MAT 335E Programming Algorithms

Lab-7 / CRN : 10611

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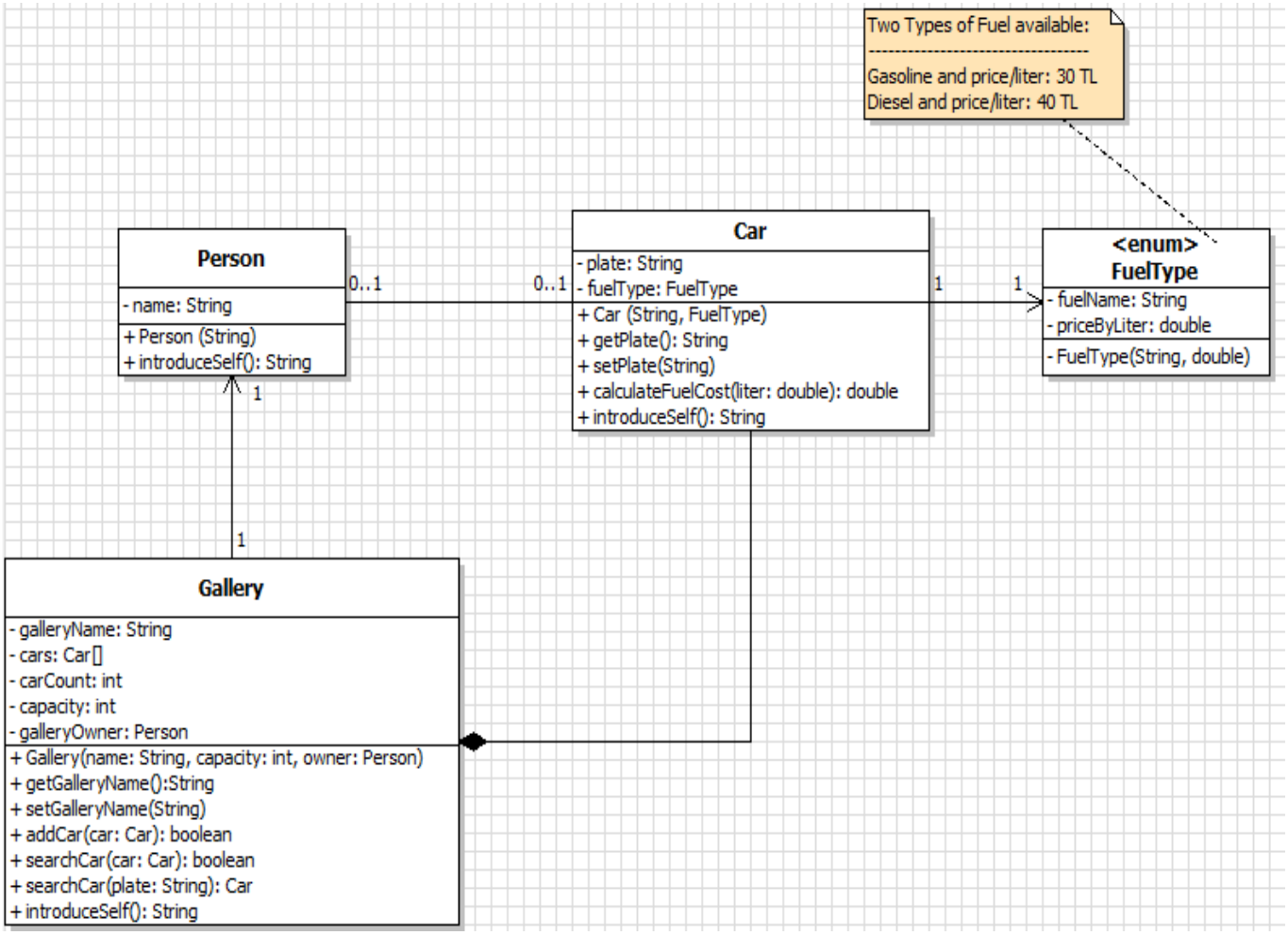
1 Question 1

Write a Java static method for each of the options listed below, each taking a one-dimensional array as a parameter:

- Find the number of unique elements in the array and then print those elements to the screen.
- Find the number of duplicate elements in the array and then print those elements to the screen.

2 Question 2



You are required to develop a basic Auto Gallery system. The UML diagram relevant to this system is provided above. Write a java source code for all classes in UML, taking into account the following guidelines. **Note that some members and methods may be missing in some classes.**

a) Write a java source code of class **FuelType**.

b) Write a java source code of class **Person**.

- **introduceSelf()** : He/She introduces himself/herself first and gives information about his/her car, if any.

c) Write a java source code of class **Car**.

- **introduceSelf()** : This method gives an information about car's plate and owner, if any.
- **calculateFuelCost(double)** : This method calculates and returns the total cost of fuel by multiplying liter of fuel and price per liter.

d) Write a java source code of class **Gallery**.

- **carCount** represents the current number of car in the gallery and **capacity** represents the capacity of gallery in terms of number of cars. Furthermore, the number of cars in the gallery must be zero when new Gallery objects are created.
- **addCar() :** It adds a car to the gallery. Also, a vehicle that is previously in the gallery must not be added again.
- **searchCar(Car):** It takes a car as a parameter and it searches this car in the gallery. If exist return true, otherwise false.
- **searchCar(String):** It takes a plate of a car as a parameter and it searches this car in the gallery. If finds, returns it.
- **introduceself():** Gallery name, gallery owner and current car number are introduced by this method.

e) Write a test class that includes main method you desired to test and run your program.