Rest Web Service with Spring boot

The goal of this lab work is to develop a small application for cars renting.

The functionalities to be implemented are:

- Get a list of unrented cars
- Rent a car
- Get back a car

Rest Web Service design (think before code)

Define JSon structures modeling a car to be rented and a list of car.

Define URI for a list of cars to be rented.

Accordingly to Restful architecture define the protocol (using HTTP request get, put, post and delete) for a car rental service.

Using Gradle for project creation

See the course about Gradle (creation of a Java web project).

Structure your application

Accordingly to Spring Boot application architecture, divide your code into four layers:

- Domain contains the data structure
- Service contains the application layer (applying treatments on data)
- Web contains the Web Service

Example to adapt:

```
com
  +- example
      +- myproject
          +- Application.java
          |
          +- domain
          |   +- Customer.java
          |   +- CustomerRepository.java
          |
          +- service
          |   +- CustomerService.java
          |
          +- web
              +- CustomerController.java
```

Spring boot coding

Write a class annotated with Controller implementing the car rental service.

Advice: use the following templates.

```java
@RequestMapping(value = "/cars", method = RequestMethod.GET)
@ResponseStatus(HttpStatus.OK)
@ResponseBody
public List<Car> listOfCars(){
}

@RequestMapping(value = "/cars/{plateNumber}", method = RequestMethod.GET)
@ResponseStatus(HttpStatus.OK)
@ResponseBody
public Car aCar(@PathVariable("plateNumber") String plateNumber) throws Exception{
}

@RequestMapping(value = "/cars/{plateNumber}", method = RequestMethod.DELETE)
@ResponseStatus(HttpStatus.OK)
public void getBack(@PathVariable("plateNumber") String plateNumber) throws Exception{
}

@RequestMapping(value = "/cars/{plateNumber}", method = RequestMethod.PUT)
@ResponseStatus(HttpStatus.OK)
public void rent(@PathVariable("plateNumber") String plateNumber) throws Exception{
}

@RequestMapping(value = "/voiture/{plateNumber}", method = RequestMethod.PUT)
@ResponseStatus(HttpStatus.OK)
public void rentAndGetBack(@PathVariable("plateNumber") String plateNumber,
@RequestParam(value="rent", required = true)boolean rent) throws Exception{
}
```

Test your application

Use a plugin for web browser like RestClient or Postman to test your application.

Code a front end application

Code a front office application for the Web Service in Javascript, or an application for Androïd, IoS…

Advices: instead of coding in pure Javascript, use a library like JQuery, Angular, React…