Project: Shopping Cart Application

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Function Specifications

I. Upon starting the application, the user is presented with a login screen. The login screen has a text field for the username, a text field for the password, and two buttons labeled "Log In as Buyer" and "Log In as Seller" below the two text fields.

BUYER

II. Pressing the "Log In as Buyer" button, after entering valid credentials into the username and password text fields, opens the Main Shopping window which displays a list of all the products that the store has on offer. Each entry on the list contains the name of a product, its price, and the amount in stock. Beside each product listing is a button labeled "Add". The total shopping cart price is displayed on the upper right part of the window. Clicking the Add button opens a new window described in <u>III.</u> Clicking a product's name opens a new window described in <u>IV.</u> Clicking the total shopping cart price opens a new window described in <u>V.</u>

III. Upon pressing the "Add" button in the Main Shopping window, a new Add Items window opens. This window contains a text field labeled "Number of Items", a button labeled "OK", and the total price of the current add order (which is the number inputted into the text field multiplied by the price of the product). After entering a valid amount into the text field (i.e. not negative and equal to or less than the total stock of the item), the total price of the add order as displayed on the Add Items window is updated to reflect the number inputted into the text field. Upon pressing the "OK" button, the items are added to the users shopping cart and the Add Items window closes. The shopping cart total displayed on the Main Shopping window is updated to reflect the added items.

IV. Clicking the name of a product in the Main Shopping window opens the Product Description window. This window displays the product's name, its price, the amount in stock, and a short description of the product written by the product's seller.

V. Clicking on the shopping cart total amount in the Main Shopping window opens the Shopping Cart window. This window contains a list of the products the user had added to his/her shopping cart, the number of each product the user specified in the Add order, the price of each Add order, and the total shopping cart price (which is the sum of the price of the Add orders). Next to each product listing is a button labeled "Remove". In the bottom right corner of the window is a button labeled "Check Out".

    A. Clicking the name of a product in the Shopping Cart window opens a new Modify Order window. This window contains a text field labeled "New Amount", a button labeled "OK", and the price of the modified Add order (which is the number entered in the text field multiplied by the product's price). After entering a valid amount into the text field (i.e. not negative and equal to or less than the total stock of the item), the total price of modified add order is updated to reflect the number inputted into the

text field. Pressing the "OK" button closes the Modify Order window and changes the amount in the associated Add order.

    B. Clicking the "Remove" button opens a new confirmation window that has the prompt: "Are you sure you want to remove this item from the shopping cart". Below the prompt are two buttons: a "Yes" button and a "No" button. Clicking the "Yes" button closes the confirmation window and removes the associated item from the shopping cart. The total shopping cart price is updated to reflect this change. If "No" is pressed, the confirmation window closes, but the associated item is not removed from the shopping cart.

VI. Clicking the "Check Out" button in the Shopping Cart window opens a new Order Confirmation window. This window contains a list of the items in the shopping cart, the amount in each Add order, the price of each Add order, and the total shopping cart price. At the bottom of the window is a button labeled "Order".

    A. Pressing the "Order" button opens a new Credit Card window. This window contains a text field for the user to input his/her credit card number and a button labeled "OK".

        1. Pressing the "OK" button in the Credit Card window after entering a credit card number into the text field removes all items from the user's shopping cart (thereby setting the shopping cart price to zero), closes the Credit Card window, the Order Confirmation window, and the Shopping Cart window. A new Order Placed window opens that contains the prompt: "Your order has been confirmed! Thank you for shopping with us!".

    B. Clicking on the name of a product in the Order Confirmation window opens a new Modify Order window. See part <u>IIIA</u>. for details on how this works.

SELLER

VII. Pressing the "Log In as Seller" button, after entering valid credentials into the username and password text fields, opens a new Main Seller window which displays a list of all the products that the user has put up for sale using the application. Each list item contains the name of the product being sold, the price at which the user is selling the product, and the amount of the product in stock. Next to each item listing is a button labeled "Remove", and there is a button labeled "Add Item" in the upper right part of the window.

VIII. Pressing the "Add Item" button opens a new Sell Item window. This window contains four text fields: the first labeled "Product Name", the second labeled "Price", the third labeled "Stock", and the fourth labeled "Description". At the bottom of the Sell Item window there is also a button labeled "OK". As the labels suggest, the user enters the name of the product they wish to sell, the price at which they are selling the product, the amount that can be sold, and a description of the product.

IX. Clicking on a product's name opens a new Modify Product window which contains the product's name (which is not modifiable), a text field labeled "Price", another text field labeled "Stock" and a last text field labeled "Description". At the bottom of the Modify Product window is a button labeled "OK". Entering a valid value (a string for the Description field or a number for the Price and Stock fields) and pressing the OK button overwrites the old value shown on the Main Seller window with the new value entered into the respective text field in the Modify Product window.

X. Pressing the "Remove" button that is next to a product will open a confirmation window with a prompt asking whether the user is sure he/she wants to remove the item, with buttons labeled "Yes" and "No" below the prompt.

XI. Clicking on "Revenue" button in the lower right of the main seller window will open the Revenue window where the seller's total profit is listed as well as a list of all the products sold by the user that have been bought by other users. At the bottom of the Revenue window is a button labeled "OK"; clicking on it closes the Revenue window.

UNIVERSAL

XII. If at any time the user closes a window that has spawned other windows, all the windows the closed window spawned close as well. For example, the user is at the Credit Card window (meaning the Main Shopping window, Shopping Cart window, and Order Confirmation window are all open) and closes the Shopping Cart window. All the windows the Shopping Cart window spawned (that is, the Order Confirmation window and the Credit Card window) close as well. Thus, only the Main window remains open.

XIII. Closing the Main Shopping window or the Main Seller window logs the user out.

User Logs In

1. The user opens the shopping application.
2. In the login window, the user is prompted to input username and password.
3. The user inputs a username and a password into their respective fields.
4. The user presses the "login as buyer" button.
5. The main shopping window opens.
6. The login window closes.
7. The user closes the main shopping window.

Variation 1: Invalid Login

1. In Step 3, user enters invalid username and/or invalid password.
2. The user presses the "login as buyer" button on the login window.
3. An error window pops up and displays a prompt:
   Access Failure: Invalid login credentials.
4. The user presses the OK button on the error window.
5. The error window closes.
6. The login window remains on the login page.

Variation 2: Closes Before Finishing

1. Start at Step 3.
2. The user closes the application.
3. The system does not check the login credentials.
4. The user is not logged in.

Customer Adds Item to Shopping Cart

1. Start at Step 6 in User Logs in

2. User clicks on the "add item" button that is next to a particular product.
3. An add items window appears and prompts the user to input a quantity.
4. The user inputs a quantity into the add items window.
5. The user clicks the OK button on the add items window.
6. The inputted quantity of the selected items are placed into the user's shopping cart.
7. The shopping cart total cost is updated.
8. The add items window closes.

Variation 1: Invalid Quantity
1. In Step 4, the user inputs an invalid number.
2. The user clicks the OK button.
3. An error window appears with a prompt:
   Invalid selection: Please enter a number between 1 and the amount in stock.
4. The user clicks the OK button on the error window.
5. The error window closes.
6. No item is entered into the user's shopping cart.
7. The main shopping window remains open.

Variation 2: Cancels Add Order
1. Start at Step 4.
2. The user closes the add items window.
3. No item is placed into the user's shopping cart.
4. The main shopping window remains open.

Variation 3: Closes Main Shopping Window
1. Start at Step 3.
2. The user closes the main shopping window.
3. The add items window closes.
4. No item is placed into the user's shopping cart.
5. The user is logged out.

Customer Reviews Product Details
1. Start at Step 6 in User Logs In.
2. The user clicks the name of a product.
3. A product description window appears displaying the product's name, price, description, and amount in stock.
4. The user closes the pop-up window.

Variation 1: Closes Main Shopping Window
1. Start at Step 3.
2. The user closes the main shopping window.
3. The product description window closes.

4. The user is logged out.

Customer Reviews Shopping Cart

1. Start at Step 6 in User Logs In.
2. The user clicks on the shopping cart total price on the main window.
3. A shopping cart window opens that displays the contents of the shopping cart, which includes the names, the prices, and the quantities of the items added to the shopping cart.
4. The user closes the shopping cart window.

Variation 1: Closes Main Shopping Window.

1. Start at Step 3.
2. The user closes the main shopping window.
3. The shopping cart window closes.
4. The user is logged out.

Customer Updates Shopping Cart Quantities

1. Start at Step 3 in Customer Reviews Shopping Cart.
2. The user clicks on the name of a product in the shopping cart in the shopping cart window.
3. A quantity change window appears, prompting the user to input a new quantity.
4. The user enters a new number into the quantity change window.
5. The user presses the OK button on the quantity change window.
6. The quantity of the product is updated.
7. The quantity change window closes.

Variation 1: Cancels Quantity Change

1. Start at Step 4.
2. The user closes the pop-up window.
3. The amount of the product in question is not changed.
4. The total shopping cart price does not change.

Variation 2: Invalid Quantity

1. Start at Step 4.
2. A pop-up window appears with a prompt:
   Invalid selection: please enter a number between 1 and the number of items in stock.
3. The user closes the pop-up window.
4. The quantity of the item in the shopping cart does not change.
5. The total shopping cart price does not change.
6. The shopping cart window remains open.

Variation 3: Closes Main Window

1. Start at Step 3.
2. The user closes the main shopping window.
3. The quantity change window closes.
4. The shopping cart window closes.
5. The amount of the product in the shopping cart does not change.

Variation 4: Closes Shopping Cart Window
1. Start at Step 3.
2. The user closes the shopping cart window.
3. The quantity change window closes.
4. The main shopping window remains open.

Customer Removes Item from Shopping Cart
1. Start at Step 3 in Customer Reviews Shopping Cart.
2. The user clicks on the remove button of a particular item in the shopping cart in the shopping cart window.
3. A confirmation window appears asking the user to confirm the removal.
4. The user clicks the yes button.
5. The item in question is removed from the shopping cart and shopping cart window.
6. The cost of the items is deducted from the total shopping cart price.
7. The total shopping cart price is updated in the shopping cart window.
8. The total shopping cart price is updated in the main shopping window.
9. The confirmation window closes.

Variation 1: Cancels Removal
1. Start at Step 3.
2. The user clicks the no button.
3. The confirmation window closes.
4. No item is removed from the shopping cart.
5. The shopping cart window remains open.
6. The main shopping window remains open.

Variation 2: Closes Shopping Cart Window
1. Start at Step 3.
2. The user closes the shopping cart window.
3. The confirmation window closes.
4. No item is removed from the shopping cart.
5. The main shopping window remains open.

Variation 3: Closes Main Shopping Window
1. Start at Step 3.
2. The user closes the main shopping window.

3. The confirmation window closes.
4. The shopping cart window closes.
5. No item is removed from the shopping cart.
6. The user is logged out.

Customer Checks Out

1. Start at Step 6 in User Logs In.
2. The user clicks on the checkout button on the main shopping window.
3. A order confirmation window opens that displaying the contents of the shopping cart (the items' name, quantities, and price of items, and total shopping cart price).
4. The user clicks the order button.
5. A credit card window opens asking for the user's credit card number.
6. The user enters a credit card number and presses the OK button on the credit card window.
7. The credit card window closes.
8. The order confirmation window closes.
9. The quantities of the items in the main shopping window (i.e. the items' stock) deduct the quantities of the items that are in the shopping cart.
10. All items are removed from the shopping cart.
11. The total shopping cart price is reset to 0.
12. A confirmation window opens confirming that the order has been placed.
13. The main shopping window remains open.

Variation 1: Cancel Checkout

1. Start at Step 3.
2. The user closes the order confirmation window.
3. No order is placed.
4. No item is removed from the shopping cart.
5. The total shopping cart price does not change.
6. The main shopping window remains open.

Variation 2: Cancel Credit Card

1. Start at Step 5.
2. The user closes the credit card window.
3. The order is not placed.
4. No item is removed from the shopping cart.
5. The total shopping cart price does not change.
6. The order confirmation window remains open.
7. The main shopping window remains open.

Variation 3: Empty Shopping Cart

1. Start at Step 2.

2. A pop-up window appears with a prompt:
   There are no items in your cart!
3. The user clicks the OK button on the pop-up window.
4. The pop-up window closes.
5. No item is added to the shopping cart.
6. The total shopping cart price remains at 0.

Variation 4: Closes Order Confirmation Window
1. Start at Step 6.
2. The user closes the order confirmation window.
3. The credit card window closes.
4. The main shopping window remains open.
5. No order is placed.

Variation 5: Closes Main Shopping Window
1. Start at Step 3.
2. The user closes the main shopping window.
3. The order confirmation window closes.
4. No order is placed.
5. The user is logged out

Customer Changes Quantity at Checkout
1. Start at Step 3 in Customer Checks Out.
2. The user clicks the name of a product in the checkout window.
3. A modify order window appears and prompts the user to enter a new quantity for the item in question.
4. The user enters a value into the quantity field.
5. The user presses the OK button in the modify order window.
6. The quantity of the item in the checkout window is updated.
7. The price of the item(s) is updated.
8. The total shopping cart price is updated.
9. The modify order window closes.
10. The order confirmation window remains open.
11. The main shopping window remains open.
12. No order is placed.

Variation 1: Closes Modify Order Window
1. Start at Step 3.
2. The user closes the modify order window.
3. The quantity of the item in shopping cart does not change.
4. The order confirmation window remains open.
5. The main shopping window remains open.

Variation 2: Invalid Quantity
1. Start at Step 4.
2. An error window appears with a prompt:
   Invalid input: Please enter an integer between 1 and the amount of item in stock.
3. The user clicks the OK button on the error window.
4. The error window closes.
5. The quantity of items does not change.

Variation 3: Closes Order Confirmation Window
1. Start at Step 3.
2. The user closes the order confirmation window.
3. The modify order window closes.
4. The main shopping window remains open.
5. The quantity of items remains unchanged.

Variation 4: Closes Main Shopping Window
1. Start at Step 3.
2. The user closes the main shopping window.
3. The modify order window closes.
4. The order confirmation window closes.
5. The quantity of items remains unchanged.
6. No order is placed.
7. The user is logged out.

Seller Logs In 💬
1. Start at Step 3 in User Logs In.
2. The user presses the login as seller button.
3. The main seller window opens.
4. The login window closes.
5. The user closes the main seller window.

Variation 1: Invalid Login
1. Start at Step 3.
2. An error window open with a prompt:
   Access Failure: Invalid Login credentials
3. The user clicks the OK button on the error window.
4. The error window closes.
5. The login window remains open.

Variation 2: Closes Before Finishing
1. Start at Step 3.

2. The user closes the login window.
3. The system does not check the login credentials.
4. The user is not logged in.

Seller Adds Item to Inventory

1. Start at Step 4 of Seller Logs In
2. The user clicks on the add new item button on the main seller window.
3. The sell item window appears that prompts the user for the name of the item, the price of the item, the quantity of the item to be in stock, and a description of the item.
4. The user fills in the name, price, and quantity fields and the description field.
5. The user clicks the OK button on the sell item window.
6. The main seller window adds the new item to its displayed list of items.
7. The sell item window closes.

Variation 1: No Description
1. Star at Step 3.
2. The user fills in the name, price, and quantity fields, but not the description field.
3. The user clicks the OK button on the sell item window.
4. The main seller window adds the new item to its displayed list of items.
5. The description of the added item is blank.
6. The sell item window closes.

Variation 2: Cancel
1. Start at Step 4.
2. The user clicks the cancel button on the add item window.
3. The sell item window closes.
4. The main seller window remains open.
5. No item is added to the inventory.

Variation 3: Empty Fields
1. Start at Step 3.
2. The user does not fills all or any of the name, price, and quantity fields.
3. An error window appears with a prompt:
   Error: Please fill all fields.
4. The user clicks the OK button on the error window.
5. The sell item window remains open.
6. The main seller window remains open.
7. No item is added to the inventory.

Variation 4: Closes Main Seller Window
1. Start at Step 4.
2. The user closes the main seller window.

3. The add item window closes.
4. No item is added to the inventory.
5. The user is logged out.

Seller Updates Item

1. Start at Step 4 of Seller Logs In.
2. The user clicks the name of an item in the main seller window.
3. A modify product window opens and prompts the user for a new price and quantity.
4. The user enters new values into the price and quantity fields.
5. The user presses the OK button on the modify product window.
6. The main seller window updates the price and quantity of the item in question.
7. The modify product window closes.

Variation 1: Empty Price Field

1. Start at Step 3.
2. The user only fills the quantity field on the modify product window.
3. The user presses the OK button on the modify product window.
4. The main seller window updates the quantity of the item in question.
5. The item's price does not change.
6. The modify product window closes.
7. The main seller window remains open.

Variation 2: Empty Quantity Field

1. Start at Step 3.
2. The user only fills the price field on the modify product window.
3. The user presses the OK button on the modify product window.
4. The main seller window updates the price of the item in question.
5. The item's quantity does not change.
6. The modify product window closes.
7. The main seller window remains open.

Variation 3: Empty Fields

1. Start at Step 3.
2. The user presses the OK button.
3. The item's price does not change.
4. The item's quantity does not change.
5. The modify product window closes.
6. The main seller window remains open.

Variation 4: Cancel

1. Start at Step 3.
2. The user presses the Cancel button on the modify product window.

3. The modify product window closes.
4. The item's price does not change.
5. The item's quantity does not change.
6. The main seller window remains open.

<u>Variation 5: Invalid Input</u>
1. Start at Step 5.
2. An error window appears with a prompt:
   Error: Please enter only positive numbers.
3. The user presses the OK button on the error window.
4. The error window closes.
5. The modify product window remains open.
6. The main seller window remains open.

<u>Variation 6: Close Main Window</u>
1. Start at Step 4.
2. The user closes the main seller window.
3. The modify product window closes.
4. The item is not updated.
5. The user is logged out.

Seller Removes Item
1. Start at Step 4 of Seller Logs In.
2. The user clicks the remove button next to an item in the main seller window.
3. A confirmation window appears and asks the user to confirm the item's removal.
4. The user presses the Yes button on the confirmation window.
5. The item is removed from the inventory.
6. The main seller window updates.
7. The confirmation window closes.
8. The main seller window remains open.

<u>Variation 1: Cancels</u>
1. Start at Step 3.
2. The user presses the No button on the confirmation window.
3. The confirmation window closes.
4. The item is not removed.
5. The main seller window remains open.

<u>Variation 2: Closes Main Seller Window</u>
1. Start at Step 3.
2. The user closes the main seller window.
3. The confirmation window closes.

4. No item is removed.
5. The user is logged out.

Seller Checks Revenue

1. Start at Step 4 of Seller Logs In.
2. The user clicks the revenue button on the main seller window.
3. A revenue window opens displaying the total user's revenue and items sold.
4. The user closes the window.

Variation 1: Closes Main seller Window

1. Start at Step 3.
2. The user closes the main seller window.
3. The revenue window closes.
4. The user is logged out.

Glossary

Add order: the process by which a user adds new items to his/her shopping cart.
Prompt: a sentence, short phrase, or word; usually used to inform the user or to ask something of the user.
String: any snippet of written human language, from a single letter to complex sentences.
Text field: a section of a window that allows the user to enter numbers or strings using the keyboard; in this application, text fields can accept either positive numbers or strings.
Total shopping cart price: the summation of the prices of all the products in the user's shopping cart. For example, if I have in my cart 2 Product As (which are worth $1.00) and 1 Product B (worth $2.00), the total shopping cart price would come to $4.00.

System

Takes input from user via keyboard and mouse.

Connection

Connection

Holds session data.
Get input from system.

System
LoginWindow 💬
MainShopping
MainSeller

Login

Prompts user for information.
Checks to see if inputted info is valid.
Redirects user to main shopping screen or to main seller screen.

AccountList 💬
Account 💬
MainShopping
MainSeller

AccountList 💬

Contains accounts.
💬
Account 💬

Account 💬

Contains username and password.
Contains the shopping cart, which in turn is an aggregate of AddOrders. 💬
Contains total shopping cart price. 💬
Creates, modifies, and deletes orders. 💬
Contains Seller object.

ShoppingCart
AddOrder
Seller

Seller

Contains seller inventory, revenue, and a list of products sold.
Adds, removes, and modifies products.

Product
Inventory

Product

Contains seller's username.
Contains item name, price, and stock.
Contains item description.

Inventory

Contains all products from all sellers' inventories.

Product
Seller
Account

MainShopping

Displays list of products for sale.
Displays shopping cart total.
Lets user add items to shopping cart.
Opens window with a product's description

Product
Inventory
ShoppingCart
AddOrder

AddOrder

Contains number of items in order.
Contains total order price.
Contains order ID.

Product

ShoppingCart

Displays current user's add orders from Account.
Sums and displays total shopping cart price.
Lets user modify and remove orders.

AddOrder
OrderConfirmation

OrderConfirmation

Displays contents of shopping cart.
Lets user modify or remove orders.

ShoppingCart
CreditCard

CreditCard

Prompts user for credit card.
Checks user's credit card number.

MainSeller

Displays current user's seller inventory.
Displays total revenue and sold items list.
Lets user add, modify, or remove products from his/her inventory.

Account

Sequence diagram with lifelines: System, Connection, Login, MainShopping, MainSeller, AccountList, ShoppingCart, Account, Inventory, Product, AddOrder, OrderConfirm, CredtiCard, Seller

Open app
createWindow
Open window
Display

Buyer login
findAccount
checkUser
Open main window
Open window
Get shopping cart
Update
Login accepted

Add item to cart
searchProduct
getStock
Stock valid
createOrder
Add order to cart
Update
Item added

Open cart
createWindow
Window
Window
Display

Edits item in cart
getStock
Valid
getOrder
editOrder
Order editted

Delete item in cart
deleteOrder
Order deleted

Checkout
openCheckout
openCard
checkCard
Empty cart
Card valid
Update
Order placed

Edit confirmation order
getOrder
searchProduct
getStock
Valid stock
modifyOrder
modify
Update
Update
Order editted

Sequence diagram participants: System, Connection, Login, MainShopping, MainSeller, AccountList, ShoppingCart, Account, Inventory, Product, AddOrder, OrderConfirm, CredtiCard, Seller

Remove item from order confirmation
Remove item
deleteOrder
Update
Order deleted

Login as Seller
findAccount
checkUser
Valid user
Open main window
Open window
checkAccount
Get seller inventory & revenue
Seller inventory & revenue
Login accepted

Add new product
checkAccount
newProduct
Add product to seller inventory
Update
Product added

Remove item from Inventory
checkAccount
Remove Product
removeProduct
Update
Updated
Removed

Edit product
checkAccount
getProduct
Product
Edit product
Update
Product editted

Get revenue & list of sold products
checkAccount
Get sold items and revenue
Sold items list and total revenue