Fuel Quota Management System Task

User Requirement:

I have to build a fuel quota management system for the general public in order to manage a fuel crisis in the country.

Any Vehicle owner should be able to register on the platform via an online portal by providing the vehicle details. The system should validate the vehicle details by connecting to the Database of the Department of Motor Traffic. If the provided information is correct, it should generate a QR code which is unique to the particular vehicle.

The fuel station owners should be able to register themselves by accessing an online portal built especially for fuel station owners.

An employee-only web portal should be available for the administrators to monitor and perform operational tasks related to fuel distribution tracking and fuel station registrations.

An Android mobile app should be implemented for the fuel station operators in order to scan the QR codes of the vehicles and see the available balance fuel quota. Once the fuel pumping is finished for a vehicle, the fuel station operator should enter the pumped amount of liters into the mobile app. Upon entering the pumped amount of liters, the vehicle owner should receive an SMS with the details. The well-known SMS gateway called “Twilio” can be used for SMS sending.

Assume that you have decided to build a separate backend Rest API application and separate front-end applications for each portal.

Minimum requirement to implement:

- Vehicle registration online portal.
- Validation of the vehicle registration details by connecting them to the Department of Motor Traffic database. Use a mock database as the Department of Motor Traffic database.
- Android app to scan the QR code and check the available balance fuel quota for fuel station operators.

- Sending notifications to the end user each time fuel pumping happens. You can use Twilio to send SMS messages. Or if you are having difficulty with Twilio use Mailgun to send emails instead.

Other than the above-mentioned features you can build any other specified requirement in the above system as you want.

Technologies to use:

- Use any language or framework to develop the backend REST API. (Java/Spring boot preferred)
- Use any database technology as you wish. (Try to use JPA to access database)
- Use any framework to develop the single page applications as you wish. Ex: React, Vue, Angular
- The authentication should be handled by using JWT tokens. You can use the Spring Security library for this.

Additional:

- All the work should be committed to a git repository regularly. Use one single git repository to push all the code.
- All the commits should be merged to the master/main branch at the end or specific milestone.
- Marks will be given to the completeness of the functionalities, Code quality, maintainability, and extensibility.