HBnB Technical Documentation

Holberton Coding School HBnB - UML

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Introduction

Purpose of the Document

This document serves as a **technical blueprint** for the HBnB project, compiling **architectural diagrams, business logic structures, and API interaction flows**. It provides a **comprehensive reference** for developers, ensuring clarity and consistency throughout the implementation process. By detailing the system's design, this document helps maintain **scalability, maintainability, and modularity**, enabling smooth development and future enhancements.

Overview

HBnB is an **innovative rental platform** designed to connect **hosts and guests**, allowing users to **register, list properties, submit reviews, and search for places** based on various criteria such as location, price, and amenities. The system follows a **layered architecture**, separating the **presentation, business logic, and persistence layers** to ensure modularity and maintainability.

To enhance efficiency and **simplify API interactions**, HBnB employs the **Facade Pattern**, which acts as a centralized interface for handling core business operations. This approach ensures that **complex operations are abstracted**, reducing dependencies and improving system flexibility. The architecture is designed to support **scalability**, making it easy to integrate additional features such as booking management, payment processing, and enhanced search functionalities in the future.

This document outlines the **fundamental design principles, system components, and data flow mechanisms** that define HBnB, providing a **structured guide** for development, testing, and deployment.

High-Level Architecture

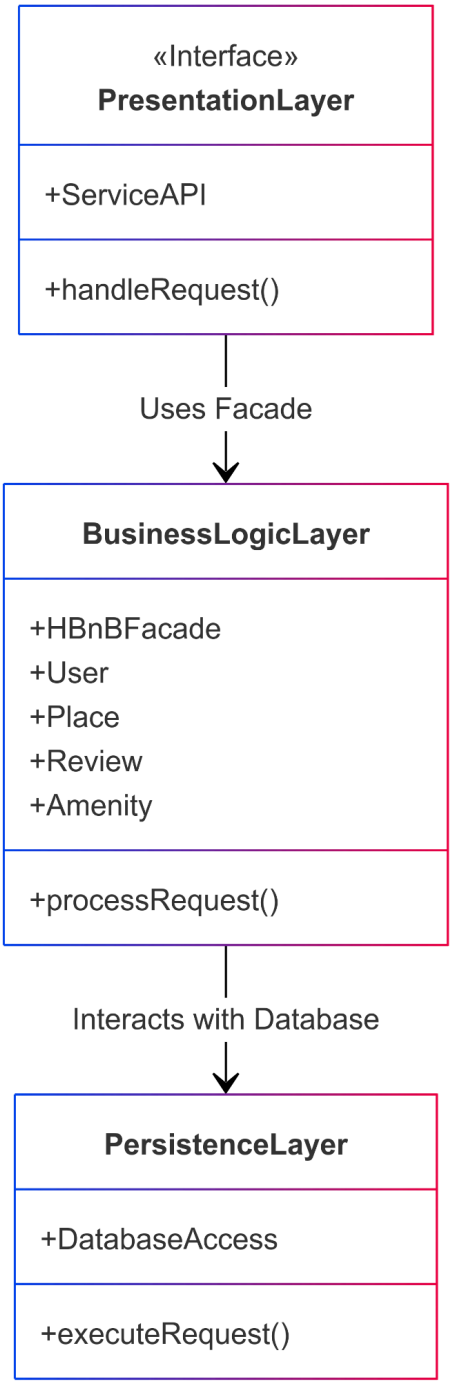
Package Diagram

Layered Architecture & Facade Pattern

HBnB consists of three main layers:

1. **Presentation Layer** - Handles API requests and responses.
2. **Business Logic Layer** - Manages core functionalities.
3. **Persistence Layer** - Interfaces with the database.

Diagram:



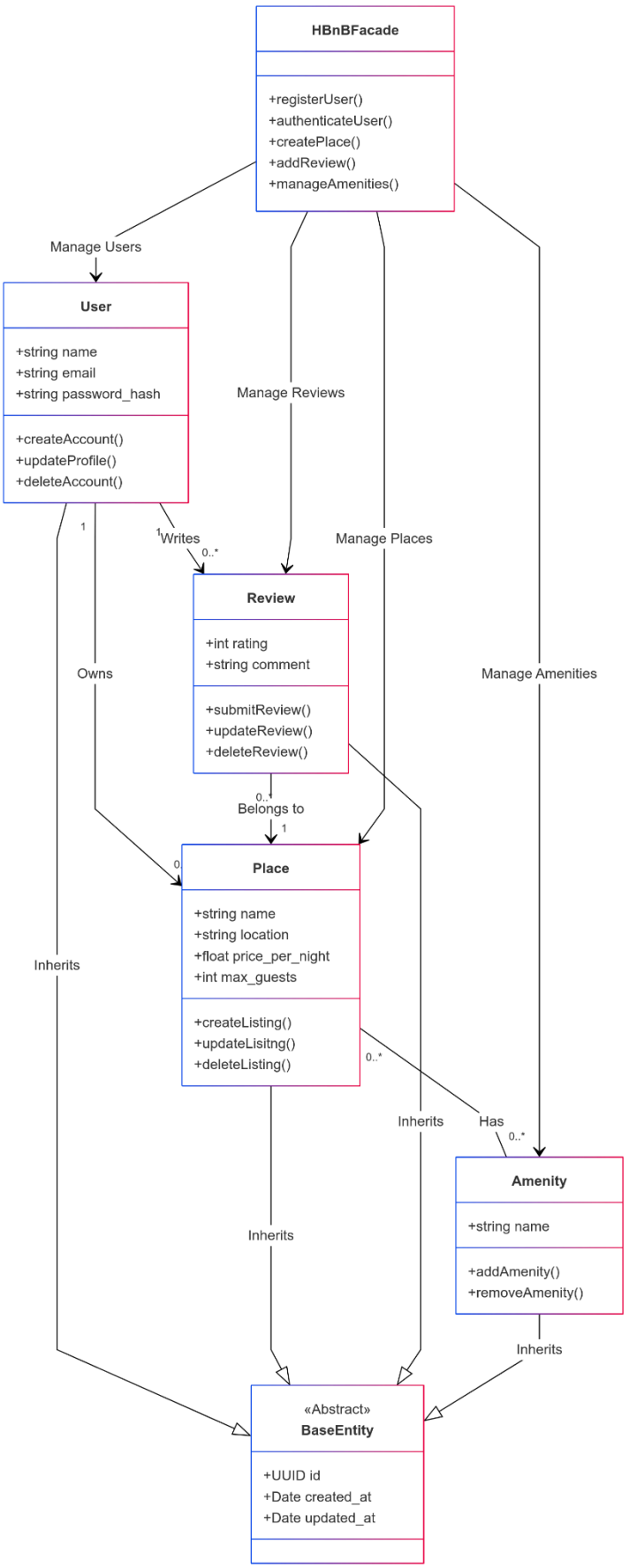
Explanation

- **Presentation Layer** provides API endpoints.
- **Business Logic Layer** encapsulates core functions in **HBnBFacade**.
- **Persistence Layer** ensures **database communication**.

Business Logic Layer (Fits in Two Pages)

Detailed Class Diagram

Diagram:



Explanation

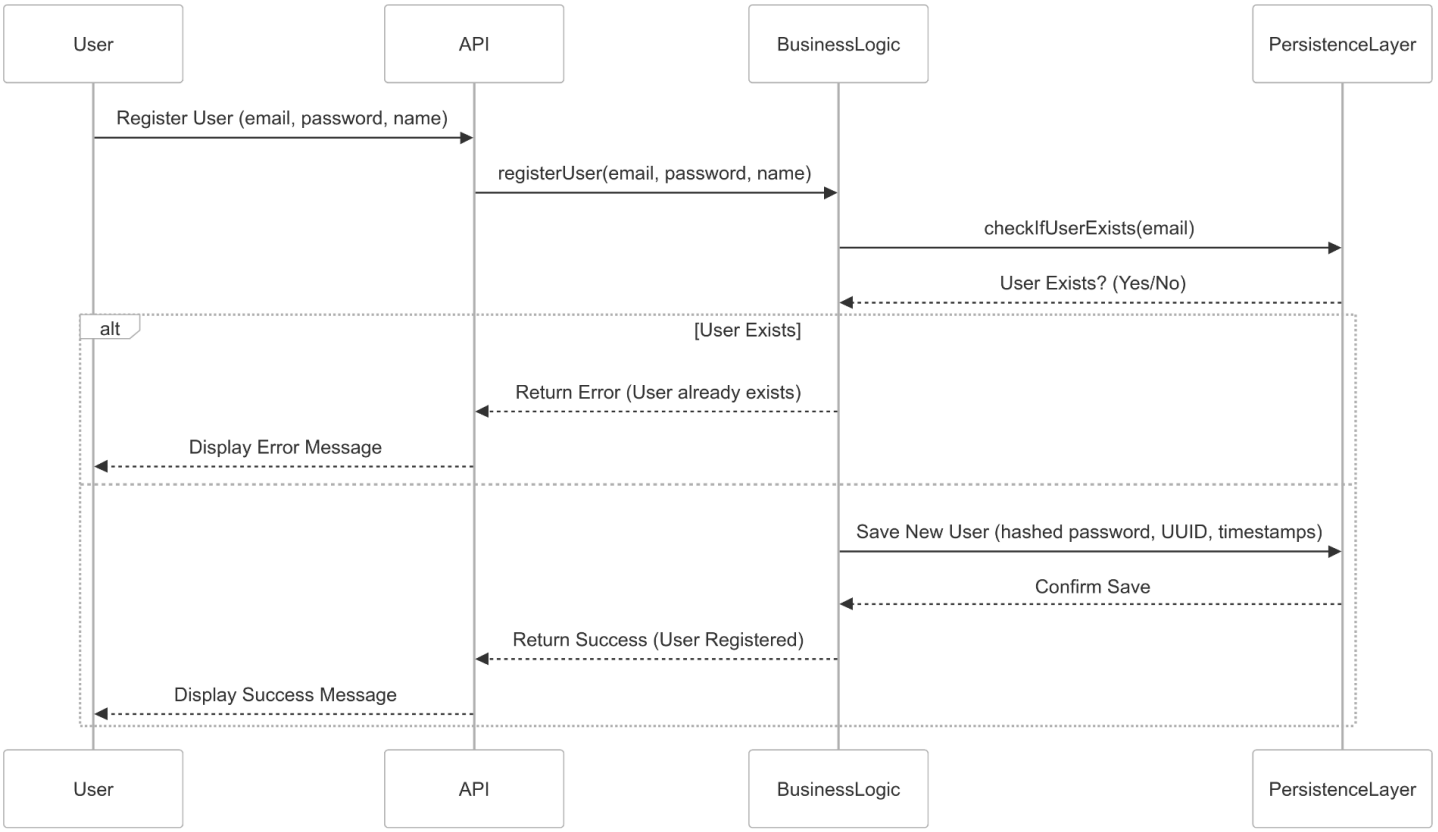
- `User`: Handles authentication and profile management.
- `Place`: Represents user-created property listings.
- `Review`: Stores feedback for places.
- `Amenity`: Defines property features.
- `HBnBFacade`: Manages all interactions between components.

API Interaction Flow (Fits in Two Pages)

Sequence Diagrams

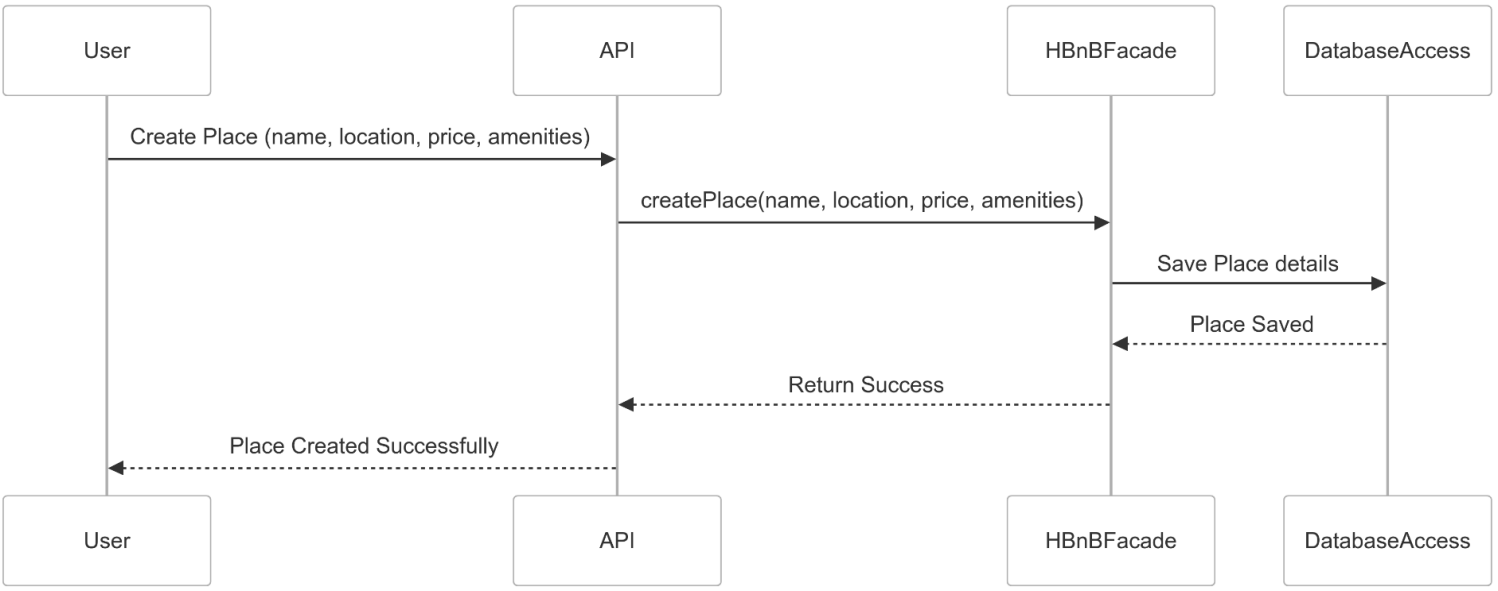
1. User Registration

Diagram:



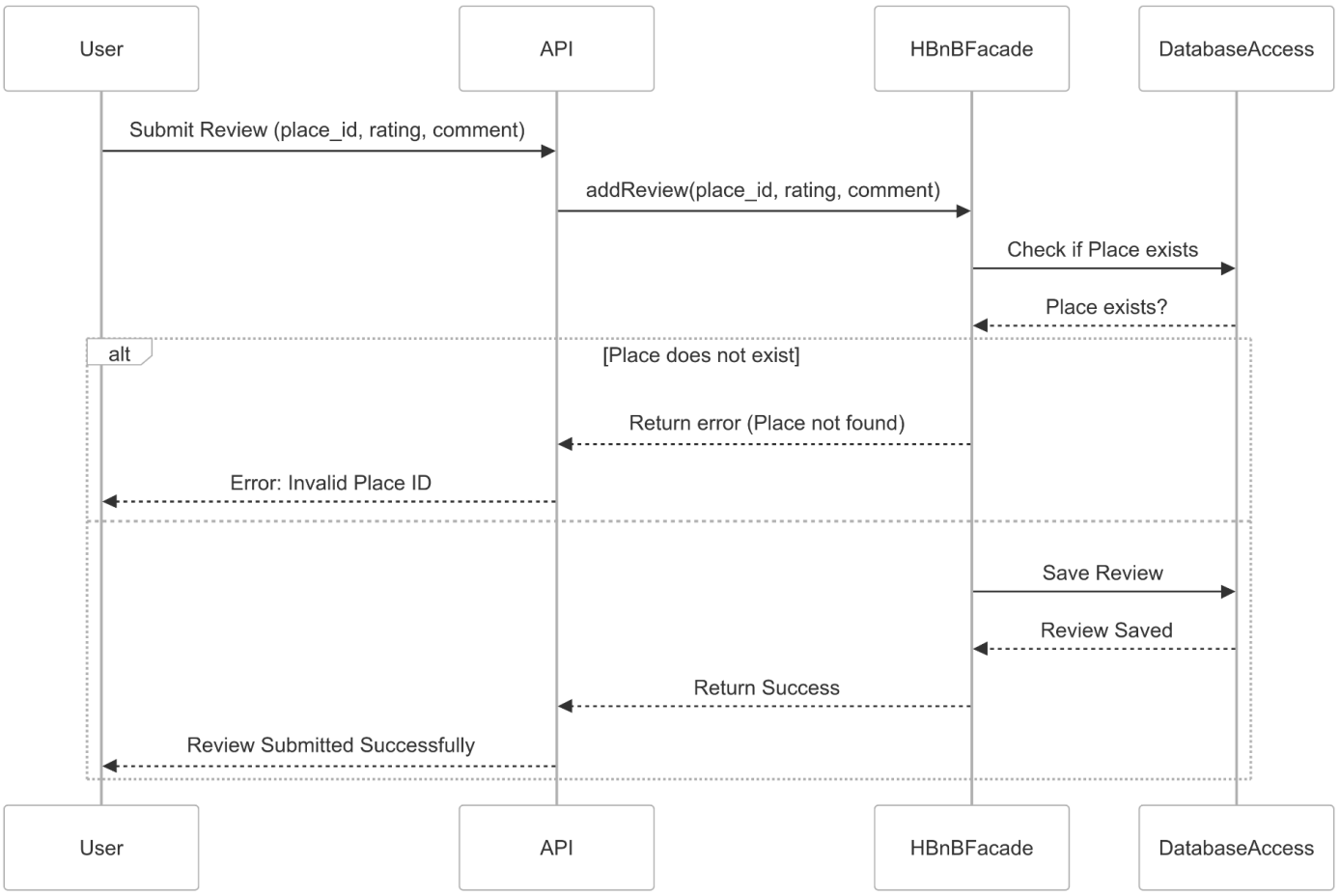
2. Place Creation

Diagram:



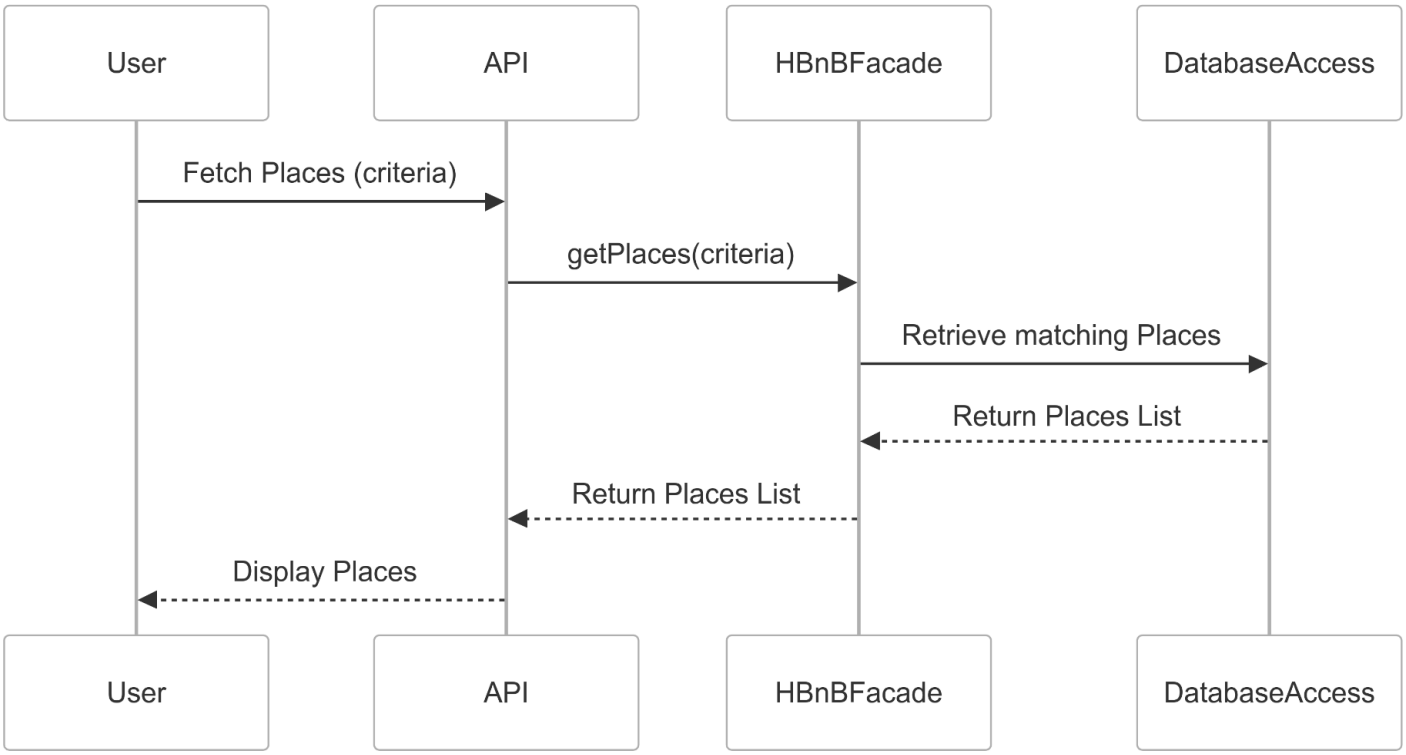
3. Review Submission

Diagram:



4. Fetching Places

Diagram:



Conclusion

This document provides a **structured reference** for the HBnB system, ensuring a **clear understanding** of design decisions and interactions, serving as the **foundation for implementation**.