

group project proposal from: Canxin, Juan, Luca, Ritesh

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Mon 11/27/2023 10:06 PM

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Hi Corey,

This is our works:

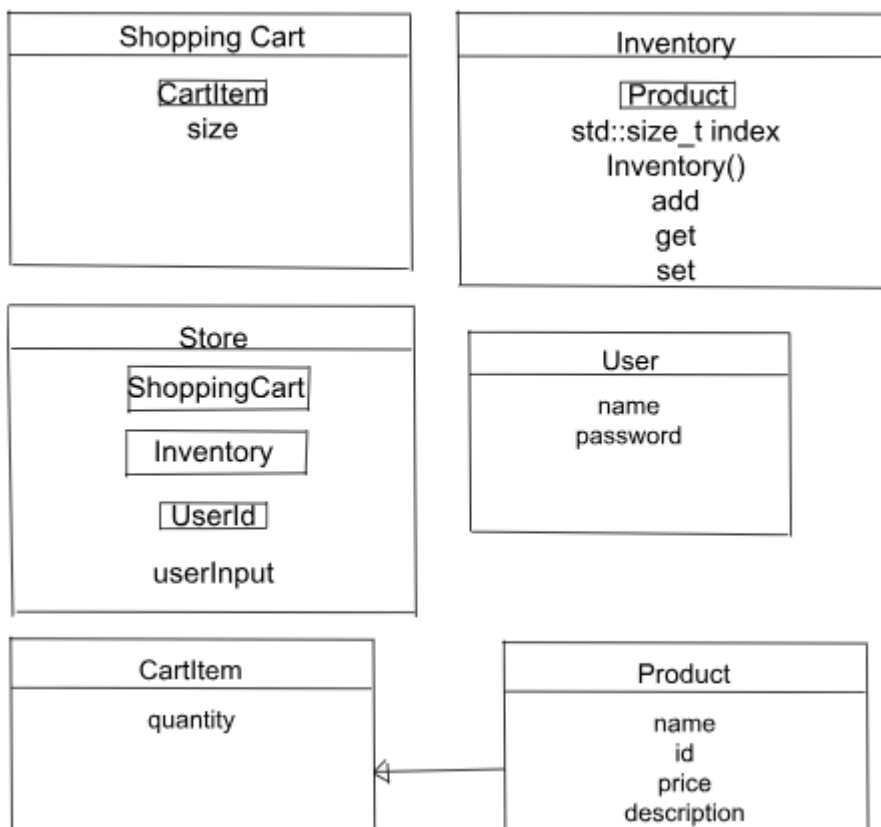
## Shopping Cart System Project Proposal

### 1. Summary of Project Goals

- To provide users with a simple and efficient online shopping experience.
- Enable users to browse products, add and remove items from the shopping cart, and proceed to checkout.
- Utilize a HashMap for fast retrieval of product information.
- Employ a LinkedList to maintain the order of items in the shopping cart.

### 2. UML Class Diagram

UML Drawing



### 3. Explanation of Guidelines Adherence

- Data Structures: A LinkedList is used to maintain the order of items within the shopping cart, while a HashMap is employed to manage the inventory of products.

- Algorithms: Implementation of search functionality in the HashMap for rapid retrieval of product details; using LinkedList traversal to calculate the total cost of the cart.
- Object-Oriented Design (OOP Design):
  - Inheritance: Special types of products may inherit from a base Product class.
  - Composition: ShoppingCart will compose CartItems, and each CartItem will contain a Product object.

#### **4. Plan of Development Stages**

- Stage 1: Design and implement the foundational classes (Product, CartItem, ShoppingCart, Inventory, Store).
- Stage 2: Develop basic functionalities of the HashMap and LinkedList.
- Stage 3: Develop core functionalities of the shopping cart (addition, removal, display, checkout).
- Stage 4: Make file retrieval and creation functions to store the inventory in text files.
- Stage 5: Perform unit testing to ensure all functionalities are working as intended. (Use different files)
- Stage 6: Design the user interface and perform integration testing. (Implement the Store class.)
- Stage 7: Final project review and deployment.
- Stage 8: (Future Plans) Make a login and sign up screen and have user info stored in the backend so program can remember certain users purchase history.

Best,  
Canxin Tang