

Distributed Systems project specification

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Chapter 1

Description

The project aims to be a webapp for a public transit company, its possible users being the employees of the company or the customers of the company. It serves as a platform to see the route of the lines of transit put in circulation by the company, aswell as a shop platform for buying tickets or passes.

1.1 Functional requirements

The application differentiates three user types: regular users, verified users and admins (or power users), differentiated by the `isAdmin` field in the *user* table in the database, which is 0 for verified users and 1 for admins. Regular users refer to the users which do not have an account, and only use the publicly available part of the app. The verified and power users need an email address and a password to log in.

- Regular users can see data about the bus lines and the prices of the tickets and the passes.
- Beside the regular users' functionalities, verified users can buy tickets or passes for their accounts. During purchase, the users will have a "shopping cart". We can think of these tickets as single rides on any line and the passes as unlimited rides for a certain amount of time (ex. a month after purchase). This information is stored in the users' accounts. Additionally, when a purchased pass nears its expiration date, an email can be sent to the user's email address notifying him/her of this fact.
- Power users can access the CRUD functionalities on any table from the database.

1.2 Non-functional requirements

- The application will be written using the Java programming language.
- The backend will use ORM and the Spring framework for building a RESTful app.
- For the frontend part, Angular JS pages will be used, which use the REST services of the backend.
- The application will be layered, being split into the data access layer, the business layer and the presentation layer.
- The data will be stored in a MySQL database containing tables for users, purchasable items, users' items and buses' routes.

Chapter 2

Use-cases

2.1 Viewing a bus line's route

- Actor: Any user
- Scenario:
 - The user clicks on the *lines* button
 - The user clicks on the button which has the wanted line's number

2.2 Purchasing items

- Actor: Verified user
- Scenario:
 - The user logs into a verified user account
 - The user clicks on the *topup* button
 - The user selects the item he wants to purchase and adds it to his cart
 - The user clicks on the *cart* button
 - The user clicks the *checkout* button