

HBnB Evolution - Technical Documentation

1. Introduction

This technical document provides a structured overview of the HBnB Evolution project, a simplified Airbnb-like application. It outlines the architecture, entities, and data flow for core features. The system follows a layered architecture: Presentation, Business Logic, and Persistence. This documentation will guide implementation and ensure consistency.

2. High-Level Architecture

The application is divided into three layers:

- Presentation Layer: API interfaces (UserAPI, PlaceAPI, ReviewAPI).
- Business Logic Layer: Core logic (UserService, PlaceService, etc.) and data models.
- Persistence Layer: Data handling through repository classes.

This design uses the Facade Pattern to isolate APIs from internal complexity. Communication flows top-down: API -> Service -> Repository.

3. Business Logic Layer - Class Diagram

This section details the classes and their relationships:

- User: Represents an application user; may be admin. Owns places and writes reviews.
- Place: A property listed by a user. Has many reviews and amenities.
- Review: Feedback tied to a user and a place.
- Amenity: Optional features like Wi-Fi. Linked many-to-many with Place.

4. API Interaction Flow - Sequence Diagrams

These diagrams describe the flow of data across layers for key features:

4.1 User Registration:

- User -> API -> UserService -> UserRepository -> back

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4.2 Place Creation:

- User -> API -> PlaceService -> PlaceRepository -> back

4.3 Review Submission:

- User -> API -> ReviewService -> ReviewRepository -> back

4.4 Fetching List of Places:

- User -> API -> PlaceService -> PlaceRepository -> back

Each follows the same pattern of Presentation -> Logic -> Persistence, then back to user.

5. Conclusion

This document provides a comprehensive reference for the HBnB application's structure and behavior. It ensures developers can build consistently using the defined architecture and flow.