02.05.2023

EGE UNIVERSITY FACULTY OF ENGINEERING

DEPT. OF COMPUTER ENGINEERING

ALGORİTHMS AND PROGRAMMING II

**MIDTERM QUESTIONS**

**Write Java codes that fulfill the following requirements:**

**I.** Write **ContactInfo** class that holds contact information of a person. Variables and methods of ContactInfo class are given below:

**\*** ContactInfo class contains three variables called homeAddress, telNumber and eMail all of which are of type String.

\* Write a constructor method without parameters. In this method, the variables are assigned to null.

\* Write a construtor method with three parameters which assigns these parameters to the variables of the class.

\* Write a copy constructor for ContactInfo class.

\* Write the accessor/mutator methods. (NOTE: You are not required to make error check in set methods.)

\* Write toString metod.

\* Write equals method (Please use the generic template that has a input parameter of type Object given in your text book.)

**II.** Write a class called **Person**. Variables and methods of Person class are given below:

\* Person class has a variable called "name" which holds the name and surname of the person together. It also contains contactInformation variable which is of type ContactInfo.

\* Write a constructor method without parameters. In this method, the variables are assigned to null.

\* Write a constructor method with two parameters which assigns these parameters to the variables of the class. **Please avoid privacy leak.**

\* Write a copy constructor for Person class. **Please avoid privacy leak.**

\* Write the accessor/mutator methods. **Please avoid privacy leak.** (NOTE: You are not required to make error check in set methods.)

\* Write toString metod.

\* Write equals method (Please use the generic template that has a input parameter of type Object given in your text book.)

**III.** Write an abstract class called **Vehicle**. Variables and methods of **Vehicle** class are given below:

\* Vehicle class has String type variables to hold the brand(producer) and licence plate number of the car, which are called brand and licencePlate respectively. It also contains a variable called owner to hold the owner of the vehicle. The variable owner is of type Person.

\* Write a constructor method without parameters. In this method, the variables are assigned to null.

\* Write a constructor method with three parameters which assigns these parameters to the variables of the class. **Please avoid privacy leak**.

\* Write a copy constructor for Vehicle class. **Please avoid privacy leak.**

\* Write the accessor/mutator methods. **Please avoid privacy leak.** (NOTE: You are not required to make error check in set methods.)

\* Write toString metod.

\* Write equals method (Please use the generic template that has a input parameter of type Object given in your text book.)

\* Vehicle class contains an abtstact method called calculateTax, which is for calculating yearly govermental tax for vehicles. calculateTax method has no parameters and returns an int value.

**IV.** Write a class called Bus which inherits from Vehicle class. Variables and methods of **Bus** class are given below:

\* Bus class has a int typed variable called capacity that holds the passenger capacity. It also has a int typed variable called ageOfBus that holds the age of the bus.

\* Write a constructor method without parameters. In this method, the variables are assigned to null.

\* Write a constructor method that takes all necessary data as parameters and assigns these parameters to the variables of the class.

\* Write a copy constructor for Bus class.

\* Write the accessor/mutator methods.(NOTE: You are not required to make error check in set methods.)

\* Write a method to calculate govermental vehicle tax on this bus. This tax is calculated as follows: If the age of bus is less than 5 then the amount of tax to be paid is 4000 TL. If the age of the bus is between 5 and 10 then the amount of tax to be paid is 3000 TL. If the age of the bus is greater than 10 then the amount of tax to be paid is 2000 TL. This method returns the int value indicating the amount of tax to be paid.

\* Write toString metod.

\* Write equals method (Please use the generic template that has a input parameter of type Object given in your text book.)

**V.** Write a Demo class that satisfies the following requirements in its main method:

\* Construct a ContactInfo object, a Person object and a Bus object that the constructed Person object is the owner. You can write the required data manually while constructing the objects, you are not required to use keyboard input or file.

\* Print the instance data values of the Bus object using toString method.

\* Print to the console the amount of tax that should be paid for this bus object.

\* Using the copy constructor, form a copy of the bus object.

\* Show the equality of these two bus objects using the equals method.

**Rules for Delivering the Quizzes**

1. Upload your project to the MIDTERM directory on EgeDers platform until **02.05.2023 Tuesday, 20:00.** When naming your project, use your 11 digit university student id and upload it in compressed form (such as 05110000222.rar or zip).

2. You can upload your project many times but the last uploaded version is saved.

3. The codes you write by yourself are more valuable. If codes that is prepared by plagiarizing from another student is detected, then both students will take zero (0) points and offical procedures of the University for cheating will be followed.