CSC511 Programming Assignment #1 Spring 2020

4 points

Due March 4, 2020 in class as hard copy printout

This is a signature assignment. Its aim is to provide assessment for ITU of student proficiency in this course across various sections and terms of this course. The signature assignment assesses two or more course learning outcomes. Its main use is to assess this course to guide changes in its teaching, CLOs, and testing methods for ITU.

Macintosh HD:Users:cornel:Desktop:Screen Shots:Screen Shot 2014-09-29 at 8.49.49 .pngForm groups of up to 2 students. Write the following Abstract Data Types in C++: Person, Student, GradStudent, PhDStudent, (4 classes). Below is the class hierarchy.

Work with g++ in command line mode. This program consists of 9 separate files. Use the preprocessor directives correctly.

In main() declare an array of Person\*, size of the array is 10.

class Person serves as the base class as shown above. It has the data: name, age. It has the methods: constructor(), getName(), getAge(), virtual void vprint().

class Student: It is like Person plus string major. It has the methods: constructor, (overridden) vprint(), getMajor().

class GradStudent: Like Student, plus string thesis. It has the methods: constructor, (overridden) vprint(), getThesis().

class PhDStudent: like GradStudent plus string dissertation.  It has the methods: constructor, (overridden) vprint(), getDissertatioijm. Copy this and paste it into the folder for the 9 program files for this assignment. Then yo;= /u can run and develop this program by being in this folder with the terminal window.

You might notice that none of the objects in the input file are of type Person, only derived classes occur, a Person object is never constructed. Person serves only as the base class to make the code more readable and safe.

In main() go into a loop of length 10 and read from the file hw1per.txt. (Reading from a file: Lecture 10.) Read from this file linewise: the first string on a line is either stu or gra or phd. Depending on this you read the following items off the line and construct either a Student, or a GradStudent or a PhDStudent. Then put a pointer to this Person in the array. As soon as 10 lines are read and the Person objects are constructed, go in a separate loop through the array and print all Persons out.

The vprint() function of all classes is polymorphic. Each class’s vprint uses the vprint of the base class. All data of the printed Person object are printed in one line, there is only one carriage return in each Person’s printing and it is done not in main(). Hint: Provide a non-poymorphic print method in Person, which is the same for all classes, and it calls the polymorphic vprint method.

**If the polymorphic vprint() function prints correctly, but without using the vprint() code of its parent class, the assignment gets up to 4 points. If each vprint() uses the vprint() code of the parent class correctly, the assignment can get up to 2 additional bonus points.**

All programs work with the same input file: hw1per.txt.

Work either alone or in a group of size 2. As a normal case: both students in the group get the same number of poins. Print all your written code plus the output of running your code in one printout with the name csc511hw1.cpp, and submit that. The source code should contain the .h and .cpp files in the order: Person.h, Person.cpp, Student.h, Student.cpp, etc. The last code file is main.cpp, then comes the output from running the program. Each submitted printout must contain the names of the students in the group.

Observe that file names start with lower case letter, class names start with upper case letter.

GradStudent: Ken age:26 mj:Journalism th:Mediatopics

PhDStudent: Roger age:29 mj:History th:CivilWar diss:Henry-8th

Student: Olga age:20 mj:Poultrysci