DEPI Task 4: E-Commerce System

The system manages users, products, inventory, shopping carts, orders, and payments

User Management

1. **User:** Defines fundamental properties for all system users (ID, email, password)

2. **Customer:** Represents shopping users with (shipping address)

3. **Admin:** Specialized user with product management privileges (List <String> privileges)

Product Catalog

1. **Product**

   - Defines common product attributes (id, name, price, description)
   - Establishes standard product detail formatting (an abstract method)

2. **Electronic Product:** Specialized product for electronics with (Warranty period)
3. **Clothing Product:** with (available size)

Inventory Management

1. **Inventory**

Central product repository with

   - Admin responsible for handling inventory management
   - List <Map<Product, int>> stock: list of products with their available quantity

Provides:

   - Adding more products in the stock
   - Stock availability checks
   - Update stock

Shopping Process

1. **Shopping Cart:** handling shopping process with

- Customer that represents the cart owner
- List<Map<Product, int>> items selected with their quantity

Handles:

- Item addition/removal
- Get total

2. **Order:** Represents completed transactions with:

- Unique order ID
- Created Date
- Finalized item list
- Total price

Provide:

- Checkout(PaymentMethod payment)
  This function will take the payment method chosen to apply the checkout process

Note that at creating an order, you must pass the cart object to initiate the order details needed

Payment Process

1. **PaymentMethod**

Defines payment processing with two abstract functions
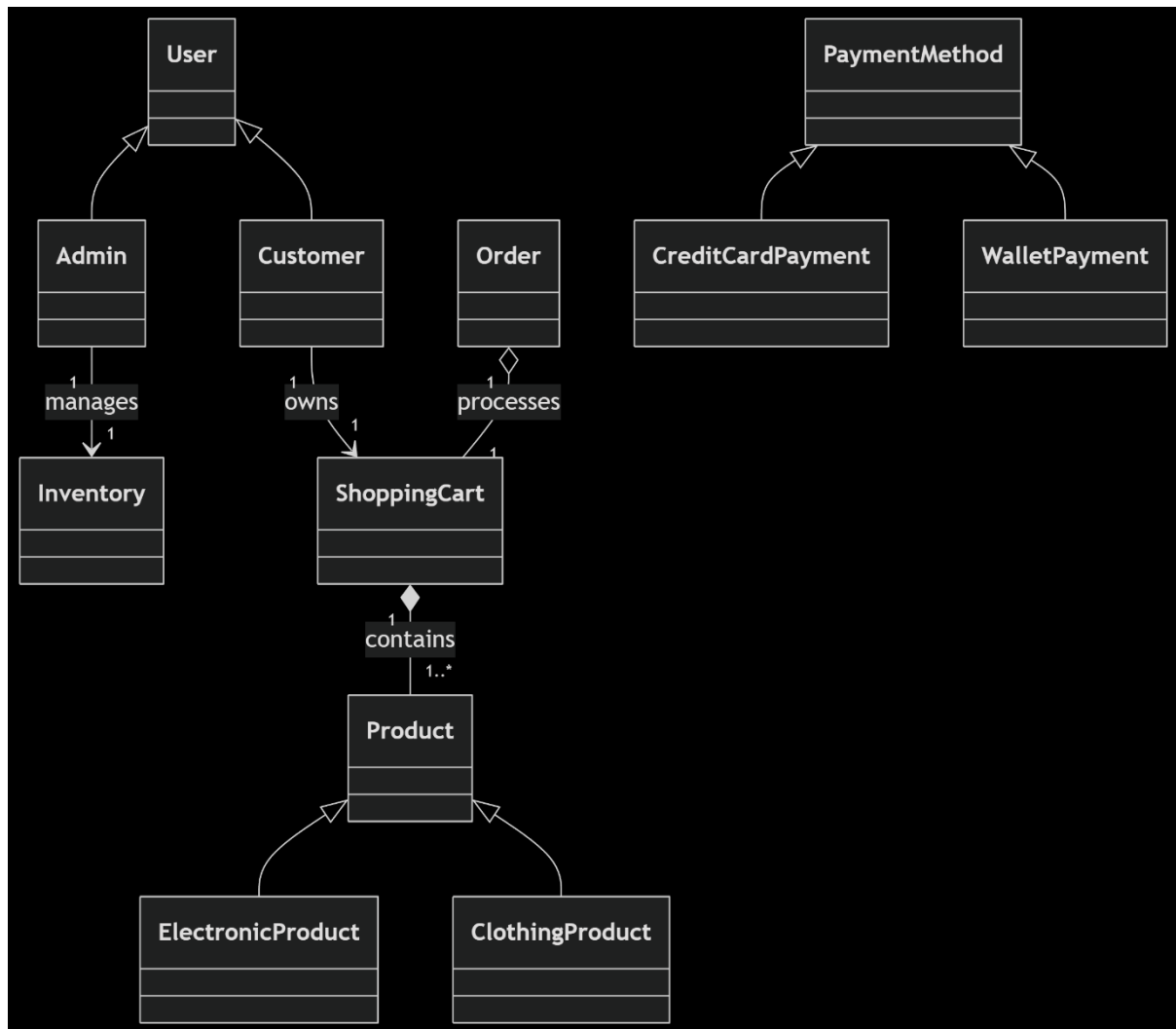
- Pay(double amount)
- PaymentDetails()

2. **CreditCardPayment**

- Traditional card payments with (Card number, Expiry date, CVV security code)
- Ensure that at checkout, order date must < expiry date of the card

3. **WalletPayment**

- Handles wallet transactions with (phone number)
- Ensure that at checkout, wallet phone number is a valid number of Egyptian numbers format

For More Clarification, but it may not 100% accurate

The program should:

4. Create one admin and one customer
5. Create more than one product of different types
6. Create inventory with list of products with their quantity
7. Create a shopping cart for the customer adding the chosen item. Check for availability at the inventory first.
8. Initiate an order for the shopping cart.
9. Create a payment method
10. Use the created payment method at the check out process

Do not ask for user inputs, just write a static code in the main function but ensure that you print the whole process log from the beginning to the end.

Important Notes

- Ensure applying all OOP concepts, Encapsulation with setters and getters, Inheritance, Abstraction, and Polymorphism
- Try to use mexin or extention for any additional suitable functionality.
- Consider each class in separate file
- # PLEASE DO NOT USE CHATGPT

Deadline: wed. 16/7/2025

Submit: One Compressed file of .dart files named by your name through the lms.