TQS: Product specification report

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1 Introduction

1.1 Overview of the project

Our Deliveries Engine is supposed to be a common platform so that any delivery store can use it. Its purpose is to calculate the dynamic matchmaking of orders and riders, manage the riders' reputation, among other statistics.
T-Tracker is our specific store implementation, that is a delivery service for Covid-19 tests. The idea is to have users request a covid test and receive it in their homes. The T-Tracker will consume the Deliveries Engine API to get the rider's information of each order.
In the scope of TQS, the project has the objective to implement multiple types of tests, as well as CI/CD pipelines to make sure that a strong SQE practice is used.

1.2 Limitations

One of the unimplemented features is the live tracking with a map in the user's side. We only have the option to check the status of the delivery, but we would like to have a map with the live location of the rider.

We also intended to have performance tests on our system, and we would definitely implement that with more time.
Also, because we only have HTTP connections in the Virtual Machine, the browser blocks all the connections without HTTPS. Because of that, the maps showing the positions of the rider, costumer and store only shows in localhost.

2 Product concept

2.1 Vision statement

(Business Initiative)
This system aims to improve people's quality of life by providing a platform where they can request a driver to deliver a covid test and, after using the test, its delivery to an analysis laboratory. By using our app, users won't have to personally travel to the laboratory in order to do quick tests, that way they won't subject themselves to potentially infected individuals. Users will be able to set their pickup and delivery address (home address), they will also be able to schedule deliveries and rate how the experience was.

(Deliveries Engine)
Riders will be able to register themselves into our system and, at any time, set their status as available or unavailable. Riders will be automatically selected based on their current location and global rating (reputation). This rating will be calculated based on previous job's ratings made by clients.
Due to it being a platform with the potential to have multiple business partnerships, riders will have the ability to be assigned to jobs from various businesses making it easier for them to get assignments.
System administrators will also be able to access statistics such as number of assignments or riders with the best ratings.

2.2 Personas

Admin:

Joana Marques

Job Title
Deliveries Engine's Admin

Age
32

Highest Level of Education
Master's Degree in Software E

Objectives

Joana is the responsable for the deliveries engine service. She wants to expand her business, increasing the number of stores that uses it.

Stories

- As an Administrator I want to see the global statistics of the system.
- As an Administrator, I want to manage the stores that use our system.

Rider:

Pedro Mimoso

Job Title
Rider

Age
21

Highest Level of Education
12th grade

Objectives

Pedro wants to finish his studies, therefore, he started working as a part-time rider at the deliveries engine.

Stories

- As a rider, I want to registry in the system so that I can get delivery requests
- As a rider, I want to share my location so that I get selected for deliveries/ pickups close to my location
- As a rider, I want to set my status as inactive so that the system doesn't select me for deliveries/ pickups
- As a rider, I want to set my status as active so that I get selected for deliveries/ pickups

Owner:

Julia Monteiro

Job Title
t-tracker's owner

Age
43

Highest Level of Education
Bachelor's Degree in Marketin

Objectives

Julia wants to use the deliveries engine to be able to deliver COVID 19 tests to the population that lives nearby.

Stories

- As the owner of a store, I want to register my store on the platform

User:

Rui Fernandes

Job Title
Baker at a local store

Age
37

Highest Level of Education
12th grade

Objectives

Rui wants to test himself and his family to check if there's any sign of COVID 19, without having to leave his home.

Stories

- As a customer, I want to register on the t-tracker's website so that I can order COVID tests
- As a customer, I want to set my home address so that it gets automatically set when I schedule a delivery/pickup
- As a customer, I want to schedule a test delivery so that it gets delivered to my home
- As a customer, I want to schedule a test pickup so that it gets delivered directly to the analysis lab
- As a customer, I want to set the delivery/ pickup time so that the driver arrives while I'm home and available
- As a user, I want to place an order
- As a user, I want to track my order
- As a customer, I want to rate my driver so that I can express how my experience was

2.3 Main scenarios

These are the main scenarios:

- **Joana Marques checks the global statistics of her system**

Joana, as an **admin**, wants to see the global performance of her system's riders. She **logs in** and evaluates the global statistics of the system

- **Pedro Mimoso sets his status as active and receives an order request**

Pedro Mimoso, as a **rider** for the Deliveries Engine service, has some free time today and wants to make some money. Because he is already registered as a rider in the system, he only needs to set himself as active. He **logs in**, goes to his **profile page** and sets his **status as active**. With this, he is available to be selected to deliver an order. After some minutes, he **receives a request** from the system and **accepts it**. After this, he gets the **store and client's location** so that he can **pick up the order** on the store and **deliver** it to the client.

- **Julia Monteiro registers her store in the Deliveries Engine service**

Julia Monteiro, as an owner of the t-tracker store, wants to i**mprove her store's capability** and implement a delivery at home system. Yet she can't afford hiring a software company to produce the system that she wants. Therefore, she wants to find a service that she can use to **manage the pickups** so that she only needs to worry about adapting the store's website to use it. Thus, she **registers** her store in the Deliveries Engine service so that she can use their services to manage the riders and pickups for her.

- **Rui Fernandes sets his location and places an order**

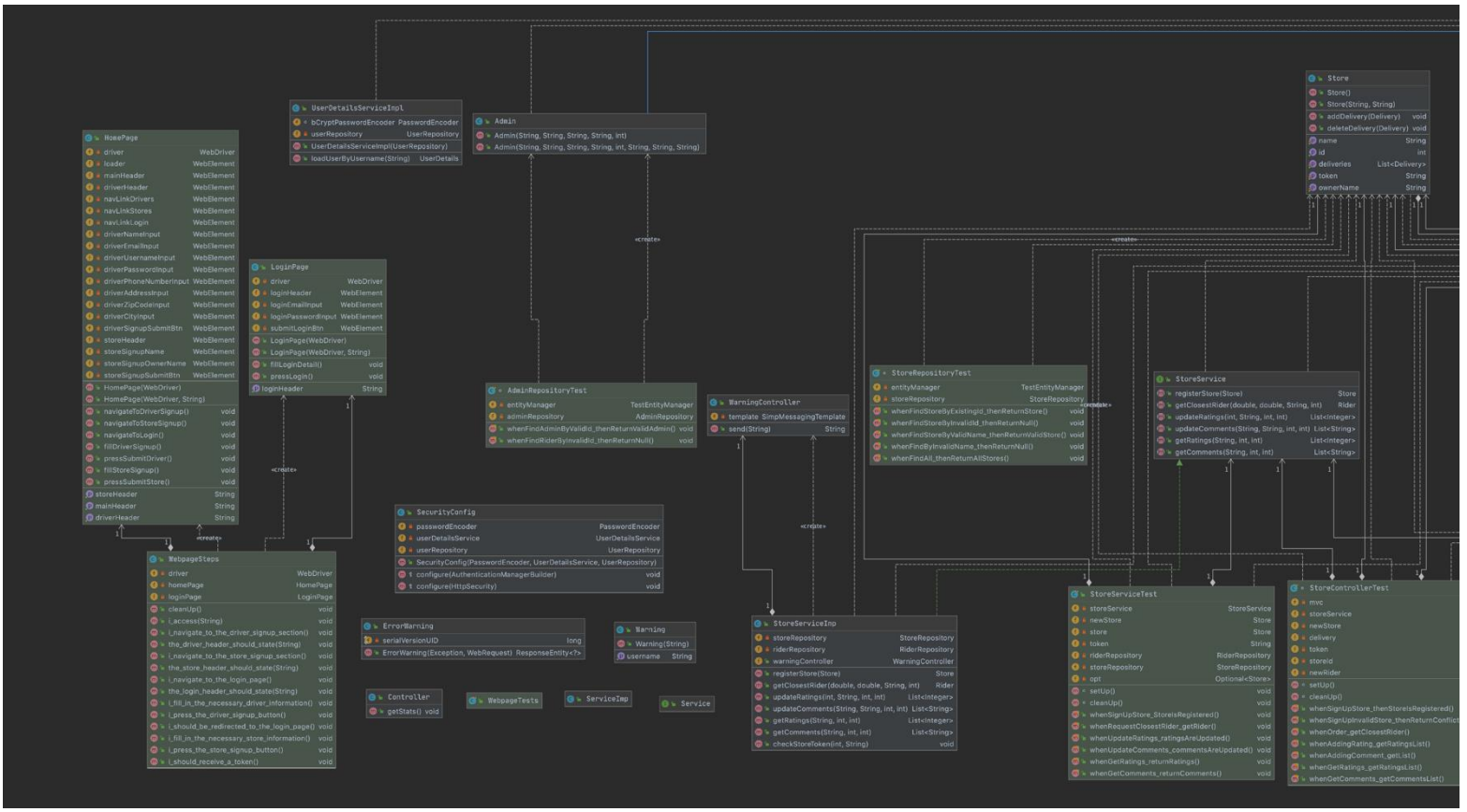
Rui Fernandes, as a general user of the t-tracker application, wants to receive a COVID test at **home** for him and his family so that he doesn't need to travel to the store. Therefore, he **registers** in the t-tracker application, goes to his **profile**, **sets his location and places the order**. Then, he has a live view of the rider so he can **track** is order.

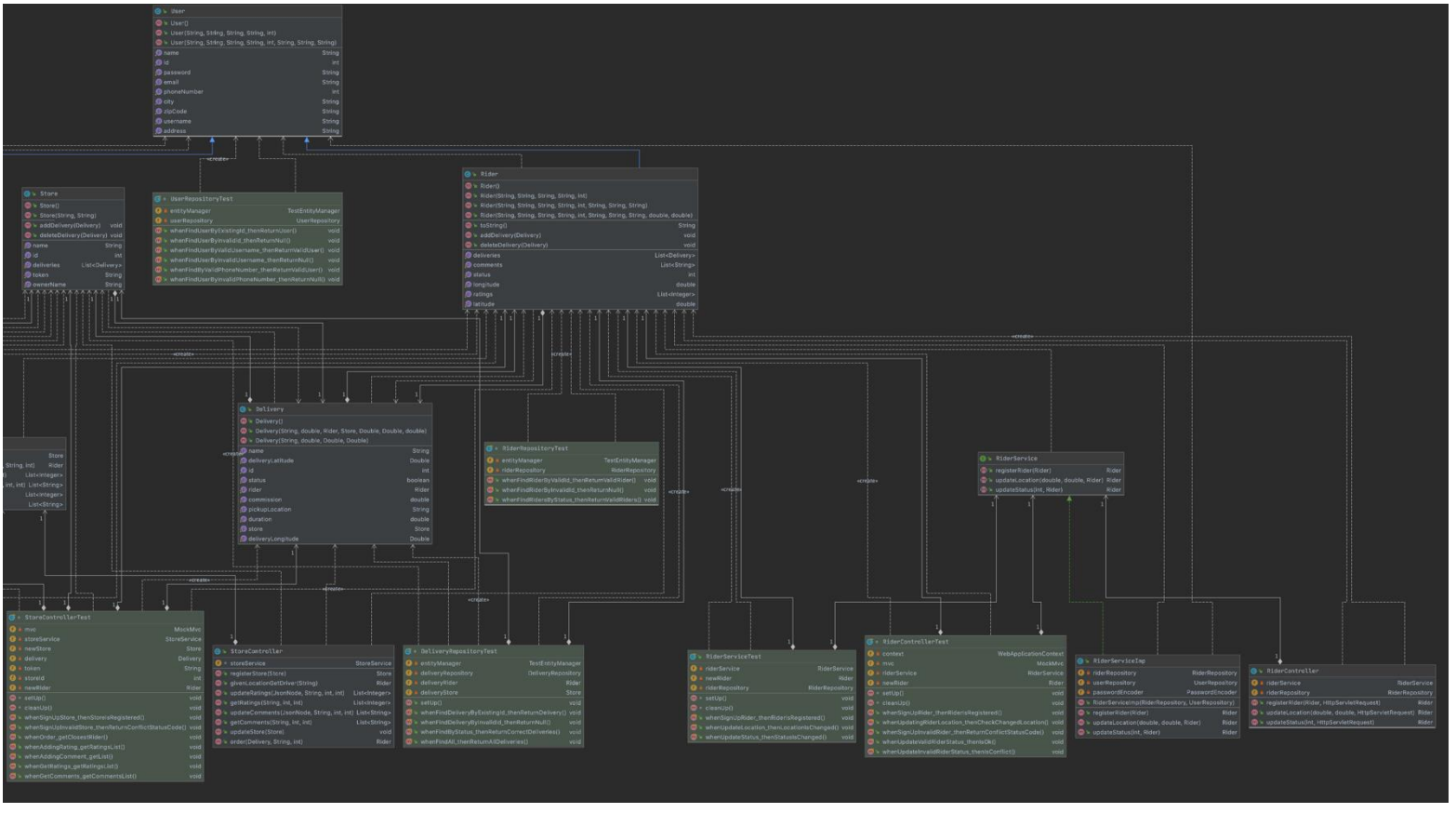
2.4 Project epics and priorities

Sprint	Epic
1	• Riders' registry; • Deliveries Engine's basic global statistics.
2	• Each order's rider being automatically assigned; • User placing an order on t-tracker.
3	• User placing a pickup order for the COVID tests to the lab; • User being able to track his orders, and rating the riders' service.

3 Domain model

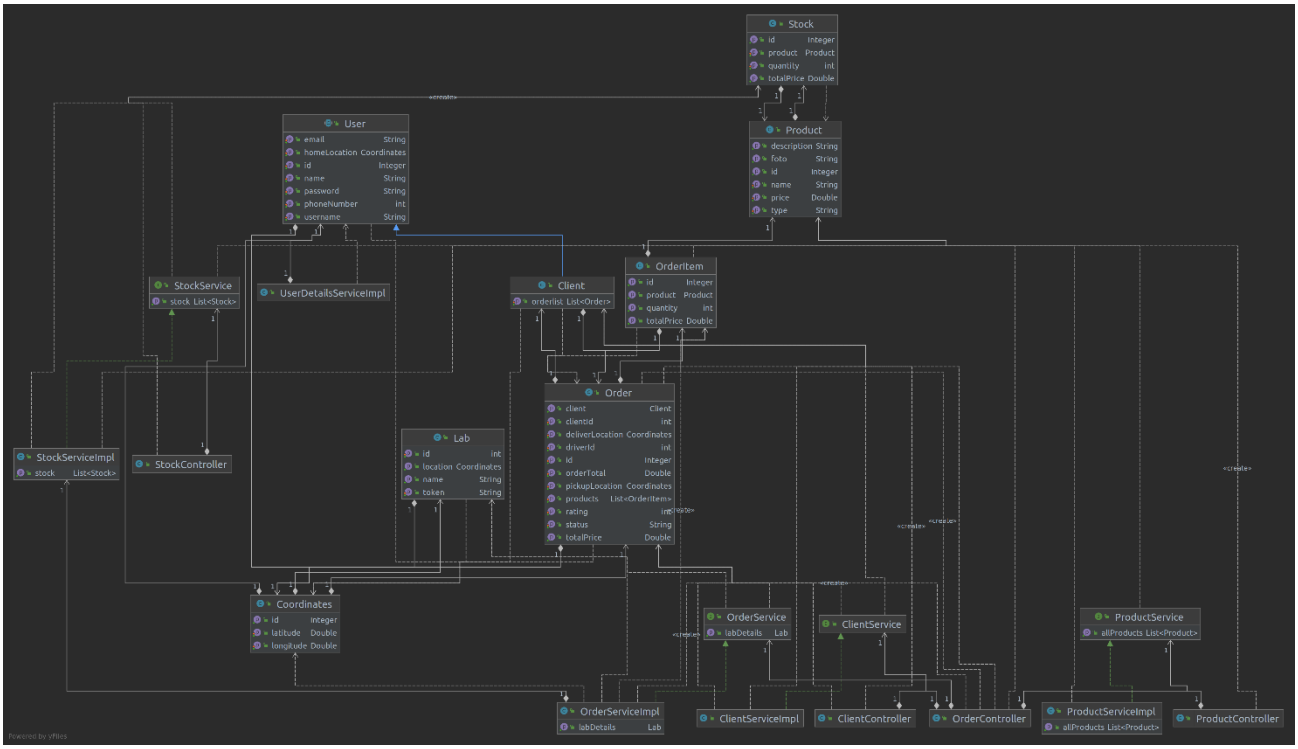
Deliveries-Engine:





Because the full diagram is too long, we had to remove some configuration and repository classes. Basically, the 3 main entities are the Rider, the Store, and the Delivery. We have 2 main controllers, one for the rider's side and the other for the store's side. The services implement methods that are called from the controllers.

T-Tracker:



Models

Name	Attributes	Description
User	Name, Username, Email, Password, Phone Number, Home Location	Entity used to store user's relevant information regarding authentication and other personal details.
Client	User Attributes, Order List	Extends User entity, represents the application's clients.
Coordinates	Latitude, Longitude	Represents a location.
Lab	Id, Token, Name, Location	Stores authentication details for accessing the deliveries API.
Product	Name, Price, Type, Description, Foto	Represents a product sold by the store.
OrderItem	Product, Quantity	Represents an item from an order placed by a client.
Stock	Product, Quantity	Represents the stock of an item on the store.
Order	Client Id, Pickup Location, Delivery Location, Order Total, Driver Id, Products, Status, Rating	Represents an order, includes information about client, rider, products bought and status/ rating.

Services

For our store's implementation we required 4 specific services, a Client Service, used to manage and retrieve information regarding registered clients and new clients. Includes methods to register new clients, retrieve a client's order history and retrieve a client information by their username. The order service's main methods are used to place new orders, update the status of an order (pending, delivering or delivered), get an order's details by its id and rate an order (from 0 to 10). The product service is used to manage the store's products and includes methods to register new products and retrieve all or specific product's information. The Stock service is used to manage the store's stock, stock can be added or removed based on the available products, if stock with a non-registered product is added, the product is automatically created.

Controllers

The 4 controllers developed are used to register and authenticate new clients, as well as retrieve information regarding their orders, place new orders and update their status/ rating, and manage both products and stock.
The controllers use the services mentioned above to process all requests.

4 Architecture notebook

4.1 Key requirements and constrains

Our system will be developed from scratch. We'll develop a robust system, that is able to have multiple services (stores) attached to it.

Our goal is to have two main modules: a deliveries engine, that can be used by any external store, and a specific implementation of a store – t-tracker.

Inside each module, we will have a web app, a business logic module, and a database.

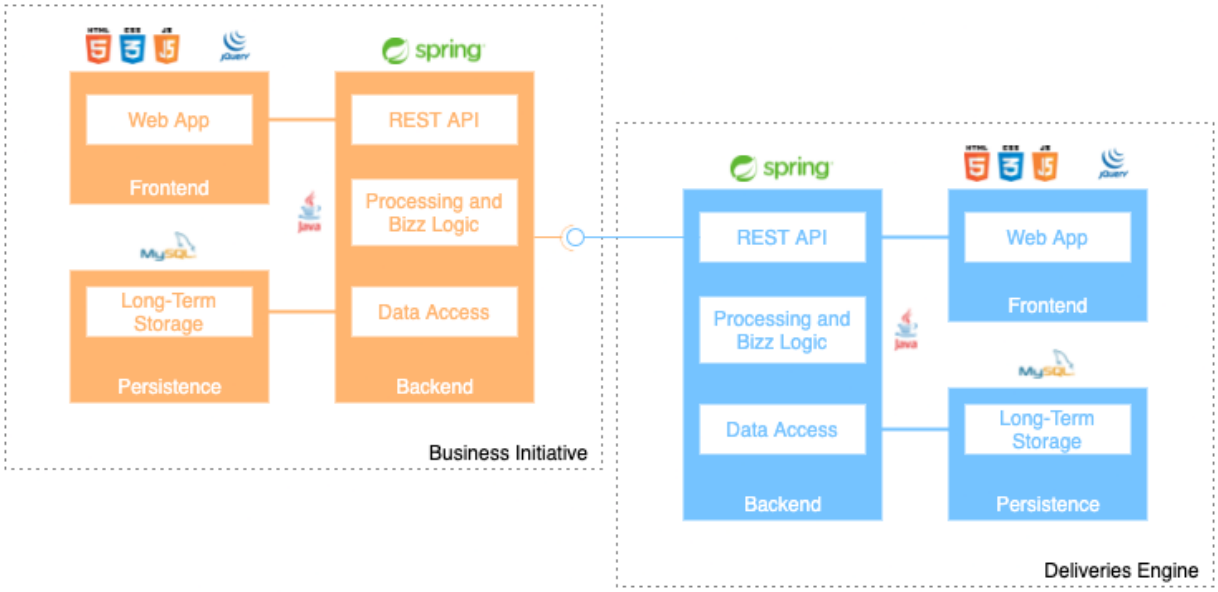
We also expect to implement a mobile app, in case we manage to have all the previous requirements implemented on time.

All the communications between the web apps and the business logic will be through HTTP requests to an API.

The communication between each specific store and the deliveries engine will also be through an API.

Each service will be dockerized, and the entire system will be deployed on a virtual machine.

4.2 Architetural view

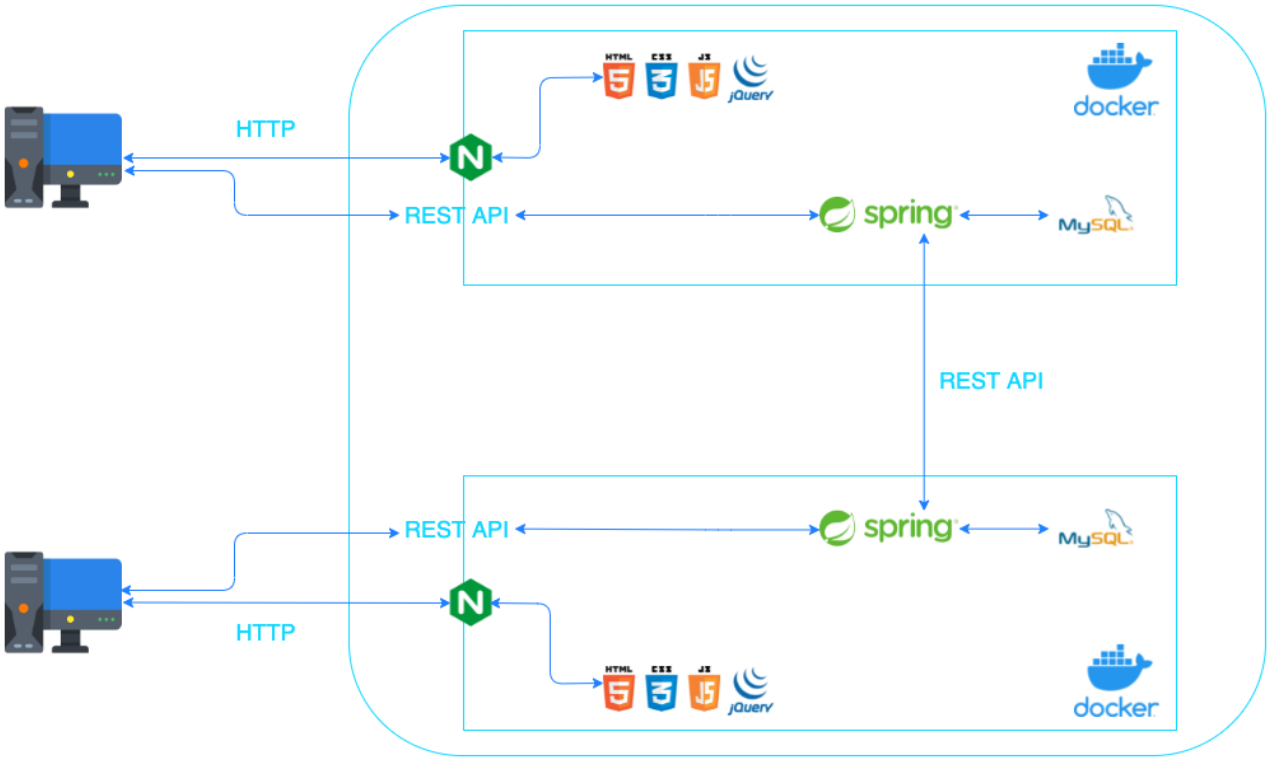


Basically, there is one project for each system. In one hand, we have the deliveries-engine application, with spring boot, HTML + CSS + JS and MySQL. This part is intended to manage the riders, i.e., any store can use it to get riders available to deliver their products. It is completely independent from the stores. On the other hand, we also have an application with the same technologies used, called T-Tracker. This application is our implementation of a specific store, a COVID-19 test delivery system. This application will consume the deliveries-engine REST API to get riders for their deliveries.

All the information is consumed through the API, except when a order is placed on the T-Tracker's side. When this happens, a POST method is sent to the deliveries-engine and then it uses a Web Socket to warn the rider that he as a new delivery to make.

4.3 Deployment architecture

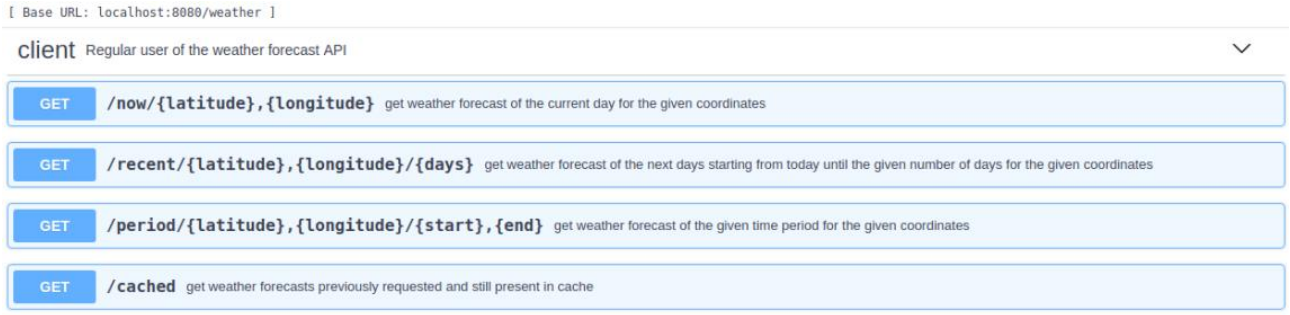
We have two docker-compose files, one for each application. As It was said before, the T-tracker



consumes the engine REST API. The client receives his frontend pages through the NGINX and then makes the requests through the REST API.

5 API for developers

[Explicar a organização da API. Os detalhes detalhes/documentação dos métodos devem ficar numa solução *hosted* de documentação de APIs, como o Swagger, ou https://apiary.io/]
<what services/resources can a developer obtain from your REST-API?>
<document the support endpoints>



6 References and resources

<document the key components (e.g.: libraries, web services) or key references (e.g.: blog post) used that were really helpful and certainly would help other students pursuing a similar work>