



Project 1 : Programming Project Assignment: E-commerce Cart System

Objective: Develop a simplified e-commerce cart system where users can view products, add them to their cart, remove items, reorder items, and proceed to a simulated checkout.

1. Introduction:

The e-commerce domain has surged in recent times, with shopping carts being a core functionality. Understanding how a cart system works can provide insights into data management, user interaction, and system operations.

2. Project Features and Tasks:

a. Product Management:

- Store products in an **ArrayList**. Each product should have an **ID, name, description, price, and stock count**.
- Implement features to **add, delete, and update** products.
- **Display** a list of all available products.

b. User Cart Management:

- Use a **LinkedList** to simulate a user's cart, allowing for easy additions and removals.
- Allow users to **add products** to their cart by **product ID**.
- Implement the ability to **remove items** from the cart.
- Allow users to change the order of items in the cart.
- **Display items** in the user's cart along with the total price.

c. Checkout System:

- Implement a basic **checkout** process where the user confirms the items in their cart.
- **Simulate a purchase process**, which **reduces** the stock count of the purchased items.
- Provide an **invoice** summary to the user with product details and the total cost.

d. User Interface:

- Create a simple text-based interface (console application) where users can perform all the aforementioned tasks.
- Implement input validation to avoid system crashes and guide users.



3. Advanced Features (Optional):

a. Persistent Storage:

- Save and load product data using file I/O operations.

b. Discount and Offers:

- Implement discount codes that users can apply during checkout.
- Allow for seasonal or product-specific offers.

c. Search and Filter:

- Implement a search feature for users to find products by name or ID.
- Allow users to filter products based on categories or price ranges.

4. Evaluation Criteria:

- **Functionality:** All core features should work without errors.
- **Code Quality:** Code should be well-organized, readable, and commented where necessary.
- **User Experience:** System prompts and messages should be clear. Handle possible erroneous inputs gracefully.
- **Data Management:** Efficient and appropriate usage of ArrayList and LinkedList.
- **Bonus:** Implementation of one or more advanced features.

5. Deliverables:

- Complete source code.
- A user manual or guide explaining how to use the system.
- A report detailing:
 - System design and architecture.
 - Challenges faced and how they were addressed.
 - Any additional features implemented and their rationale.
 - Lessons learned and possible future improvements.

6. Tips:

- Begin with designing your product and cart data structures.
- Focus on core functionalities before attempting advanced features.
- Test each feature thoroughly before moving on to the next.
- Regularly backup your code and maintain version control if possible (e.g., using Git).

Deadline: September 30, 2023.

Happy coding! We look forward to seeing your e-commerce cart system in action.