

Group 22 Report

The provided Java code constitutes a Swing-based Shopping Cart application, organized into several classes to handle distinct aspects of the application. The primary class, `ShoppingCartApp`, orchestrates the main application window and integrates panels for login, shopping cart, and home views using a `JTabbedPane`. The `LoginPanel` class, extending `JPanel`, is responsible for the login functionality. It features input fields for username and password, as well as buttons for login, cancel, and account type selection. The class implements authentication logic and incorporates a dialog for selecting the account type, distinguishing between buyers and sellers. The `ShoppingCartPanel` class extends `JPanel` and manages the shopping cart functionality.

It displays a table showcasing product details within the shopping cart and offers options to remove products and proceed to checkout. The class includes methods for adding products to the cart, removing products, calculating the total amount, and displaying a checkout dialog upon completion. The `HomePanel` class, extending `JPanel`, represents the home view, displaying available products. Employing a grid layout, it showcases product images, details, and "Add to Cart" buttons. This panel integrates seamlessly with the `ShoppingCartPanel` to facilitate the addition of products to the shopping cart. The `ProductItem` class defines the structure of a product, encapsulating attributes such as name, price, image path, and quantity. It provides methods to retrieve and update product information.

The main method executed using `SwingUtilities.invokeLater`, ensures proper handling of Swing components on the Event Dispatch Thread (EDT). It creates an instance of the `MainFrame` class, initiating the Shopping Cart application. Overall, the application demonstrates effective GUI design principles, event handling, and the seamless integration of various panels to deliver a comprehensive shopping experience. Notable features include user authentication, product selection, shopping cart management, and a streamlined checkout process.

Student: Israel Andrade, Misael Concepcion, Kevin Pham, John Sinfuego

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Login:

Shopping Cart App

Login

Username:

1

Account Type

Select your account type:

Buyer Seller

Password:

•

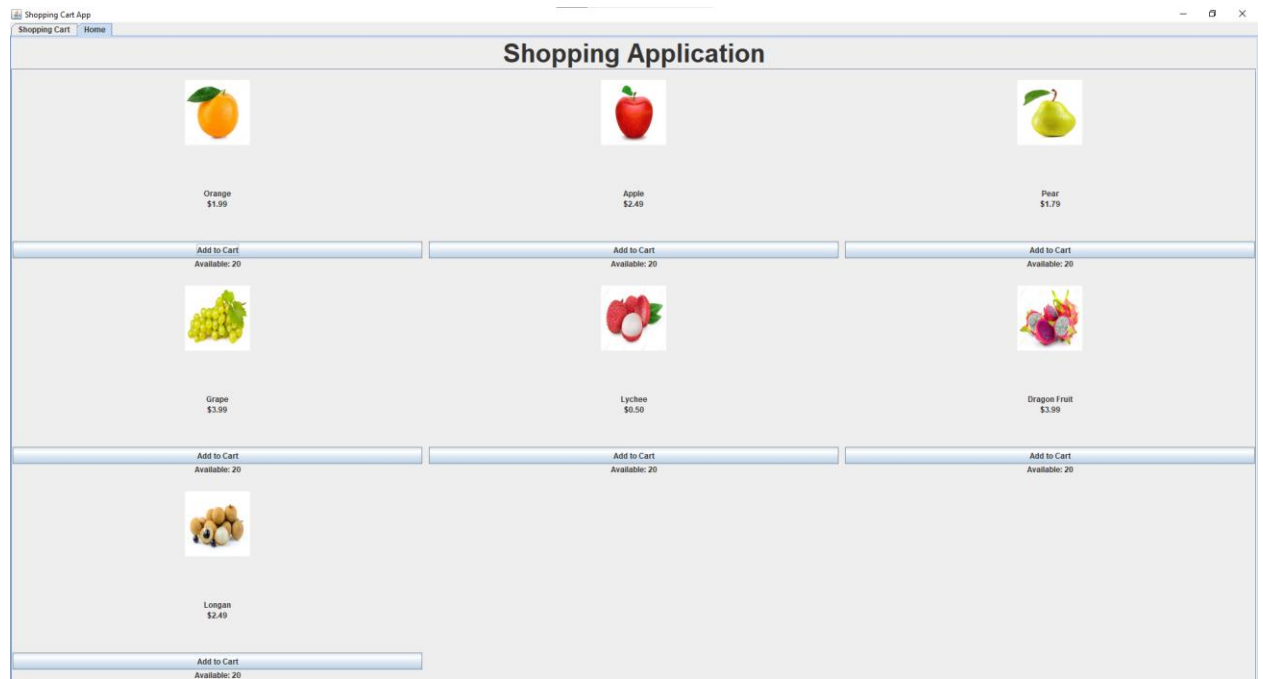
Login Cancel Select Account Type

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Items:



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Shop cart:

Shopping Cart App


Shopping Cart Home

Shopping Application




Orange
\$1.99

Add to Cart
Available: 19




Apple
\$2.49

Add to Cart
Available: 18



Pear
\$1.79

Add to Cart
Available: 18




Grape
\$3.99

Add to Cart
Available: 18




Lychee
\$0.50

Add to Cart
Available: 19



Dragon Fruit
\$3.99

Add to Cart
Available: 19



Longan
\$2.49

Add to Cart
Available: 19

Shopping Cart App

Shopping Cart Home

Your Shopping Cart

Product	Quantity	Price
Orange	1	1.99
Lychee	1	0.50
Apple	2	4.98
Dragon Fruit	1	3.99
Pear	2	3.58
Grape	2	7.98
Longan	1	2.49

Remove Product

Checkout

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Removed Grape:

Shopping Cart App

Shopping Cart Home

Your Shopping Cart		
Product	Quantity	Price
Orange	1	1.99
Lychee	1	0.50
Apple	2	4.98
Dragon Fruit	1	3.99
Pear	2	3.58
Longan	1	2.49

Remove Product Checkout

Checkout Items:

Shopping Cart App

Shopping Cart Home

Your Shopping Cart		
Product	Quantity	Price
Orange	1	1.99
Lychee	1	0.50
Apple	2	4.98
Dragon Fruit	1	3.99
Pear	2	3.58
Longan	1	2.49

Checkout

Checkout completed for 1

Total Amount: \$18.53

OK

Remove Product Checkout

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UML Diagram:

1. User Login

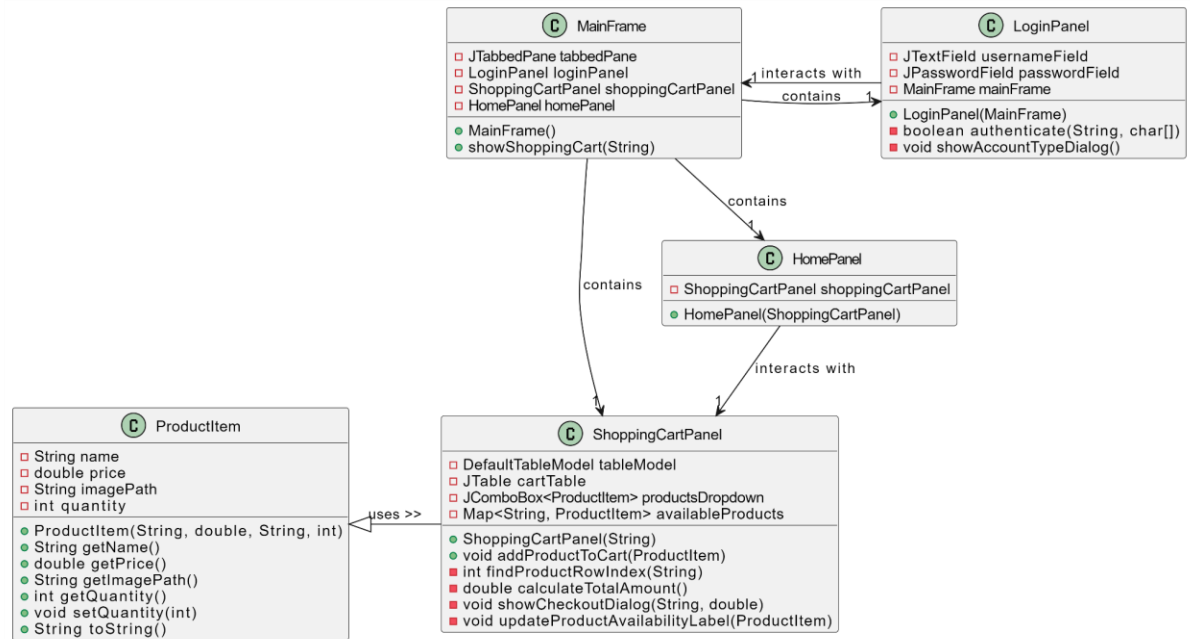


Figure 1 Class diagram

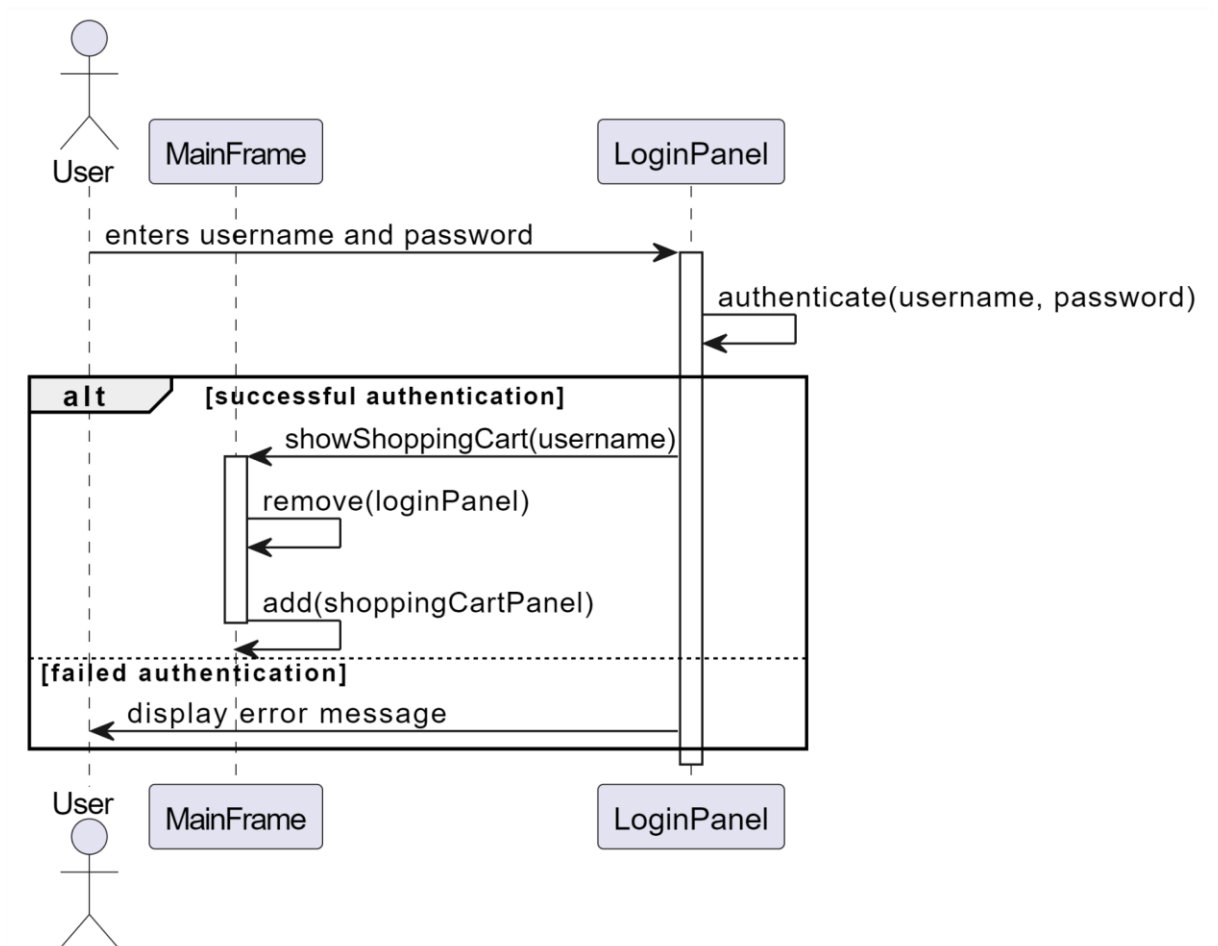


Figure 2 Sequence diagram

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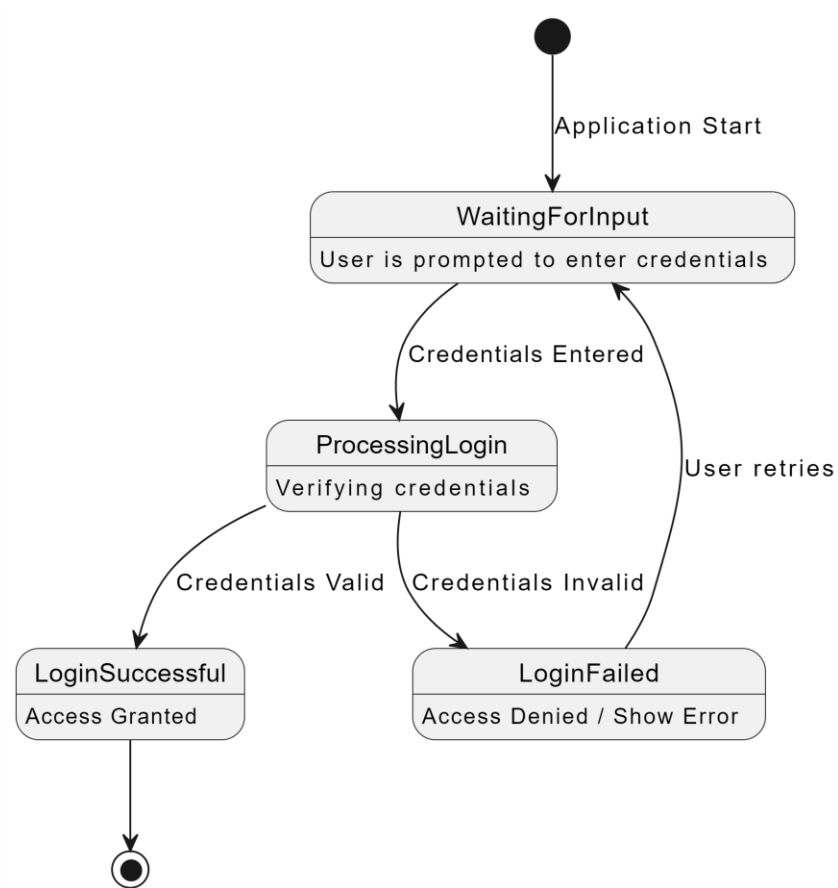


Figure 3 State diagram

2. User Adds item to inventory

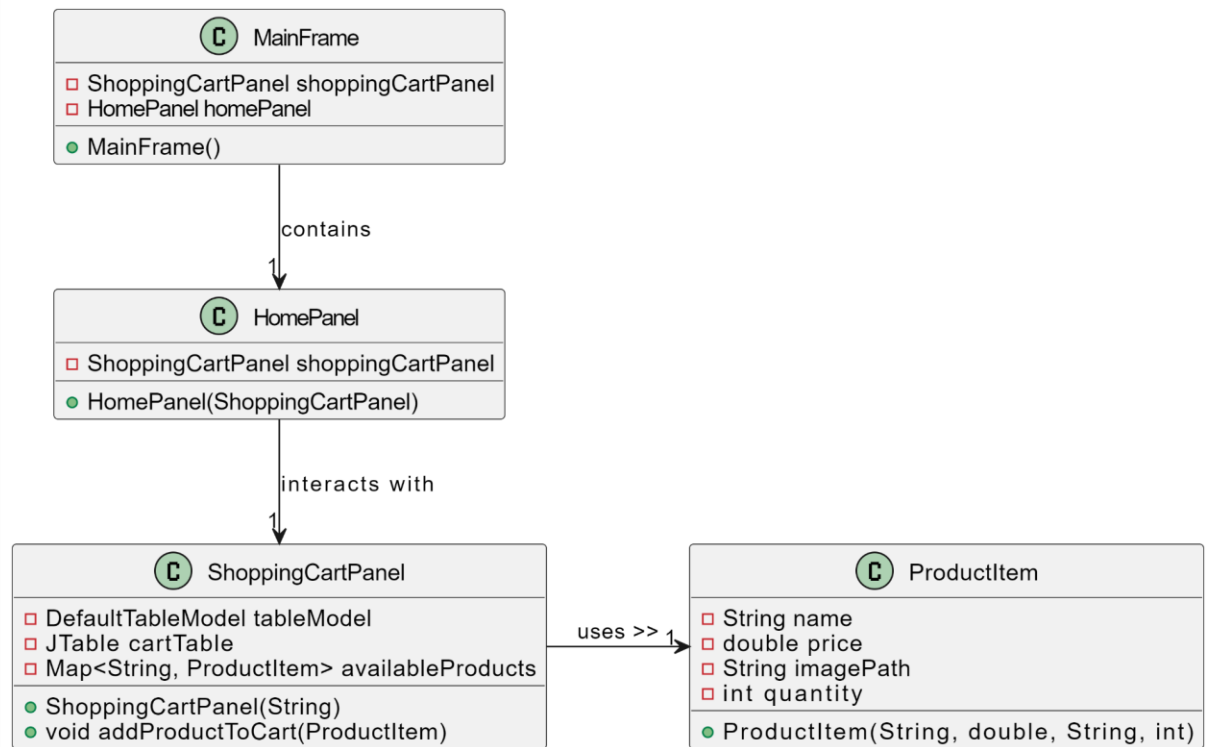


Figure 4 Class diagram

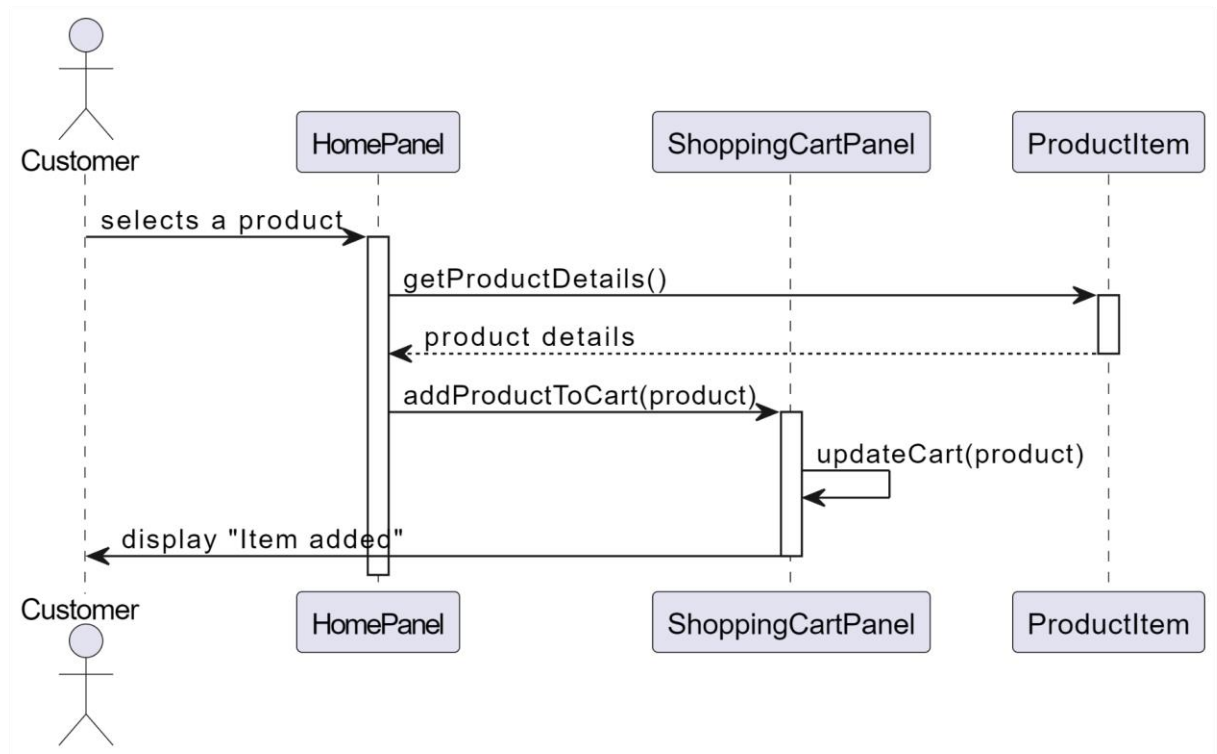


Figure 5 Sequence diagram

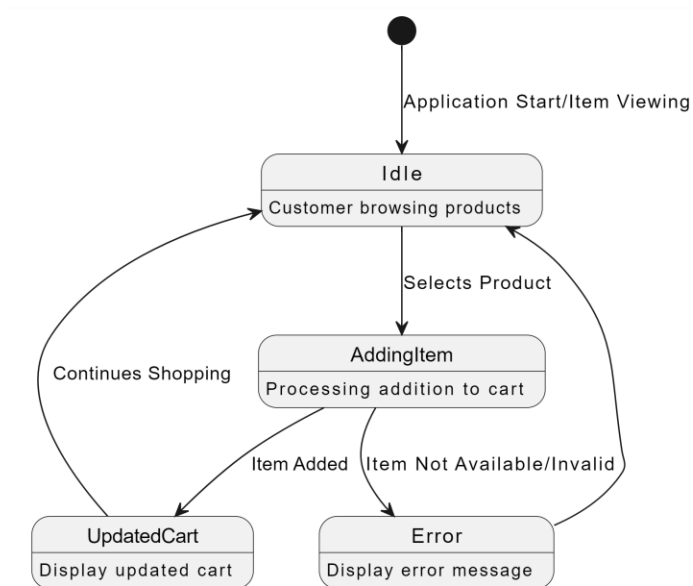


Figure 6 State diagram

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3. Customer Reviews Product Details

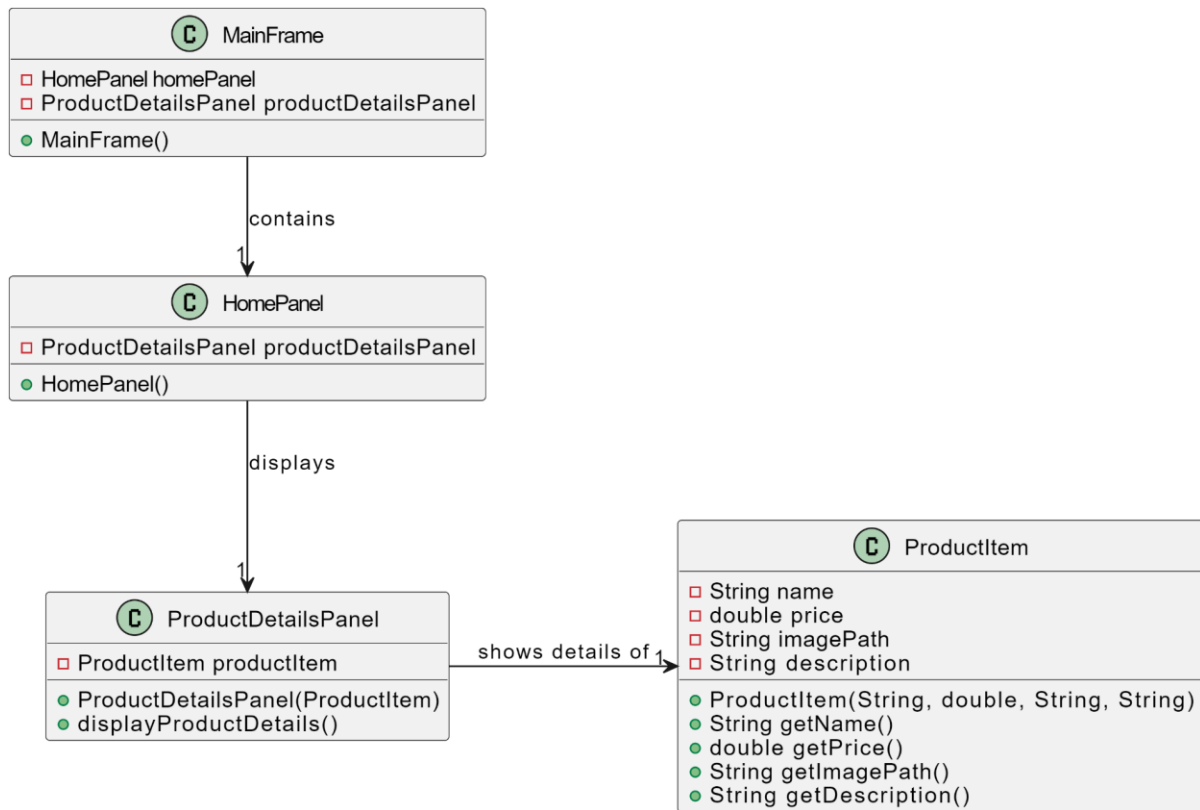


Figure 7 Class

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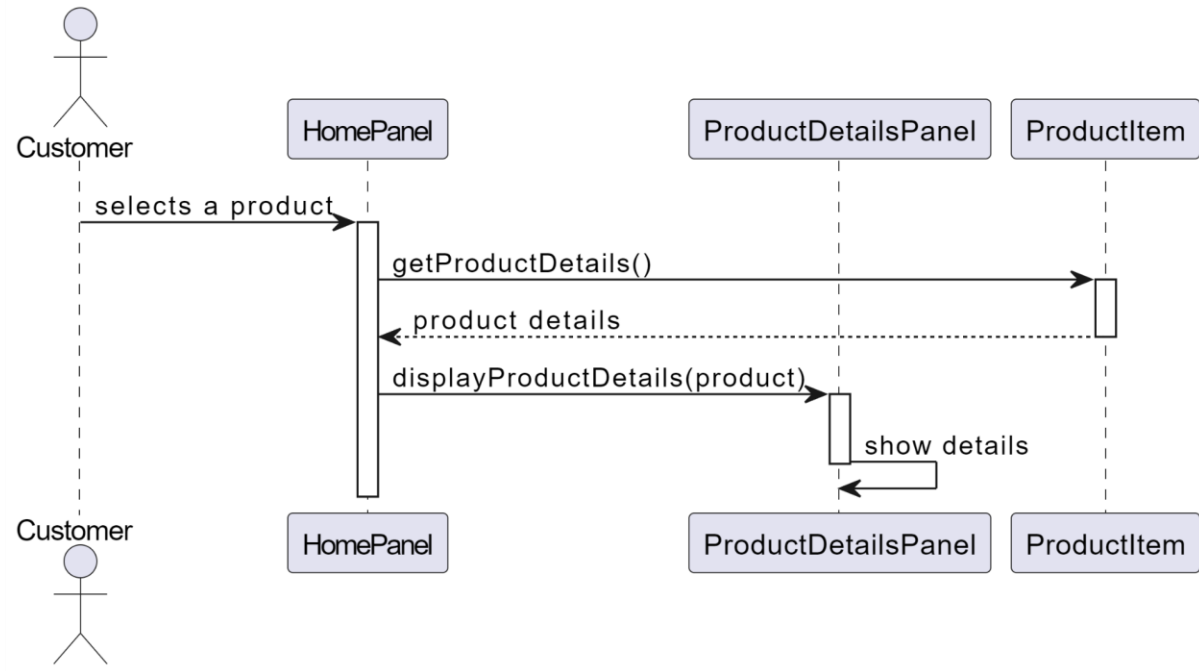


Figure 8 Sequence

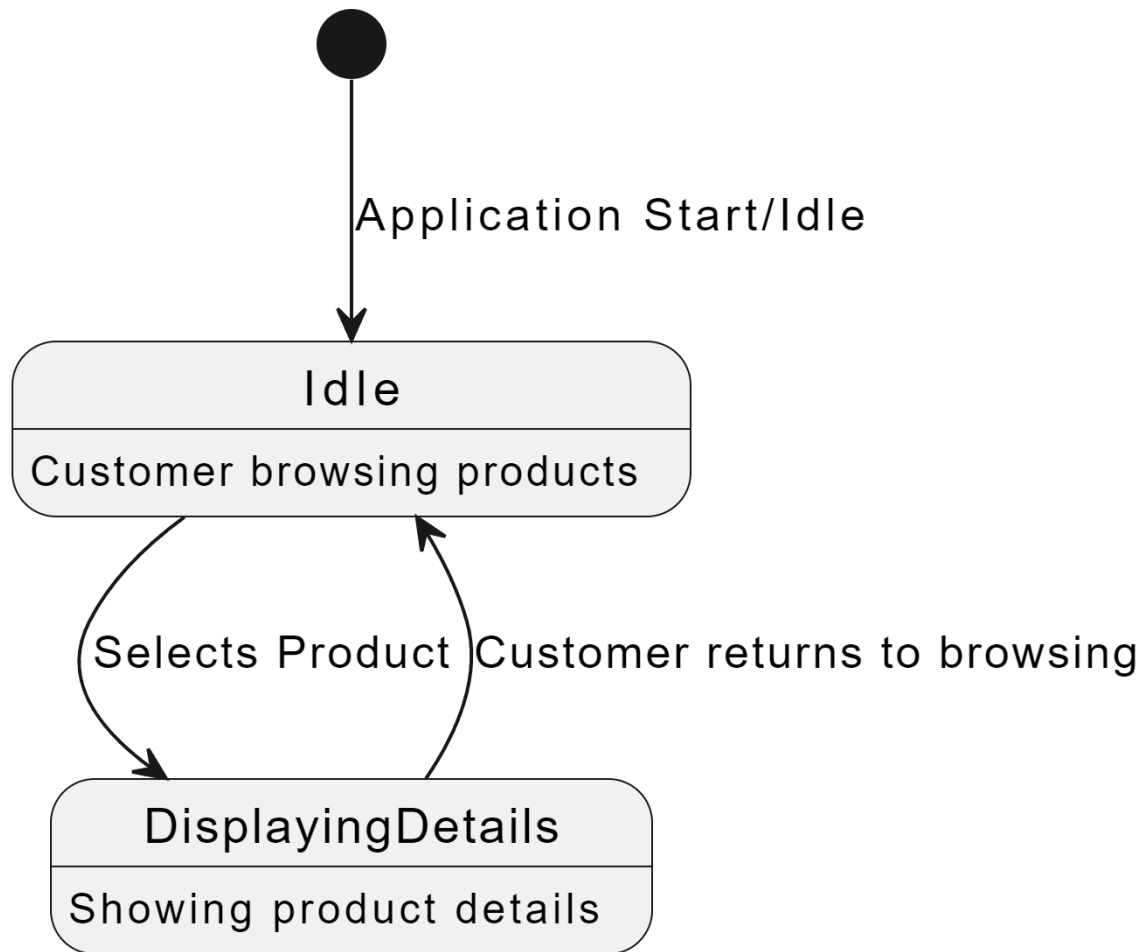


Figure 9 State

4. Customer Reviews/Updates Shopping Cart

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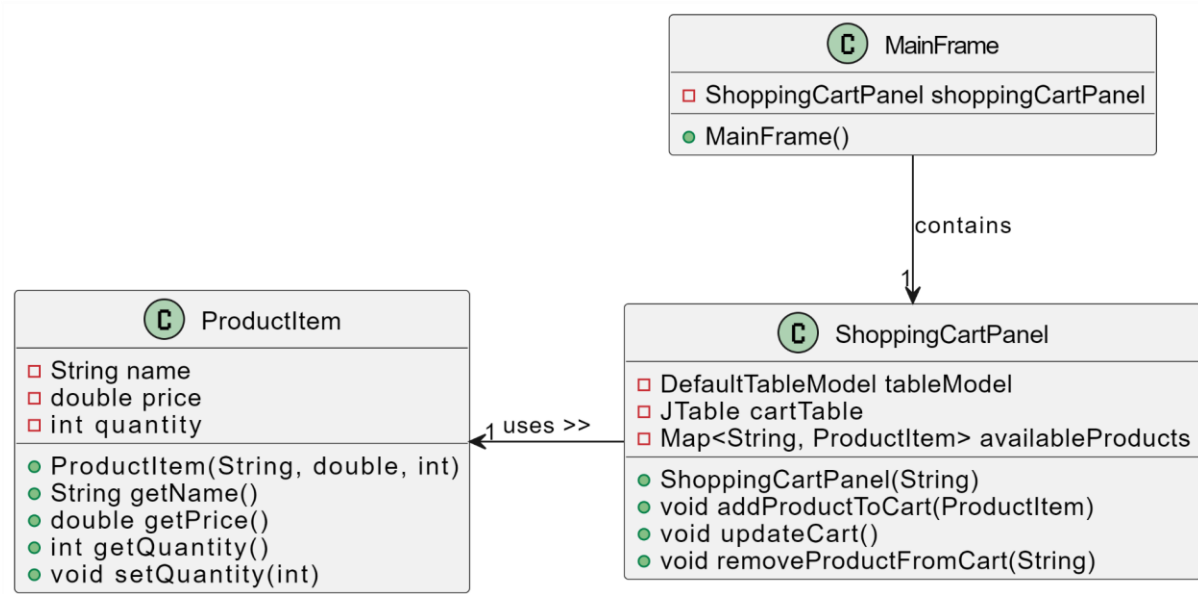


Figure 10 Class

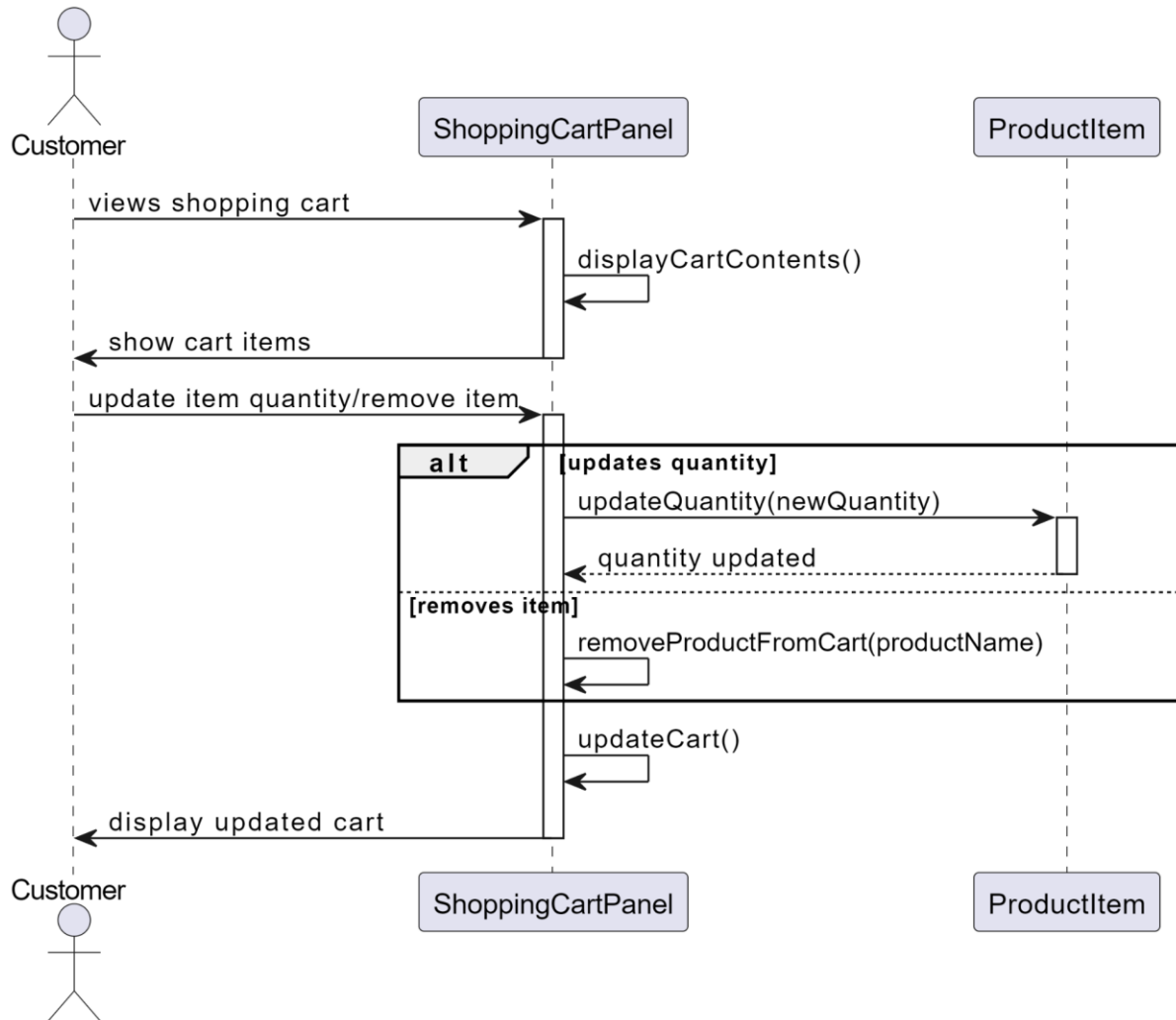


Figure 11 Sequence

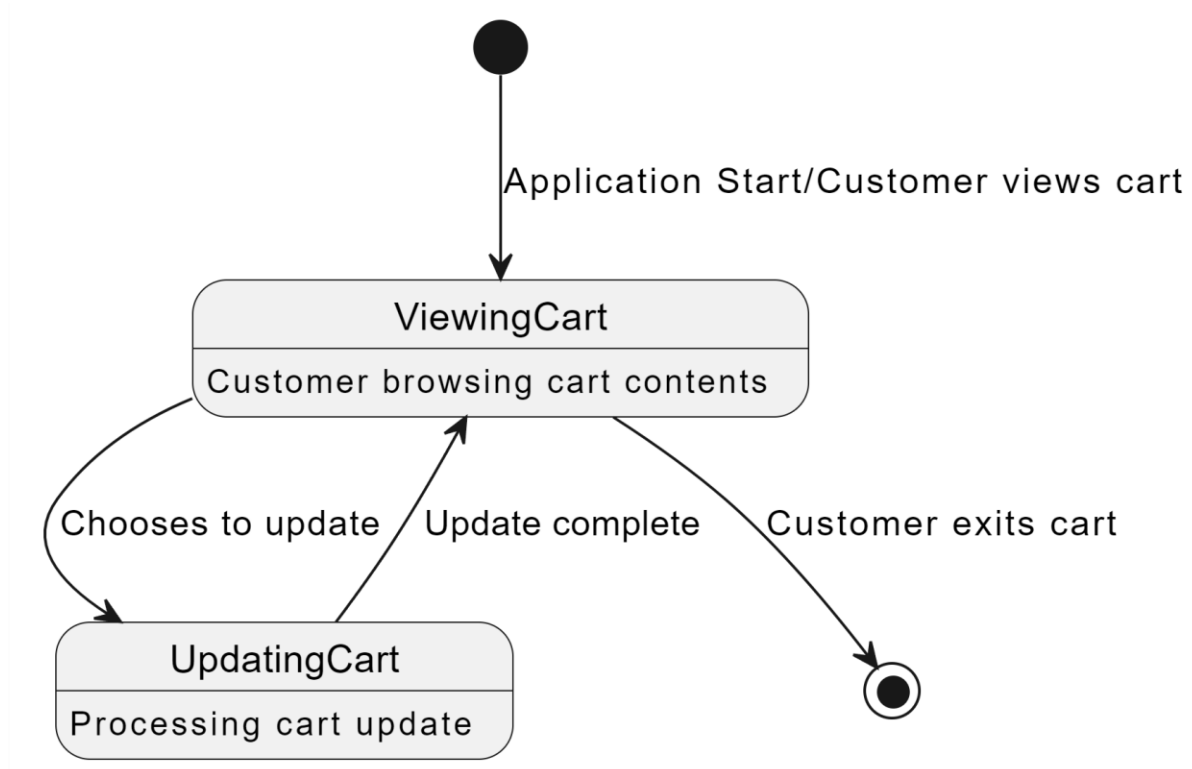


Figure 12 State

5. Customer Checks out

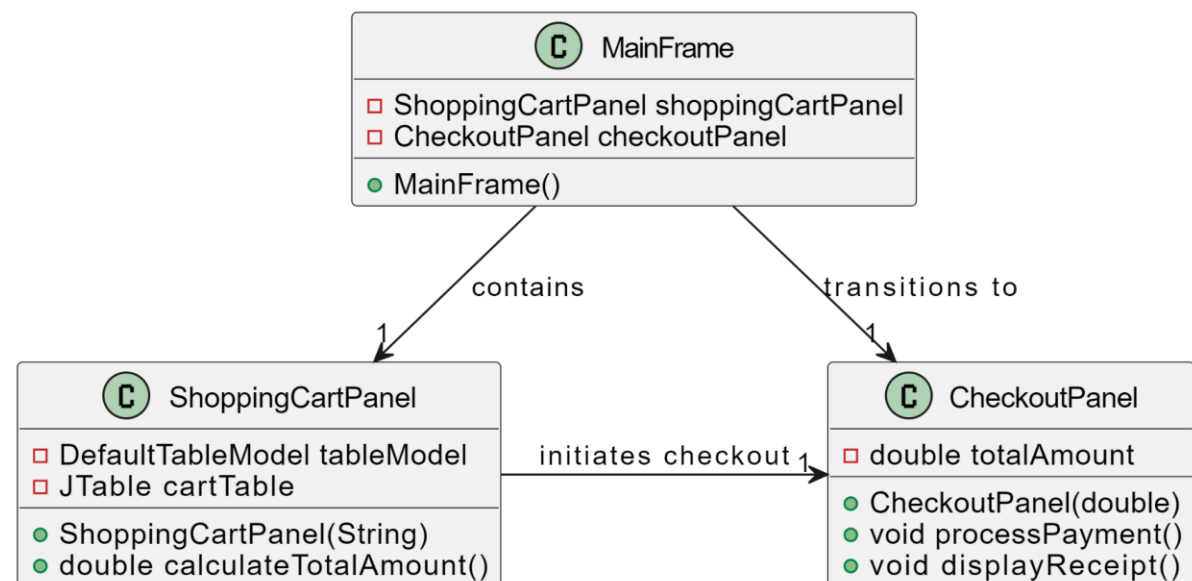


Figure 13 Class

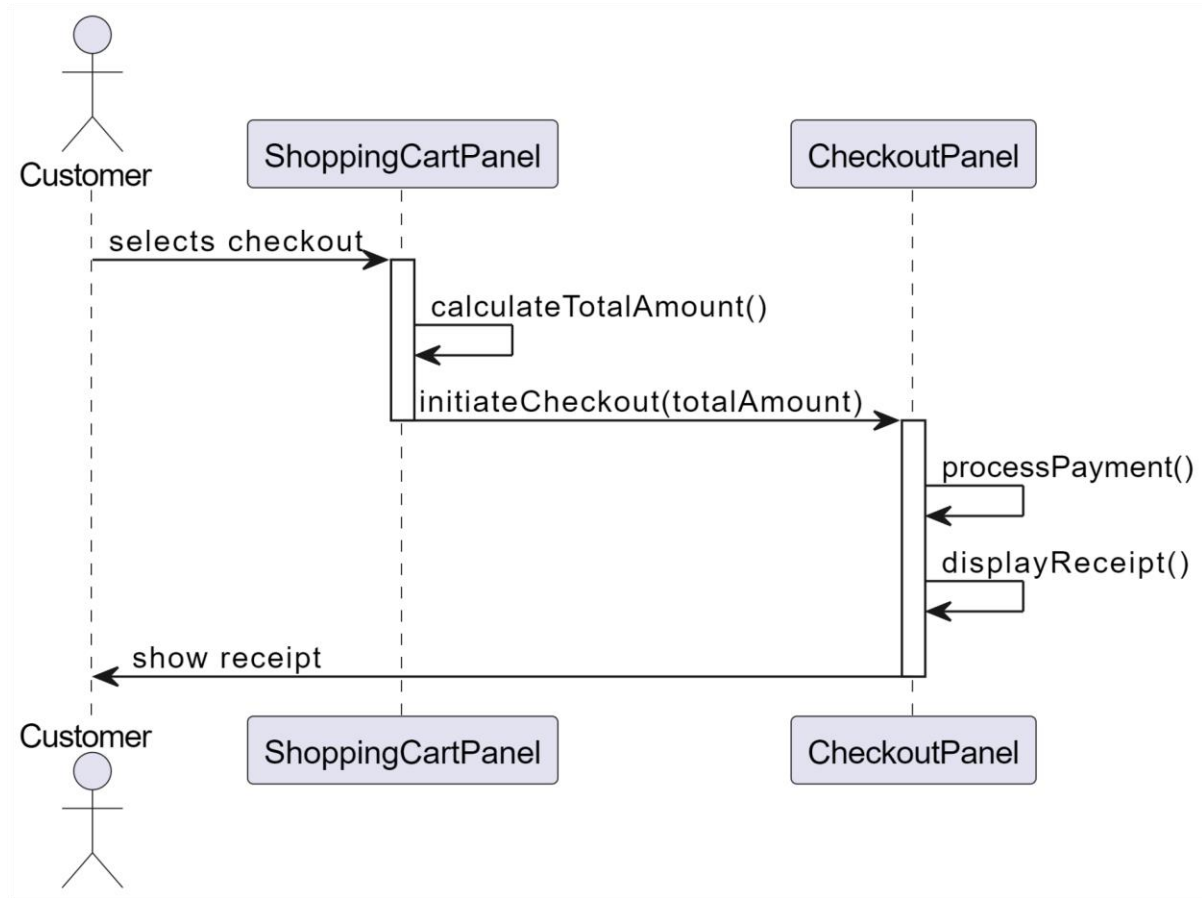


Figure 14 Sequence

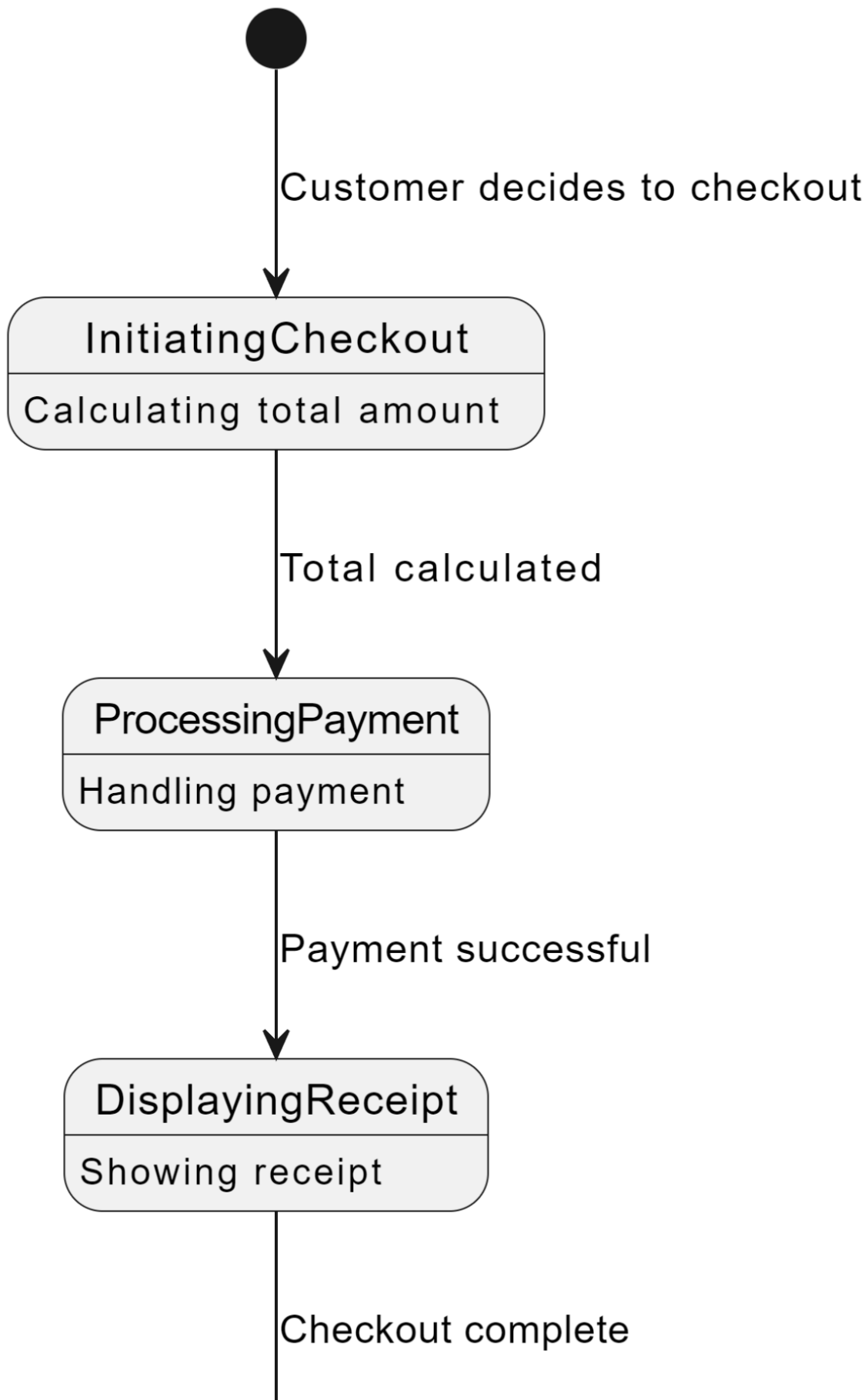


Figure 15 State

6. Seller Reviews/Updates Inventory

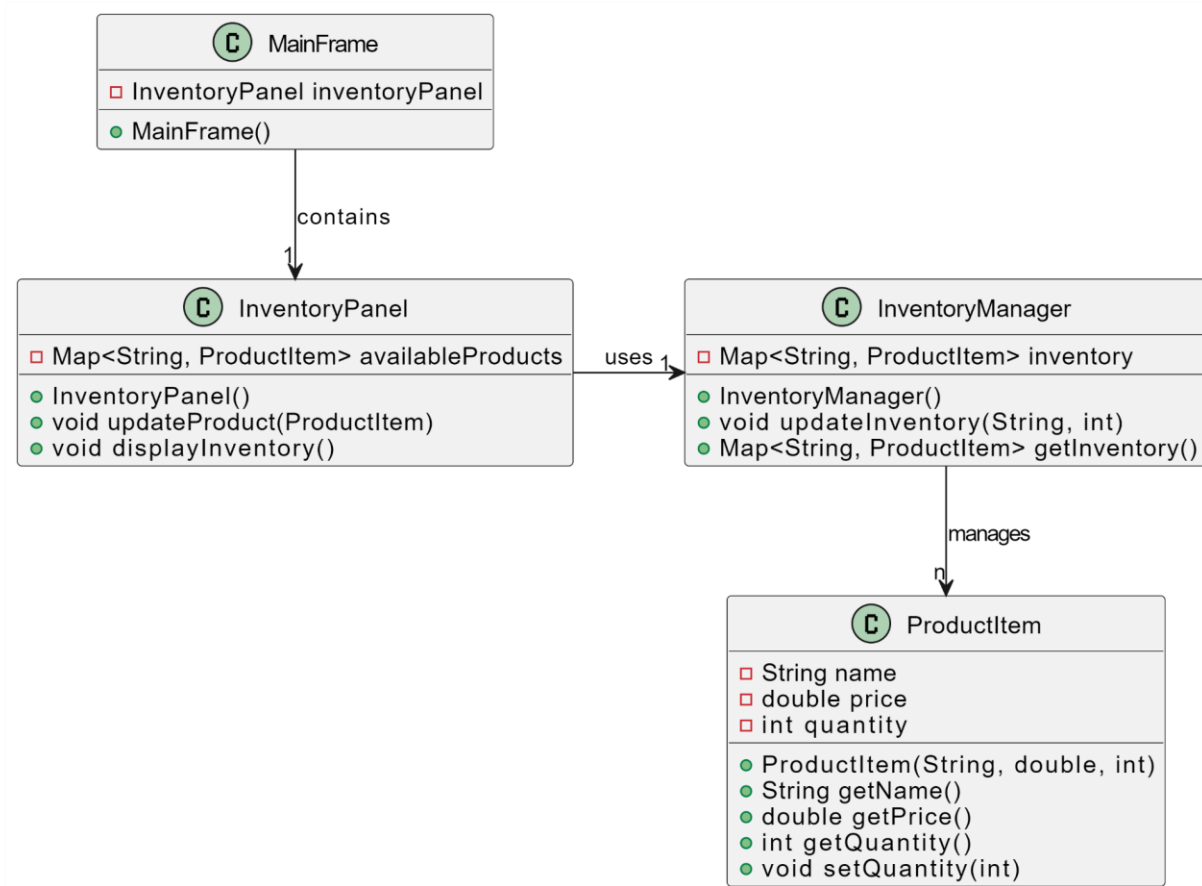


Figure 16 Class

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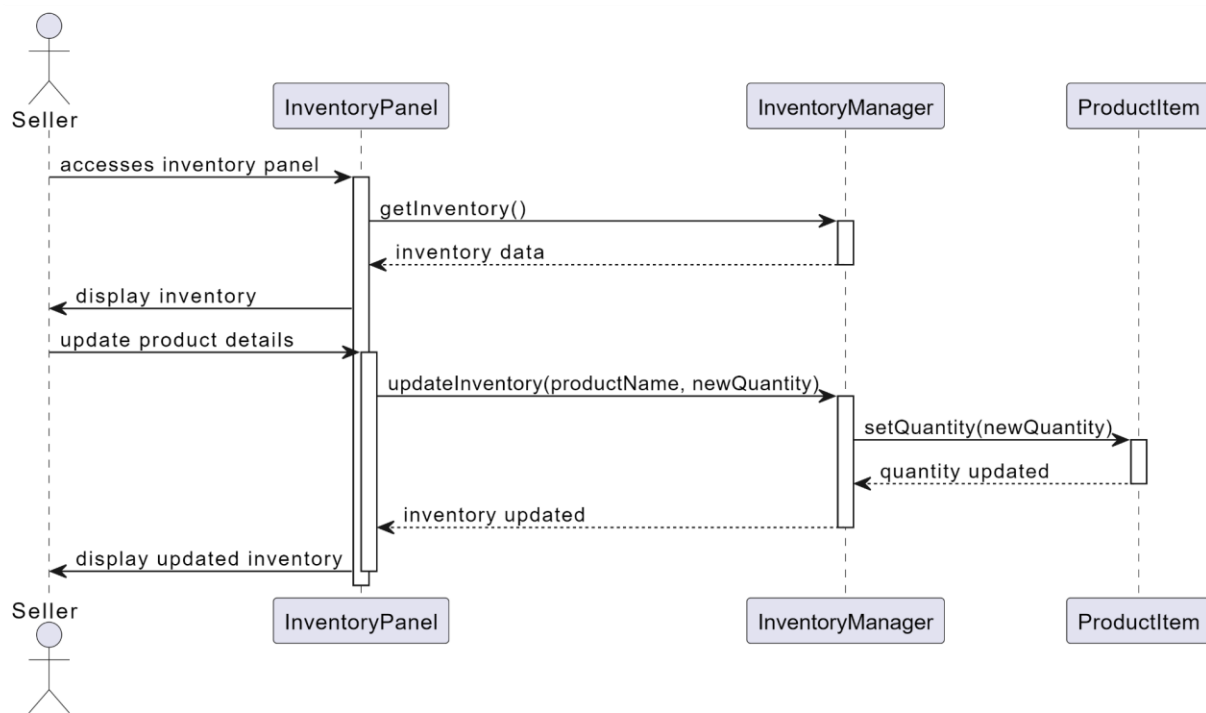


Figure 17 Sequence

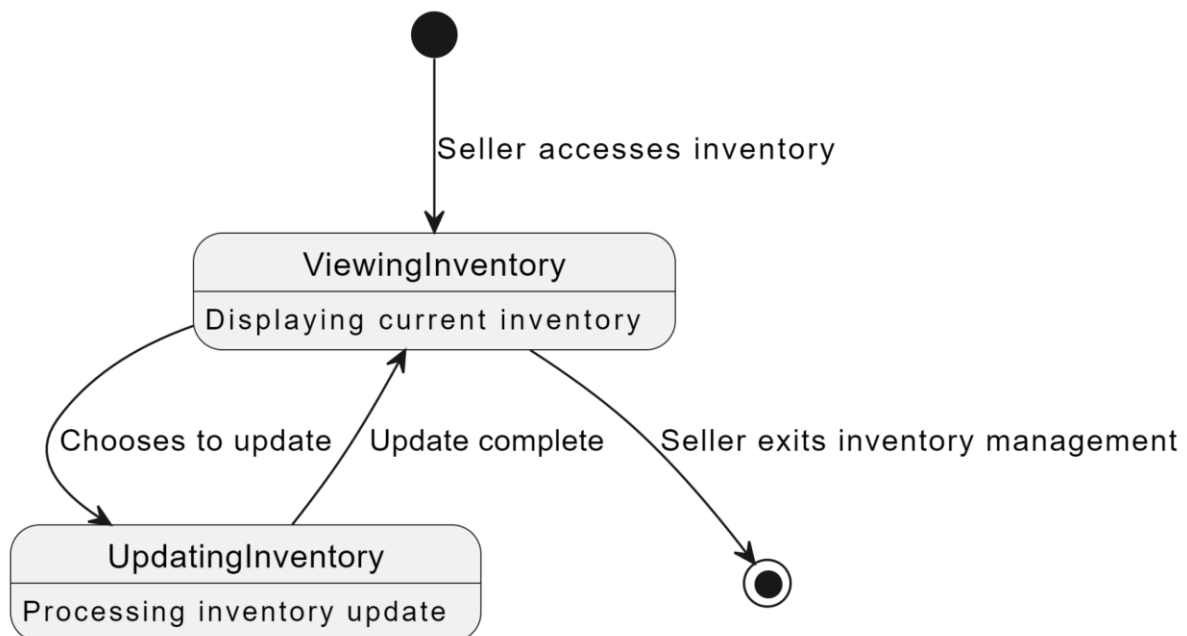


Figure 18 State

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7. Seller Adds New Product

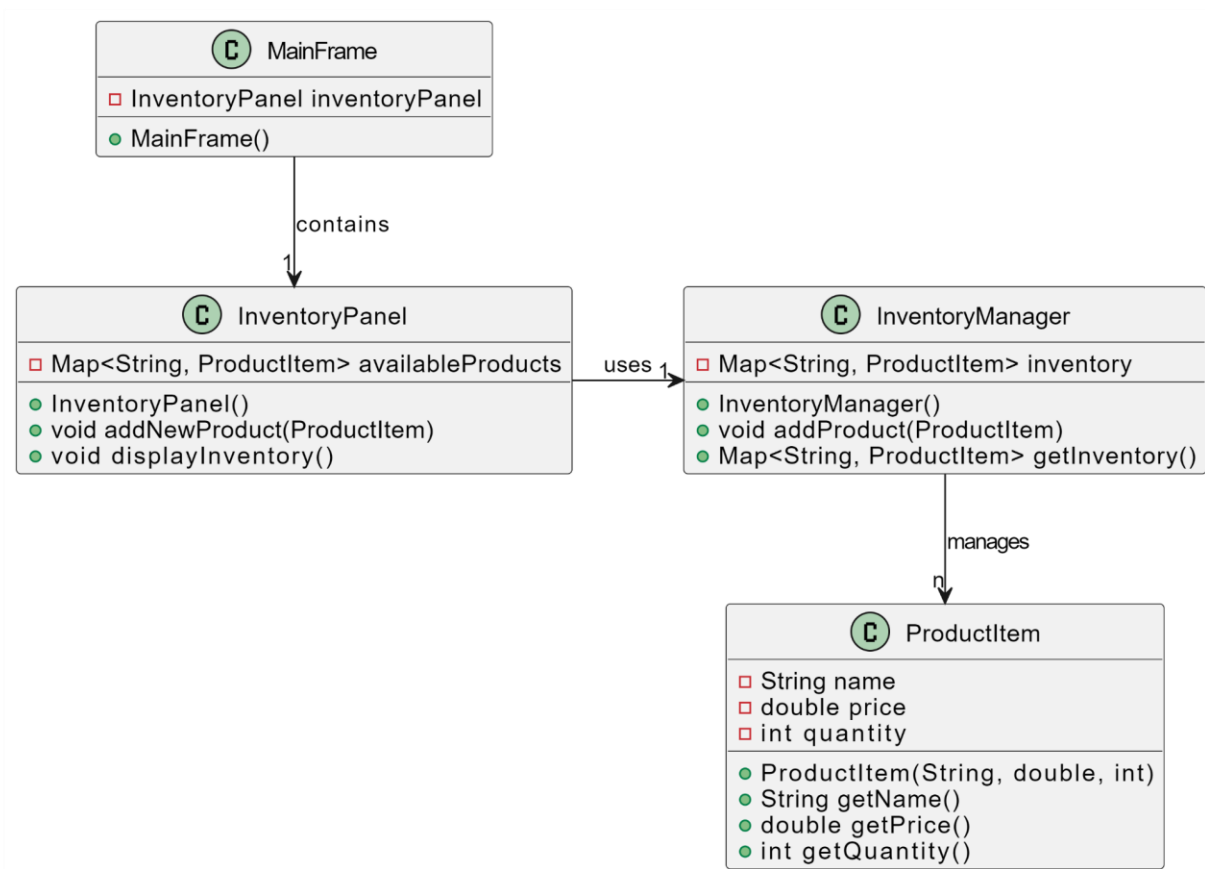


Figure 19 Class

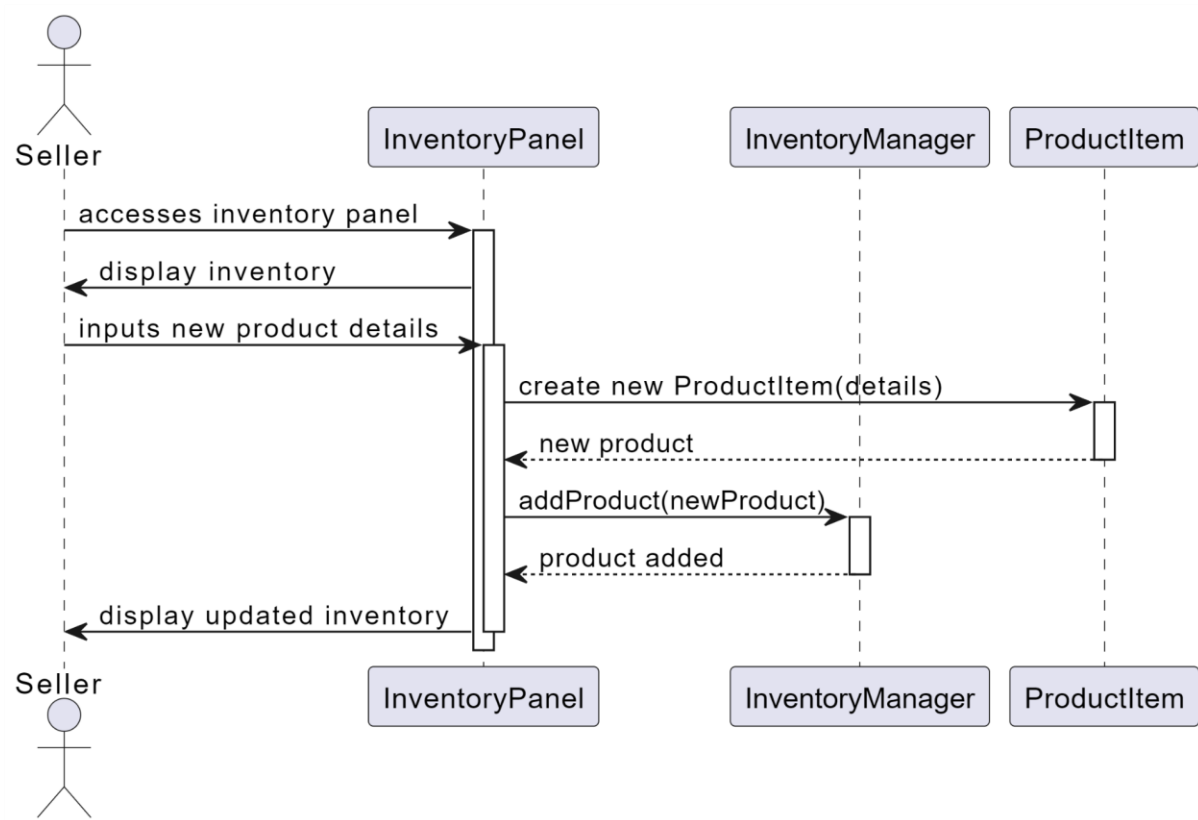


Figure 20 Sequence

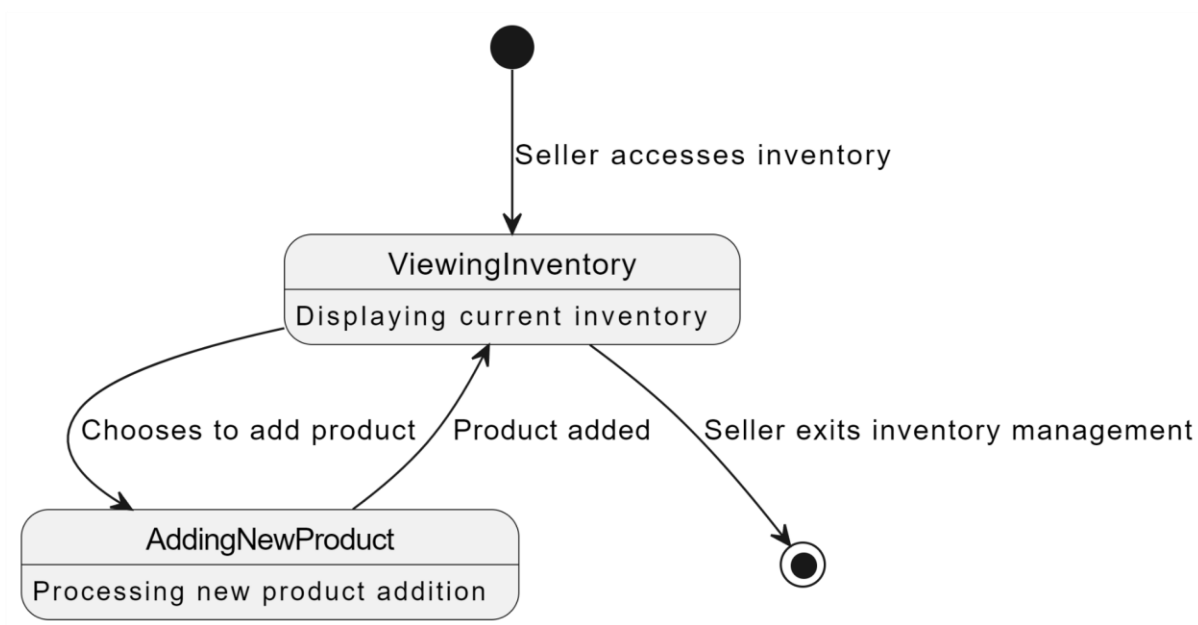


Figure 21 State

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CRC Cards:

Customer	
<ul style="list-style-type: none">• Store customer information (username, password)• Manage a shopping cart	<ul style="list-style-type: none">• Collaborates with ShoppingCart to manage the customer's shopping cart.

Seller	
<ul style="list-style-type: none">• Store seller information (username, password)• Manage an inventory of products• Add products to the inventory• Update product quantities in the inventory	<ul style="list-style-type: none">• Collaborates with Product to represent products in the inventory.

Product	
<ul style="list-style-type: none">• Store product information (product_id, name, price, quantity)• Update product details	<ul style="list-style-type: none">• Collaborates with ShoppingCartItem to represent products in a shopping cart.

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ShoppingCart	
<ul style="list-style-type: none">• Manage shopping cart items (add_item, calculate_total)	<ul style="list-style-type: none">• Collaborates with Product and ShoppingCartItem to handle items in the shopping cart.



Payment Gateway	
<ul style="list-style-type: none">• Validate credit card details during checkout	<ul style="list-style-type: none">• Collaborates with the Customer class for credit card validation.

Financial Tracking	
<ul style="list-style-type: none">• Track costs, revenues, and profits	<ul style="list-style-type: none">• Collaborates with the Seller class for tracking financial data.

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ShoppingCartItem	
<ul style="list-style-type: none">• Store information about a product in the shopping cart (product, quantity)	<ul style="list-style-type: none">• Collaborates with Product and ShoppingCart for representing and updating items in the shopping cart.

ShoppingCartDemo	
<ul style="list-style-type: none">• The main class for demonstrating the shopping cart functionality.	<ul style="list-style-type: none">• Collaborates with Customer, Seller, Product, ShoppingCart, and ShoppingCartItem to demonstrate how the system works.

MainFrame	
<ul style="list-style-type: none">• Create and manage the main application window (JFrame).• Initialize and manage tabs (Login, Shopping Cart, Home).	<ul style="list-style-type: none">• Collaborates with LoginPanel, ShoppingCartPanel, and HomePanel for displaying different application views.

LoginPanel	
<ul style="list-style-type: none">• Display the login user interface.• Authenticate users.	<ul style="list-style-type: none">• Collaborates with MainFrame for switching to the shopping cart view upon successful login.

ShoppingCartPanel	
<ul style="list-style-type: none">• Display the shopping cart user interface.• Manage the shopping cart contents.• Calculate the total amount.	<ul style="list-style-type: none">• Collaborates with ProductItem for adding products to the cart.• Collaborates with MainFrame for switching to the home view.• Collaborates with JTable and DefaultTableModel for displaying cart contents.• Collaborates with the CheckoutDialog for completing the checkout process.

HomePanel	
<ul style="list-style-type: none">• Display the home user interface with product listings.	<ul style="list-style-type: none">• Collaborates with ProductItem for representing and displaying products.• Collaborates with ShoppingCartPanel for adding products to the shopping cart.

ProductItem	
<ul style="list-style-type: none">• Store information about a product (name, price).• Provide a string representation of the product.	<ul style="list-style-type: none">• Collaborates with HomePanel and ShoppingCartPanel for representing and displaying products.

CheckoutDialog	
<ul style="list-style-type: none">• Display a dialog for completing the checkout process.	<ul style="list-style-type: none">• Collaborates with ShoppingCartPanel for retrieving the total amount and username.• Collaborates with JDialog and JPanel for displaying the dialog interface.