Programming Assignment 4

Due Date: 11:59 PM 04/05/2020

How to submit your solutions:

- **You will submit only one .java file (ParkingGarage**.java) for this assignment.

Note: Codes will be compared against each other using "document similarity" tools. Any evidence of code duplication will result in an 'F' in this assignment or an 'F' in this course.

For this assignment, you will need to review the notes and video for "Case study on class interactions .." under Week 11 materials on BlackBoard.

In this assignment, you will create a class called **ParkingGarage**. The UML diagram below shows the class attributes and methods.

- The cars parked in the garage are stored in **Cars,** and the corresponding ParkingMeter are stored in **Meters.** Associated Parking Tickets are stored in **Tickets.** Note that a Parking Ticket object can be null object if the car is parked legally.
- **TOTAL_SPOTS** should be set as 'final' and set to 20. It indicates the total number of parking spots in the garage.
- **total_fine** is the amount of total fine from all the tickets issued by the patrolling officer **PO**.
- **totalIllegalCars** is the total number of cars which are parked illegally in the garage.
- **ParkingGarage():** First constructor should initialize the Objects in ParkingMeter[] Meters and ParkedCar[] Cars, ParkingTicket[] Tickets, and PO as null objects; total_fine should be 0, totalIllegalCars = 0.
- **ParkingGarage(ParkingMeter[] SetMeters,ParkedCar[] SetCars, PoliceOfficer P):** Second constructor should initialize the Objects in ParkingMeter[] Meters and ParkedCar[] Cars, and PO using the argument objects. Use deep copy instead of shallow copy. ParkingTicket[] Tickets, total_fine and totalIllegalCars should be computed using the method CalculateFine() as described below.
- **CalculateFine():** Within this method, the police officer inspects each car and corresponding parking meter and issues the associated parking ticket. Note that if the car is parked illegally, the ticket is a null object. This method also calculate total_fine and totalIllegalCars .
- Complete all set and get methods. Use deep copy instead of shallow copy.

- You can add methods to the ParkedCar, ParkingMeter, and PoliceOfficer Class if you need to.