## **Person.h**

**#ifndef CSC511HW1\_PERSON\_H**

**#define CSC511HW1\_PERSON\_H**

**using** **namespace** std;

**class** **Person** {

string name;

**int** age;

**public**:

Person();

Person(string, **int**);

Person(Person &);

**virtual** **void** **vprint**();

**void** **println**();

string **getName**();

**int** **getAge**();

**virtual** string **getStatus**();

};

**#endif *//CSC511HW1\_PERSON\_H***

## **Person.cpp**

**#include <iostream>**

**#include "Person.h"**

**using** **namespace** std;

Person::Person() : name(""), age(0) {}

Person::Person(string name, **int** age) : name(name), age(age) {}

Person::Person(Person &p) : name(p.name), age(p.age) {}

**void** **Person::vprint**() {

cout << getStatus() << ": " << name << " " << age;

}

**void** **Person::println**() {

vprint();

cout << endl;

}

string **Person::getName**() { **return** name; }

**int** **Person::getAge**() { **return** age; }

string **Person::getStatus**() { **return** "Person"; }

## **Student.h**

**#ifndef CSC511HW1\_STUDENT\_H**

**#define CSC511HW1\_STUDENT\_H**

**#include <fstream>**

**#include "Person.h"**

**using** **namespace** std;

**class** **Student** : **public** Person {

string discipline;

**public**:

Student();

Student(string, **int**, string);

Student(Student &);

**void** **vprint**();

string **getMajor**();

string **getStatus**();

};

**#endif *//CSC511HW1\_STUDENT\_H***

## **Student.cpp**

**#include <iostream>**

**#include "Student.h"**

**using** **namespace** std;

Student::Student() : Person(), discipline("") {}

Student::Student(string name, **int** age, string discipline)

: Person(name, age), discipline(discipline) {}

Student::Student(Student &s) : Person(s), discipline(s.discipline) {}

**void** **Student::vprint**() {

Person::vprint();

cout << " " << discipline;

}

string **Student::getMajor**() { **return** discipline; }

string **Student::getStatus**() { **return** "Student"; }

## **GradStudent.h**

**#ifndef CSC511HW1\_GRADSTUDENT\_H**

**#define CSC511HW1\_GRADSTUDENT\_H**

**#include "Student.h"**

**class** **GradStudent** : **public** Student {

string thesis;

**public**:

GradStudent();

GradStudent(string, **int**, string, string);

GradStudent(GradStudent &);

**void** **vprint**();

string **getThesis**();

string **getStatus**();

};

**#endif *//CSC511HW1\_GRADSTUDENT\_H***

## **GradStudent.cpp**

**#include <iostream>**

**#include "GradStudent.h"**

**using** **namespace** std;

GradStudent::GradStudent() : Student(), thesis("") {}

GradStudent::GradStudent(string name, **int** age, string major, string thesis)

: Student(name, age, major), thesis(thesis) {}

GradStudent::GradStudent(GradStudent &g) : Student(g), thesis(g.thesis) {}

**void** **GradStudent::vprint**() {

Student::vprint();

cout << " " << thesis;

}

string **GradStudent::getThesis**() { **return** thesis; }

string **GradStudent::getStatus**() { **return** "GradStudent"; }

## **PhDStudent.h**

**#ifndef CSC511HW1\_PHDSTUDENT\_H**

**#define CSC511HW1\_PHDSTUDENT\_H**

**#include "GradStudent.h"**

**class** **PhDStudent** : **public** GradStudent {

string dissertation;

**public**:

PhDStudent();

PhDStudent(string, **int**, string, string, string);

PhDStudent(PhDStudent &);

**void** **vprint**();

string **getDissertation**();

string **getStatus**();

};

**#endif *//CSC511HW1\_PHDSTUDENT\_H***

## **PhDStudent.cpp**

**#include <iostream>**

**#include "PhDStudent.h"**

**using** **namespace** std;

PhDStudent::PhDStudent() : GradStudent(), dissertation("") {}

PhDStudent::PhDStudent(

string name,

**int** age,

string major,

string thesis,

string dissertation

) : GradStudent(name, age, major, thesis), dissertation(dissertation) {}

PhDStudent::PhDStudent(PhDStudent &p)

: GradStudent(p), dissertation(p.dissertation) {}

**void** **PhDStudent::vprint**() {

GradStudent::vprint();

cout << " " << dissertation;

}

string **PhDStudent::getDissertation**() { **return** dissertation; }

string **PhDStudent::getStatus**() { **return** "PhDStudent"; }

## **main.cpp**

**#include <set>**

**#include <iostream>**

**#include "src/Person.h"**

**#include "src/Student.h"**

**#include "src/GradStudent.h"**

**#include "src/PhDStudent.h"**

**using** **namespace** std;

Person \***readPerson**(ifstream &file) {

std::set<string> types{"stu", "gra", "phd"};

string type, name, major, thesis, dissertation;

**int** age;

*// Loop while not find a person identificator or end of file*

**do** { file >> type; } **while** (types.count(type) == 0 && !file.eof());

file >> name >> age >> major;

**if** (type == "stu") {

**return** **new** Student(name, age, major);

}

file >> thesis;

**if** (type == "gra") {

**return** **new** GradStudent(name, age, major, thesis);

}

file >> dissertation;

**if** (type == "phd") {

**return** **new** PhDStudent(name, age, major, thesis, dissertation);

}

**return** nullptr;

}

**int** **main**() {

**int** count = 10, i = 0;

Person \*people[count];

Person \*p;

ifstream **file**("../data/hw1per.txt");

**while** ((i < count) && (p = readPerson(file))) {

people[i++] = p;

}

**for** (**int** k = 0; k < i; k++) {

people[k]->println();

}

**return** 0;

}

## **Output:**

GradStudent: Ken 26 Journalism Mediatopics

PhDStudent: Roger 29 History CivilWar Henry-8th

Student: Olga 20 Poultrysci

GradStudent: Tom 38 Shipping MailService

PhDStudent: Rudolph 31 PLSC Intern-Mktg Ethics-Society

PhDStudent: Sam 44 Mathematics Galois-Fields Galois-Crypt

Student: George 60 Preaching

GradStudent: Tom 27 PreMed Cytoplasm

GradStudent: Cheryl 25 Prelaw Tort-Procedure

Student: Renee 22 CPE