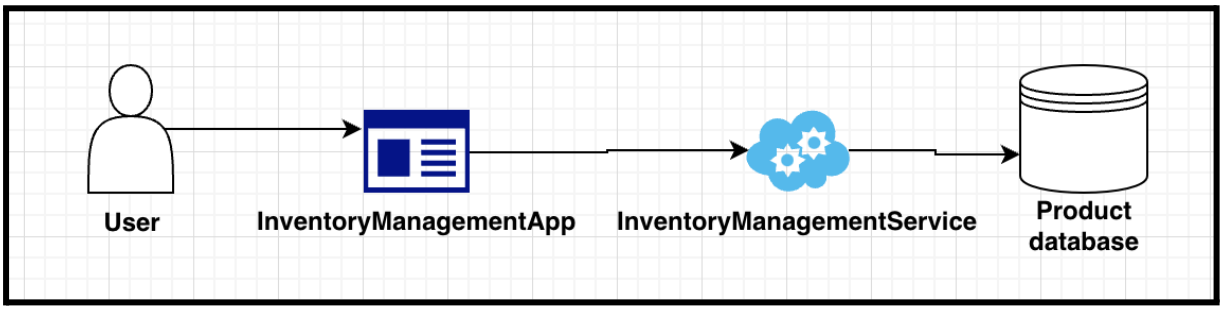
HLD



Ideal design

Service Api's:
Login, Add product to inventory, Update product quantity in inventory, Remove product in inventory, List all products in inventory, Search for a product.

Database:
relational (SQL) so that read write operations are efficiently performed, ACID transactions ensuring high consistency

Implemented design

Service Api's:
Add product to inventory, Update product quantity in inventory, List all products in inventory, Search for a product.

Database:
In memory hashmap

LLD

Database Schema

Ideal:
SQL db with:
composite primary key(Name, Category)
Name; secondary key
Category; secondary key
Price;
Quantity;
Threshold;

Implemented:

In memory hashmap:
Map<ProductKey, Product>
Where productKey = hash(name, category)

Class structure:

Refer code

Future Enhancements:

- Algorithm for the search can be enhanced by prefix search with an error threshold in search
- Notification for below threshold value can be email notifications instead of console output
- Input output class data structure definition for all user operations/API’s
- List all products and search product by category feature results can be paginated
- Separate db and api’s for setting and storing threshold values to make them configurable