OOP Lab – 03

In lab done: Q3,Q4  
After lab done: Q1,Q2,Q5

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Q1

//23K2001 Muzammil

#include<iostream>

using namespace std;

class waterbottle{

    private:

    string company, color;

    float mililiter,liter;

    public:

    void setCompany(string c\_name)

    {

        company = c\_name;

    }

    string getCompany()

    {

        return company;

    }

    void setColor(string col\_name)

    {

        color = col\_name;

    }

    string getColor()

    {

        return color;

    }

    void setMililiter(float ml)

    {

        mililiter = ml;

    }

    float getMililiter()

    {

        return mililiter;

    }

    void setliter()

    {

        liter = mililiter/1000;

    }

    float getliter()

    {

        return liter;

    }

    void update(float drink)

    {

        if(drink<mililiter)

        {

            mililiter-=drink;

            liter = mililiter/1000;

            cout<<"After person drink "<<drink<<" mL, now bottle contains:"<<endl;

            cout<<"In liter: "<<liter<<"\nIn milliliter: "<<mililiter<<endl;

        }

        else

        cout<<"You cannot drink more than bottle capacity, please input correct values."<<endl;

    }

};

int main()

{

    waterbottle cool;

    string namecompany,namecolor;

    cout<<"Input company name: ";

    cin>>namecompany;

    cool.setCompany(namecompany);

    cout<<"Input color: ";

    cin>>namecolor;

    cool.setColor(namecolor);

    int consumed, capacity;

    cout<<"Input capacity: ";

    cin>>capacity;

    cool.setMililiter(capacity);

    cool.setliter();

    cout<<"How much u drinked? ";

    cin>>consumed;

    cout<<"\nCompany: "<<cool.getCompany()<<endl;

    cout<<"Color: "<<cool.getColor()<<endl;

    cool.update(consumed);

    return 0;

}

Q2

//23K2001 Muzammil

#include<iostream>

using namespace std;

class student{

    private:

    int st\_id, s\_age;

    string st\_name;

    char grade;

    public:

    void setID(int id)

    {

        st\_id = id;

    }

    void setAge(int age)

    {

        s\_age = age;

    }

    void setName(string name)

    {

        st\_name = name;

    }

    void setGrade(char g)

    {

        grade = g;

    }

    int getID()

    {

        return st\_id;

    }

    int getAge()

    {

        return s\_age;

    }

    string getName()

    {

        return st\_name;

    }

    char getGrade()

    {

        return grade;

    }

    void displaySt\_info()

    {

        cout<<"Info of student '"<<st\_name<<"' :"<<endl;

        cout<<"Student ID: "<<st\_id<<endl;

        cout<<"Student Age: "<<s\_age<<endl;

        cout<<"Grade: "<<grade<<endl;

    }

};

class teacher{

    private:

    int t\_id;

    string t\_name, subject;

    public:

    void setID(int id)

    {

        t\_id = id;

    }

    void setName(string name)

    {

        t\_name = name;

    }

    void setSubj(string s\_name)

    {

        subject = s\_name;

    }

    int getID()

    {

        return t\_id;

    }

    string getName()

    {

        return t\_name;

    }

    string getSubj()

    {

        return subject;

    }

    void displayT\_info()

    {

        cout<<"Info of teacher '"<<t\_name<<"' :"<<endl;

        cout<<"Teacher ID: "<<t\_id<<endl;

        cout<<"Subject Taught: "<<subject<<endl;

    }

};

class course{

    private:

    string code,name;

    teacher t;

    public:

    void setCode(string courseCode)

    {

        code = courseCode;

    }

    void setName(string courseName)

    {

        name = courseName;

    }

    string getName()

    {

        return name;

    }

    string getCode()

    {

        return code;

    }

    void displayCourseInfo()

    {

        cout<<"Info of course '"<<name<<"' :"<<endl;

        cout<<"Course Code: "<<code<<endl;

    }

};

class schoolManagement{

    public:

    void addStudent(student \*&s, int &n)

    {

        n++;

        student \*s\_temp = new student[n];

        int i;

        for(i=0;i<n-1;i++)

        {

            s\_temp[i] = s[i];

        }

        delete[] s;

        s = s\_temp;

        int id,age;

        string name;

        char grade;

        cout<<"Input ID: ";

        cin>>id;

        cout<<"Input Name: ";

        cin>>name;

        cout<<"Input Age: ";

        cin>>age;

        cout<<"Input Grade: ";

        cin>>grade;

        s[n-1].setID(id);

        s[n-1].setName(name);

        s[n-1].setAge(age);

        s[n-1].setGrade(grade);

        cout<<"..new student added successful\n"<<endl;

    }

    void addTeacher(teacher \*&t, int &n)

    {

        n++;

        teacher \*t\_temp = new teacher[n];

        int i;

        for(i=0;i<n-1;i++)

        {

            t\_temp[i] = t[i];

        }

        delete[] t;

        t = t\_temp;

        int id;

        string name, subj;

        cout<<"Input teacher ID: ";

        cin>>id;

        cout<<"Input Name: ";

        cin>>name;

        cout<<"Input Subject: ";

        cin>>subj;

        t[n-1].setID(id);

        t[n-1].setName(name);

        t[n-1].setSubj(subj);

        cout<<"..new teacher added successful\n"<<endl;

    }

    void addCourse(course \*&c,int &n)

    {

        n++;

        course \*c\_temp = new course[n];

        int i;

        for(i=0;i<n-1;i++)

        {

            c\_temp[i] = c[i];

        }

        delete[] c;

        c = c\_temp;

        string codecourse, namecourse;

        cout<<"Input Course code: ";

        cin>>codecourse;

        cout<<"Input Course name: ";

        cin>>namecourse;

        c[n-1].setCode(codecourse);

        c[n-1].setName(namecourse);

        cout<<"..new course added successful\n"<<endl;

    }

    void displayAllStudents(student \*s, int &n)

    {

        int i;

        cout<<"...DISPLAYING ALL STUDENTS STUDYING IN OUR SCHOOL...\n"<<endl;

        for(i=0;i<n;i++)

        {

            s[i].displaySt\_info();

            cout<<"\n";

        }

    }

    void displayAllTeachers(teacher \*t, int &n)

    {

        int j;

        cout<<"...DISPLAYING ALL TEACHERS TEACHING IN OUR SCHOOL...\n"<<endl;

        for(j=0;j<n;j++)

        {

            t[j].displayT\_info();

            cout<<"\n";

        }

    }

    void displayAllCourses(course \*c,int &n)

    {

        int k;

        cout<<"...DISPLAYING ALL COURSES TAUGHT IN OUR SCHOOL...\n"<<endl;

        for(k=0;k<n;k++)

        {

            c[k].displayCourseInfo();

            cout<<"\n";

        }

    }

};

int main()

{

    int ch;

    int sts=1, ts=1,cs=1;

    schoolManagement delson;

    student \*s = new student[sts];

    teacher \*t = new teacher[ts];

    course \*c = new course[cs];

    cout<<"\nPlease input data for 1 student!"<<endl;

    int id,age;

    string name, subj, codecourse, namecourse;

    char grade;

    cout<<"Input ID: ";

    cin>>id;

    cout<<"Input Name: ";

    cin>>name;

    cout<<"Input Age: ";

    cin>>age;

    cout<<"Input Grade: ";

    cin>>grade;

    s[0].setID(id);

    s[0].setName(name);

    s[0].setAge(age);

    s[0].setGrade(grade);

    cout<<"\nPlease input data for 1 teacher!"<<endl;

    cout<<"Input ID: ";

    cin>>id;

    cout<<"Input Name: ";

    cin>>name;

    cout<<"Input Subject: ";

    cin>>subj;

    t[0].setID(id);

    t[0].setName(name);

    t[0].setSubj(subj);

    cout<<"\nPlease input data for 1 course!"<<endl;

    cout<<"Input Course code: ";

    cin>>codecourse;

    cout<<"Input Course name: ";

    cin>>namecourse;

    c[0].setCode(codecourse);

    c[0].setName(namecourse);

    cout<<"\n\n\*\*\*WELCOME TO DELSON SCHOOL"<<endl;

    do{

        cout<<"\n1. Add a student\n2. Add a teacher\n3. Add a course"<<endl;

        cout<<"4. Display all students\n5. Display all teachers\n6. Display all courses"<<endl;

        cout<<"Press '0' to Exit"<<endl;

        cin>>ch;

        switch(ch)

        {

            case 1:

            {

                delson.addStudent(s,sts);

                break;

            }

            case 2:

            {

                delson.addTeacher(t,ts);

                break;

            }

            case 3:

            {

                delson.addCourse(c,cs);

                break;

            }

            case 4:

            {

                delson.displayAllStudents(s,sts);

                break;

            }

            case 5:

            {

                delson.displayAllTeachers(t,ts);

                break;

            }

            case 6:

            {

                delson.displayAllCourses(c,cs);

                break;

            }

            case 0:

            {

                return 0;

            }

            default:

            cout<<"Invalid input, try again!"<<endl;

        }

    } while(ch!=0);

    delete[] s;

    delete[] t;

    delete[] c;

    return 0;

}

Q3

//23K2001 Muzammil

#include<iostream>

using namespace std;

class Employee{

    private:

    string fname, lname;

    int salary;

    public:

    void setfname(string name)

    {

        fname = name;

    }

    void setlname(string name)

    {

        lname = name;

    }

    void setsalary(int monthly)

    {

        if(monthly<0)

        salary = 0;

        else

        salary = monthly;

    }

    string getfname()

    {

        return fname;

    }

    string getlname()

    {

        return lname;

    }

    int getsalary()

    {

        return salary;

    }

};

int main()

{

    Employee worker;

    Employee assistant;

    cout<<"..Initiliazing data for Employee: Worker"<<endl;

    worker.setfname("Arshad");

    worker.setlname("Nadeem");

    worker.setsalary(45000);

    cout<<"..Initiliazing data for Employee: Assistant"<<endl;

    assistant.setfname("Mubeen");

    assistant.setlname("Kazmi");

    assistant.setsalary(25000);

    cout<<"Worker '"<<worker.getfname()<<" "<<worker.getlname()<<"' Yearly salary: "<<worker.getsalary()\*12<<endl;

    cout<<"Assistant '"<<assistant.getfname()<<" "<<assistant.getlname()<<"' Yearly salary: "<<assistant.getsalary()\*12<<endl;

    cout<<"..assigning 10% raise to both employee"<<endl;

    worker.setsalary(worker.getsalary()\*1.10);

    assistant.setsalary(assistant.getsalary()\*1.10);

    cout<<"..salaries raised!"<<endl;

    cout<<"New salaries: "<<endl;

    cout<<"Worker '"<<worker.getfname()<<" "<<worker.getlname()<<"' Yearly salary: "<<worker.getsalary()\*12<<endl;

    cout<<"Assistant '"<<assistant.getfname()<<" "<<assistant.getlname()<<"' Yearly salary: "<<assistant.getsalary()\*12<<endl;

    return 0; }

Q4

//23K2001 Muzammil

#include<iostream>

using namespace std;

class car{

    private:

    string model;

    int year, price;

    public:

    void setModel(string name)

    {

        model = name;

    }

    void setYear(int yr)

    {

        year = yr;

    }

    void setPrice(int p)

    {

        price = p;

    }

    string getModel()

    {

        return model;

    }

    int getYear()

    {

        return year;

    }

    int getPrice()

    {

        return price;

    }

};

int main()

{

    car dreamcar;

    cout<<"..Setting values.."<<endl;

    dreamcar.setModel("Lamborghini Aventador LP 780-4 Ultimae");

    dreamcar.setYear(2022);

    dreamcar.setPrice(500000);

    cout<<"Values:\n"<<endl;

    cout<<"Model: "<<dreamcar.getModel()<<endl;

    cout<<"Year: "<<dreamcar.getYear()<<endl;

    cout<<"Price: $"<<dreamcar.getPrice()<<endl;

    return 0;

}

Q5

//23K2001 Muzammil

#include<iostream>

using namespace std;

class temperature{

    private:

    float celsius;

    public:

    void setCelsius(float t)

    {

        celsius = t;

    }

    float getCelsius()

    {

        return celsius;

    }

    float in\_fahrenheit()

    {

        return ((9.0/5.0)\*(celsius))+32;

    }

};

int main()

{

    temperature lab;

    float temp;

    cout<<"Input lab temperature(in celsius): ";

    cin>>temp;

    lab.setCelsius(temp);

    cout<<"Lab temperature:\nCelsius: "<<lab.getCelsius()<<endl;

    cout<<"Fahrenheit: "<<lab.in\_fahrenheit()<<endl;

    return 0;

}