

HBnB Technical Documentation

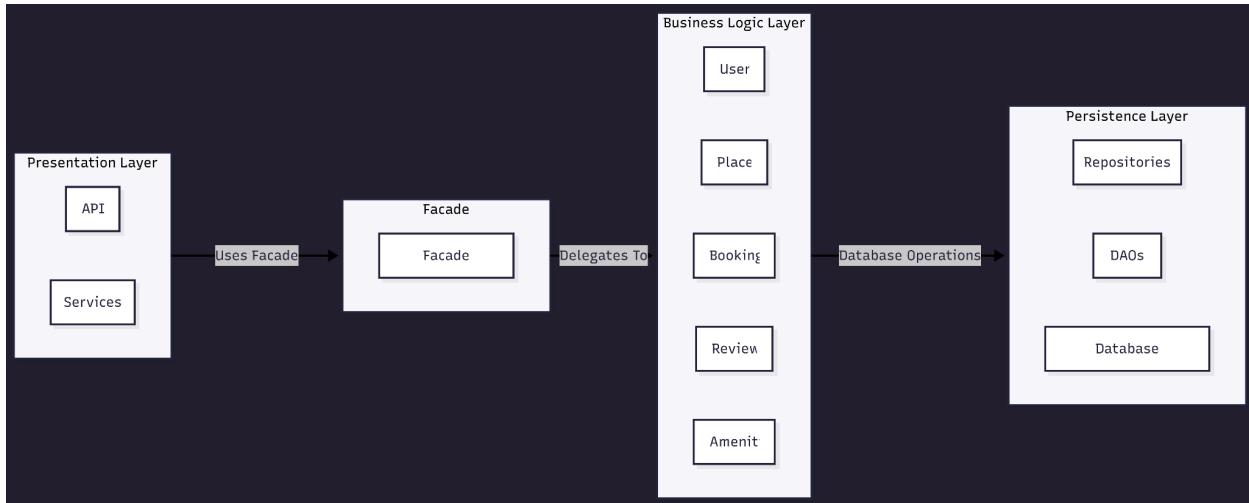
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1 - Introduction

HBnB is a web-based application that enables users to manage accounts, list and manage properties, associate amenities with places, and create reviews for visited locations. The system is designed around business rules and follows a layered architecture composed of a **Presentation layer**, a **Business Logic layer (BLL)** and a **Persistence layer**.

This documentation serves as a comprehensive reference to the HBnB project. It describes the system's architecture, details the relationships between its core entities and presents visual diagrams that demonstrate how essential features operate. The goal is to provide a clear, cohesive understanding of how the system is designed and how its components work together.

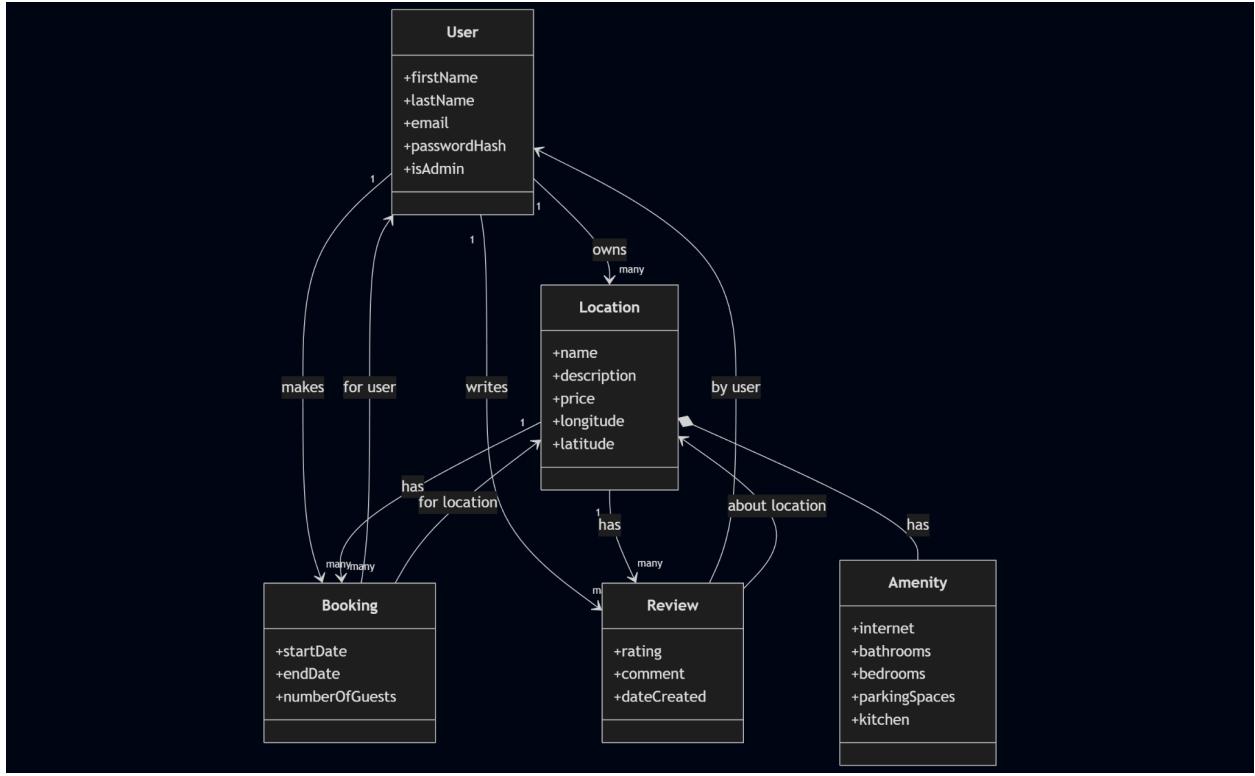
2 - High level Package Diagram



This diagram above represents how the system operates on a holistic level

The presentation layer handles the API and points of service method, which communicates to the Façade, which then delegates the tasks required for the user to see the correct information to the BLL and pulls the data from the persistence layer to be shown to the user back up at the presentation layer

3 - Class Diagram



This diagram above is our class diagram. This shows the visual representation of the relationships of each entity along with its attributes.

- **Users** represent anyone actually using the system. This can be either an admin, a standard user looking for a booking or someone who lists bookings of their place.
- **Locations** represent a property listed on the platform. They contain descriptive information and are associated with amenities, bookings and reviews.
- **Bookings** represent a reservation made by a user for a specific location.
- **Reviews** represent the user feedback for a location after a booking.
- **Amenities** represent the features available at a location.

To understand the relationships of each element here:

Users can own multiple locations, make multiple bookings and write multiple reviews.
Locations can have many bookings, many reviews and many amenities. Bookings and reviews both reference a single user and a single location, since they involve both parties.

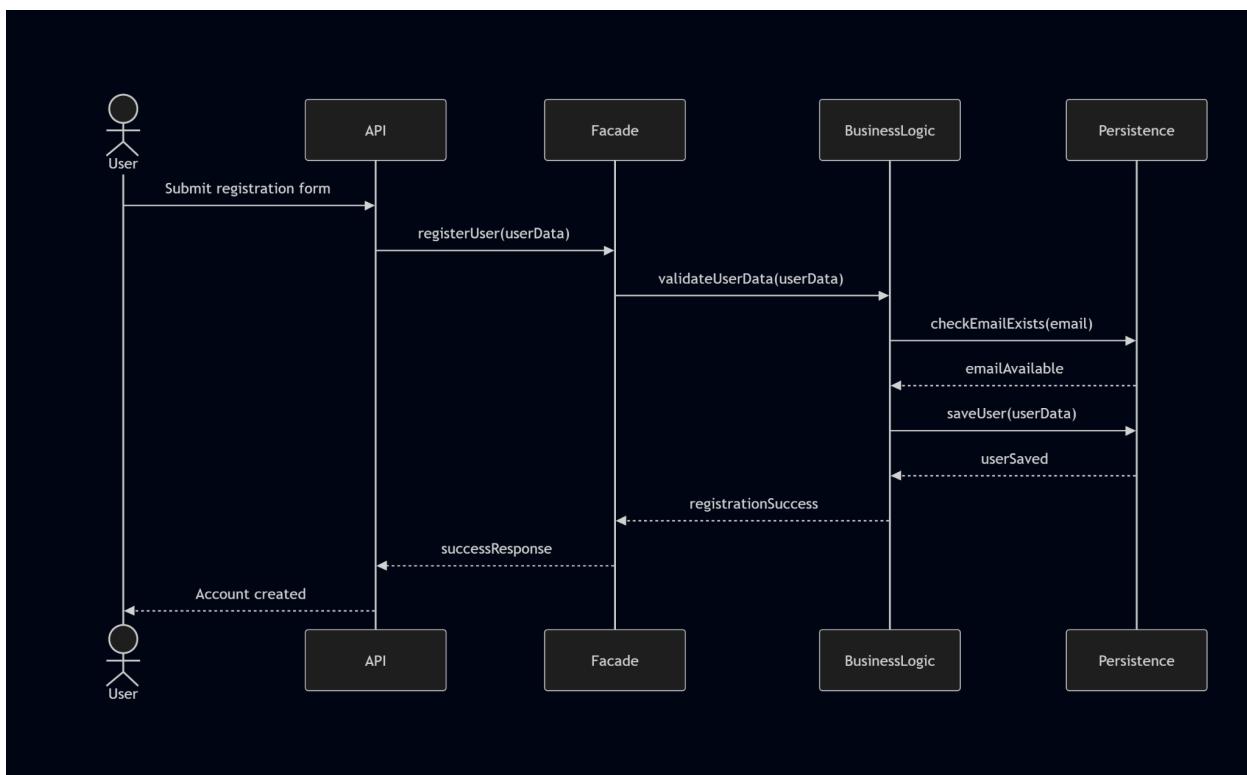
We avoided inheritance because none of the classes represent a subtype of another. Instead the system relies on associations and models real-world relationships. Amenities were modelled as a separate class to keep the location class focused on the core property

information. This style mirrors the behavior of a real world property-rental platform where users interact with locations through bookings and reviews.

4 - Sequence Diagrams

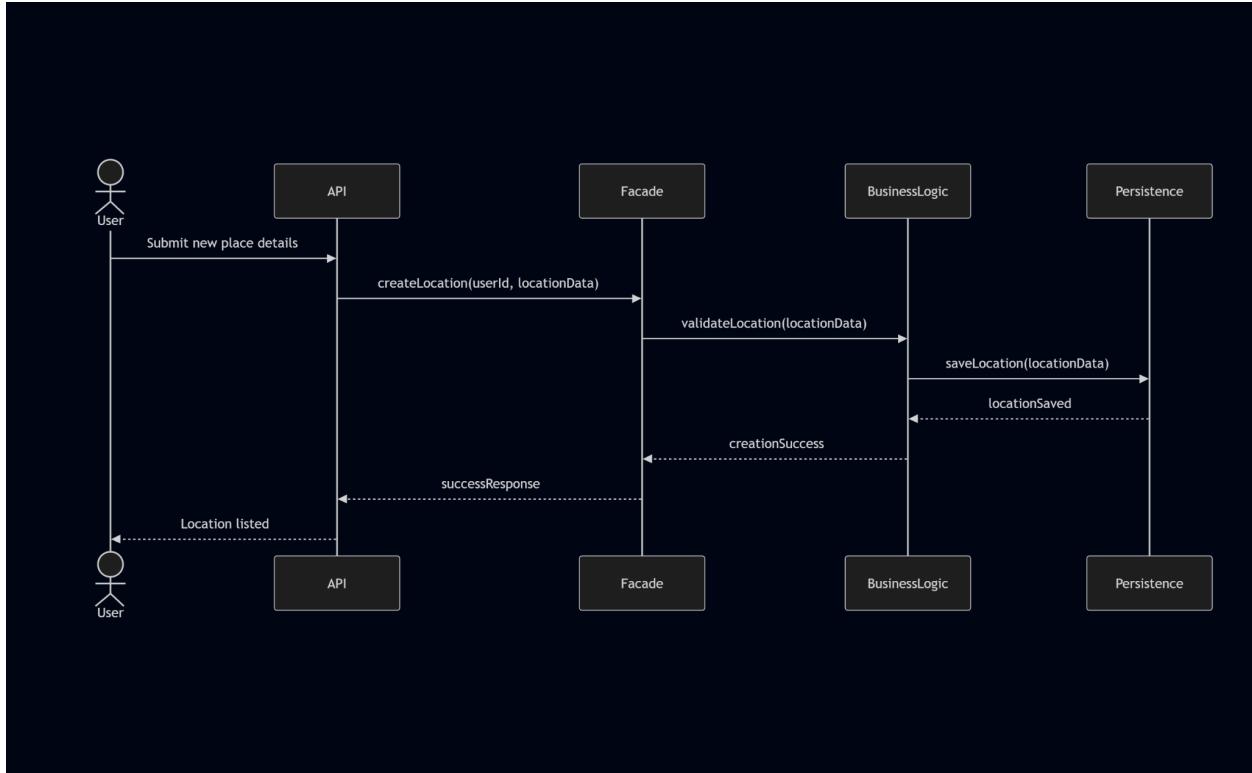
The following sequence diagrams demonstrate the dynamic behavior of the HBnB system. They outline how major components communicate during essential operations and provide a clear view of the processes that support the system's core features.

4.1 - User registration



This sequence diagram illustrates the process of registering a new user in the HBnB system. The user submits their details through the API, which forwards the request to the Façade. The Façade delegates validation to the BLL, which checks whether the provided email already exists in the system. If the email is available, the BLL instructs the persistence layer to store the new user record. The successful result then propagates back through the Façade and API to the user.

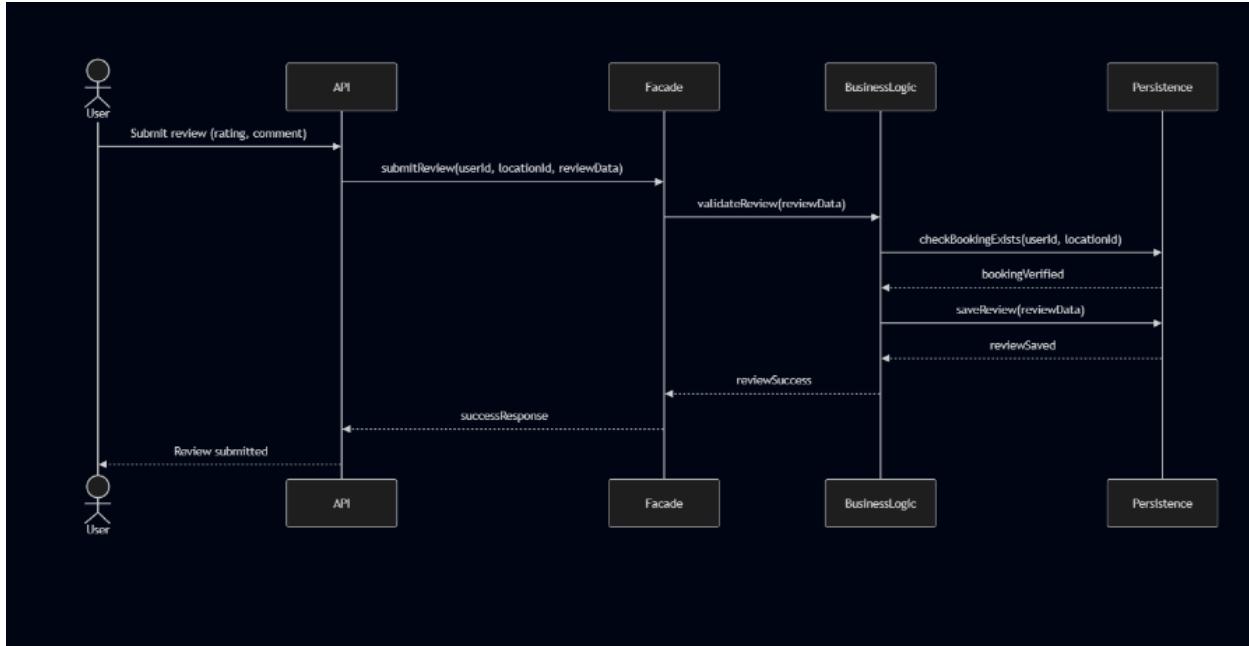
4.2 - Submitting new place details



This sequence diagram shows how the HBnB system handles the creation of a new location listing. When a user submits the required details, the API forwards the request through the Façade to the BLL, where the data is validated. If the information is acceptable and does not conflict with an existing listing, the persistence layer stores the new location. The successful result then flows back up to the user.

This diagram demonstrates how the system coordinates validation and data storage during location creation, and how this workflow fits into the overall layered architecture.

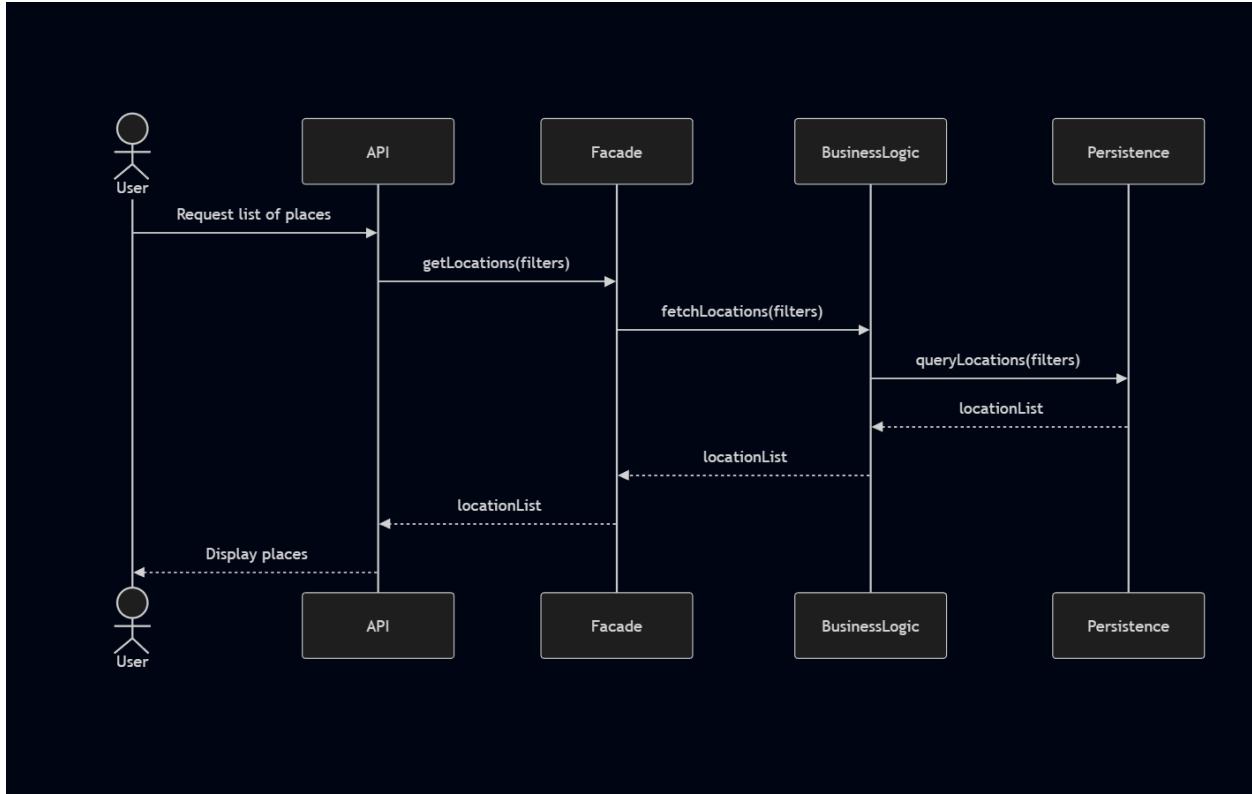
4.3 - Submitting a review



This sequence diagram shows how the HBnB system processes a user review. After a user submits a rating and a comment, the request is passed through the API and Façade to the BLL, where the system verifies that the user has an existing booking for the specified location. This prevents invalid or malicious reviews. If the booking is confirmed, the review is stored by the persistence layer, and a success response is returned to the user.

This workflow demonstrates how the system enforces review integrity and ensures that only legitimate users can provide feedback, supporting the reliability of the platform's review system.

4.4 - Requesting places to book from



This sequence diagram shows how the HBnB system retrieves a list of available locations based on the user-selected filters. When the user requests a list of places, the API forwards the filters through the Façade to the BLL, which queries the persistence layer for matching locations. The resulting list is returned through the layers and is presented to the user.

This workflow demonstrates how the system handles filtered data retrieval and supports the browsing functionality within the overall architecture.