UPskill

Princípios de Desenvolvimento de Software – Project Assignment

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1 Preamble

This document presents a (simulated) context in which *Dream House*, an English company that has a network of real estate agencies, intends to explore and validate an application to manage the business (lease or sale) of properties. To this end, the company decided to start the development of a new software product (prototype) in collaboration with the students of the UPskill program. Thus, the software product described hereinafter is, on the one hand, adapted to promote:

1. The consolidation and acquisition of new competencies related to software development, by students.
2. The practice and internalization of the recommended working method and presented best practices, which are commonly used in the software industry.

2 Intended Software Product

Dream House is a company from the United States of America that has a network of real estate agencies and wants an application to manage the business (lease and sale) of properties. The software application should be conceived having in mind that it can be further commercialized to other companies besides *Dream House*.

2.1 Business Context

Dream House needs an application that allows clients who visit its stores/agencies to access properties available for lease or sale, as well as for company employees to carry out a set of operations related to the real estate business. These operations include publishing rental and sale advertisements, scheduling visits to the property and registering business (lease or sale).

From time to time, property owners contact *Dream House* with the aim of selling or renting their properties. Owners go to one of the company's branches and meet with a real estate agent to sell or rent one or more properties. A company branch is characterized by a code, a designation, an address and opening/closing times. Owners can also use the company's application for the same purpose, choosing, if they want, the agent they prefer to promote the property, or letting the system assign one automatically.

The owner must provide information about the type of property (apartment, house or land), the area (in square meters), the location, the distance from the city center, the requested price and one or more photographs. If the property is an apartment or a house, the owner must also provide the number of bedrooms, the number of bathrooms, the number of parking spaces and the available equipment, such as central heating and/or air conditioning. If the property is a house, the existence of a basement or habitable attic, as well as sun exposure must also be recorded.

Upon receiving a new request, the real estate agent defines the commission and publishes the offer in the system, so that it is visible to all clients who visit the agency or use the app. The commission can be a fixed amount or a percentage of the requested price.

All registered information, except the commission, can be accessed by the client who intends to buy or rent the property. The client must be registered in the system. For that, he/she must provide the name, the citizen's card number, the tax identification number (TIF), the email address and the contact telephone number. Additionally, an internal code is automatically assigned.

To make searches easier, clients must be able to consult the properties by type of business (lease or sale), type of property (apartment, house or land) or number of rooms, and sort by criteria such as price or location.

To check the conditions of a particular property, clients can ask the real estate agency to schedule a visit, indicating preferred date(s) – day and time. The property promoting agent receives the request, checks availability and registers the visit scheduling in the system. At that moment, the system automatically sends an SMS to the client with the date/time of the visit.

When a client decides to buy/rent a property, he/she sends a purchase/lease request to the agent. After being appreciated, the agent accepts or rejects the request. If the request is accepted, the advertisement will no longer be shown to clients using the app.

The set of stores/agencies is managed by a store network manager. He is responsible for registering the network's branches and their agents (specifying the name, the citizen's card number, the email address, the contact telephone number and the agency to which the agent is assigned).

2.2 Envisioned Application

It is envisioned that the general information management will be made by multiple dedicated User Interfaces (UI), such as:

1. A Web Application targeted to the *Dream House* staff.
2. A mobile application targeted to the clients.

By this moment, the focus is not on developing such UI but on the development of the core applications. As that, for demo purposes a basic UI console application suffices. Likewise, although all persons using the system must be authenticated in advance, for now, the authentication process can be simulated/mocked.

The system should start up in less than 10 seconds and whenever the system fails, there should be no data loss. At certain times of the day, it is expected that the system will be overloaded. To avoid potential problems, the system must be prepared so that the response time is at maximum of 5 seconds regardless of the existing load.

Overall system availability must be higher than 99% per year. It is also important that the system is prepared to easily support data persistence on multiple target systems as, for instance, relational databases, NoSQL databases or in memory databases.

All project artifacts (including code) must be developed in English. Adoption of automatic regression tests, using the Google Testing Framework, is also strongly recommended/valued.

2.3 Project Requirements

It is intended to develop a prototype that provides the following functionalities (User Stories):

US10 - As Network Manager, I want to register a new store.

AC10-1: The store code must be unique and have five alphanumeric characters.

AC10-2: Opening and closing times should be entered in the format hh:mm.

US11 - As Network Manager, I want to register a new agent.

AC11-1: The Administrator should choose the store where the agent works (or will work) from a list of existing stores.

AC11-2: Providing the Citizen Card Number is optional.

US12 - As Network Manager, I want to get a list of all agents.

AC12-1: The agents should be grouped by store and then listed alphabetically by name.

US13 - As Network Manager, I want to list all deals made.

AC13-1: The deals made should be listed store by store, and the total revenue per store must be displayed, separated by type of business (sales and rentals).

US20 - As Unregistered User, I want to display listed properties.

US21 - As Unregistered User, I want to register a new client.

AC21-1: The Citizen Card Number and the phone number must be unique for each client.

AC21-2: The Internal Code is a numeric code that starts at 1 and is generated sequentially.

US30 - As Client, I want to request to list a property for sale or rent.

AC30-1: The client should start by choosing the type of property to list (apartment, house or land).

AC30-2: Providing distance from the city center is optional.

US31 - As Client, I want to request a visit booking.

AC31-1: Day and time should be entered in the format dd-mm-yyyy and hh:mm, respectively.

AC31-2: A maximum of 3 preferred dates must be accepted.

US32 - As Client, I want to place an order to property purchase/lease.

US40 - As Agent, I want to publish a sale or rent advertisement.

AC40-1: The agent should choose the advertisement from a list of unpublished property listings assigned to him.

US41 - As Agent, I want to reply to a visit booking request.

AC41-1: The agent should choose the visit booking request from a list of unanswered requests assigned to him.

US42 - As Agent, I want to evaluate a property purchase/lease order.

AC42-1: The agent should choose the property purchase/lease order from a list of orders assigned to him and that have not yet been evaluated.

When developing the system, the following requirements must also be considered:

- The application must be developed in Java language using the IntelliJ IDE, preferably.
- Recognized coding conventions and standards (e.g. CamelCase) should be adopted.
- Best practices regarding, for instance, requirements management, business analysis and software design must be adopted.
- All project artifacts (including code) must be developed in English.
- The application must be provided with a user manual.
- For readability purposes it is mandatory that all images are in SVG format.

Finally, It is highly recommended that the working environment follows a repository/project structure similar to the one presented in the Base/template Project.