Program 3 – Abstract Classes
100 points

IMPORTANT
You will have to write code while carefully following the "IT 179 Program Grading Guidelines"

Set-Up
Create a new Java project named: **P3**. In the src folder, create a Java package named: **edu.ilstu**. This package will contain all four classes that you will write in this assignment.

Use the UML diagram below (Figure 1) as a reference. In the package edu.ilstu, create an **abstract** super class Person, two **concrete** subclass Employee and Student, and the driver testing class Test. If a method is an override method, you should include @Override.

```
                        Person
        - name : String
        - age : int
        - gender : String
        + Person(String name, int age, String gender)
        + getName() : String
        + getAge() : int
        + getGender() : String

        + toString() : String
        + equals(Object obj) : boolean
```

```
           Employee                              Student

 - hour : double                      - major  : String
 - rate : double                      - totalGrade : double
 - payment : double                   - numberOfCourses : int

 + Employee(String name, int age,     + Student(String name, int age, String gender, String major,
       String gender,                        double totalGrade, int numberOfCourses)
       double hour, double rate)      + getAverageGrade() : double
 + getHour() : double                 + toString() : Sting
 + getRate() : double                 + equals(Object obj) : boolean
 + getPayment() : double
 + toString() : Sting
 + equals(Object obj) : boolean
```

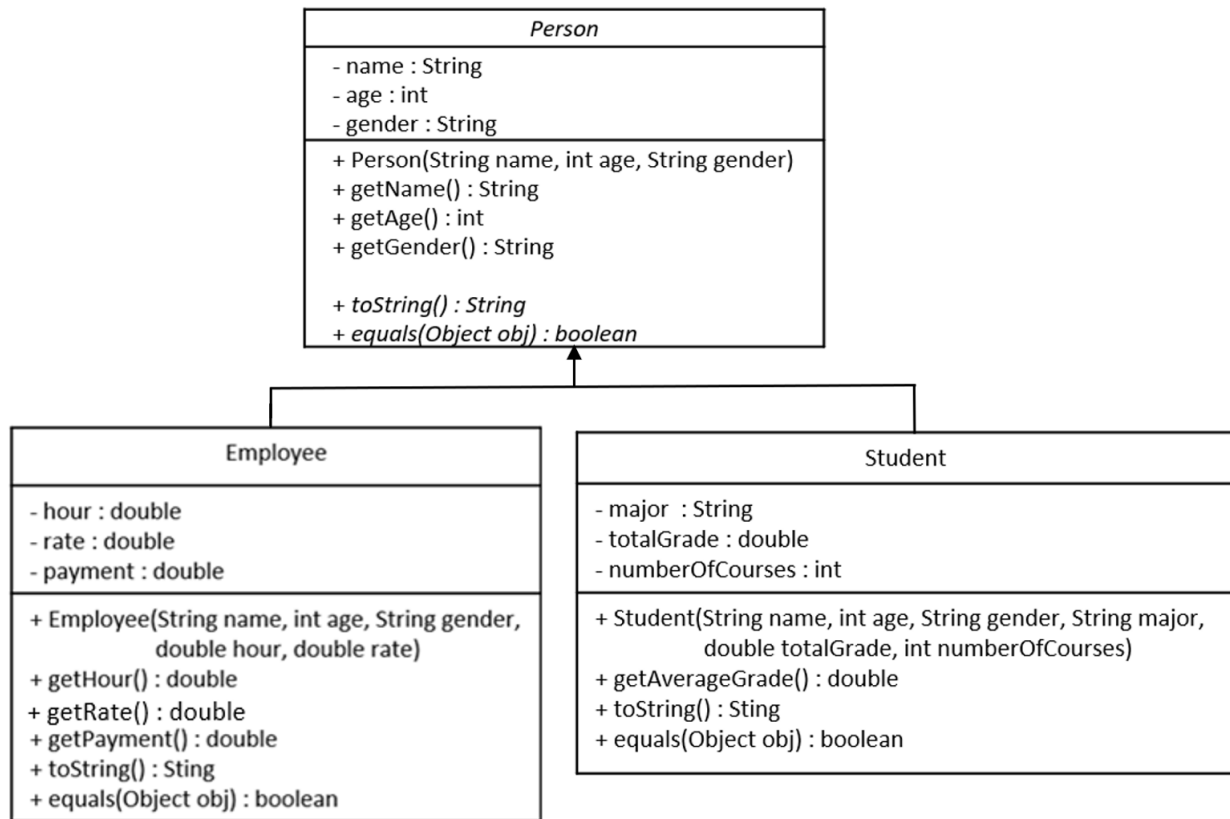Figure 1

In the Student class, if two students share the same name, age and major, we can consider they are the <u>same person</u>. The average grade equals the total grade divided by the number of courses. In the Employee class, if two employees share the same name, age, and payment, we can consider they are the <u>same person</u>. The payment equals rate x hour.
In the toString() method, you can use DecimalFormat df = new DecimalFormat("#.##"); df.format(number) to format the decimal representation of the payment and average grade.

In the Test class, first, create two employee objects using the following listed arguments, then print out the objects' information and compare these two objects to determine whether these two employees are the same person.

Object #	name	age	gender	hour	Rate
1	Linda Ward	26	Female	17.8	22.7
2	Linda Ward	26	Female	19.3	17.8

Next, create two student objects using the following listed arguments, then print out the objects' information and compare these two objects to determine whether these two students are the same person.

Object #	name	age	gender	major	totalGrade	numberOfCourses
1	James Smith	21	Male	Computer Science	350	4
2	James Smith	21	Male	Information Technology	281	3

To Be Submitted

Please zip your Java project in a file called P2.zip and submit to ReggieNet before the due date. Your submission must contain these four files:

> Person.java
> Emplyee.java
> Student.java
> Test.java