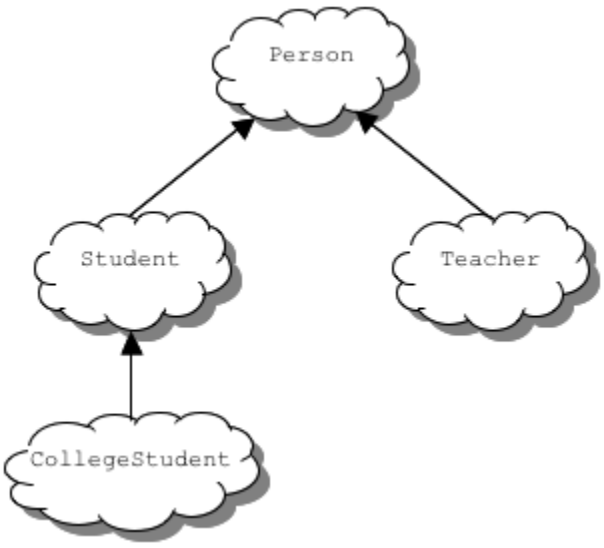
Assignment – 5

Due: 11:59 PM PST, 13th Nov

Background:

You will be given two classes. `Person` superclass and the `Student` subclass. In this assignment you will create two new classes, `Teacher` and `CollegeStudent`, using inheritance. A `Teacher` will be like `Person` but will have additional properties such as *salary* and *subject*.
The `CollegeStudent` class will extend the `Student` class by adding a *year* (current level in college) and *major* (e.g. "Electrical Engineering", "Communications", and "Undeclared").

The inheritance hierarchy follows.



Requirement:

1. You will be provided with two source files as shown above: *Person.java* for the `Person` class, *Student.java* for the `Student` class. These files should be used throughout this assignment.
2. Write a `Teacher` class that extends the parent class `Person`.
    a. Add instance variables to the class for *subject* (e.g. "Computer Science", "Chemistry", "English", "Other") and *salary* (the teacher's annual salary). *Subject* should be of type `String` and salary of type **`double`**. Choose appropriate names for the instance variables. These variables will be private.
    b. Write a constructor for the `Teacher` class. The constructor will use five parameters to initialize `myName`, `myAge`, `myGender`, *subject*, and *salary*. Use the **`super`** reference to use the constructor in the `Person` superclass to initialize the inherited values.
    c. Write "setter" and "getter" methods for all of the class variables. For the `Teacher` class they would be: `getSubject`, `getSalary`, `setSubject`, and `setSalary`.
    d. Write the `toString()` method for the `Teacher` class. Use a **`super`** reference to do the things already done by the superclass.
3. Write a `CollegeStudent` subclass that extends the `Student` class.
    a. Add instance variables to the class for major (e.g. "Electrical Engineering", "Communications", "Undeclared") and year (e.g. FRESH = 1, SOPH = 2,

...). *Major* should be of type `String` and *year* of type **`int`**. Choose appropriate names for the instance variables. These variables will be private.

   b. Write a constructor for the `CollegeStudent` class. The constructor will use seven parameters to initialize `myName, myAge, myGender, myIdNum, myGPA`, *year*, and *major*. Use the **`super`** reference to use the constructor in the `Student` superclass to initialize the inherited values.
   c. Write "setter" and "getter" methods for all of the class variables. For the `CollegeStudent` class they would be: `getYear, getMajor, setYear,` and `setMajor`.
   d. Write the `toString()` method for the `CollegeStudent` class. Use a **`super`** reference to do the things already done by the superclass.

4. Write a main class with a `main()` named **LastnameFirstnameA5** that constructs all of the classes (`Person, Student, Teacher,` and `CollegeStudent`) and calls their `toString()` method.
5. Update age of the person, salary of the teacher, GPA of the student and major of the College Student.
6. Print the information of the person, teacher, student and college student with updated values.

Sample Output:

```
Coach Bob, age: 27, gender: M
Lynne Brooke, age: 16, gender: F, student id: HS95129, gpa: 3.5
Duke Java, age: 34, gender: M, subject: Computer Science, salary: 50000.0
Ima Frosh, age: 18, gender: F, student id: UCB123, gpa: 4.0, year: 1, major:
English

Person: Coach Bob, age: 29, gender: M
Student: Lynne Brooke, age: 16, gender: F, student id: HS95129, gpa: 3.8
Teacher: Duke Java, age: 34, gender: M, subject: Computer Science, salary:
100000.0
College Student: Ima Frosh, age: 18, gender: F, student id: UCB123, gpa: 4.0,
year: 1, major: Computer Science
```