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#include <iostream>
#include <string>

using namespace std;
class Grade
{
protected:
    int n;
    float *x,y;
public:
    virtual void Input(); // Ham ao
    virtual float X()=0; // Ham thuan ao
    float Z()
    {
        return 0.5*X() + 0.5*y;
    }
    virtual void Print() // Ham ao
    {
        cout<<"Diem X: "<<X()<<"\tDiem Y: "<<y<<"\t Diem Z: "<<Z()<<endl;
    }
};

void Grade::Input()
{
    int i;
    x = new float[n];
    for(i=0; i<n; i++)
    {
        cout<<"Diem X"<<i+1<<": "; cin>>x[i];
    }
    cout<<"Diem Y: "; cin>>y;
}

class Course : public Grade
{
    string coursename;
    int courseid, num;
public:
    void Input() //Dinh nghĩa lại Input
    {
        fflush(stdin);
        cout<<"Hoc phan: "; getline(cin, coursename);
        cout<<"So tin chi: "; cin>>num;
        cout<<"The loai: "; cin>>courseid;
        if(courseid==1) //khong thuc hanh
            n=2;
        if(courseid==2) //co thuc hanh
            n=3;
    }
};

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        // if(courseid==3) //co bai tap lon
        //     n=4;
        Grade::Input();    // Thua ke
    }
    float X()    // Dinh nghia lai X()
    {
        if(courseid==1)
        {
            if((x[0] < 4.0) || (x[1] < 4.0))
                return 0.0;
            return 0.2*x[0] + 0.8*x[1];
        }
        if(courseid==2)
        {
            if((x[0] < 4.0) || (x[1] < 4.0) || (x[2] < 4.0))
                return 0.0;
            return 0.2*x[0] + 0.4*x[1] + 0.4*x[2];
        }
        // if(courseid==3)
        //     return 0.2*x[0] + 0.2*x[1] + 0.3*x[2] + 0.3*x[3];
    }
    virtual void Print()    // Dinh nghia lai Print()
    {
        cout<<"Hoc phan: "<<coursename.c_str()<<"\tso tin chi:
        "<<num<<endl;
        Grade::Print();    // Thua ke
    }
};

class Student
{
    string name;
    int id, coursenum; // So luong hoc phan dang ky < 10
    Course course[10]; // Mang doi tuong hoc phan
public:
    void Init();
    void Print();
};

void Student::Init()
{
    int i;
    fflush(stdin);
    cout<<"Ho ten: "; getline(cin, name);
    cout<<"Ma so hoc vien: "; cin>>id;
    cout<<"So luong hoc phan: "; cin>>coursenum;
    for(i=0; i<coursenum; i++)
        course[i].Input();
}

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}  
void Student::Print()  
{  
    int i;  
    cout<<"Ho ten: "<<name.c_str()<<"\tma so hoc vien: "<<id<<endl;  
    cout<<"Ket qua cac hoc phan:"<<endl;  
    for(i=0; i<coursenumber; i++)  
        course[i].Print();  
}  
  
int main()  
{  
    Student studentA;  
    studentA.Init();  
    studentA.Print();  
    return 0;  
}
```