Homework-2 / November 29, 2022

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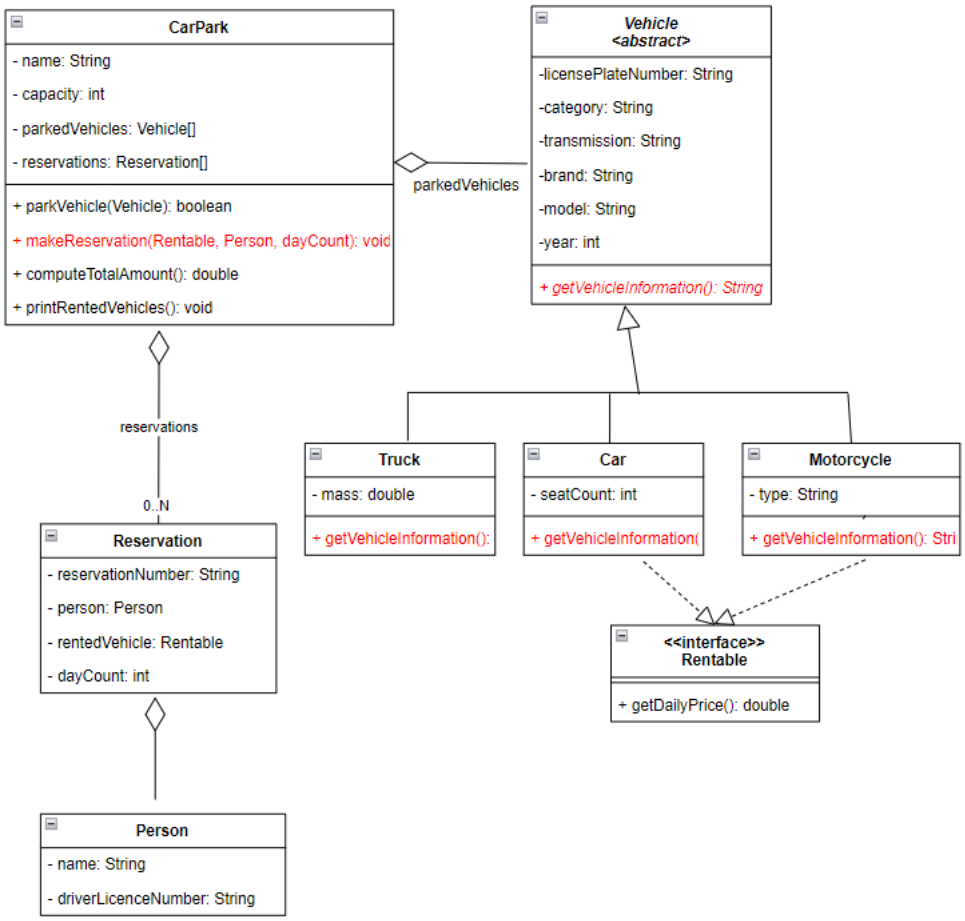
1. **The Deadline for this homework is Wednesday 7th of December 23:59:00.**
2. **Late submissions are not accepted.**
3. **Homework should be completed individually, copying the work of others is not permitted.**
4. **The penalty for teamwork or copying source code from others is -100.**

Homework Details:

1. A simple Car Rental/Park system's UML diagram is provided. Implement corresponding Java classes and interfaces.
2. Add all specified fields and methods in your classes. Apply encapsulation principles. Add getter/setter methods and all required contructors.
3. For one to Many relations, you can use array or ArrayList types.
4. Implement the following methods as defined:

Class	Method name	Implementation Details
CarPark	parkVehicle	params: Vehicle return: boolean (true/false) 1. Find the vehicle count in the *parkedVehicles* array(don't count empty elements) 2. If parked vehicle count < carPark's capacity then add Vehicle into the *parkedVehicles* array and return true otherwise don't add vehicle into the array and return false
CarPark	makeReservation	params: Rentable, Person, dayCount return: void 1. generate a random 8 digit reservation number 2. Create a reservation Object 3. Add newly created reservation object into the CarPark's *reservations* array
CarPark	computeTotalAmount	**params**: - **return**: double 1. Loop *reservations* array 2. Calculate *dailyPrice*dayCount* for each reservation. 3. Add previously calculated amount to totalAmount 4. Return totalAmount
CarPark	printRentedVehicles	**params**: - **return**: void create a loop for *reservation* array . print following reservation data on the screen: • reservation number • person name • day count • vehicle brand • vehicle model • seat count (if car) • type (if motorcycle)


CarPark
- name: String
- capacity: int
- parkedVehicles: Vehicle[]
- reservations: Reservation[]
+ parkVehicle(Vehicle): boolean
+ makeReservation(Rentable, Person, dayCount): void
+ computeTotalAmount(): double
+ printRentedVehicles(): void
parkedVehicles
Vehicle
<abstract>
-licensePlateNumber: String
-category: String
-transmission: String
-brand: String
-model: String
-year: int
+ getVehicleInformation(): String
reservations
0..N
Reservation
- reservationNumber: String
- person: Person
- rentedVehicle: Rentable
- dayCount: int
Person
- name: String
- driverLicenceNumber: String
Truck
- mass: double
+ getVehicleInformation():
Car
- seatCount: int
+ getVehicleInformation(
Motorcycle
- type: String
+ getVehicleInformation(): Stri
<<interface>>
Rentable
+ getDailyPrice(): double

SAMPLE TEST CODE

```
CarPark carPark = new CarPark("Star Park", 5);
Car car1
Car car2
Car car3
Car car4
Motorcycle motor1
Motorcycle motor2

Person person1=…
Person person2=…
Person person3=…

System.out.println("park status:"+carPark.parkVehicle(car1));
System.out.println("park status:"+carPark.parkVehicle(car2));
System.out.println("park status:"+carPark.parkVehicle(car3));
System.out.println("park status:"+carPark.parkVehicle(motor1));
System.out.println("park status:"+carPark.parkVehicle(motor2));
System.out.println("park status:"+carPark.parkVehicle(car4));


carPark.makeReservation(car1, person1, 5);
carPark.makeReservation(car2, person2, 10);
carPark.makeReservation(motor1, person3, 4);

System.out.println("Total Amount="+carPark.computeTotalAmount());
System.out.println("--------- RENTED VEHICLES ---------");
carPark.printRentedVehicles();
```

This part is hidden. Because you can initialize your objects in different ways.

I don't want you to use exactly my way

SAMPLE EXECUTION

Park capacity is 5, so that the last car could not be parked

```
park status:true
park status:true
park status:true
park status:true
park status:true
park status:false
Total Amount=3400.0
--------- RENTED VEHICLES ---------
Res:[64134399,5 days], Driver:[Esma Meral], Vehicle:[Honda, Civic, 5 seats]
Res:[30678985,10 days], Driver:[Sema Demir], Vehicle:[Honda, Jazz, 5 seats]
Res:[18240358,4 days], Driver:[Ahmet Karaca], Vehicle:[Honda, CBF 150,
Scooter]
```

Total amount:
200*5+200*10+4*100=3400
All cars and all motorcycles must use same daily price. İn my example I used 200 for cars, 100 for motorcycles.

CAR

#	License Plate Number	category	transmission	brand	model	year	Seat Count
1	34 EYY 62	Medium	Automatic	Honda	Civic	2020	5
2	34 H 6287	Small	Manuel	Honda	Jazz	2019	5
3	06 AB 87	Medium	Automatic	Toyota	Corolla	2021	5
4	16 CK 28	Large	Automatic	Peugeot	301	2022	5

MOTORCYCLE

#	**License Plate Number**	**category**	**transmission**	**brand**	**model**	**year**	**type**
1	34 KK 71	Standard	Manual	Honda	CBF 150	2018	Scooter
2	34 ABC 51	Adventure	Manual	BMW	R120GS ADV	2022	Motorcycle