MATH 335E Programming Algorithms

Lab-8 / CRN: 21193

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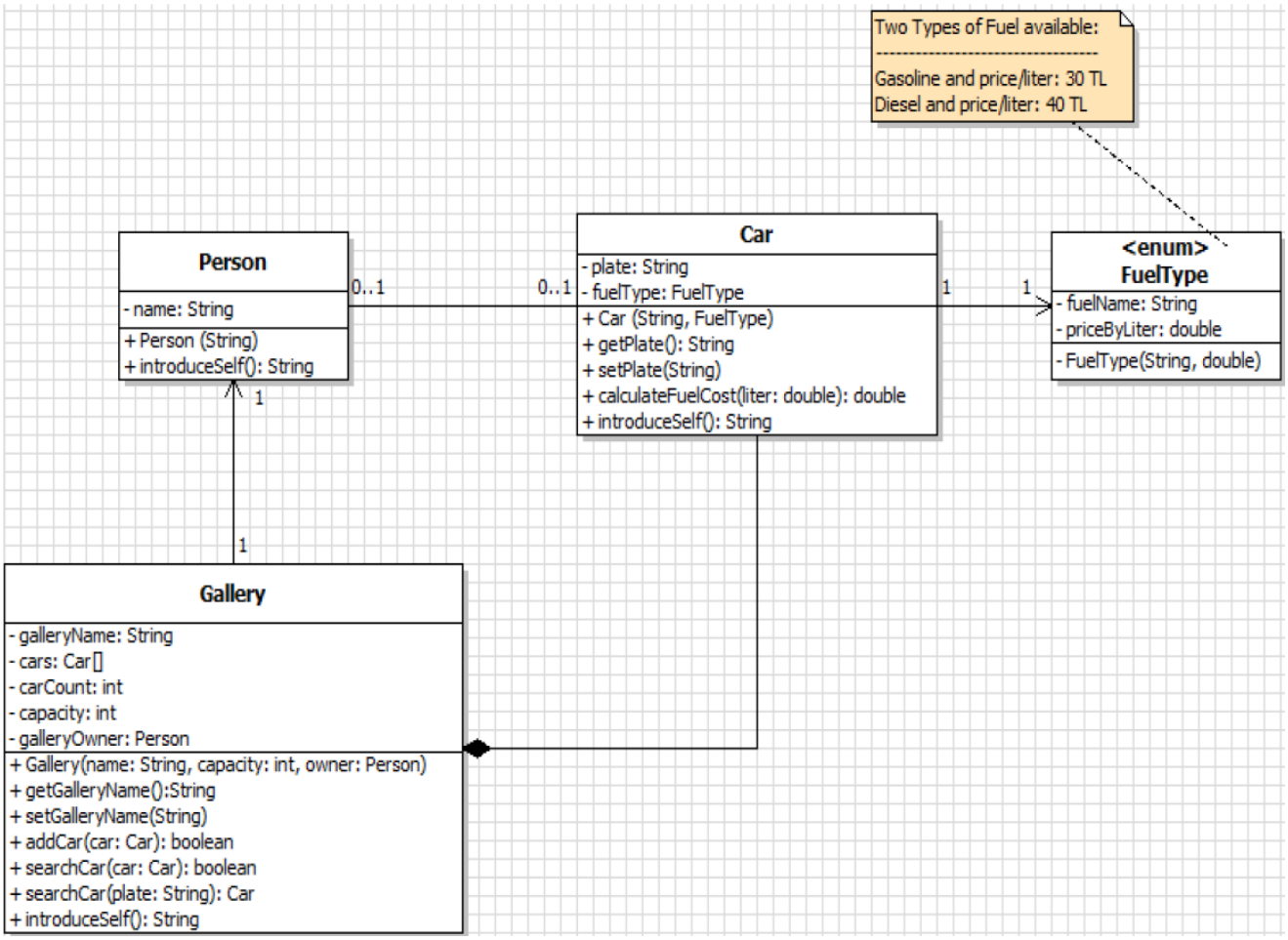
Question 1 (Auto Gallery System)



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, considering the following guidelines. Note that some members and methods may be missing in some classes.

- Write a Java source code of the class FuelType.
- Write a Java source code of the class Person.
  - introduceSelf(): He/She introduces himself/herself first and gives information about his/her car, if any.

- Write a java source code of class Car.
  - introduceSelf(): This method gives information about the car's plate and owner, if any.
  - calculateFuelCost(double): This method calculates and returns the total fuel cost by multiplying the fuel and price per liter.
- Write a Java source code of class Gallery.
  - carCount represents the current number of cars in the gallery, and capacity represents the gallery's capacity in the 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 searches this car in the gallery. If it exists, return true; otherwise, it is false.
  - searchCar(String): It takes a plate of a car as a parameter, and it searches this car in the gallery. If finds it, return it.
  - introduceself(): Gallery name, gallery owner, and current car number are introduced by this method.
- Write a test class that includes the main method you desire to test and run your program.

Question 2(Tic-Tac-Toe)

Create a class TicTacToe that will enable you to write a program to play Tic-Tac-Toe. The class contains a private 3-by-3 two-dimensional array. Use an enum type to represent the value in each cell of the array. The enum's constants should be named X, O, and EMPTY (for a position that does not contain an X or an O). The constructor should initialize the board elements to EMPTY. Allow two human players. Wherever the first player moves, place an X in the specified square, and place an O wherever the second player moves. Each move must be to an empty square. After each move, determine whether the game has been won and whether it's a draw.