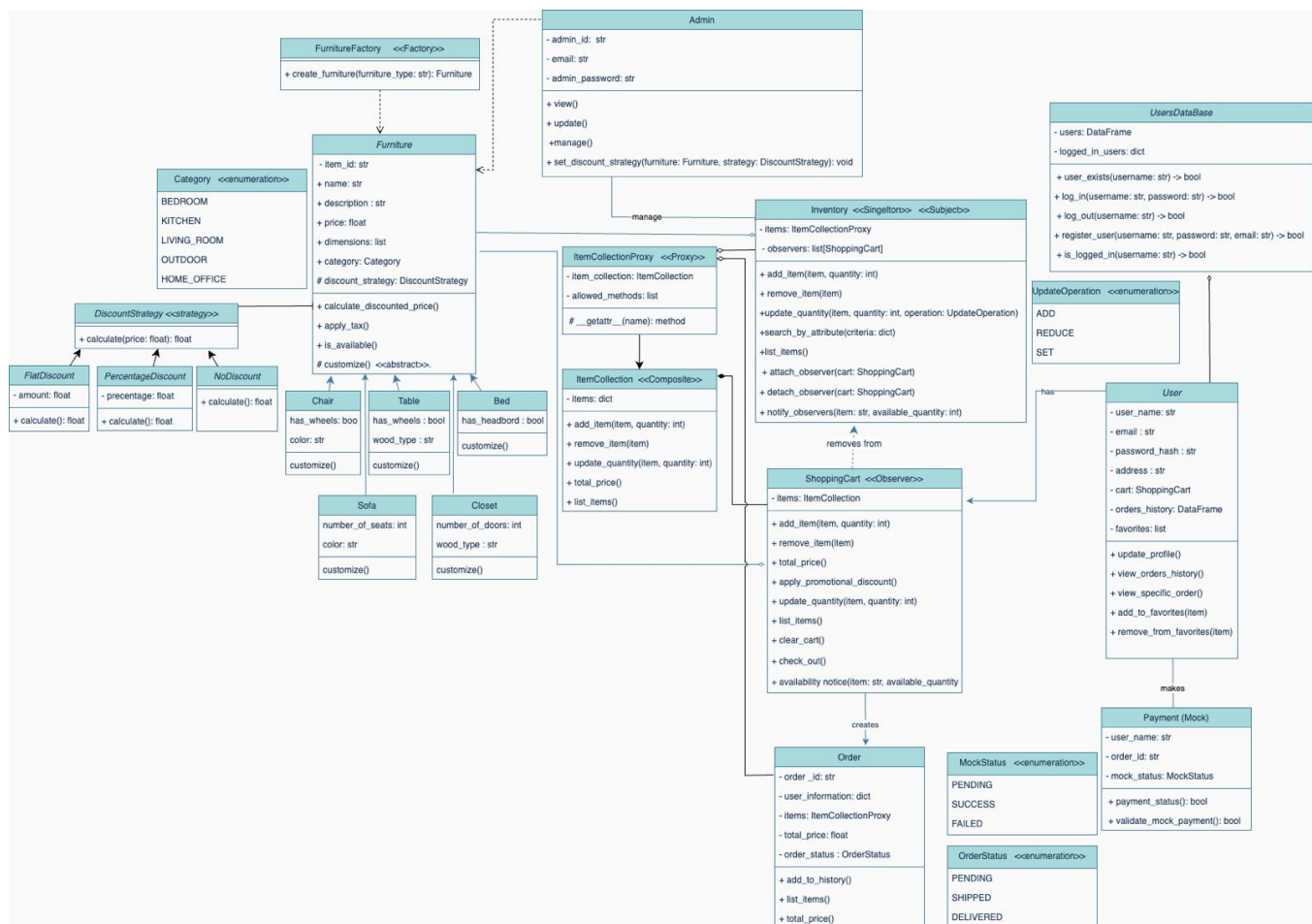# Online Furniture Store Project - Design Changes

Previous Design Summary

The previous system included:

1. **Inventory and Shopping Cart Management** using Observer and Composite patterns.

2. **User Management System** with User, UsersDatabase for managing user data and purchase history.

3. **Furniture Classes** with Furniture as a base class and subclasses.

4. **Order and Payment Management** with Order, OrderStatus, and Payment.

5. **Factory Pattern** used for furniture creation via FurnitureFactory.

6. **Admin Management** with Admin handling inventory updates and discounts.

7. **Authentication** was handled using a database column (is_logged_in).

Old Design Diagram

Key Changes in the New Design

1. **Separation of Responsibilities with Dedicated Management Classes**

   o Added UserManager to handle user registration, login, and management.

   o Added OrderManager to manage and retrieve orders.

   o Introduced JWTManager for authentication token (JWT) management.

2. **New User Management Structure**

   o UserDatabase is now a Singleton managing user data storage and authentication.

   o User now has private fields and improved security for handling personal information.

   o Authentication is now handled using JWT tokens instead of the is_logged_in column in the database, improving security and scalability.

3. **Improved Shopping Cart and Inventory Structure**

   o ShoppingCart now directly accesses Inventory for availability checks during check out and when items are added to the cart.

   o Introduced CartItemLocator to manage product search and addition to the cart.

4. **Enhanced Search Mechanism**

   o Added SearchStrategy with implementations for name-based search, price range filtering, and attribute-based queries.

5. **Expanded Use of Enumerations (Enums)**

   o Additional enums were introduced to improve structure and flexibility, such as PaymentMethod, ChairMaterial, TableShape, FurnitureSize, SofaColor, and BedSize.

6. **Updated Order and Checkout System**

   o Order is now directly linked to a user (user_id).

   o CheckoutSystem centralizes the checkout process (inventory validation, user authentication, payment processing, order updates).

   o Added OrderDatabase to store and manage order data, improving retrieval and tracking.

7. **Data Management with JSON**

   o JsonFileManager enables reading and writing user, inventory, and order data.

8. **Removal of Admin Role**

   o The Admin class was removed to improve system modularity and reduce centralization.

   o Its responsibilities, such as inventory updates and discount management, were reassigned to Inventory and UserManager, allowing for a more flexible and decentralized approach without a single authoritative user managing the system.

<u>The final diagram is attached in a separate file due to its size.</u>

Note: In the diagram, there are both dashed and solid lines. The difference between the lines is solely for visual enhancement purposes and has no other significance.