Explanatory Notes for Task 1: Class Diagram

Entity Descriptions

1. **User**
   Role in the System: Represents individuals who interact with the HBnB platform. Users can register, update their profiles, and are identified as regular users or administrators.

   Key Attributes:

   - o **ID**: A unique identifier for each user (UUID4), ensuring that each user is distinct within the system.
   - o **First_name**: The user's first name.
   - o **Last_name**: The user's last name.
   - o **Email**: The user's email address, used for communication and identification.
   - o **Password**: Encrypted password for user authentication.
   - o **Is_admin**: A boolean flag to distinguish between regular users and administrators.
   - o **created_at, updated_at**: Timestamps for record creation and updates, useful for auditing purposes.

   Key Methods:

   - o **register_profile()**: Allows new users to register on the platform.
   - o **update_profile()**: Enables users to update their information.
   - o **delete_profile()**: Allows users or administrators to delete a user profile.

2. **Place**
   Role in the System: Represents properties or accommodations listed by users. These places can be rented or visited by other users.

   Key Attributes:

   - o **ID**: A unique identifier for each place (UUID4).
   - o **Title**: A brief title or name for the property.
   - o **Description**: Detailed information about the property.
   - o **Price**: Cost per night or stay.
   - o **Latitude, Longitude**: Geographic coordinates to locate the place.
   - o **created_at, updated_at**: Timestamps for record creation and updates.

   Key Methods:

   - o **create_place()**: Allows users to list a new place.
   - o **update_place()**: Enables updating information about an existing place.

- o **delete_place**(): Removes a place from the listings.
- o **list_places**(): Lists all the available places on the platform.

3. **Review**
   Role in the System: Allows users to leave feedback on places they have visited, helping others in making informed decisions.

   Key Attributes:

   - o **ID**: A unique identifier for each review (UUID4).
   - o **Rating**: A numeric rating (e.g., 1 to 5 stars).
   - o **Comment**: A text-based review of the place.
   - o **created_at, updated_at**: Timestamps for record creation and updates.

   Key Methods:

   - o **create_review**(): Allows users to submit a review for a place.
   - o **delete_review**(): Removes a review from the platform.
   - o **list_reviews_by_place**(): Lists all reviews associated with a specific place.

4. **Amenity**
   Role in the System: Represents services or features that can be associated with a place, such as Wi-Fi, parking, or a pool.

   Key Attributes:

   - o **ID**: A unique identifier for each amenity (UUID4).
   - o **Name**: The name of the amenity.
   - o **Description**: A description of the amenity.
   - o **created_at, updated_at**: Timestamps for record creation and updates.

   Key Methods:

   - o **create_amenity**(): Allows users to create a new amenity.
   - o **update_amenity**(): Enables updates to existing amenities.
   - o **delete_amenity**(): Removes an amenity from the list.
   - o **list_amenities**(): Lists all available amenities on the platform.

Relationships Between Entities

1. **User** **and** **Place**
   A User can own multiple Places (1 User -- * Place). This association reflects the

ownership of the property by the user, who can manage the place listings, such as adding, updating, or deleting their properties.

2. **User** **and** **Review**
   A User can leave multiple Reviews on places they have visited (1 User -- * Review). This represents the user's ability to provide feedback for various properties, influencing other users' decisions.

3. **Place** **and** **Review**
   A Place can receive multiple Reviews (1 Place -- * Review). This relationship highlights how each place can accumulate reviews from different users, affecting its reputation and popularity.

4. **Place** **and** **Amenity**
   A Place can have multiple Amenities (1 Place o-- * Amenity). This composition signifies that a place can offer a variety of services, making it more attractive to potential renters. However, if a place is deleted, its associated amenities remain intact in the system.

Contribution to Business Logic

These relationships allow the platform to function cohesively. Users create and manage Places, which attract other users based on the Reviews and Amenities offered. Reviews add credibility and help rank Places based on user experiences, while Amenities make the Places more appealing by providing additional value, such as comfort and convenience. This interconnected logic ensures that the system provides a fluid user experience, from registration and profile management to property listing, booking, and reviewing.