HBnB Project – Comprehensive Technical Documentation

Ryota et Simon

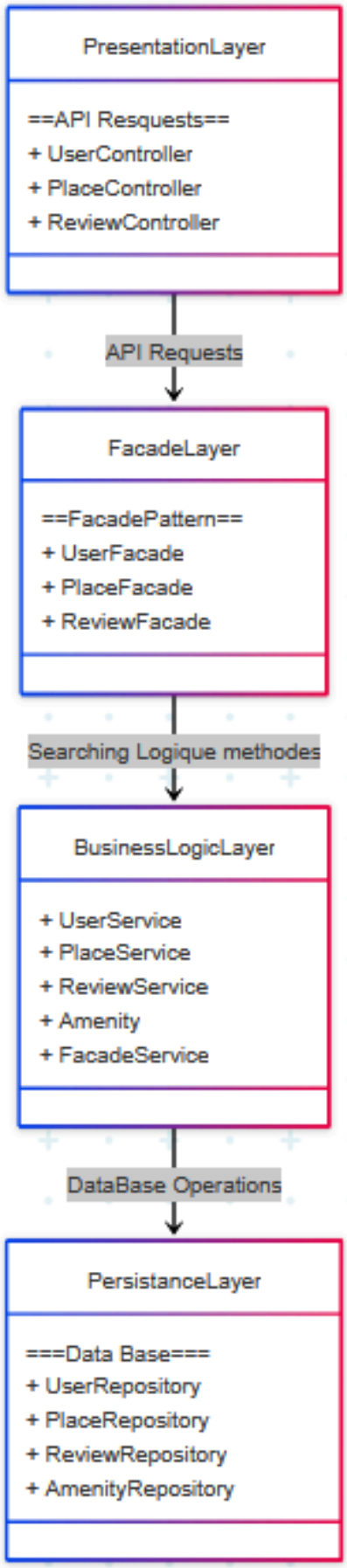
1. Introduction

This technical document serves as a detailed blueprint for the HBnB project, designed as a property rental platform. The objective is to provide a clear, structured, and professional guide for implementation. This document compiles all architectural and design diagrams—including the high-level architecture, the business logic class diagram, and API interaction flows—with accompanying explanations. It will be used as a reference throughout the project's development lifecycle.

2. High-Level Architecture

The following diagram illustrates the high-level layered architecture of the HBnB project, leveraging the Facade Pattern to simplify the interactions between layers.

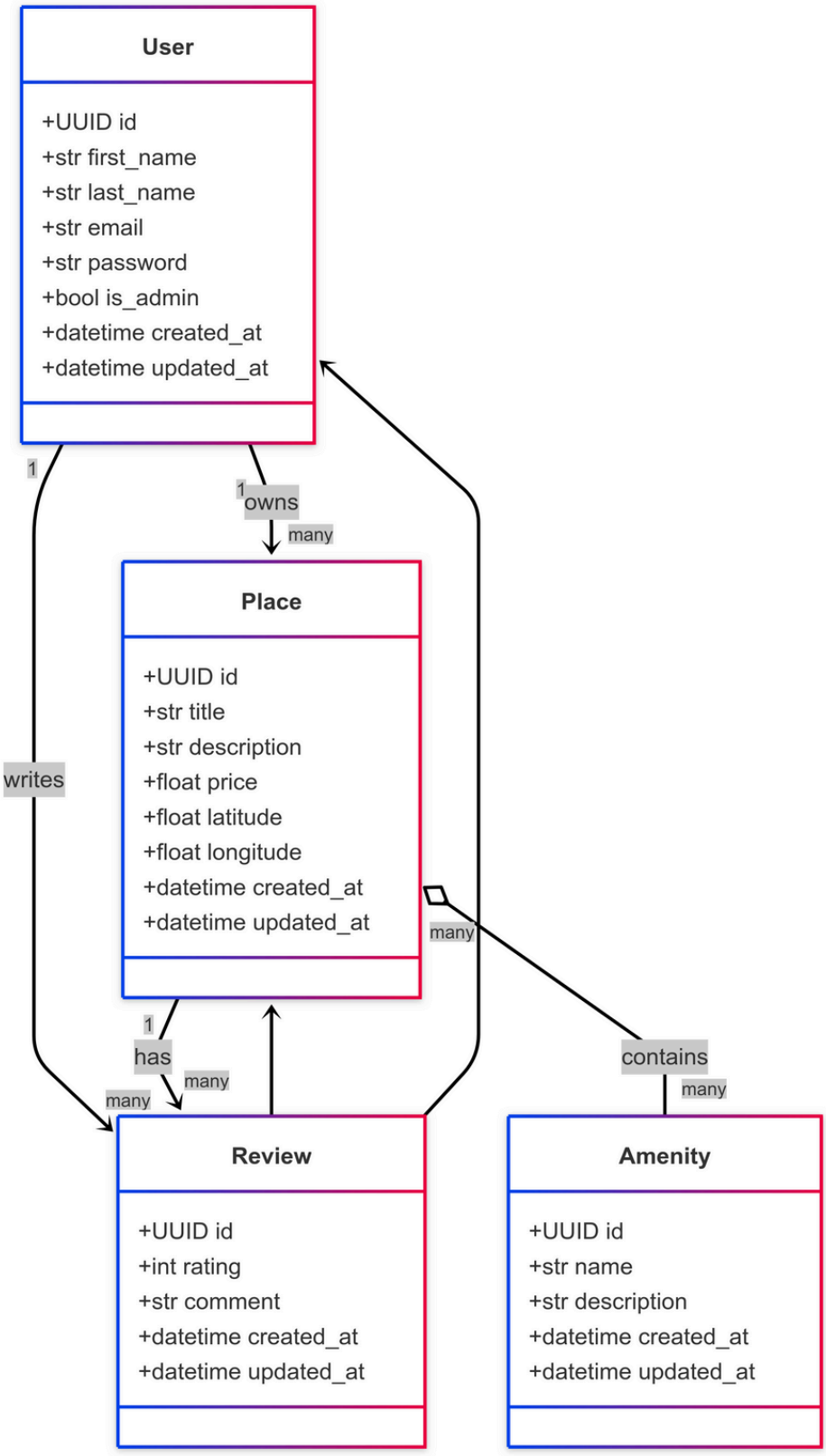
The architecture follows a clean separation of concerns:
- The Presentation Layer contains the API controllers for User, Place, and Review.
- The Facade Layer simplifies interactions by exposing high-level interfaces.
- The Business Logic Layer manages all application logic.
- The Persistence Layer encapsulates direct database operations.
This layered approach ensures molecularity and maintainability.



3. Business Logic Layer

This diagram details the class structure for the Business Logic Layer, showing key entities and their relationships.

Entities include:
- User: Manages user credentials and roles.
- Place: Describes properties listed by users.
- Review: Stores user reviews for each place.
- Amenity: Lists amenities associated with places.
The diagram illustrates relationships such as 'User owns Place', 'Place has Reviews', and 'Place contains Amenities'.

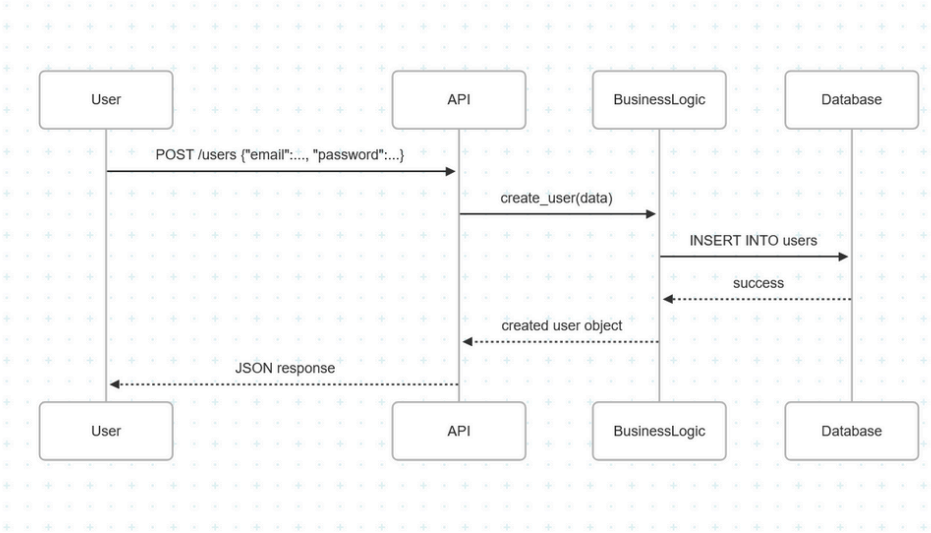


4. API Interaction Flow

This section presents sequence diagrams for typical API interactions in the system.

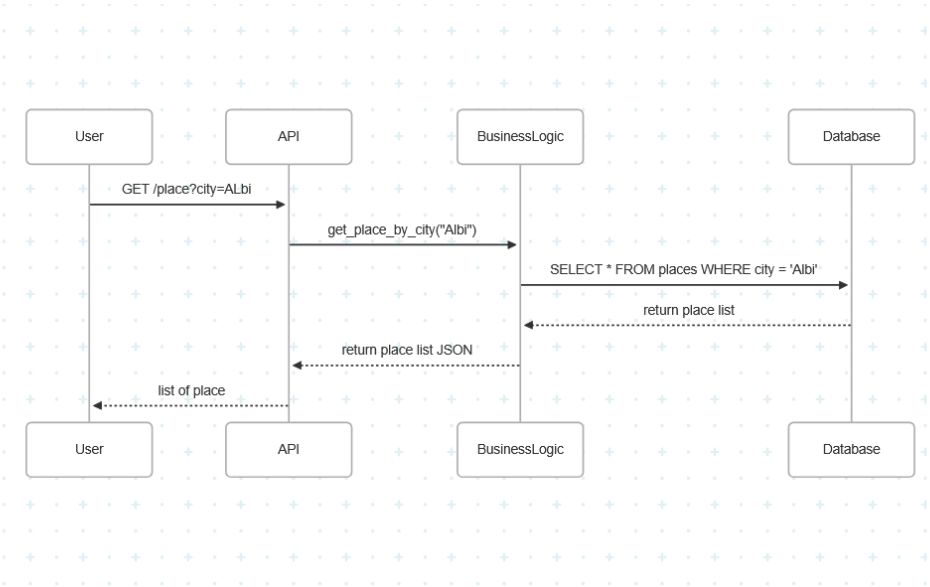
4.1 Create User

The UserController receives a POST request to create a user. The Facade Layer calls the relevant service to insert the new user into the database, and a JSON response confirms creation.



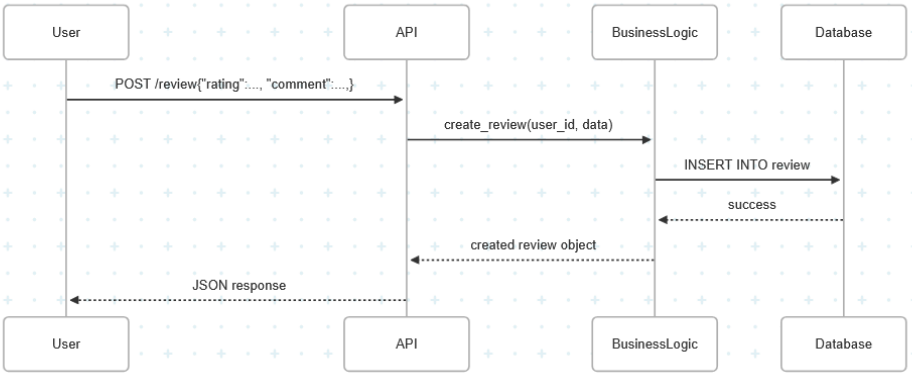
4.2 Create Place

A POST request `/places` is used to create a new place. The request is handled similarly via the API to Facade to Business Logic and then inserted into the database.



4.3 Create Review

A POST request `/review` with rating and comment data is handled by the ReviewController. The business logic layer processes the request and inserts the data into the review table in the database. A confirmation JSON is returned.



4.4 Retrieve Places by City

A GET request /place?city=Albi is sent to retrieve places by city. The API calls the Facade Layer, which queries the Business Logic and retrieves data from the database. The response is returned as a JSON list of places.