

## **Final project**

### **Data structure And Algorithm**

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#### **Class:**

BSSE(B)

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### **School Management System (Student Record)**

#### **Project (Explanation):**

We make this project with help of **singly linklist**.

In singly linklist we move forward ,so we insert data in different nodes with the help of ptr in forward movement.

#### **1: Insert Record:**

You can insert unlimited student data with the help of link-list.

#### **2: Delete Record:**

You can delete any student data with the help of his roll number.

### **3: Modify Record:**

You can modify any student data with the help of his roll number.

### **4: Search Record:**

You can search any student data with the help of his roll number.

### **5: Display Record:**

You can display all students data.

### **6: Sum of Student(sum of nodes):**

You can count number of students or number of nodes present in link-list.

## **Code of project:**

```
#include <iostream>

#include<conio.h>

using namespace std;

class linklist

{

    private:

    struct node

    {

        string name,id,roll_no,cgpa,classs;

        node*link;

    };

};
```

```
node*head=NULL;

public:

    int insertnode(string n,string clas, string roll,string i,string
cgpa)
    {
        node*ptr=new node;
        ptr->name=n;
        ptr->classs=clas;
        ptr->roll_no=roll;
        ptr->id=i;
        ptr->cgpa=cgpa;
        ptr->link=NULL;

        if(head==NULL)
        {
            head=ptr;
        }
        else
        {
            node*temp= head;
            while(temp->link!=NULL)
```

```

        {

            temp=temp->link;

        }

        temp->link=ptr;

    }}

int display()

{int i=0;

    if(head==NULL)

    {

        cout<<"\n\t\t_____||| Linklist is empty

|||_____ \n\n\n";

    }

    else{

        cout<<"\t\t

\t***** \t\t" << endl;

        cout<<"\t\t\t***** All Data of Student*****\t\t" << endl;

        cout<<"\t\t\t*****

\t\t" << endl << endl;

        node*temp=head;

        while(temp!=NULL)

        {

```

```

        cout<<"Record of Student : "<<i+1<<endl<<endl;

        cout<<"Name of

Student"<<"      :\t"<<temp->name<<endl;

        cout<<"Class of

student"<<"      :\t"<<temp->classs<<endl;

        cout<<"Roll no of student"<<"      :

"<<temp->roll_no<<endl;

        cout<<"Id of

student\t"<<"      :\t"<<temp->id<<endl;

        cout<<"Cgpa of

student"<<"      :\t"<<temp->cgpa<<endl;

        temp=temp->link;

        i++;

    }

}}

int deletee()

{

    string a;

    int count=0;

    if(head==NULL)

    {

```

```

        cout<<endl<<"\t\t_____||| Linklist is empty

|||_____ \n\n"<<endl;

    }

    else

    {

        cout<<"\t\t

\t***** \t\t"<<endl;

        cout<<"\t\t\t*****Delete any record of

student***\t\t"<<endl;

        cout<<"\t\t\t*****

\t\t"<<endl<<endl;

        cout<<endl<<"Enter the Roll No of Student : ";

        cin>>a;

        if(a==head->roll_no)

        {

            node*ptr=head;

            head=ptr->link;

            delete ptr;

            count++;

        }

        else

```

```

        {
            node*prev=head;
            node*ptr=head->link;
            while(ptr!=NULL)
            {
                if(a==ptr->roll_no)
                {
                    prev->link=ptr->link;

                    cout<<endl<<"\n\n\t\tData OF student
" <<ptr->name<<" Is Deleted"<<endl;

                    count++;

                    delete ptr;

                    break;
                }

                prev=ptr;

                ptr=ptr->link;
            }

        }

        if(count==0)
        {

```

```

                                cout<<endl<<"\t\t\t____!!! Student record

not found !!!_____"<<endl;

                                }

                                }

                                }

int search()

{

    string a;

    int count=0;

    int found=1;

    if(head==NULL)

    {

        cout<<endl<<"\t\t\t____||| Linklist is empty

|||_____\n\n"<<endl;

        }

        else

        {

            cout<<"\t\t\t

\t*****\t\t\t"<<endl;

            cout<<"\t\t\t*****Search record of

Student*****\t\t\t"<<endl;

```



```

cout<<"\t\t*****

\t\t"<<endl<<endl;

        cout<<"  Enter Roll No For searching Data Of

Student: ";

        cin>>a;

        node*ptr=head;

        while(ptr!=NULL)

        {

                if(a==ptr->roll_no)

                {

                        cout<<"Name of

Student"<<"      :\t"<<ptr->name<<endl;

                        cout<<"Class of

student"<<"      :\t"<<ptr->class<<endl;

                        cout<<"Roll no of student"<<"      :

"<<ptr->roll_no<<endl;

                        cout<<"Id of

student\t"<<"      :\t"<<ptr->id<<endl;

                        cout<<"Cgpa of

student"<<"      :\t"<<ptr->cgpa<<endl;

                        count++;

```

```

        }

        ptr=ptr->link;

        found++;//ya found hm srf node ki position
btany k li ha;

    }

    if(count==0)

    {

        cout<<endl<<"\t\t\t_____!!! Student record
not found !!!_____ "<<endl;

    }

}

}

int update()

{

    string a;

    string nam,i,roll,cgpa,clas;

    int count=0;

    int found=1;

    if(head==NULL)

    {

        cout<<endl<<"\t\t\t_____| Linklist is empty

|_|_____\n\n"<<endl;

```

```

    }

    else

    {

        cout<<"\t\t

\t*****\t\t" << endl;

        cout<<"\t\t*****Update record of

Student****\t\t" << endl;

        cout<<"\t\t*****

\t\t" << endl << endl;

        cout<<"enter value of node for update : ";

        cin>>a;

        node*ptr=head;

        while(ptr!=NULL)

        {

            if(a==ptr->roll_no)

            {

                cout<<endl<<"value for update is found :

"<<a<<" at node "<<found<<endl;

                cout<<"\nEnter the name of student : ";

                cin>>nam;

                cout<<endl<<endl<<"Enter the class : ";

```

```

        cin>>clas;

        cout<<endl<<endl<<"Enter the Roll no : ";

        cin>>roll;

        cout<<endl<<endl<<"Enter the cgpa : ";

        cin>>cgpa;

        cout<<endl<<endl<<"Enter the ID : ";

        cin>>i;

        ptr->name=nam;

        ptr->roll_no=roll;

        ptr->classs=clas;

        ptr->cgpa=cgpa;

        ptr->id=i;

        cout<<endl<<"_____||| Record is
updated|||_____ : "<<endl<<endl;

        count++;

    }

    ptr=ptr->link;

    found++;//ya found hm srf node ki position
btany k li ha;

    }

    if(count==0)

    {

```

```

                                cout<<endl<<"\t\t\t_____!!! Student record
not found !!!_____ "<<endl;
                                }
                                }
                                }
                                int sum()
                                {
                                    int a;
                                    int sum=0;
                                    if(head==NULL)
                                    {
                                        cout<<endl<<"\t\t\t___||| Linklist is empty
|||_____ "<<endl;
                                    }
                                    else
                                    {
                                        node*ptr=head;
                                        while(ptr!=NULL)
                                        {
                                            sum=sum+1;
                                            ptr=ptr->link;
                                        }

```

```

        cout<<"\t\t

\t*****\t\t" << endl;

        cout<<"\t\t\t*****Total Data of

Student****\t\t" << endl;


cout<<"\t\t\t*****

\t\t" << endl << endl;

        cout<< endl << "\t\t ____ ||| Total no.of nodes in

linklist are : "<< sum << " ||| ____ " << endl;

        }

    }

};

int main()

{

    linklist l;

    string name, clas, roll, cgpa, i;

    int choice, key;

    cout<<"\t\t\t*****

\t\t" << endl;

        cout<<"\t\t\t*****STUDENT MANAGEMENT SYSTEM*****

\t\t" << endl;

```

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

cout<<"\t\t\t_____||| Project is Submitted By
|||_____"<<endl<<endl;

cout<<"\t\t\t\tUsama abubakar 068\n\t\t\t\tMuhammad Amir
053\n\t\t\t\tMuhammad Bilal 089"<<endl;

cout<<"\n\tPress any key to continue...!!!"<<endl;

cin>>key;

system("cls");

loop:

cout<<"\n\n\n\t\t\t--->Press '1' To add Record:"<<endl;
cout<<"\t\t\t--->Press '2' To Display Record:"<<endl;
cout<<"\t\t\t--->Press '3' To Search Record:"<<endl;
cout<<"\t\t\t--->Press '4' To Modify Record:"<<endl;
cout<<"\t\t\t--->Press '5' To Delete Record:"<<endl;
cout<<"\t\t\t--->Press '6' To count all Record:"<<endl;

cin>>choice;

system("cls");

switch(choice)

{

case 1:
```

```

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

        cout<<"\t\t\t*****Insert the record of
student****\t\t" << endl;

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

        cout<<"Enter the name of student : ";

        cin>>name;

        cout<<endl<<"Enter the class : ";

        cin>>clas;

        cout<<endl<<"Enter the Roll no : ";

        cin>>roll;

        cout<<endl<<"Enter the cgpa of Student : ";

        cin>>cgpa;

        cout<<endl<<"Enter the ID : ";

        cin>>i;

        l.insertnode(name,clas,roll,cgpa,i);goto loop;

        break;

        case 2:

                l.display(); goto loop;

```



```
        break;

        case 3:

            l.search();goto loop;

            break;

        case 4:

            l.update();goto loop;

            l.deletee();goto loop;

            break;

        case 5:

            l.deletee();goto loop;

            break;

        case 6:

            l.sum();goto loop;

            break;

        default:

            cout<<"\n\nYou enter wrong

key...!!!!"<<endl;goto loop;

    }

}
```

## Outputs of project:

```
C:\Users\DELL\AppData\Local\Microsoft\Windows\INetCache\IE\ZVMW21LK\project[1].exe

*****STUDENT MANAGEMENT SYSTEM*****

_____||| Project is Submitted By |||_____

        Usama abubakar 068
        Muhammad Amir 053
        Muhammad Bilal 089

Press any key to continue...!!!
```

```
pData\Local\Microsoft\Windows\INetCache\IE\ZVMW21LK\project[1].exe

--->Press '1' To add Record:
--->Press '2' To Display Record:
--->Press '3' To Search Record:
--->Press '4' To Modify Record:
--->Press '5' To Delete Record:
--->Press '6' To count all Record:
```

```
C:\Users\DELL\AppData\Local\Microsoft\Windows\INetCache\IE\ZVMW21LK\project[1].exe

*****Insert the record of student*****

Enter the name of student : usama_Abubakar
Enter the class : BSSWE
Enter the Roll no : 1
Enter the cgpa of Student : 3.89
Enter the ID : 0009
```

```
C:\Users\DELL\AppData\Local\Microsoft\Windows\INetCache\IE\ZVMW21LK\project[1].exe

*****All Data of Student*****

Record of Student : 1
Name of Student      : usama_abubakar
Class of student     : BSSWE
Roll no of student   : 1
Id of student        : 3.89
Cgpa of student      : 0009
Record of Student : 2
Name of Student      : bilal_ali
Class of student     : BSSWE
Roll no of student   : 2
Id of student        : 3.67
Cgpa of student      : 0089
Record of Student : 3
Name of Student      : Amir_nazir
Class of student     : BSSWE
Roll no of student   : 3
Id of student        : 3.78
Cgpa of student      : 0098
```

```
C:\Users\DELL\AppData\Local\Microsoft\Windows\INetCache\IE\ZVMW21LK\project[1].exe

*****Search record of Student*****

Enter Roll No For searching Data Of Student: 3
Name of Student      : Amir_nazir
Class of student     : BSSWE
Roll no of student   : 3
Id of student        : 3.78
Cgpa of student      : 0098
```

```
C:\Users\DELL\AppData\Local\Microsoft\Windows\INetCache\IE\ZVMW21LK\project[1].exe

*****Delete any record of student***

Enter the Roll No of Student : 2

Data OF student bilal_ali Is Deleted
```

```
C:\Users\DELL\AppData\Local\Microsoft\Windows\INetCache\IE\ZVMW21LK\project[1].exe

*****All Data of Student*****

Record of Student : 1

Name of Student      :  Ansir_ali
Class of student     :  BSSWE
Roll no of student   :  4
Id of student        :  009
Cgpa of student      :  4.
Record of Student : 2

Name of Student      :  Amir_nazir
Class of student     :  BSSWE
Roll no of student   :  3
Id of student        :  3.78
Cgpa of student      :  0098
```