ALGORITHMS AND PROGRAMMING - OOP Project

Write the code that meets the requirements given below in Java.

I. It is requested to write a class named **ContactInfo** to represent contact information. Variables and methods that should be in **ContactInfo** class are given below.

* It contains homeAddress, phoneNumber, eMail variables of String type to hold home address, phone number and e-mail address respectively.
* Write a constructor method without parameters. In this method, variables will be assigned null.
* Write a constructor method with three parameters to assign the values passed as parameters to the variables in the class.
* Write a "copy constructor" method for ContactInfo class.
* Create get and set methods called accessor/mutator (NOTE: You are not asked to check for errors in the data to be assigned).
* Write the toString method.
* Write the equals method.

II. You are asked to write a class named **Person** to represent persons. The variables and methods that should be in the **Person** class are given below:

* It keeps the name and surname of the contact together in a String type variable named name. There is also a variable contactInformation of type ContactInfo.
* Write a constructor method without parameters. In this method, variables will be assigned null.
* Write a two-parameter constructor method that will assign the values passed as parameters to the variables in the class, **paying attention to the "Privacy Leak" situation**.
* Write the "copy constructor" method for the Person class**, paying attention to the "Privacy Leak" situation**.
* Create the get and set methods called accessor/mutator by **paying attention to the "Privacy Leak" situation in the relevant place**. (NOTE: You are not asked to check for errors in the data to be assigned).
* Write the toString method.
* Write the equals method.

III. It is requested to write an abstract class named **Vehicle** to represent vehicles. The variables and methods that should be in the **Vehicle** class are given below:

* You are asked to define brand and licencePlate variables of String type to hold the brand (manufacturer) and license plate of the vehicle, respectively, and owner variable of Person type to hold the person who owns the vehicle.
* Write a constructor method without parameters. In this method, variables will be assigned null.
* Write a constructor method with three parameters to assign the values passed as parameters to the variables in the class**, paying attention to the "Privacy Leak" situation**.
* Write the "copy constructor" method for the Vehicle class**, paying attention to the "Privacy Leak" situation**
* Create the get and set methods called accessor/mutator by **paying attention to the "Privacy Leak" situation in the** relevant place. (NOTE: You are not asked to check for errors in the data to be assigned).
* Write the toString method.
* Write the equals method.
* There is an abstract method for calculating the motor vehicle tax, calculateTax, which returns a value of type int and has no parameters.

IV. Derive the class named **Bus** representing buses from the class **Vehicle** by inheritance. Variables and methods that should be in the Bus class are given below:

* There is an int variable capacity to hold the passenger capacity of the bus and an int variable ageOfBus to hold the age of the bus.
* Write a constructor method without parameters. In this method, variables will be assigned null.
* Write a constructor method to receive and assign all necessary data as parameters.
* Write a "copy constructor" method for Bus class.
* Create get and set methods called accessor/mutator (NOTE: You are not asked to check for errors in the data to be assigned).
* CalculateTax method will be written for calculating motor vehicle tax. This method will be implemented as follows: If the bus age is less than 5 years old, 4000 TL tax will be paid, if the bus age is between 5 and 10 years old, 3000 TL tax will be paid and if the bus age is more than 10 years old, 2000 TL tax will be paid. This method will return the amount of tax to be paid as an int type value.
* Write the toString method.
* Write the equals method.

V. Write an experimental **Demo** class and do the following in the main method.

* Create a ContactInfo class object, a Person class object and a Bus class object owned by this Person object by manually typing the data into the code (no need to read from a file or keyboard).
* Print the data of the Bus class object you created using the toString method.
* Print the amount of motor vehicle tax to be paid for the Bus class object you created.
* Create a copy object from the Bus class object with "copy constructor".
* Show the equality of these two Bus class objects by using the "equals" method and printing the result.