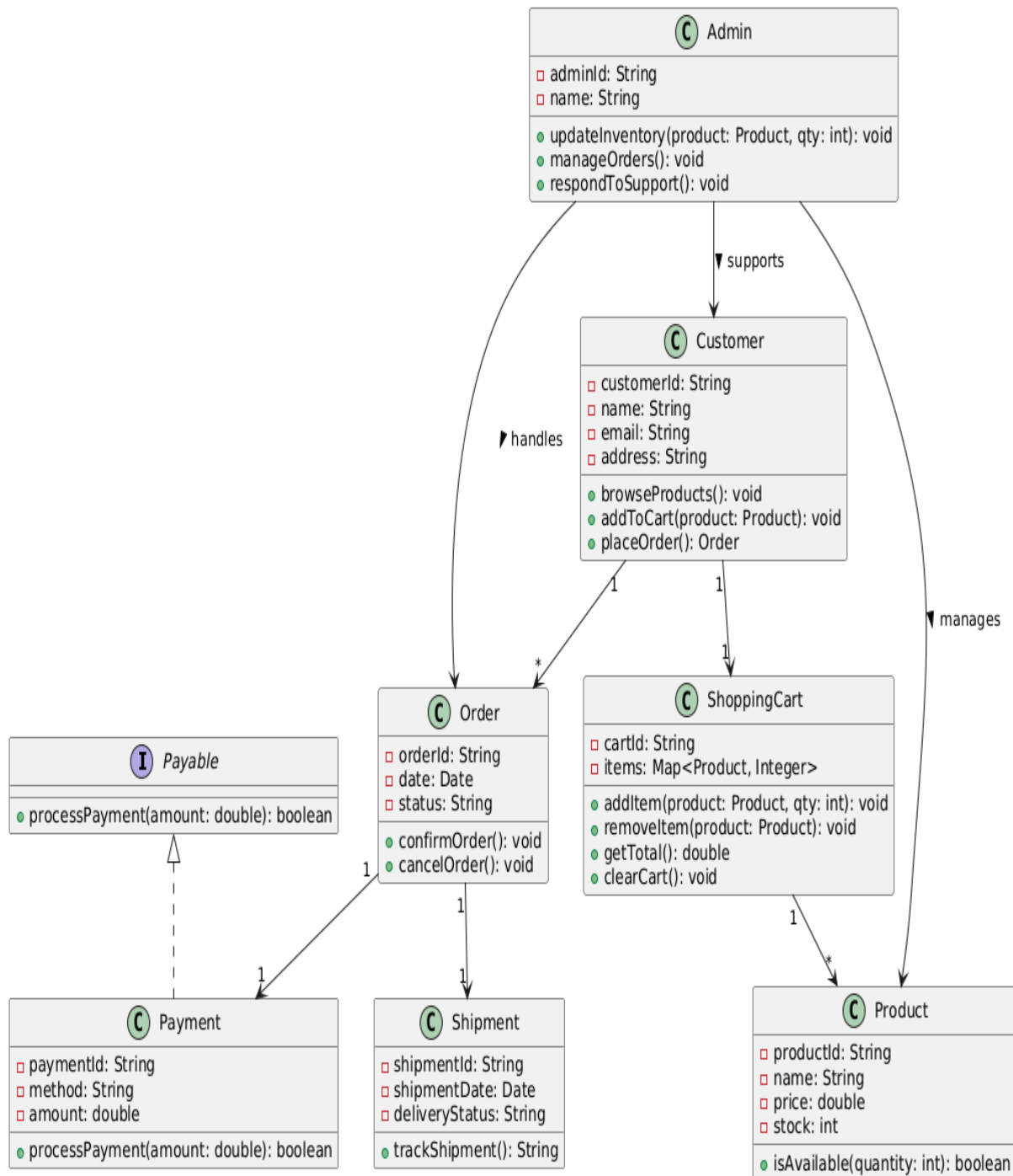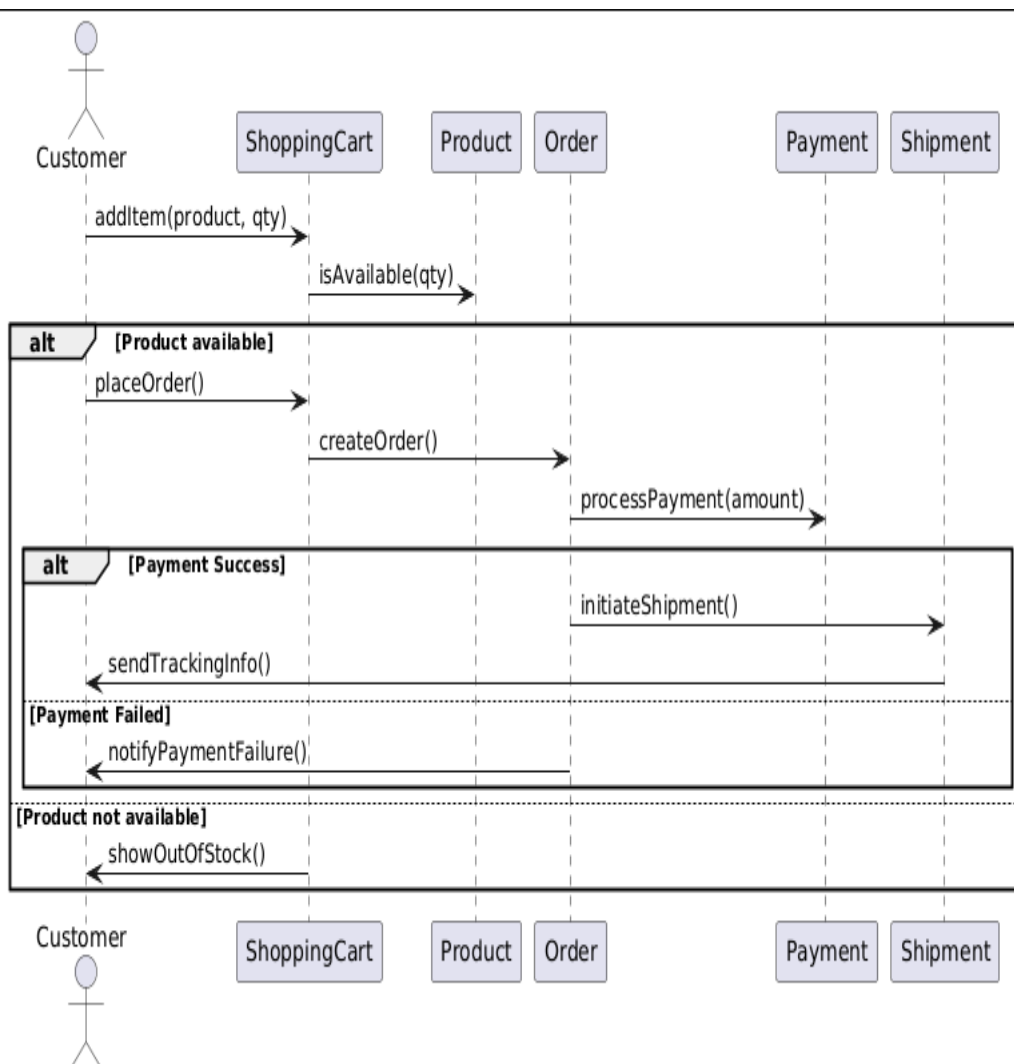# ASSIGNMENT-2

Class Diagram

This class diagram shows how an online shopping system is organized and how the different parts work together. At the center of the system is the customer, who can look through available products, add items to a shopping cart, and then place an order. The shopping cart holds the selected products and keeps track of quantities. Once the customer places the order, it's connected to both a payment and a shipment process. The payment class takes care of completing the transaction and follows a standard interface called Payable, which allows for different types of payment methods. The shipment class helps track the delivery status of each order. Products have details like name, price, and available stock, and they are managed by the admin. The admin is responsible for keeping the product list updated, handling orders, and helping customers if any issue comes up. The relationships show that one customer can have multiple orders, each order links to one payment and one shipment, and a shopping cart can contain many different products. Overall, the system is built in a way that makes all the main online shopping features work together smoothly.

SEQUENCE DIAGRAM

This sequence diagram shows how the "Place Order" process works in the online shopping system from start to finish. It begins when the customer adds a product and quantity to the shopping cart. The cart then checks with the product to see if the requested amount is available in stock. If the

product is available, the customer moves forward and places the order. The cart creates the order and sends the payment request. If the payment is successful, the order proceeds to shipment, and tracking information is sent back to the customer. If the payment fails, the customer gets a failure notification. On the other hand, if the product isn't available in the first place, the system immediately informs the customer that the item is out of stock. This flow includes decision points for both product availability and payment status, showing how the system reacts under different conditions to make the order process reliable and user-friendly.

ACTIVITY DIAGRAM

The activity diagram outlines the full order process from the customer's perspective. It begins with the customer browsing products and viewing details of individual items. Once they select a product, they can add it to their cart and decide whether to continue shopping or proceed to checkout. At checkout, they provide shipping details and choose a payment method. The system then checks if the product is available in inventory. If it is, the payment is processed. If the payment goes through successfully, the system generates the order and starts the shipping process. At the same time, it sends a confirmation email to the customer and updates the inventory in parallel. After that, the customer can track the shipment, and the process ends once the delivery is confirmed. If the inventory isn't available, the system shows an out-of-stock message. If the payment fails, a payment error is displayed, and the process ends. This diagram clearly captures the decision points and parallel tasks involved in fulfilling an order.

```
                    ●
                    │
                    ▼
         ┌─────────────────────┐
         │   Browse Products   │
         └─────────────────────┘
                    │
                    ▼
         ┌─────────────────────┐
         │ View Product Details│
         └─────────────────────┘
                    │
                    ▼
      ┌─────────────────────────────┐
      │ Select Product & Add to Cart│
      └─────────────────────────────┘
                    │
    yes             ▼             no
      ◇─────< Continue Shopping? >─────◇
      │                                │
      ▼                                ▼
:Browse Products    ◇    :Proceed to Checkout
                    │
                    ▼
         ┌─────────────────────┐
         │Enter Shipping Details│
         └─────────────────────┘
                    │
                    ▼
         ┌─────────────────────┐
         │Choose Payment Method│
         └─────────────────────┘
                    │
                    ▼
         ┌─────────────────────┐
         │     Place Order     │
         └─────────────────────┘
                    │
                    ▼
      < Inventory Available? >───:Show Out-of-Stock Message───◉
                    │
               :Process Payment
                    │
                    ▼
      < Payment Successful? >───:Display Payment Error───◉
                    │
               :Initiate Shipment
                    │
 ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━
      │                                │
      ▼                                ▼
┌─────────────────────┐      ┌─────────────────────┐
│Send Email Confirmation│    │  Update Inventory   │
└─────────────────────┘      └─────────────────────┘
      │                                │
 ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━
                    │
                    ▼
         ┌─────────────────────┐
         │   Track Shipment    │
         └─────────────────────┘
                    │
                    ▼
         ┌─────────────────────┐
         │  Confirm Delivery   │
         └─────────────────────┘
                    │
                    ▼
                    ◉
```