California State University, San Bernardino
School of Computer Science & Engineering
CSE 2010 Fall 2022

Lab 8: Inheritance (30 points)

DUE: Wednesday November 16 by 8:30pm

Make sure to indent your code properly and add comments. Source code with no comments will have points deducted.

In this lab, we are going to define a base class and several derived classes. Please make all data members in the class private, and member functions public.

1. (3 points) Write the code to implement the class Person.
    - A Person has a name, address, telephone number, and an E-mail address
    - Provide the following member functions:
        1. Default Constructor
        2. Parameter Constructor
        3. Destructor
        4. Functions that return the private data members
        5. Functions that update the data members.
2. (4 points) Create a derived class Student, that inherits Person
    - A Student has the additional attribute of status (example: freshman, sophomore, junior, senior)
    - Provide the following member functions:
        1. Default Constructor
        2. Parameter Constructor
        3. Destructor
        4. Functions that return the private data member.
        5. Functions that update the data member.
3. (4 points) Create a derived class Employee, that inherits Person
    - An Employee has the additional attributes of salary and date hired.
    - Provide the following member functions:
        1. Default Constructor
        2. Parameter Constructor
        3. Destructor
        4. Functions that return the private data members
        5. Functions that update the data members.
4. (4 points) Define a class Faculty, that inherits Employee
    - Faculty has the additional attribute of rank (professor, associate, lecturer, etc) and status (tenured, tenure-track, visiting, etc).
    - Provide the following member functions:
        1. Default Constructor
        2. Parameter Constructor
        3. Destructor
        4. Functions that return the private data members
        5. Functions that update the data members.

5. (4 points) Define a class Staff, that inherits Employee
    - Staff has the additional attribute of position (job title)
    - Provide the following member functions:
        1. Default Constructor
        2. Parameter Constructor
        3. Destructor
        4. Functions that return the private data member.
        5. Functions that update the data member.

6. (7 points) Write a test main program that does the following:
    - Declare Person, Student, Employee, Faculty, and Staff objects with their parameter constructors.
    - Use each of the class' accessor functions to display each object's information.
    - Update the student's status, then display their information again.
    - Update the Staff's salary, then display their information again.

7. (4 points) Finally, provide a complete UML diagram to show the relationship between all of the classes. You can do this by hand, then upload a picture, or use a UML diagram software.

Be sure to implement everything correctly, as you will use these classes to practice polymorphism in Homework 3.