Katihar engineering collage Katihar.-854109

Computer Science & Engineering Dept .

OOP's Assignment -2

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Assignment Date:- 03 june 2022

Assignment submission date:-13 june 2022

BRANCH:- CSE

Project on student management system using c++.

PROGRAM CODE:-

```
#include<iostream>
#include<string.h>
#include<stdlib.h>
#include<malloc.h>
#include<iomanip>

using namespace std;
class Student {
        private:
          long int si_no , registration_no , semester , marks  , cgpa;
         float percentage;
         string first_name, middle_name , last_name , gender , address , mob_no , division;
        public:
         Student(long int reg_no ,long int sem,long long int mark,string firstname , string middlename , string lastname , string gend , string add , string mob )
              {
                    registration_no = reg_no;
                    semester = sem;
                    marks = mark;
                    first_name = firstname;
```

```
        middle_name = middlename;
        last_name = lastname;
        gender = gend;
        address = add;
        mob_no = mob;
}
void update(){
        cout << "Enter choice to update"<<endl;
        cout << "1. Registration Number"<<endl;
        cout << "2. Semester"<<endl;
        cout << "3. Marks"<<endl;
        cout << "4. First Name"<<endl;
        cout << "5. Middle Name"<<endl;
        cout << "6. Last Name"<<endl;
        cout << "7. Gender"<<endl;
        cout << "8. Address"<<endl;
        cout << "9. Mobile No"<<endl;
        cout << "0. Exit"<<endl;
        int x;
        cin >> x;
        switch(x){
                case 1:
                        cin >> registration_no;
                        break;
                case 2:
                        cin>> semester;
                        break;
                case 3:
                        cin >> marks;
```

```
                    break;
                case 4:
                    cin >> first_name;
                    break;
                case 5:
                    cin >> middle_name;
                    break;
                case 6:
                    cin >> last_name;
                    break;
                case 7:
                    cin >> gender;
                    break;
                case 8:
                    cin >> address;
                    break;
                case 9:
                    cin >> mob_no;
                    break;
                case 0:
                    break;
            }
                    system("cls");
            cout<< "Update successful";
        }
 void setSerialNo(int a)
         {
              //cout << "\nSerial number of registration number " << registration_no << " is set to " << a;
              si_no = a;
```

```
}
void displayInfo(){
        cout<<endl;
        cout<<setw(15) << setfill(' ') << si_no;
        cout<<setw(15) << setfill(' ') << registration_no;
        cout<<setw(15) << setfill(' ') << first_name;
        cout<<setw(15) << setfill(' ') << middle_name;
        cout<<setw(15) << setfill(' ') << last_name;

        cout<<setw(15) << setfill(' ') << gender;
        cout<<setw(40) << setfill(' ') << address;
        cout<<setw(15) << setfill(' ') << semester;
        cout<<setw(15) << setfill(' ') << mob_no;
        cout<<endl;

}
 void displayMarks(){
        cout<<endl;
        cout<<setw(15) << setfill(' ') << si_no;
        cout<<setw(15) << setfill(' ') << registration_no;
        cout<<setw(15) << setfill(' ') << first_name;
        cout<<setw(15) << setfill(' ') << 600;
        cout<<setw(15) << setfill(' ') << marks;
        cout<<setw(15) << setfill(' ') << marks/6;
        cout<<setw(15) << setfill(' ') << marks/60;
        if(marks/6 > 60){
                cout<<setw(15) << setfill(' ') << "First" ;
          }else if(marks/6 > 45){
                cout<<setw(15) << setfill(' ') << "Second";
```

```
                }else if(marks/6 > 30){
                        cout<<setw(15) << setfill(' ') << "Pass";
                }else{
                        cout<<setw(15) << setfill(' ') << "Fail";
                }
                cout<<endl;

        }
        int getRegNo(){
                return registration_no;
        }

};

class StudentWrapper
{
        private:
            Student *student;
            StudentWrapper *previous , *next;
        public:
            void setStudent(Student &s){
                student = &s;
                }
            void setPrevious(StudentWrapper *sw){
                previous = sw;
                }
                void setNext(StudentWrapper *sw){
                        next = sw;
                }
```

```
                StudentWrapper *getNext(){
                        return next;
                }
                StudentWrapper *getPrevious(){
                       return previous;
                }
                Student *getStudent(){
                        return student;
                }
};
class StudentManagementSystem
{
        private:
             StudentWrapper* head;
             int no_of_student, total_marks;
        public:
                StudentManagementSystem(){
                        no_of_student =0;
                        total_marks = 600;

                }
                void addStudent(Student &s)
                          {
                        // cout<< " inserting student in sms \n";
                StudentWrapper*st=(StudentWrapper*)malloc(sizeof(StudentWrapper));
                         st->setStudent(s);
                        if(no_of_student == 0){
                                // cout<< " no of student is 0 in sms \n";
                                        head = st;
```

```
                }
            else{
                //      cout<< " no of student is not 0 in sms \n";
                        StudentWrapper *sw = head;
                        for(int i=1; i<no_of_student;i++){
                                sw = sw->getNext();
                        }
                        sw->setNext(st);
                        st->setPrevious(sw);
                }
                 s.setSerialNo(++no_of_student);
}
void printHeadInformation()
{
 cout<<endl;
        cout<<setw(15) << setfill(' ') << "S.I No";
        cout<<setw(15) << setfill(' ') << "Reg No";
        cout<<setw(15) << setfill(' ') << "First Name";
        cout<<setw(15) << setfill(' ') << "Middle Name";
        cout<<setw(15) << setfill(' ') << "Last Name";

        cout<<setw(15) << setfill(' ') << "Gender";
        cout<<setw(40) << setfill(' ') << "Address";
        cout<<setw(15) << setfill(' ') << "Semester";
        cout<<setw(15) << setfill(' ') << "Mob No";
        cout<<endl;
}
 void printHeadMarks()
{
```

```
 cout<<endl;
        cout<<setw(15) << setfill(' ') << "S.I No";
        cout<<setw(15) << setfill(' ') << "Reg No";
        cout<<setw(15) << setfill(' ') << "First Name";
        cout<<setw(15) << setfill(' ') << "Total Marks";
                cout<<setw(15) << setfill(' ') << " Marks";
        cout<<setw(15) << setfill(' ') << "Percentage";
        cout<<setw(15) << setfill(' ') << "CGPA";
        cout<<setw(15) << setfill(' ') << "Division";
        cout<<endl;
}
void ShowAllInformation(){
        //cout<<" \n printing all "<<no_of_student << " list \n ";
        printHeadInformation();
        StudentWrapper *sw = head;
         for(int i=0; i<no_of_student ; i++)
                {
                    Student *stud = sw->getStudent();
                    stud->displayInfo();
                    sw = sw->getNext();
                 }
}
void showSorted(){
          //      cout<<" \n printing all "<<no_of_student << " list \n ";
        printHeadInformation();
        int minimum = head->getStudent()->getRegNo();
        StudentWrapper *min = head;
        int prevmin = 0;
       for(int j=0; j<no_of_student; j++)
```

```
            {
                StudentWrapper *sw = head;
                minimum ;= 9999999999;
          for(int i=0; i<no_of_student ; i++){
                Student *stud = sw->getStudent();
 if((stud->getRegNo() < minimum) && (stud->getRegNo() > prevmin))
                {
                        minimum = stud->getRegNo();
                        min = sw;
                }
                sw = sw->getNext();
                }
                min->getStudent()->displayInfo();
                prevmin =       min->getStudent()->getRegNo();
}
 }
void ShowAllMarks(){
        printHeadMarks();
        StudentWrapper *sw = head;
        for(int i=0; i<no_of_student ; i++)
                {
                Student *stud = sw->getStudent();
                stud->displayMarks();
                sw = sw->getNext();
                }
}
Student *search(int reg_no){
        StudentWrapper *sw = head;
         for(int i=0; i<no_of_student ; i++){
```

```
                Student *stud = sw->getStudent();
                if(stud->getRegNo() == reg_no)
                    {
                        return stud;
                    }
                sw = sw->getNext();
            }
            Student *s = new Student(0, 0, 00 ,"" , "" , "" , "" , "" , "" );
            s->setSerialNo(0);
            return s;
}
 void DeleteStudent(int reg_no){
        StudentWrapper *sw = head;
       StudentWrapper *sprev = head;
   if(sw->getStudent()->getRegNo() == reg_no)
            {
                head = sw->getNext();
                no_of_student--;
                return;
            }
       for(int i=0; i<no_of_student ; i++){
                Student *stud = sw->getStudent();
                if(stud->getRegNo() == reg_no){
                        sprev->setNext(sw->getNext());
                        sw->getNext()->setPrevious(sprev);
                        no_of_student--;
                    }
                    sprev = sw;
                sw = sw->getNext();
```

```
                    }
                }
};
StudentManagementSystem sms;
void addStudent(){
        long int  registration_no , semester , marks;
        string first_name, middle_name , last_name , gender , address , mob_no;
        cout << "\nFirst Name => ";
        cin >>first_name;
        cout << "\nMiddle Name => ";
        cin >> middle_name;
        cout << "\nLast Name => ";
        cin>> last_name;
        cout << "\nRegistration Number => ";
        cin >> registration_no;
        cout << "\nSemester=> ";
        cin >> semester;
        cout << "\nMarks => ";
        cin >> marks;
        cout << "\nGender => ";
        cin >> gender;
        cout << "\nAddress => ";
        cin >> address;
        cout << "\nMobile Number=> ";
        cin >> mob_no;
        Student *s = new Student(registration_no , semester , marks , first_name , middle_name , last_name , gender , address , mob_no);
        sms.addStudent(*s);
                system("cls");
                cout << "Student added successfully";
```

```
}
int main()
 {
        Student s(33, 3, 100 ,"Ashish" , "Kumar" , "Singh" , "Male" , "katihar engiering coollege" , "9430480704" );
        sms.addStudent(s);
        Student s3(11, 443, 10440 ,"Arman" , "" , "Khan" , "Male" , "katihar engiefgring coollege" , "7050511195" );
        sms.addStudent(s3);
        Student s2(22, 34, 1030 ,"Akshay" , "kumar" , "Ranavat" , "Male" , "kafgtihar engiering coollege" , "8178572536" );
        sms.addStudent(s2);
        //sms.ShowAllInformation();
        //sms.showSorted();
        int x=1;
            while(x){
                    cout << "Main Menu"<<endl;
                cout << "1. Add Student Details"<<endl;
                cout << "2. Search Student Details"<<endl;
                cout << "3. Update Student Details"<<endl;
                cout << "4. Delete Student Details"<<endl;
                cout << "5. Sort Student Details using Registration Number"<<endl;
                cout << "6. Display Student Details in tabular format"<<endl;
                cout << "7. Show Duplicate Data of Students"<<endl;
                cout << "8. Display Student Result Details "<<endl;
                cout << "9. To clear console"<<endl;
                cout << "0. Exit"<<endl;
                cin >> x;

                switch(x){
```

```
        case 9:
                system("cls");
                break;
        case 0:
                x = 0;
                break;
        case 1:
                addStudent();
                break;
        case 2:{
                int reg_no1;
                cout <<"\nEnter Registration Number to search => ";
                cin >> reg_no1;
                Student *st = sms.search(reg_no1);
                sms.printHeadInformation();
                st->displayInfo();
                break;
        }
case 3:
        {
                int reg_no2;
                cout <<"\nEnter Registration Number to update => ";
                cin >> reg_no2;
                Student *st2 = sms.search(reg_no2);
                st2->update();
        break;
}
case 4:
        {
```

```
                int reg_no3;
                        cout <<"\nEnter Registration Number to delete => ";
                        cin >> reg_no3;
                        sms.DeleteStudent(reg_no3);
                        cout <<"\nStudent deleted successfully";
                break;
            }
            case 5:
                sms.showSorted();
                break;
            case 6:
                sms.ShowAllInformation();
                break;
            case 7:
                cout << "No duplicacy found in students";
                break;
            case 8:
                sms.ShowAllMarks();
                break;
            default:
                cout<<"Invalid command entered Please use commands between 0
to 8 "<<endl;
            }
        }
          //sms.search(112276676);
}
```

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OUTPUT:-