Please design and code an inventory system. Please do the following:

- Design and implement API layer to model and support the below requirements. You do not need to develop a UI, unless it helps you.

- In memory data structure is okay (no database code needed)

- Write tests

- Please write production-quality code and provide a runnable solution (at least from tests as entry points)

- Provide a README file with instructions on how to run your application, as well as brief documentation about your design, code structure, assumptions, reasoning, and any notes you want to add for extensibility, maintainability, security, performance, etc, that you don't have time to implement.

- Please post your solution on GitHub. We will may ask questions and/or comment in your code as part of code review.

- Feel free to email me questions or send me descriptions of your understand of the requirements for clarification/validation or if you want me to look over your initial design.

**Requirements**

1. Add an item to the inventory:

When I add a new item to the inventory

Then inventory contains information about the newly added item, such as Label, Expiration, Type.

2. Take an item from the inventory by Label:

When I took an item out from the inventory

Then the item is no longer in the inventory

3. Notification that an item has been taken out:

When I took an item out from the inventory

Then there is a notification that an item has been taken out.

4. Notification that an item has expired:

When an item expires

Then there is a notification about the expired item.