

CSC8404 Coursework Report

1. Summary of Proposal

This coursework is based on the lectures that delivered on Advanced Programming in Java. The aim is to practice the design principles covered in lectures. The task is to develop classes, interfaces and tests to be used in development of a Car Rental application.

2. Class and Class Diagram

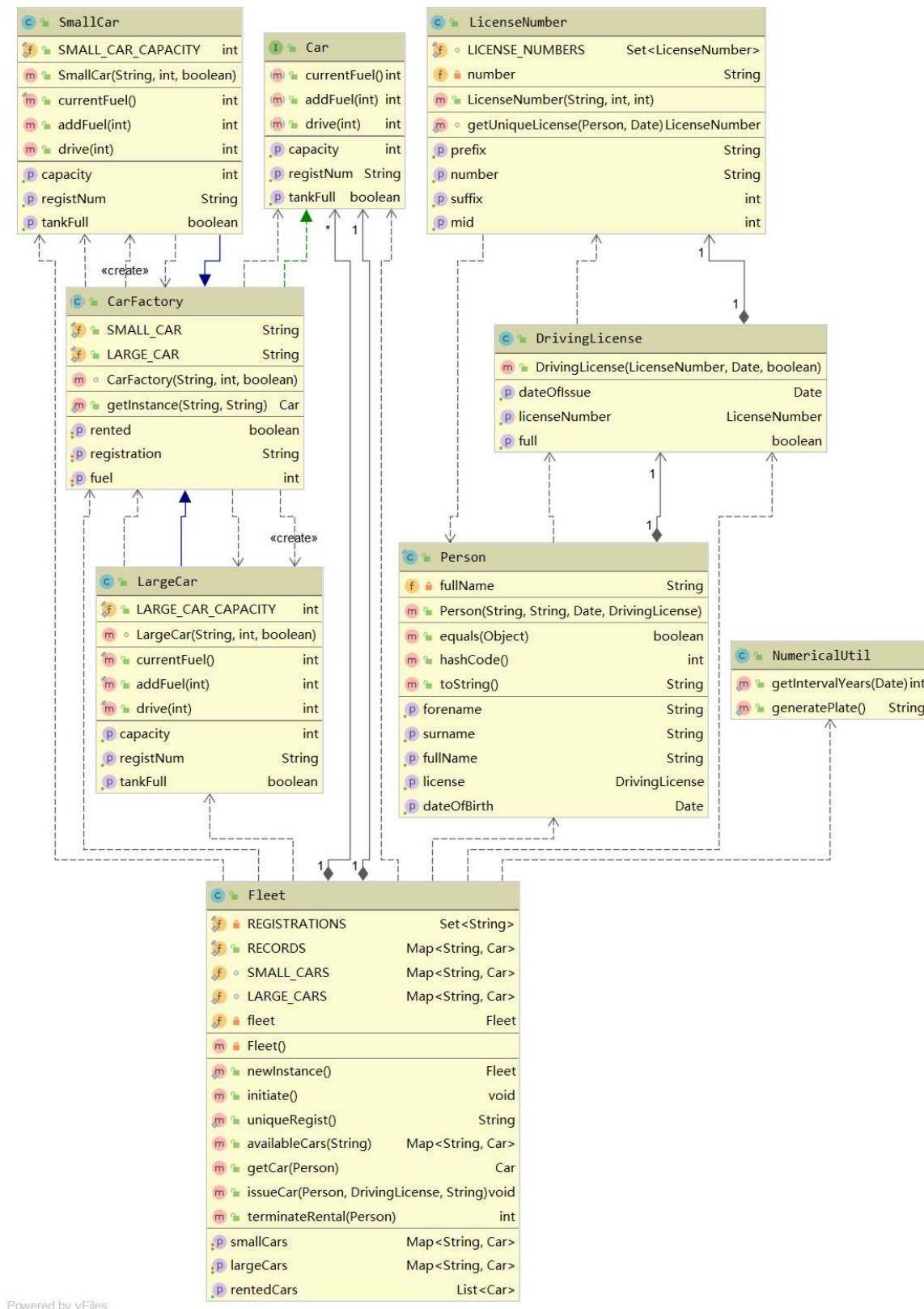


Image 1 : The class diagram of car rental system

Package Introduction

Package car contains all the Car-related interfaces and implementations as well as tests. Package fleet includes the Fleet class and related tests. Package license contains the Driving License and License number classes and tests. Package person contains the Person class and test.

Package util contains a tool class used by related classes.

Package Car

CarFactory is an abstract class that implements the Car class with a static factory method that distinguishes between different types of cars to instantiate different classes (including LargeCar and SmallCar).

The Car interface defines some methods that need to be implemented by LargeCar and SmallCar.

LargeCar and SmallCar both are the subclasses of the CarFactory. And they have their own implementations of the methods in the Car interface.

Package Fleet

Class Fleet provides all the car rental related functions, I use the Singleton pattern to ensure its uniqueness. We can call newInstance method to get an unique instance, and call the initiate method to get the LargeCar and SmallCar prepared in this instance.

Fleet provides all the car rental related functions, I use the Singleton mode to ensure its uniqueness.

Package License

Package license contains 2 classes, which are DrivingLicense and LicenseNumber. I use the LicenseNumber to generate a unique license number for each DrivingLicense instance.

Package Person

Class Person is in Package Person stands for the customers who wants to rent a car. It interacts with the DrivingLicense and Fleet closely.

Package Util

I also create an UmericalUtil to generate unique license numbers and car's registration numbers.