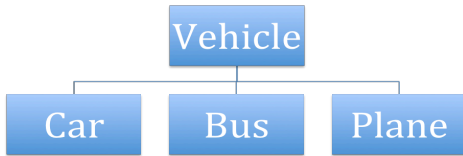


EXERCISE



PLATFORM

Java 8 JDK

Eclipse IDE

We are developing the online system of a tour agency. This agency has several transport vehicles: Car, bus and planes. Cars may be rent to 4 people (sharing economy); buses and planes could be taken a seat. All the vehicles have some seats with constant seating plan.

Below graphics show the seating plan and seat labels of the vehicles. Whenever a customer asks for a seat from any vehicle, we should check the special preconditions for it.

Car

1	2
3	4

Bus

1	2
3	4
5	6
7	8

Plane

1A	2A	3A	4A	5A
1B	2B	3B	4B	5B
1C	2C	3C	4C	5C
1D	2D	3D	4D	5D

Special preconditions:

Car: Customer must have a driving license.

Bus: Seats that next to each other must be allocated to the same gender. A single male and a single female cannot sit next to each other. (Some countries really have this rule ☺)

Technical Requirements:

- A base class named Vehicle must define all the possible methods and attributes. Subclasses may override them. Subclasses must be: Car, Bus, and Plane.
- Seating plans should be represented as a two-dimensional array. And it should be hidden from other classes. It should be accessed only by reserveSeat() and listSeats() method.
- We must not be able to reserve a seat without checking the preconditions.
- Each vehicle should have a method to list all the customers' name and their seat labels.

Objectives

- Design a super class with some methods and attributes.
- Create subclasses, override the methods and define attribute values.
- Use private and protected access modifiers to encapsulate critical data.

Activities

- Create customer class with these attributes: id, name, surname, isLicensed, gender.
 - Create a constructor with all the attributes above.
 - Create Vehicle class and its proper constructors to ease the creation process. Inside the vehicle class,
 - Define “seats” that is a multidimensional array of Customers. You will put Customer instances to proper indexes.
 - Define plate attribute of the vehicle.
 - Define destination attribute of the vehicle.
 - Define String reserveSeat(Customer c) method. It will take the customer and return the reserved seat number. It will return an empty string if no seat is available. This method should check the preconditions and reserve seats sequentially.
 - Define listSeats() method. This will return all the seats and the customer name-surname that was reserved for with the seat label: Example output for a bus: (2 is empty yet because Talha is a single male, and Marie is a single female).
- 1- Talha Ocakci

2- Empty

3- Marie Jane

...
- - Create Car, Plane and Bus classes. They all must override Vehicle class.
 - Override the attributes and methods to satisfy the seating plans in the problem definition.
 - Create a main class to create a one car, one plane and one bus. Create 5 different customers. Try to reserve a seat for all customers in the car, bus and plane.
 - List seats of all vehicles.

