Knight Foundation School of Computing and Information Sciences

COP 3337: Computer Programming II
Assignment – III: Inheritance
Due Date & Time: Sunday Sep 18, 2022 11:59 pm
Instructor: Ahmad Waqas, PhD

Instructions:

- Create a separate java class file for each class.
- Zip the complete project and submit the .zip file.
- The general rubrics are given below:

Description	Max. Marks
Coding style Use the best practices for writing the code. The code is well organized and very easy to follow.	20%
Logic Student has used the effective programming logic for solution and demonstrates the appropriate concept in respective task.	60%
Results The program is error-free and generates the expected results as per the specifications.	20%

Task:

Create the following classes:

Person Class:

Create a class called `Person` with definition as follows. Completing the definitions of the methods is part of this programming assignment.

```
public class Person{
     private String name;
     public Person()
       {…}
     public Person(String name)
       {…}
     public Person(Person object)
       {…}
     public String getName()
       {…}
     public String setName(String name)
       {…}
     public String toString()
       {…}
     public boolean equals(Person other)
       {…}
}
```

Employee Class:
The Employee class extends the Person class and has instance variable `hireDate` (since it will hold the hiring date of an employee so use Date class). This class will have following three constructors:

1. No argument constructor
2. An argument constructor that receives `name` and `hireDate`.
3. An argument constructor that receives `Employee` object.

Define the constructors, mutator and accessor methods, and suitably define `toString` and `equals` methods.

SalariedEmployee Class:
The SalariedEmployee class extends the Employee class and has instance variable `salary`. The class will have the following three constructors:

1. No argument constructor
2. An argument constructor that receives `name`, `hireDate` and `Salary`.
3. An argument constructor that receives `SalariedEmployee` object.

Define the constructors, mutator and accessor methods, and suitably define `toString` and `equals` methods.

Doctor Class:
Give the definition of a class named Doctor whose objects are records for a clinic's doctors. This class will be a derived class of the class SalariedEmployee. A Doctor record has the doctor's specialty (such as "Pediatrician", "Obstetrician", "General Practitioner", and so forth; so, use the type String) and office visit fee (use type double). Be sure your class has a reasonable complement of constructors, accessor, and mutator methods, and suitably defined `equals` and `toString` methods.

Patient Class:
Give the definition of class Patient whose objects are records for a clinic. Patient will be derived from the class Person. A Patient record has the patient's name (inherited from the class Person) and primary physician of type `Doctor`. Be sure your class has a reasonable complement of constructors, accessor and mutator methods, and suitably defined `equals` and `toString` methods.

Billing Class:
Give the definition of class Billing whose objects are records for a clinic. A Billing object will contain a `Patient` object, a `Doctor` object, and an amount due of type double. Be sure your class has a reasonable complement of constructors, accessor and mutator methods, and suitably defined `equals` and `toString` methods.

Main Class
Write a test program that creates at least three patients, at least three doctors, and at least three Billing records, and then prints out the patients, doctors and billing information. At the end print out the total income from the Billing records.

Sample Output
The sample output of the main program is depicted in the below picture.

```
The doctor Bob was hired on Wed Dec 31 19:00:12 EST 1969 at Salary 34000.0.
The speciality is Pediatrist and visit fee is $10.5.
The doctor Susan was hired on Wed Dec 31 19:04:14 EST 1969 at Salary 450000.0.
The speciality is Surgeon and visit fee is $150.5.
The doctor Lilly was hired on Wed Dec 31 19:04:14 EST 1969 at Salary 290000.0.
The speciality is Kidney and visit fee is $95.5.

*Patient's Information*
The name is: Fred, Primary doctor is: Bob
The name is: Sally, Primary doctor is: Susan
The name is: John, Primary doctor is: Lilly

*Billings's Information*
Patient: Fred
Doctor: Bob
Amount Due: $21.0
Patient: Sally
Doctor: Susan
Amount Due: $150.5
Patient: John
Doctor: Lilly
Amount Due: $170.0

The total income from billing records is: 341.5
```