Assignent 3 - Landmarks

GitLab Repository: https://gitlab.com/bicocca_projects/2023_assignment3_landmarks

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Project

This project focuses on developing the backend of a social application for saving points of interest (*landmarks*) around the world. Each user can save points of interest which include the coordinates (latitude, longitude, altitude), a name, and the description relating to that point. A user can also "follow" other users, in order to see (via an hypothetical frontend which can be a web app or a mobile app) the points of interest that they save at any time. Users are divided into Basic and VIP. Basic users have a limit of 10 landmarks saves, while VIPs have unlimited saves.

At the implementation level, JPA and Hibernate was used to manage synchronization and mapping with the PostgreSQL database, while the Spark framework was used to manage the API endpoints, which allows fast and functional management of the endpoints and their handlers.

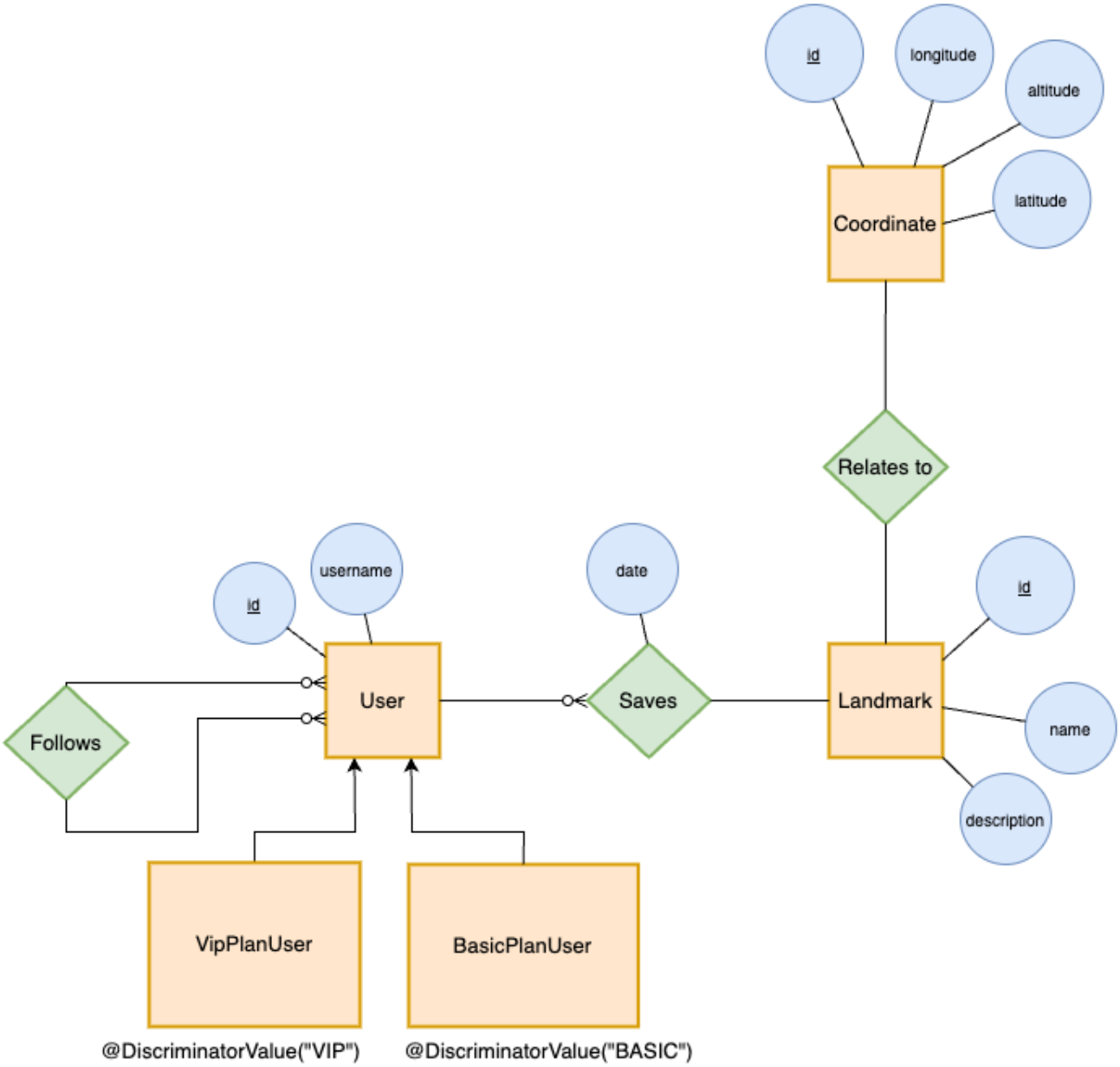
ER Diagram

We have these entities:

- User
- BasicPlanUser
- VipPlanUser
- Landmark
- Coordinate

and three relations:

- "follows": Many-to-Many, self-loop on User entity;
- "relates to": One-to-One, between Landmark and Coordinate;
- "saves": One-to-Many, between User and Landmark.



Project Structure

The application source code is structured in the following packages:

- **controller**: Controllers handle incoming HTTP requests, process them, and provide an appropriate response. They act as an intermediary between the client (hypotetical user interface) and the application's business logic;
- **model**: Models represent the application's data and business logic. They encapsulate the structure of data entities and provide methods for interacting with the data;
- **service**: Services contain the business logic of the application. They act as an intermediary between controllers and repositories, handling complex operations, and providing a higher-level API;
- **repository**: Repositories are responsible for data access and database interactions. They provide methods for querying, saving, and deleting entities;

- **util**: Utility classes contain common functionalities that can be reused across the application. The main class in this folder is `PersistenceManager`, which manages the lifecycle of `EntityManagerFactory` and provides methods for initializing, obtaining, and closing it.
- **exception**: Exception classes used around the project.

By adhering to the MVC pattern, the project's structure encourages separation of concerns, making the codebase modular, maintainable, and scalable.