```

Input: 3

Enter the PRN of the student which is to be deleted : 456

Member deleted! List has 2 members now!

Enter 1 to add a member in division A
Enter 2 to add a member in division B
Enter 3 to delete a member from division A
Enter 4 to delete a member from division B
Enter 5 to display division A list
Enter 6 to display division B list
Enter 7 to reverse display division A list
Enter 8 to reverse display division B list
Enter 9 to concatenate Division A and Division B
Enter 10 to display concatenated list
Enter any other key to exit
Input: 5

President : Pratik
PRN : 123

Secretary : Anuj
PRN : 789

List has 2 members!

Enter 1 to add a member in division A
Enter 2 to add a member in division B
Enter 3 to delete a member from division A
Enter 4 to delete a member from division B
Enter 5 to display division A list
Enter 6 to display division B list
Enter 7 to reverse display division A list
Enter 8 to reverse display division B list
Enter 9 to concatenate Division A and Division B
Enter 10 to display concatenated list
Enter any other key to exit
Input: 7

Anuj
789

Pratik
123

Lists of Division A and Division B are concatenated! Club has total 5 members now!

Enter 1 to add a member in division A
Enter 2 to add a member in division B
Enter 3 to delete a member from division A
Enter 4 to delete a member from division B
Enter 5 to display division A list
Enter 6 to display division B list
Enter 7 to reverse display division A list
Enter 8 to reverse display division B list
Enter 9 to concatenate Division A and Division B
Enter 10 to display concatenated list
Enter any other key to exit
Input: 10

President : Pratik
PRN : 123

Member : Anuj
PRN : 789

Member : Sarthak
PRN : 753

Member : Krishna
PRN : 951

Secretary : Nishant
PRN : 258

List has 5 members!

Enter 1 to add a member in division A
Enter 2 to add a member in division B
Enter 3 to delete a member from division A
Enter 4 to delete a member from division B
Enter 5 to display division A list
Enter 6 to display division B list
Enter 7 to reverse display division A list
Enter 8 to reverse display division B list
Enter 9 to concatenate Division A and Division B
Enter 10 to display concatenated list
Enter any other key to exit
Input:
n