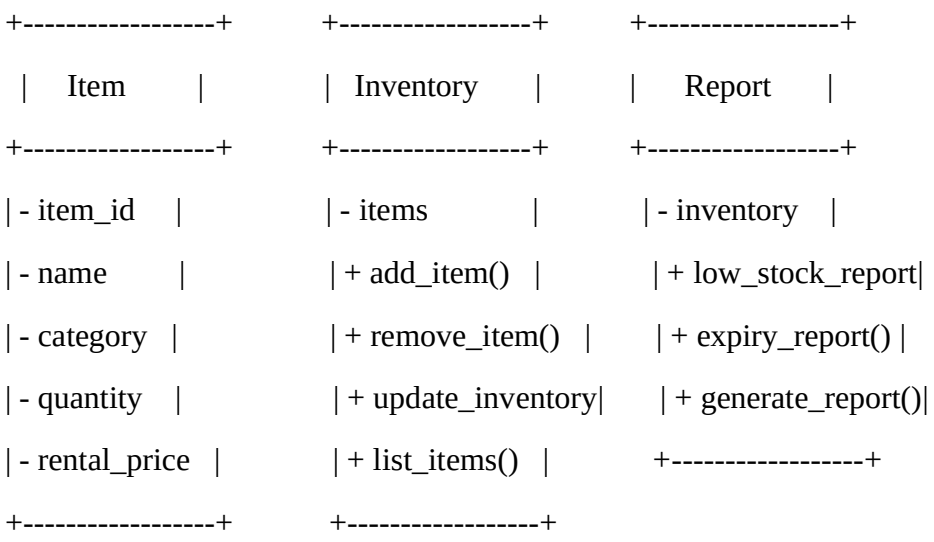
Project Description:

This project is a Python-based inventory management system that lets users manage stock and generate reports. It performs tasks such as adding, removing, and updating inventory items while keeping track of details such as category, quantity, rental price, and optional attributes such as expiration dates. Users are given roles (admin or manager) with varying permissions to control inventory actions and generate reports, such as low stock and expiry reports. The system also saves data as a JSON file for future use.

Code Structure with Diagram



Structure Overview:

- **Item Class**: Represents individual items, containing attributes like `name`, `category`, `quantity`, `rental_price`, and additional optional details.

- **Inventory Class**: Manages items in the inventory, allowing for adding, removing, updating stock, listing, and checking low stock.

- **Report Class**: Generates reports like low stock and expiry reports based on the inventory.

- **User Class**: Implements role-based permissions, controlling access to actions such as adding or updating items.

Instructions to Use

1. **Running the Script:**

   - Load or create an inventory from a file (`inventory.json`).

   - Use the program to add items, view the inventory, update stock, or generate reports.

2. **Key Actions:**

   - Add an item: Input name, category, quantity, price, and optional attributes.

   - Update inventory: Change the quantity of an existing item.

   - Generate reports: Low stock (below a threshold) or expiry (before a given date).

3. **Data Persistence:** The inventory data is saved in `inventory.json`, allowing it to be loaded in future sessions.

Verification of Code Sanity

Findings, Challenges, and Limitations

Findings:

- The program successfully implements role-based permissions and offers persistent data management.

Challenges:

- Handling expiration date checks and data validation required extra attention.

Limitations:

- The system uses a static salt in encryption (if added), which should be improved for security.

- The placeholder sales report needs further development.