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// inheritance5.h
#include <string>
#include <memory>
using namespace std;

enum Discipline { ARCHEOLOGY, BIOLOGY, COMPUTER_SCIENCE };
enum Classification { FRESHMAN, SOPHOMORE, JUNIOR, SENIOR };

class Person {
protected:
    string name;
public:
    Person() { setName(""); }
    Person(const string& pName) { setName(pName); }
    void setName(const string& pName) { name = pName; }
    virtual string getName() const { return name; }
};

// Student "is-a" Person
class Student:public Person {
private:
    Discipline major;
    shared_ptr<Person> advisor;
public:
    Student(const string& sname, Discipline d,
            const shared_ptr<Person>& adv) : Person(sname) {
        major = d;
        advisor = adv;
    }

    void setMajor(Discipline d) { major = d; }
    Discipline getMajor() const { return major; }
    void setAdvisor(shared_ptr<Person>& p) { advisor = p; }
    shared_ptr<Person> getAdvisor() const { return advisor; }
};

// Faculty "is-a" Person
class Faculty:public Person {
private:
    Discipline department;
public:
    Faculty(const string& fname, Discipline d) : Person(fname) {
        department = d;
    }
    void setDepartment(Discipline d) { department = d; }
    Discipline getDepartment() const { return department; }
};

// TFaculty "is-a" Faculty, which "is-a" Person
class TFaculty: public Faculty {
private:
    string title;
public:
    // This Constructor allows the specification of a title
    TFaculty(const string& fname, Discipline d, string title)
        : Faculty(fname, d) {
        setTitle(title);
    }
}

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    void setTitle(const string& title) { this->title = title; }

    // Override Person's getName function
    virtual string getName( ) const{ return title + " " + name; }
};

// This exhibits the default non-polymorphic behavior of C++.
#include "inheritance5.h"
#include <vector>
#include <iostream>
using namespace std;

int main() {
    // Create a vector of pointers to Person objects
    vector<shared_ptr<Person>> people {
        make_shared<TFaculty>("Indiana Jones", Discipline::ARCHEOLOGY, "Dr."),
        make_shared<Student>("Thomas Cruise", Discipline::COMPUTER_SCIENCE, nullptr),
        make_shared<Faculty>("James Stock", Discipline::BIOLOGY),
        make_shared<TFaculty>("Sharon Rock", Discipline::BIOLOGY, "Professor"),
        make_shared<TFaculty>("Nicole Eweman", Discipline::ARCHEOLOGY, "Dr.")
    };

    // Print the names of the Person objects
    for (int k = 0; k < people.size(); k++) {
        cout << people[k]->getName() << endl;
    }

    return 0;
}

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