HBnB (Holberton Evolution Bed and Breakfast)

➜ Package

HBnB is structured using a **3-layer architecture** and follows **Object-Oriented Programming (OOP)** principles.

Layers

1. Presentation Layer

- Exposes API endpoints
- Handles requests and responses

2. Business Logic Layer

- Contains core domain classes (User, Location, Review, Amenity)
- Applies validation and business rules
- Manages relationships between objects

3. Persistence Layer

- Handles database operations (CRUD)
- Stores and retrieves application data

Flow : Presentation → Business Logic → Persistence

OOP Principles Used :

Encapsulation: Private attributes (e.g., id, email, password) are protected and accessed via methods.

Abstraction: Business logic is separated from API and database details.

Association: A User owns Location and writes Review. Location contains Amenity and Review.

Composition: A Location is composed of multiple Amenity objects.

➜ Classes

The classes for HBnB are

1. **User:** Represents a user of the platform (guest, host or administrator), with attributes such as email, password, first name, and last name.

2. **Location:** Represents properties listed on the site, including details like the location (longitude and latitude), a description and the price.

3. **Amenity:** Represents the amenities offered at a place.

4. **Review:** Represents ratings and comments provided by a user about a specific place.

Typical Relationships: A User can own many Places and write many Reviews. A Place can have many Amenities and be referenced in multiple Reviews but only has one owner. A Review can only be written by one User and reference one Place. An Amenity belongs to only one place.

For more details, please refer to the UML class diagram

➜ Sequence

1. Get Places (GET /places)

User → API → Business Logic → Database → Response list.

2. User Registration

User submits data → Validate → Store in database → Return success/error.

3. Create Review

Validate user + location → Insert review → Return result.

4. Create Place

Validate owner + data → Insert place → Return result.