Parking Lot Project Specification

The purpose of this project is demonstrating the capability of OOP and Spring development.

1 Technology Stack

- Spring boot - maven

Create a Spring boot web project

- Swagger

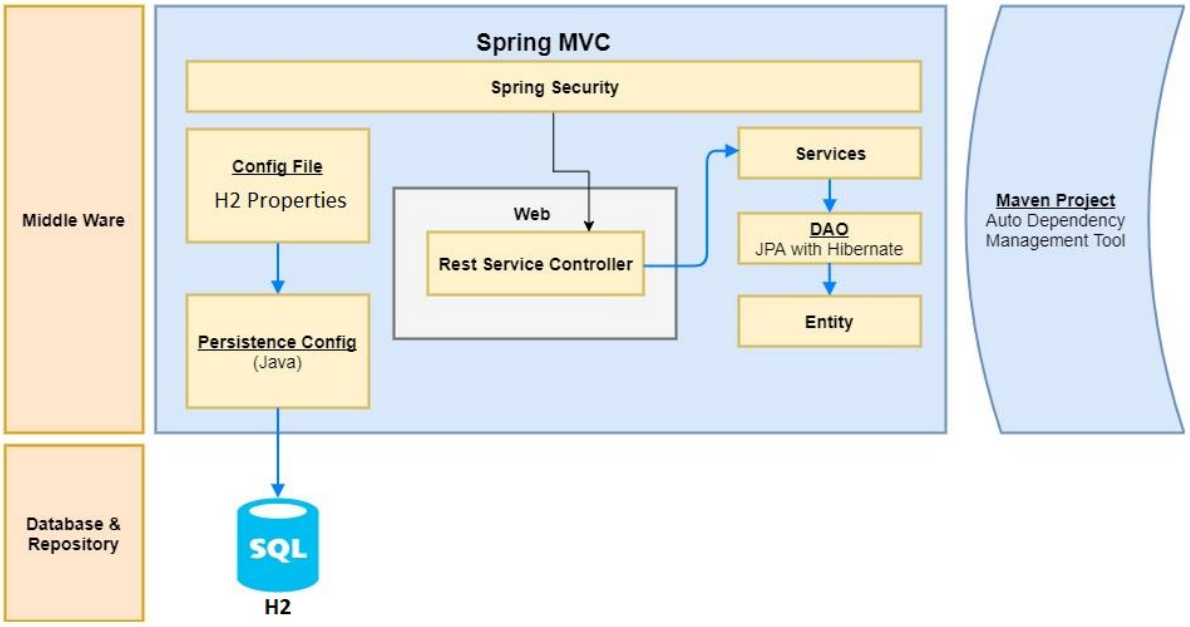
Define services on Swagger UI

- Lombok
- H2 – JPA

2 Project Definition

Parking Lot is a simple application for calculating parking fee for parked car. Parking Lot product supports the following functions.

Use spring framework to make necessary implementation.



2.1 Managing the parking areas

Parking lot solution supports multiple parking areas for different locations. New parking lot can be defined or existing parking lot can deleted or modified. Different price list can be assigned for each parking lot.

Working time of parking lots can be defined separately.

2.1.1 Entities

Entity will contain name, capacity, city attributes and price list. Price list will be one to many relation. Example price data;

Hour	Price
0-2	10TL
2-4	12TL
4-8	15TL
8-14	17TL
14-24	20TL

Each parking area can have different hour range and different price. A validation must check the hour data while parking area is created, 24 hour range should be completely defined. Use system wide exception handling.

2.1.2 Services

i. Create parking area
ii. Update parking area
iii. Delete parking area
iv. Get Parking area by name
v. Get daily income of a parking area

This service will take a date as parameter and sums all the calculated fee.

2.2 Manage Vehicles

Vehicle data will be stored in database. When a user checks in, vehicle data will be stored automatically.

There will be types of vehicle, which can be SEDAN, SUV and MINIVAN. According type of vehicle, fee will be calculated differently.

2.2.1 Entity

Vehicle entity will contain license plate and type.

2.2.2 Services

i. Get parking details of vehicle

Returns parking and fee history of vehicle

2.3 Check in/out (park)

System will keep record of the parking action. With the record system will calculate parking fee.

With check-out service system will calculate the fee and update the record of the parking. Fee calculation is about getting parking time and mapping the time with hour range of parking area.

2.3.1 Entity

Entity will contain check in date, check out date, vehicle id, parking area id and fee.

2.3.2 Services

i. Check-in

This service will create a record about check-in date, vehicle and parking area. If vehicle is not registered, system will create vehicle record. Parameters should be check-in date, vehicle, parking area id.

A validation need to be defined for available capacity of parking area. If capacity is full, system will throw an exception.

ii. Check-out

On check out service will calculate the parking fee and update parking record. Fee calculation will change according to vehicle type.

SEDAN	Defined fee for parking area
SUV	10% additional to SEDAN
MINIVAN	15% additional to SEDAN

3 Break Points

1. Use interface for services and **polymorphism** for vehicle types.
2. **Separate** service classes according to vehicle types.
3. Insert proper comments and loggers.
4. There should not be any issue on Sonarlint (please use the sonarlint plugin for your preferred IDE).
5. Relations and cascade types should be defined.
6. Use system wide exception handling layer.
7. Use validators for validation.
8. Unit tests for service classes.