

E-commerce system

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INTRODUCTION

Problem Statement

Many existing e-commerce systems suffer from slow performance, difficult navigation, weak search features, and unreliable payment or order tracking. These issues have led to poor customer experience and reduced sales. Therefore, a new e-commerce system is needed to provide fast, secure, and user-friendly shopping with efficient product browsing, smooth checkout, and easy management for both customers and admins.

Scope

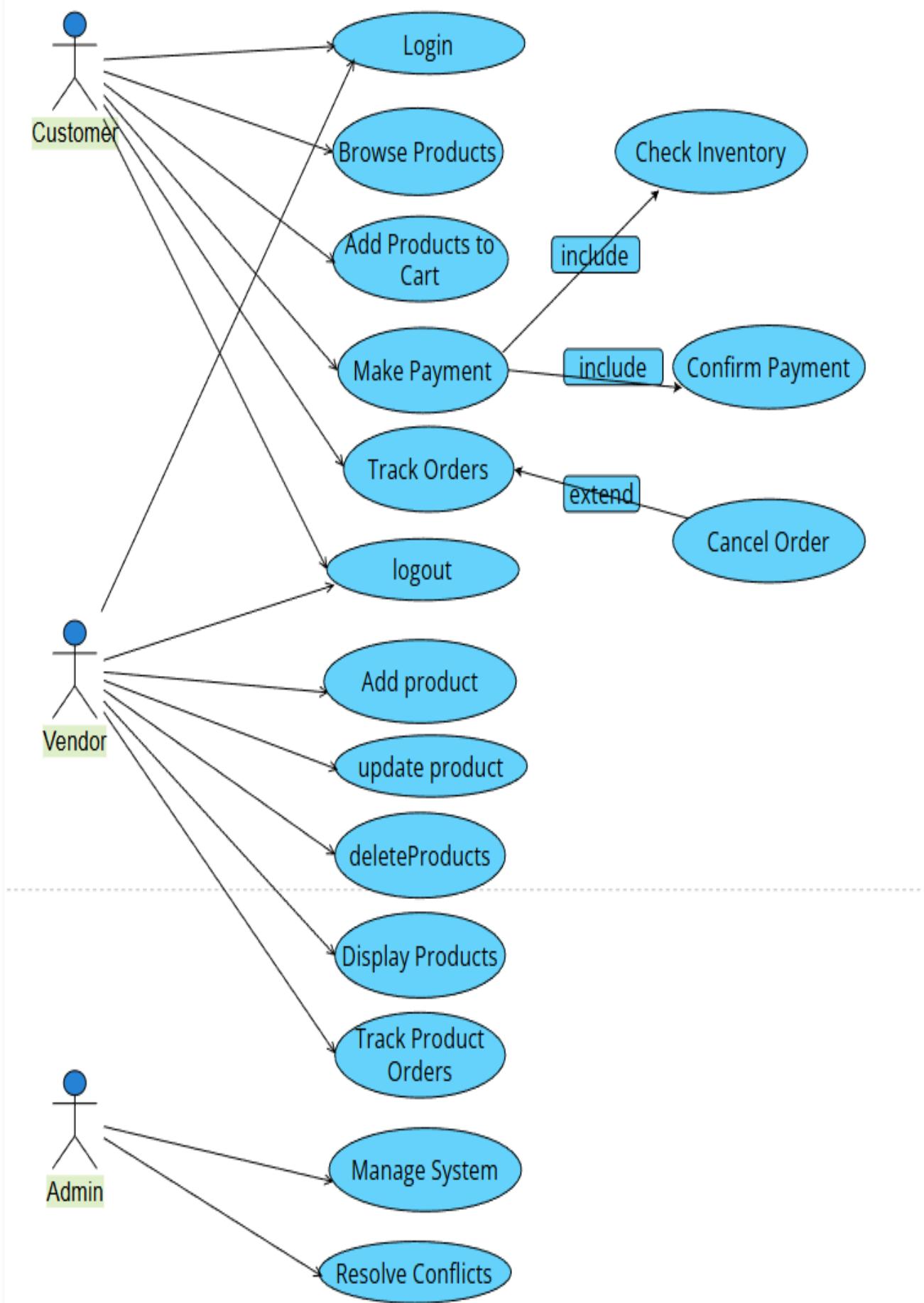
- What does the system cover?
 - Customers can create and manage their accounts.
 - Customers can browse and track products displayed on the platform.
 - Vendors can log in to their vendor accounts.
 - Vendors can display their products and any discounts.
 - Vendors can add, update, and delete their products.
 - Admins can manage system issues and resolve conflicts between customers and vendors.
- Who are the users?
 - Admins
 - Vendors
 - Customer
- What does the system probably not include?
 - Advanced AI tools or recommendation engines will not be included in the initial version of the system.
 - App version will be developed later

Constraints

- Some tools used in producing the system
 - Frontend Languages and Frameworks
 - HTML
 - CSS and Bootstrap
 - JS and Node.js
 - Backend Languages and Frameworks
 - PHP
 - MySQL
- Security and Privacy
 - The system must provide a secure payment process.
 - All personal information must remain protected, encrypted, and hidden from unauthorized access.
- Maintainability
 - If any technical error occurs, the system should recover within a few minutes.
 - Ongoing customer activities (such as browsing or adding items to the cart) should continue normally after the system recovers.
- Ease of Use
 - The system should offer multiple ways to complete common tasks, making it simple and flexible for all users

Diagrams

Use Case Diagram



E-COMMERCE SYSTEM

AL-Hussein Hassan

Browse

Use Case ID	1
Use Case Name	Browse products
Actors	Customers
Preconditions	1. Customers must be logged into the system
Post conditions	1. The customers can view the available products 2. The customers can select products and view more info about or buy them
Normal Flow	1. Customers logs in the system 2. The system shows the list of the available products 3. The customers can browse these products 4. The customers can select from these products to view more info or buy
Alternative Flow	A customer doesn't log in the system 1. A message asking this customer to sign up/log in 2. Customers are redirected to the registration form page

Add products to cart

Use Case ID	2
Use Case Name	Add products to cart
Actors	Customers
Preconditions	1. Customers must be logged into the system
Post conditions	1. The customers can view the available products 2. The customers can select products to buy from them 3. The products show in the cart page
Normal Flow	1. Customers logs in the system 2. The system shows the list of the available products 3. The customers can browse these products 4. The customers can select from these products to buy
Alternative Flow	The product isn't available 1. A sorry message shows for customer

Make Payment

Use Case ID	3
Use Case Name	Make payment

E-COMMERCE SYSTEM

Actors	Customers
Preconditions	1. Customers must be logged into the system
Post conditions	1. The customer successfully completes the payment, and the order is confirmed. 2. The payment amount is deducted from the customer's account.
Normal Flow	1. Customers logs in the system 2. The system shows the list of the selected products to buy in the cart page 3. The customers can browse these products 4. Make payment
Alternative Flow	A customer doesn't log in the system 1. A message asking this customer to sign up/log in 2. Customers are redirected to the registration form page Any error in visa validation 1. Show message "check your visa info"

Ahmad Hani

Track Orders

Use Case ID	4
Use Case Name	Track Orders
Actors	Customers
Preconditions	1. The user must be logged into the system. 2. The user must have at least one previously created order. 3. A stable internet connection must be available.
Post conditions	1. The system successfully displays the status of the selected order. 2. The user can view detailed tracking information (if available). 3. The user returns to the orders list or home page after viewing details.
Normal Flow	1. The user logs into the system. 2. The user navigates to the Track Orders section. 3. The system displays a list of all the user's orders. 4. The user selects an order to track. 5. The system retrieves the tracking information for the selected order. 6. The system displays the order status (Pending, Shipped, Delivered, Cancelled). 7. The user views the tracking details and returns to the previous page
Alternative Flows	1. If the user has no orders, Then the system displays: "You have no orders yet."

E-COMMERCE SYSTEM

	<p>2. If the system fails to retrieve order data due to a server or network issue, Then the system displays: “<i>Unable to load order data. Please try again later.</i>”</p> <p>3. If the selected order is canceled, Then the system displays the order status as <i>Canceled</i> And shows the reason for cancellation (if available).</p>
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Add product

Use Case ID	5
Use Case Name	Add product
Actors	Vendor
Preconditions	<p>1. The user must be logged into the system 2. The user must have at least one previously created order. 3. A stable internet connection must be available.</p>
Post conditions	<p>1. The product is successfully saved in the database. 2. The product immediately appears in the vendor’s product list. 3. The product becomes available for customers in the product browsing interface</p>
Normal Flow	<p>8. The vendor logs into the system. 9. The vendor opens the dashboard and clicks Add Product. 10. The system displays the product entry form. 11. The vendor enters the required product details (name, price, description, quantity, image, category). 12. The vendor clicks Submit. 13. The system validates the entered data. 14. The system saves the new product into the database. 15. The system displays a success message: <i>“Product added successfully.”</i></p>
Alternative Flows	<p>1. If a required field is missing or invalid, Then the system displays: “<i>Please fill all required fields.</i>” And returns the user to the same form page.</p> <p>2. If the uploaded image has an unsupported format, Then the system displays: “<i>Invalid image format. Please upload JPG/PNG.</i>”</p> <p>3. If a database error occurs while saving the product, Then the system displays: “<i>Failed to add product. Please try again.</i>”</p>

Anas Nasef

Update product

Use Case ID	6
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E-COMMERCE SYSTEM

Use Case Name	Update Product
Actors	Vendor
Preconditions	1. Vendor is logged into the system. 2. The product to be updated already exists in the database.
Post conditions	The product information is updated in the system database.
Normal Flow	<ol style="list-style-type: none"> 1. Vendor navigates to their product management page. 2. Vendor selects the specific product to edit. 3. Vendor modifies the desired details and clicks "Save". 4. System validates the new data. 5. System updates the product record in the MySQL database. 6. System displays a "Product Updated Successfully" message.
Alternative Flows	<p>Validation Error If the vendor leaves a required field empty or enters invalid data:</p> <ol style="list-style-type: none"> 1. System displays an error message indicating the invalid field. 2. System keeps the form open for correction.

Delete products

Use Case ID	7
Use Case Name	Delete Product
Actors	Vendor
Preconditions	1. Vendor is logged into the system. 2. The product to be deleted already exists in the database.
Post conditions	The product is removed from the store and no longer visible to customers.
Normal Flow	<ol style="list-style-type: none"> 1. Vendor navigates to the product list. 2. Vendor clicks the "Delete" button next to a product. 3. System displays a confirmation pop-up ("Are you sure you want to delete this item?"). 4. Vendor confirms the deletion. 5. System removes the product record from the database.

Ibrahim Gamal

Display products

Use Case ID	8
Use Case Name	Display Products
Actor	Vendor

E-COMMERCE SYSTEM

Preconditions	1. Vendor is logged in. 2. Products exist in the database.
Post Conditions	Vendor can view all available products.
Normal Flow	1. Vendor logs into the system 2. Vendor navigates to the “Products” page. 3. System retrieves all product records. 4. System displays the product list (name, quantity, price, description, image). 5. Vendor reviews the list.
Alternative Flow	1. logged in is not corrected 2. No Products Available System displays “No products found.”

Track products orders

Use Case ID	9
Use Case Name	Track Product Orders
Actor	Vendor
Preconditions	1. Vendor is logged in. 2. Orders exist in the system. 3. Orders are linked to vendor's products.
Post Conditions	Vendor can track and view order statuses.
Normal Flow	1. Vendor logs into the system 2. Vendor navigates to the “Track Orders” page. 3. System retrieves all related orders. 4. System displays order details (Order ID, Customer Name, Products, Quantity, Total Price, Status, Date). 5. Vendor reviews the orders.
Alternative Flow	A1: No Orders Found 1. System displays “No orders available.” A2: logged in is not corrected 1. System displays “logged in is not corrected.”

Anton Saeed

Manage System

use UCase ID	10
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E-COMMERCE SYSTEM

Use Case Name	Manage System
Actors	Admin
Preconditions	<ol style="list-style-type: none"> 1. Admin is logged into the system. 2. System is online and functional.
Post conditions	<ul style="list-style-type: none"> • Admin can access and modify system settings, including user roles, system configuration, and overall management operations.
Normal Flow	<ul style="list-style-type: none"> • Admin navigates to the system management panel. • Admin selects the operation they want to perform (e.g., update settings, manage users). • System displays the selected management interface. • Admin makes changes and clicks "Save" or "Apply". • System updates the system configuration accordingly and confirms success
Alternative Flows	<ul style="list-style-type: none"> • If the Admin enters invalid data <ul style="list-style-type: none"> ◦ System displays an error message. ◦ Admin corrects the data. ◦ System processes the changes successfully.

Resolve Conflicts

Use Case ID	11
Use Case Name	Resolve Conflicts
Actors	Admin
Preconditions	<ol style="list-style-type: none"> 1. Admin is logged into the system. 2. Conflicting data or orders exist that require resolution.
Post conditions	<ul style="list-style-type: none"> • Conflicts are resolved, ensuring system consistency and proper workflow.
Normal Flow	<ul style="list-style-type: none"> • Admin navigates to the conflicts management interface. • System displays a list of current conflicts (e.g., order conflicts, product discrepancies). • Admin reviews each conflict and selects the resolution action (e.g., approve, reject, merge). • Admin applies the resolution. • System updates records accordingly and confirms resolution
Alternative Flows	<p>Unable to Resolve Automatically:</p> <ul style="list-style-type: none"> • If the system cannot resolve a conflict automatically: <ul style="list-style-type: none"> ◦ System flags the conflict for manual review.

E-COMMERCE SYSTEM

- o Admin intervenes and resolves it manually.

Ahmed Walaa

Login

Use Case ID	1
Use Case Name	login
Actors	System User
Preconditions	1. The user must be registered in the system 2. The system must be available
Post conditions	1. The user is successfully authenticated 2. The user gains access to the system
Normal Flow	1. The user navigates to the login page 2. The user enters valid username and password 3. The user submits the login request 4. The system validates the user credentials
Alternative Flows	Invalid login credentials 1. The system rejects the login request 2. The system displays an error message 3. The user is prompted to re-enter valid credentials

Log out

Use Case ID	6
Use Case Name	logout
Actors	System User
Preconditions	1. The user must be logged into the system 2. The system must be available
Post conditions	1. The user session is terminated 2. The user is successfully logged out of the system

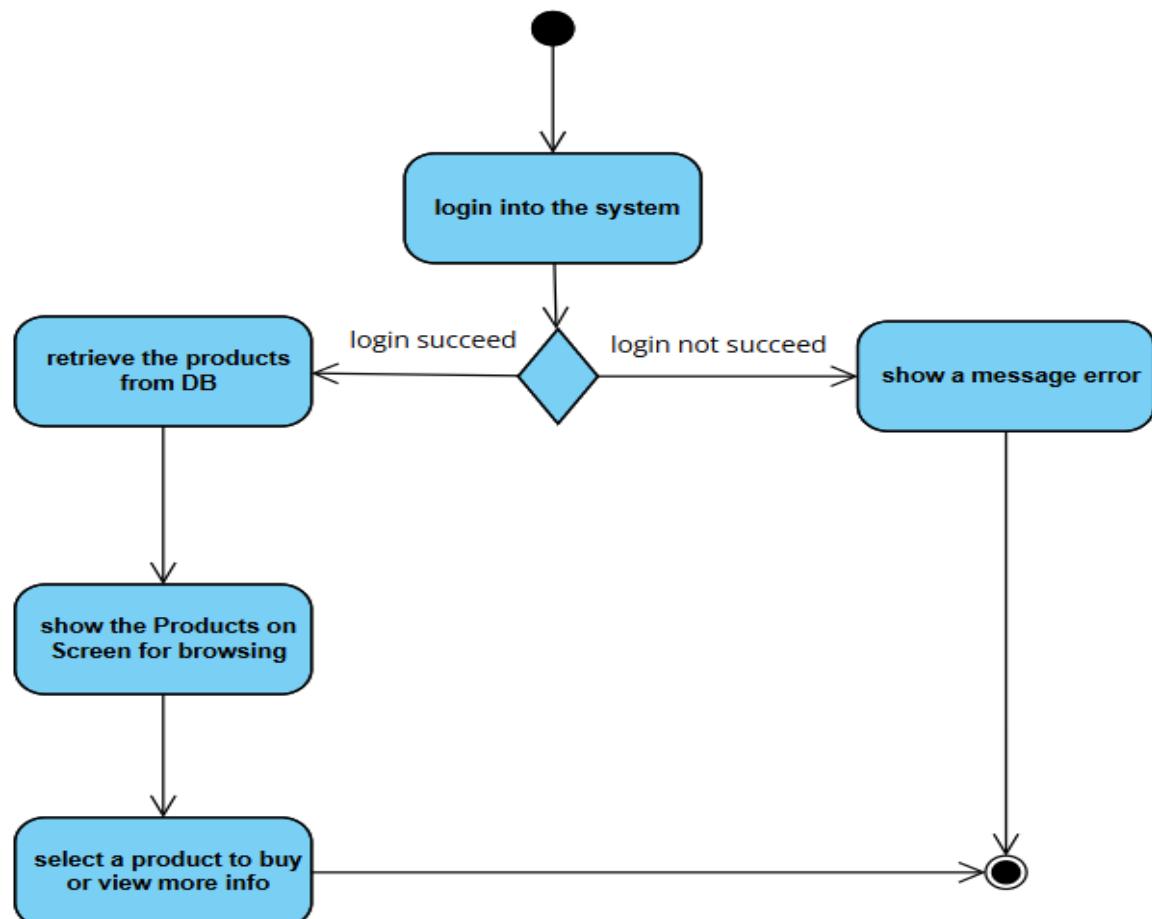
E-COMMERCE SYSTEM

Normal Flow	1. The user selects the logout option 2. The system terminates the active session 3. The system redirects the user to the login page
Alternative Flows	Session timeout 1. The system automatically terminates the session 2. The user is redirected to the login page

Activity Diagram

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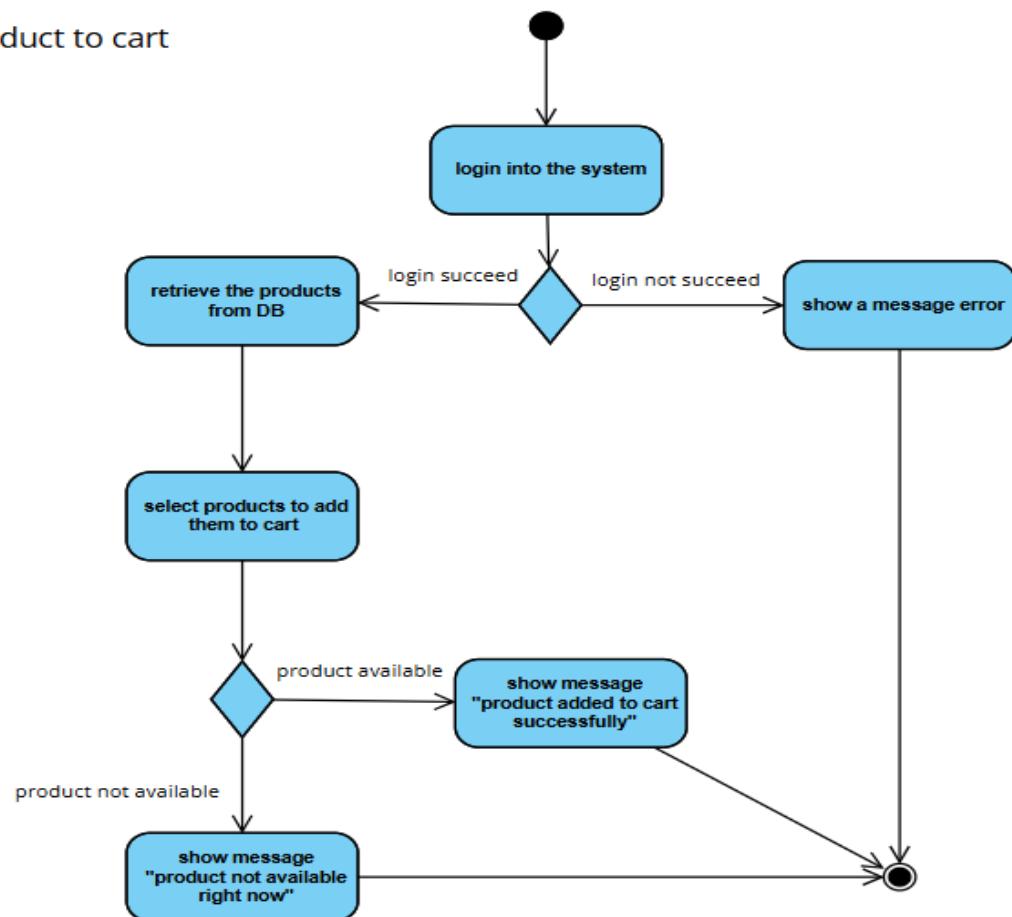
Browse products



E-COMMERCE SYSTEM

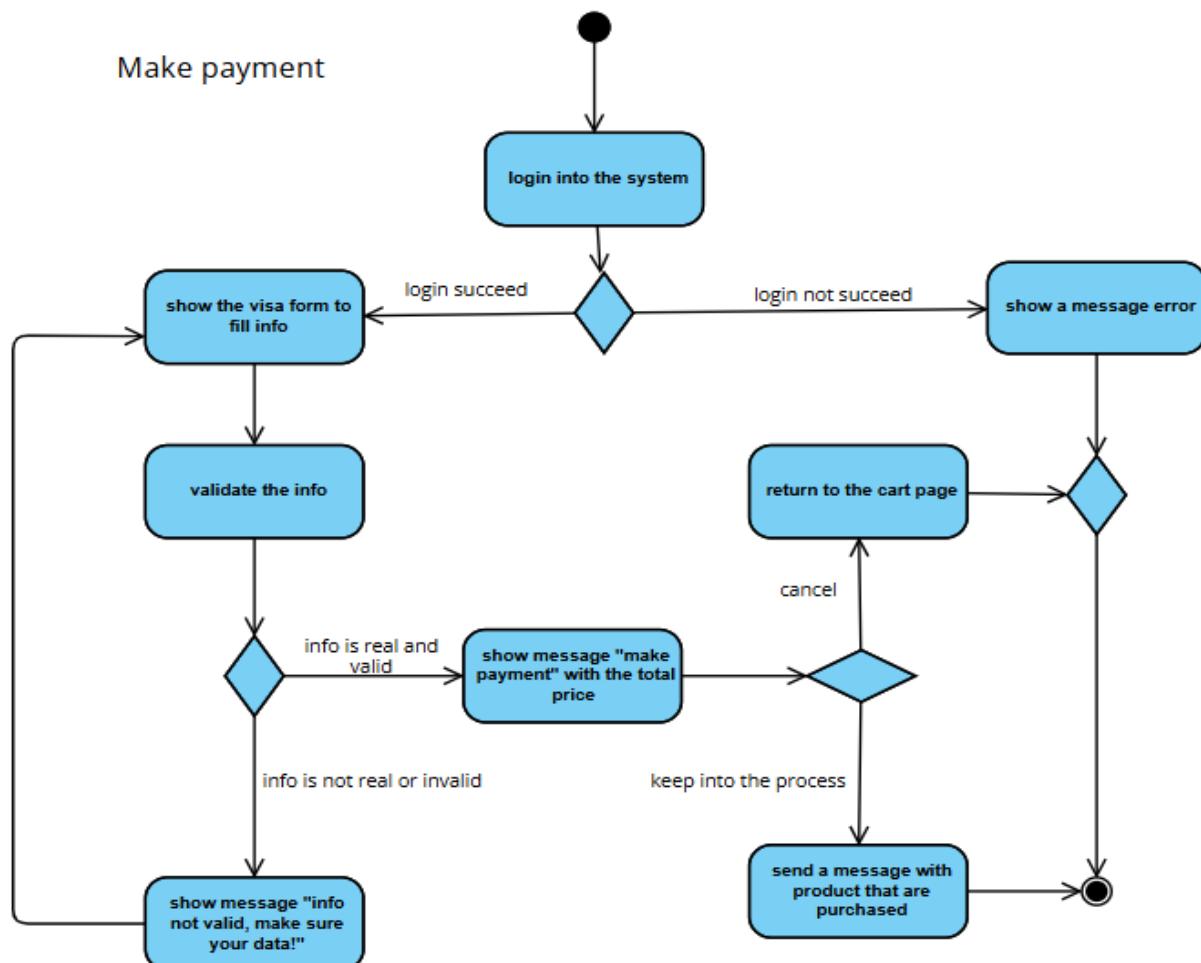
Add Products to Cart

Add product to cart



Make Payment

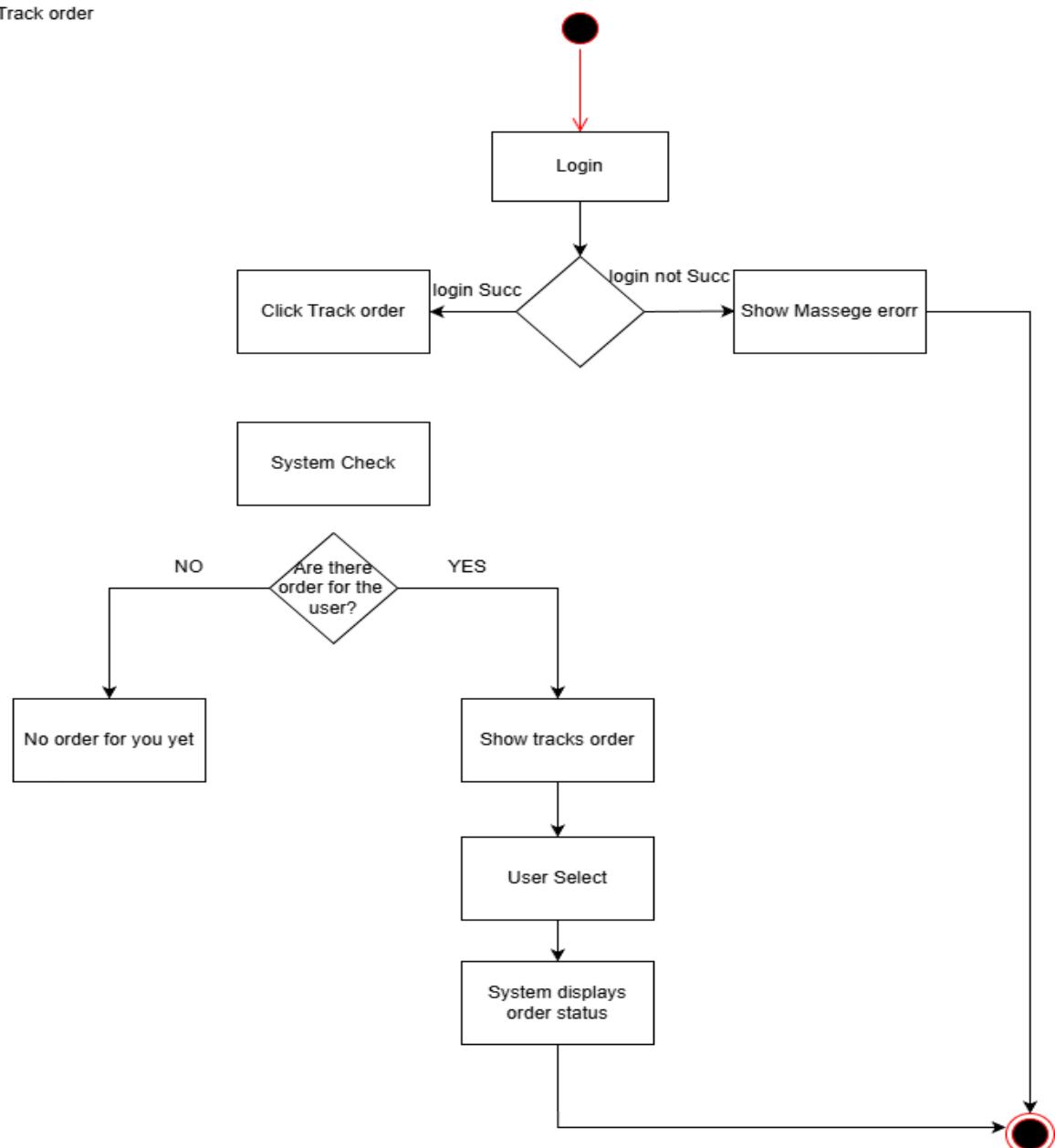
Make payment



Ahmad Hani

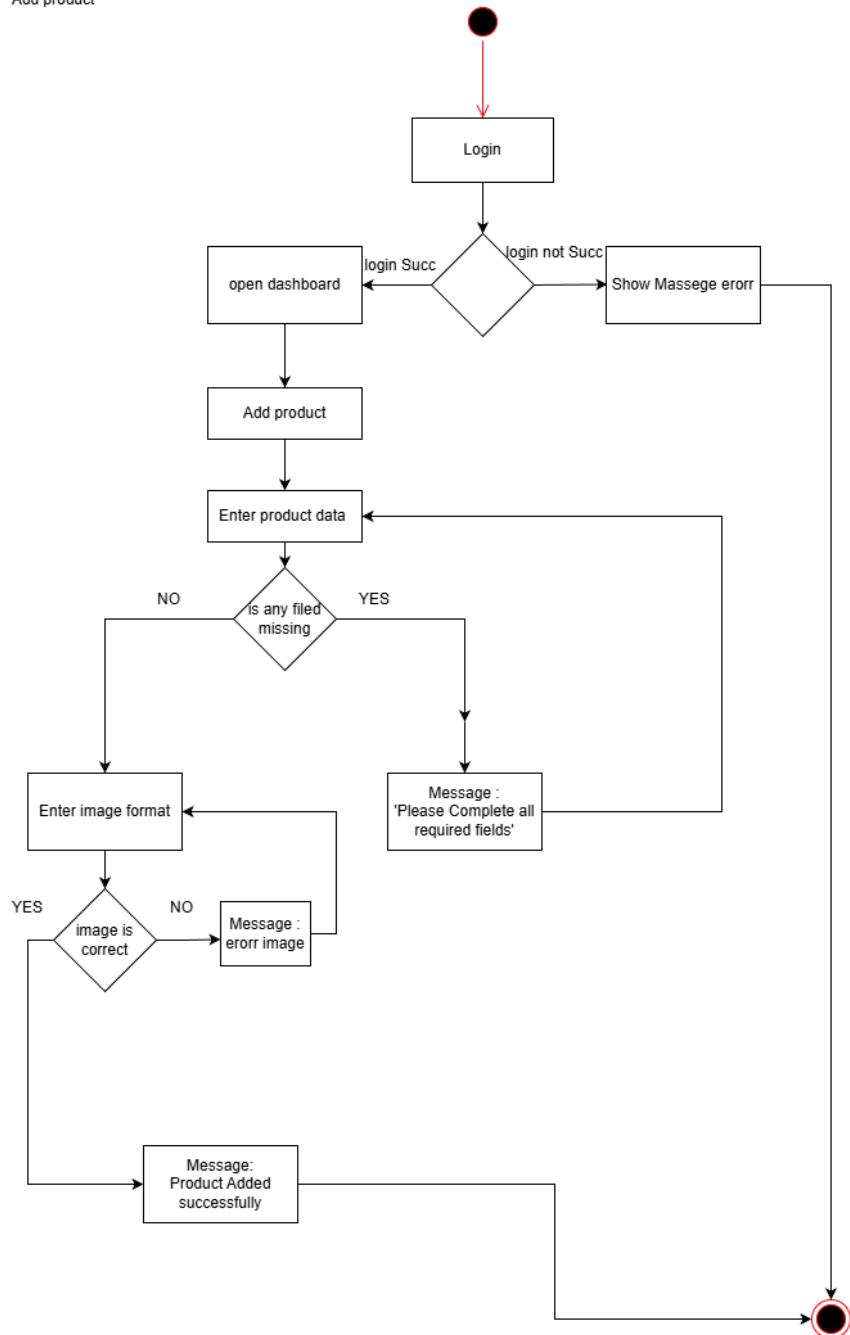
Track Orders

Track order



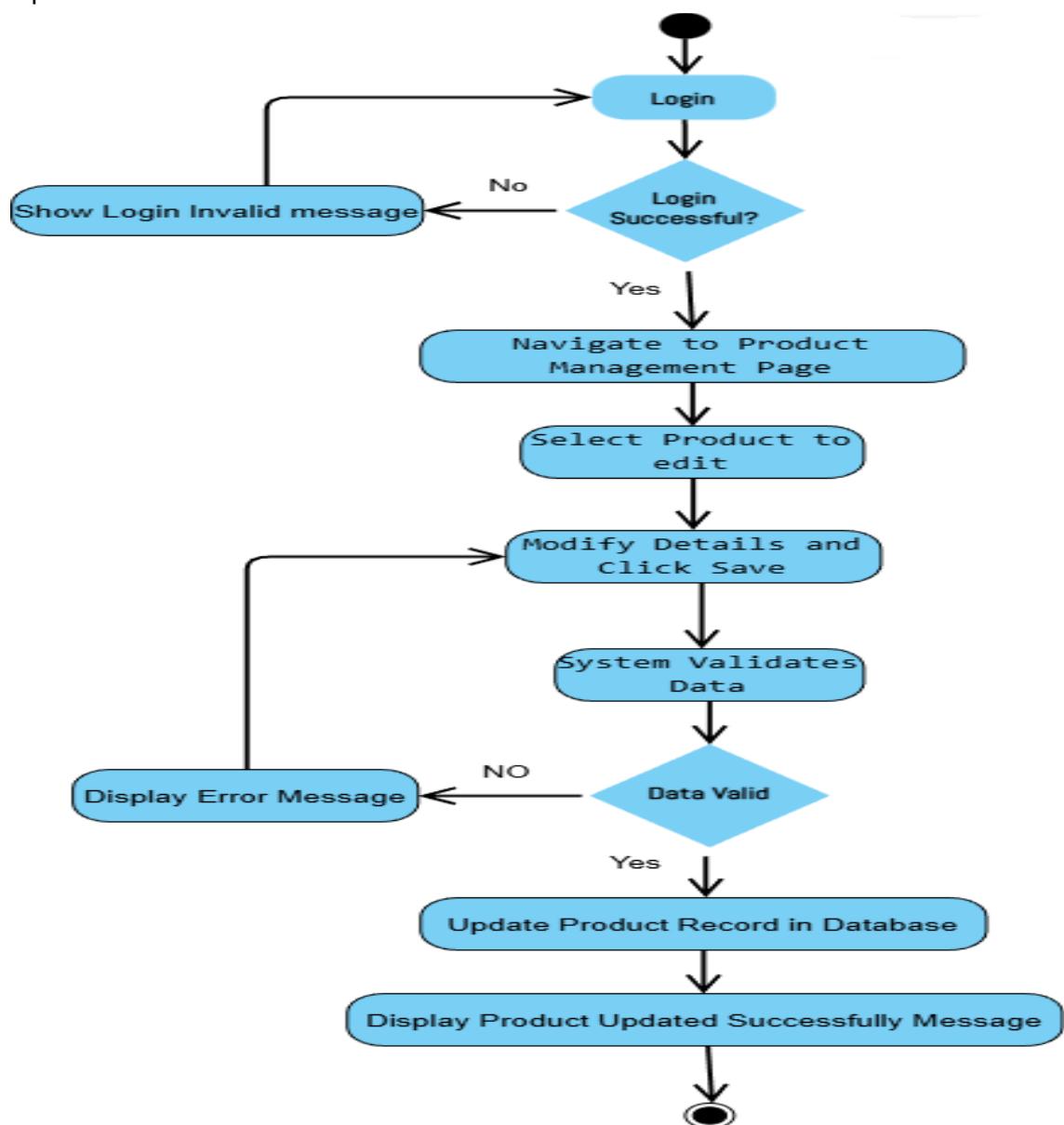
Add product

Add product



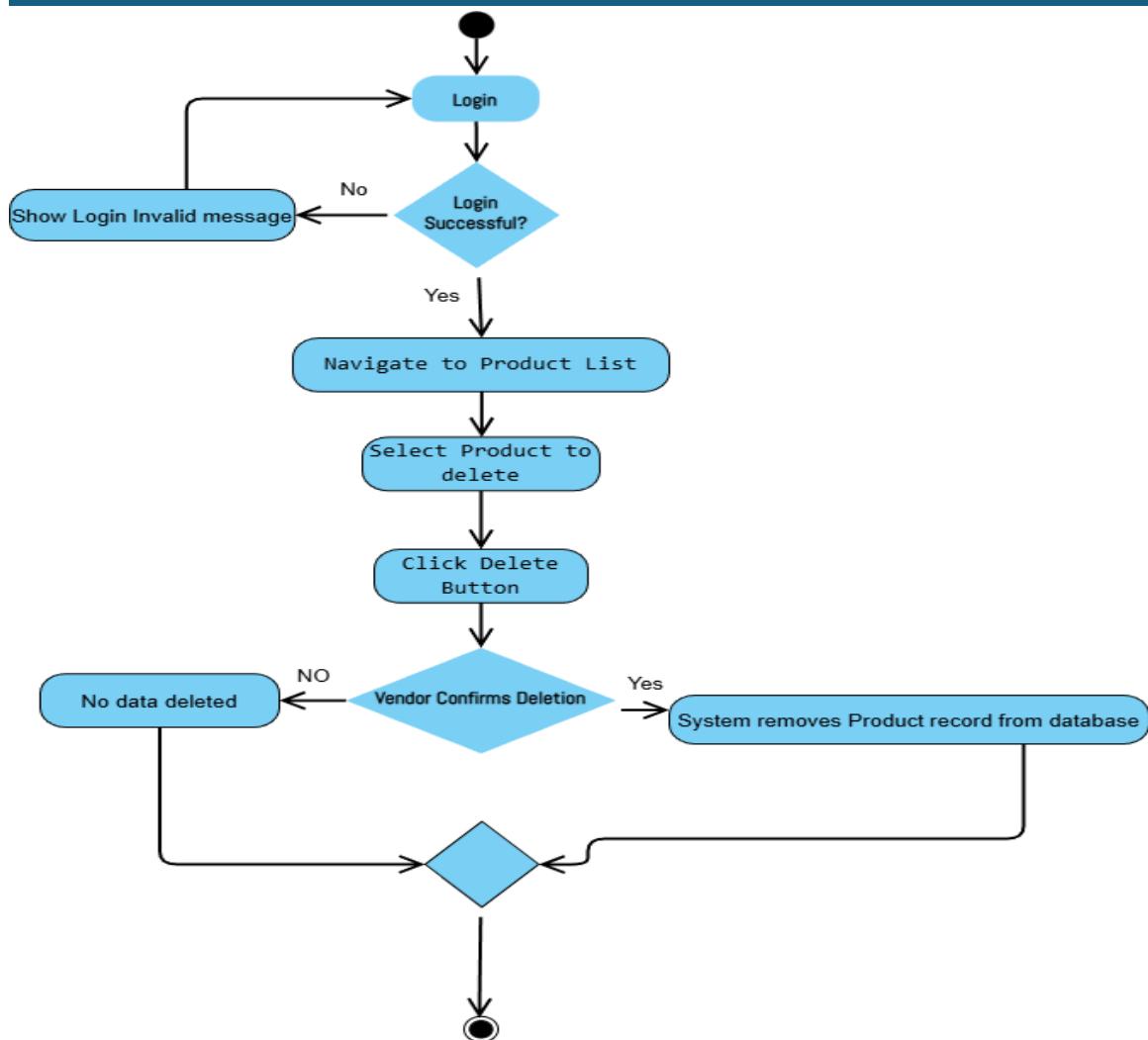
Anas Nasef

Update Product



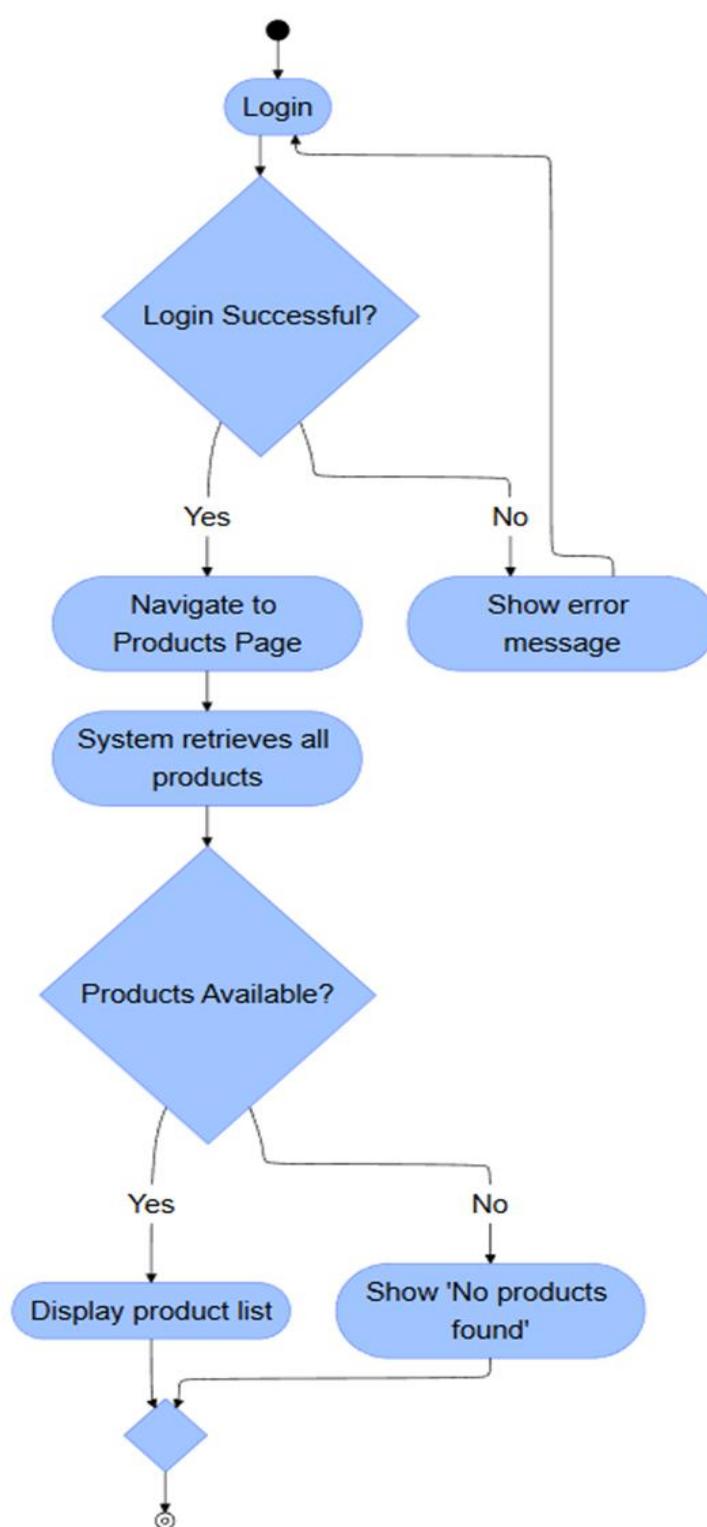
Delete Product

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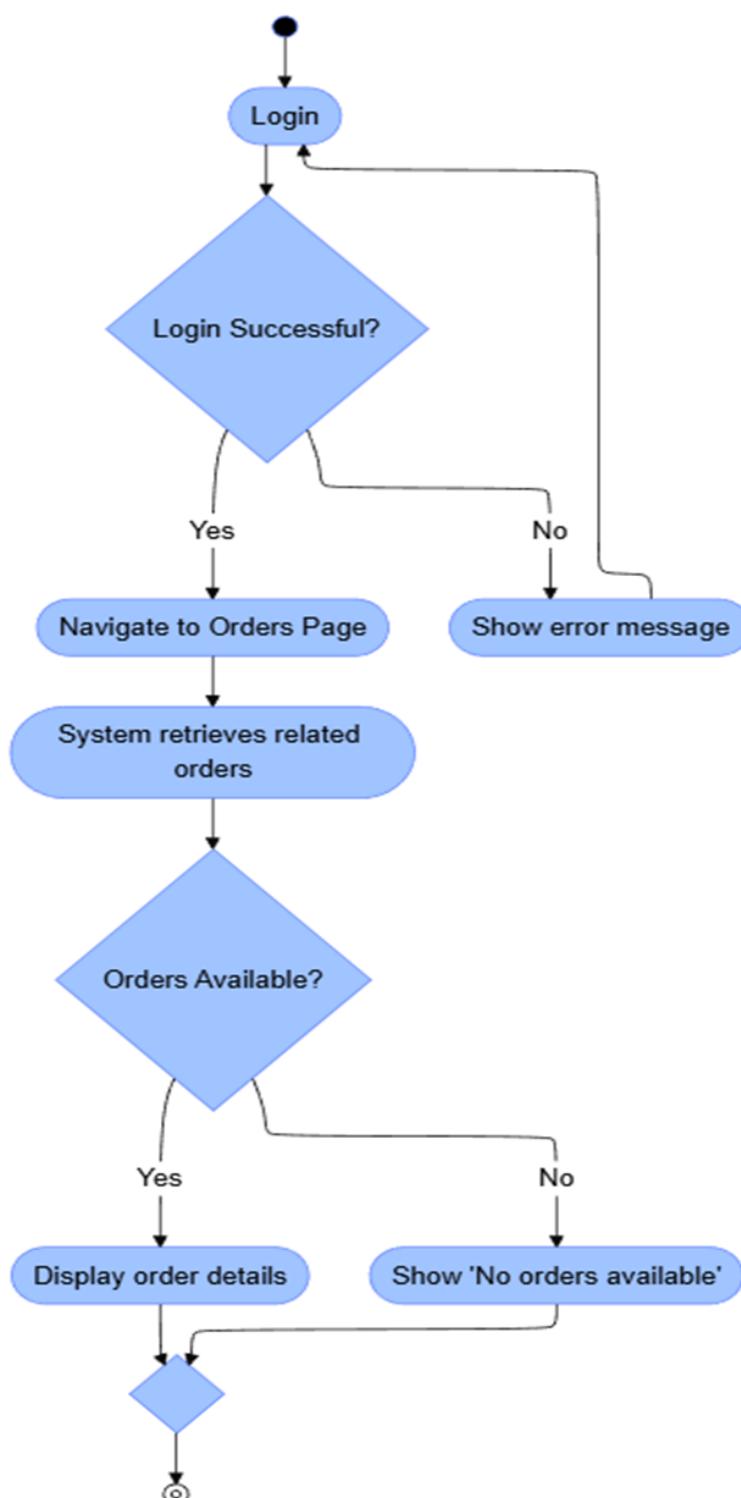


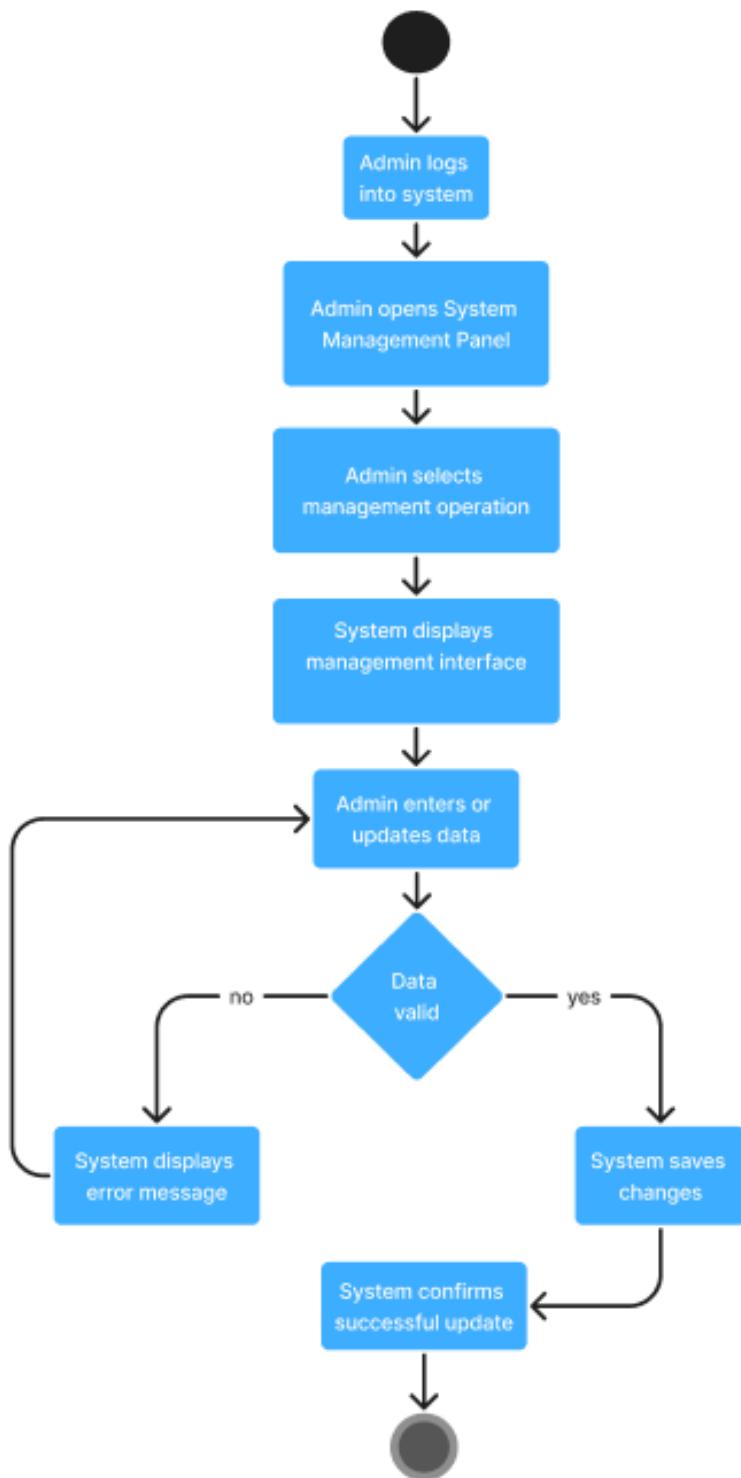
Ibrahim Gamal

Display products

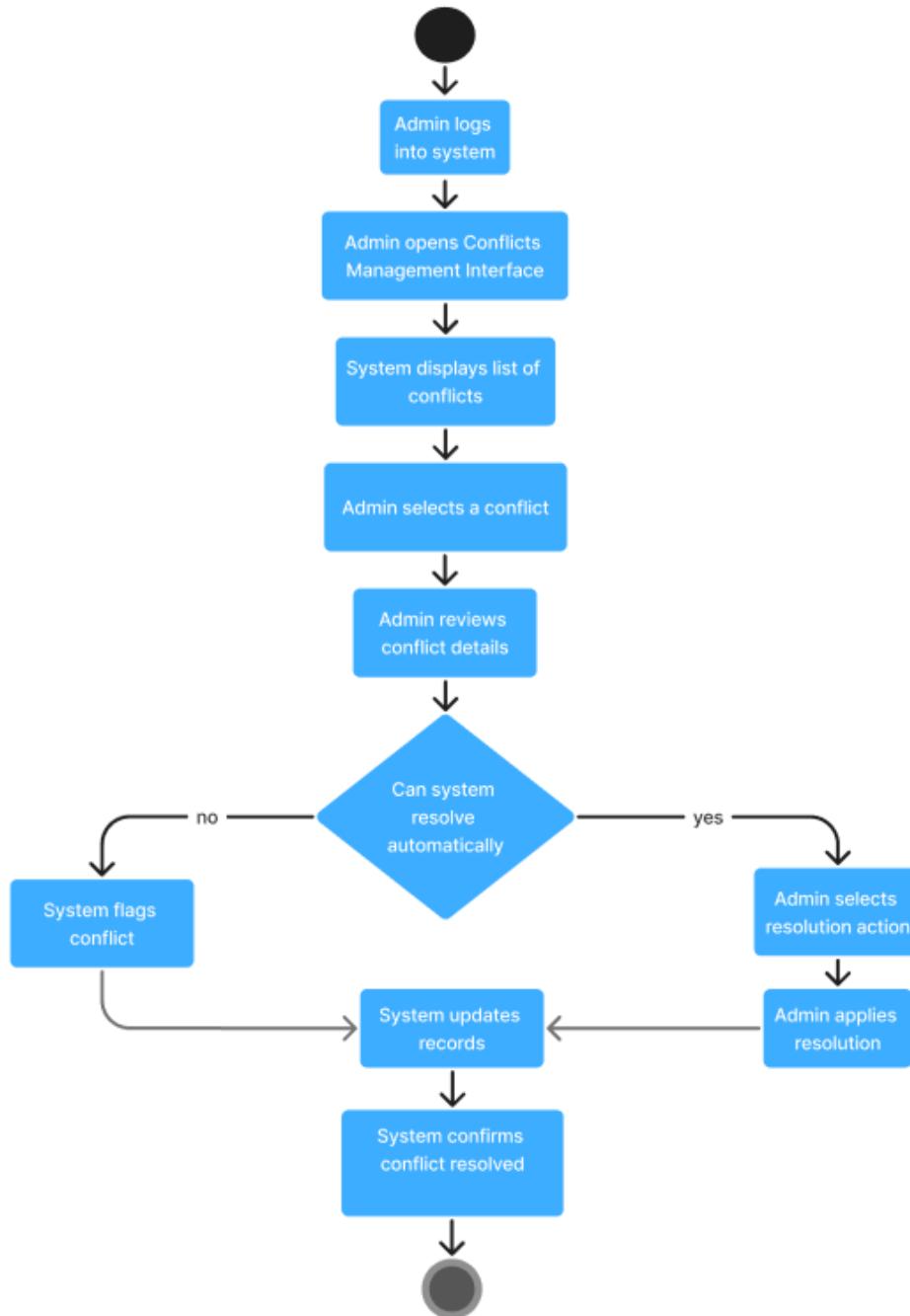


Track products orders



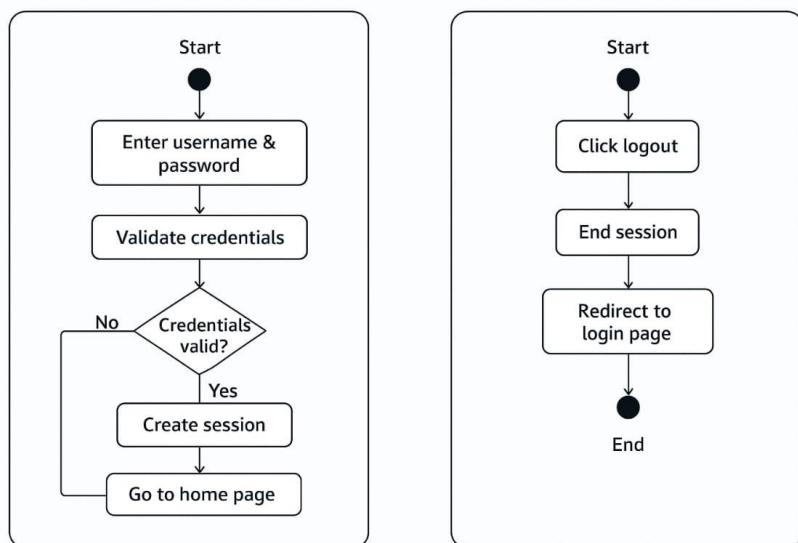


Resolve conflicts



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Login and logout

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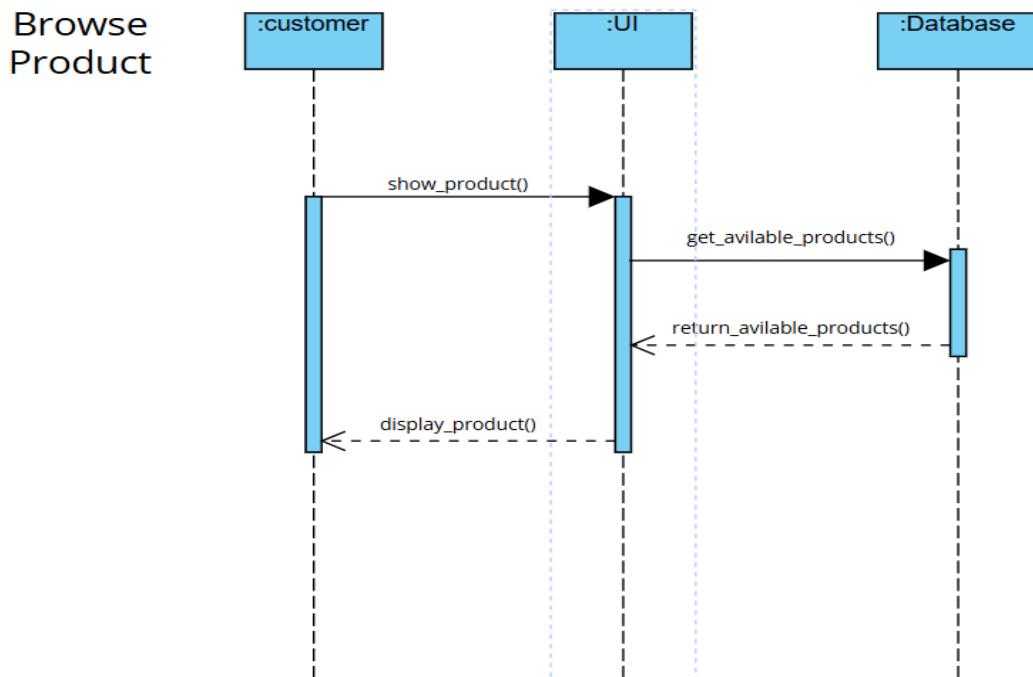


Class Diagram

Sequence Diagram

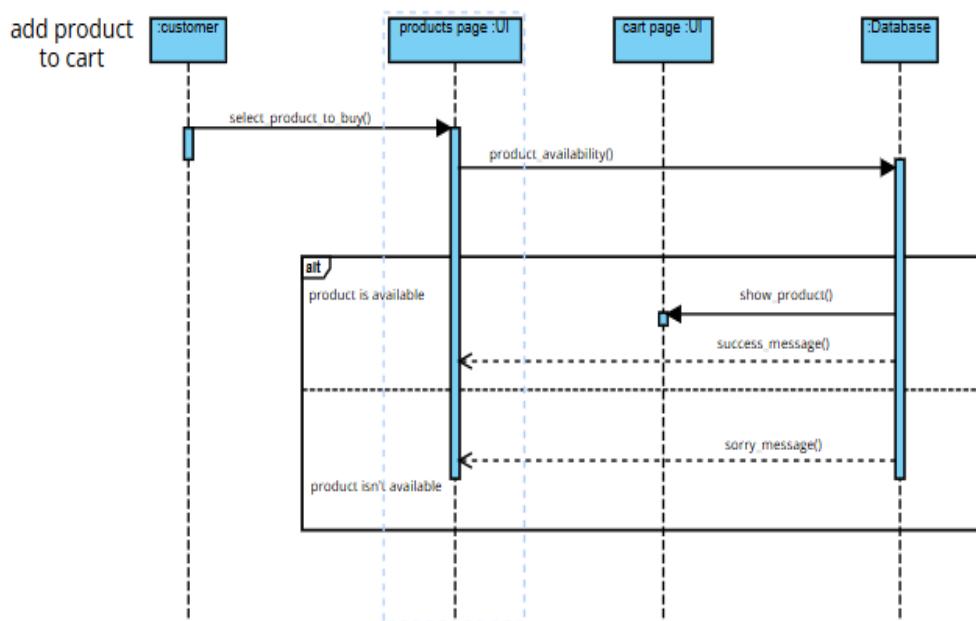
AL-Hussein Hassan

Browse products

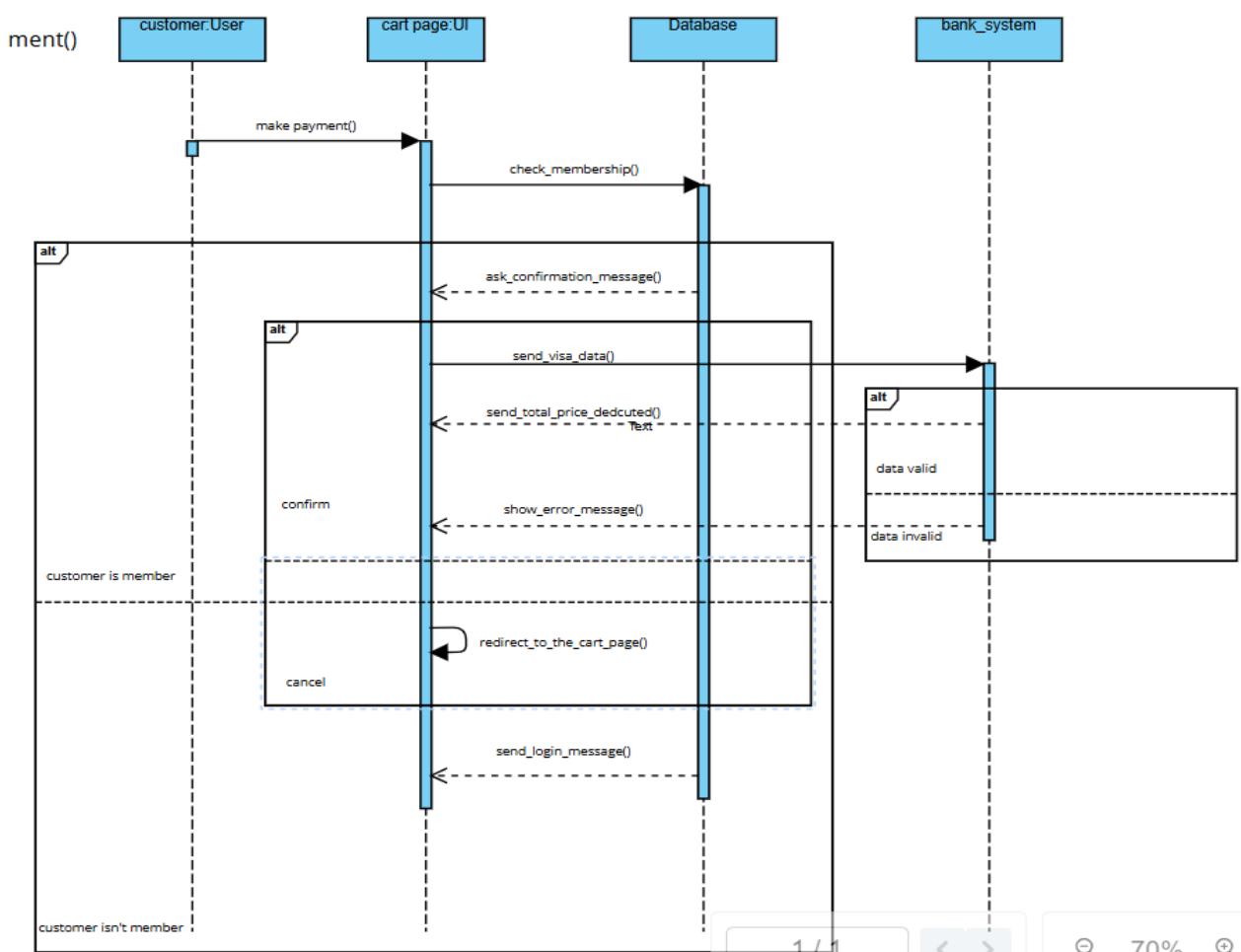


Add Products to Cart

E-COMMERCE SYSTEM



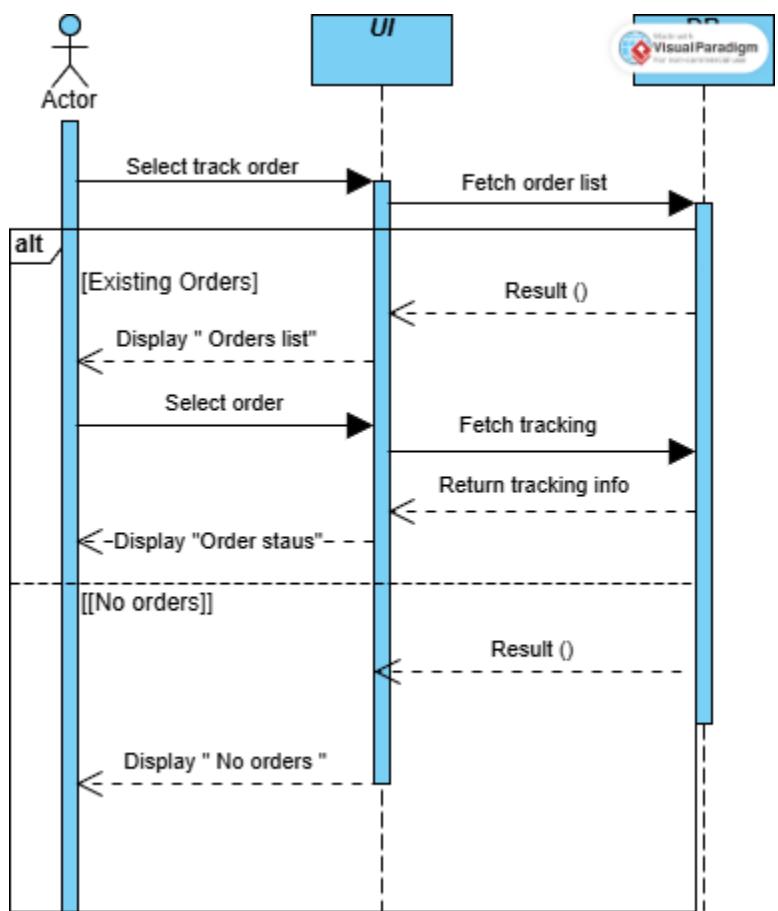
Make Payment



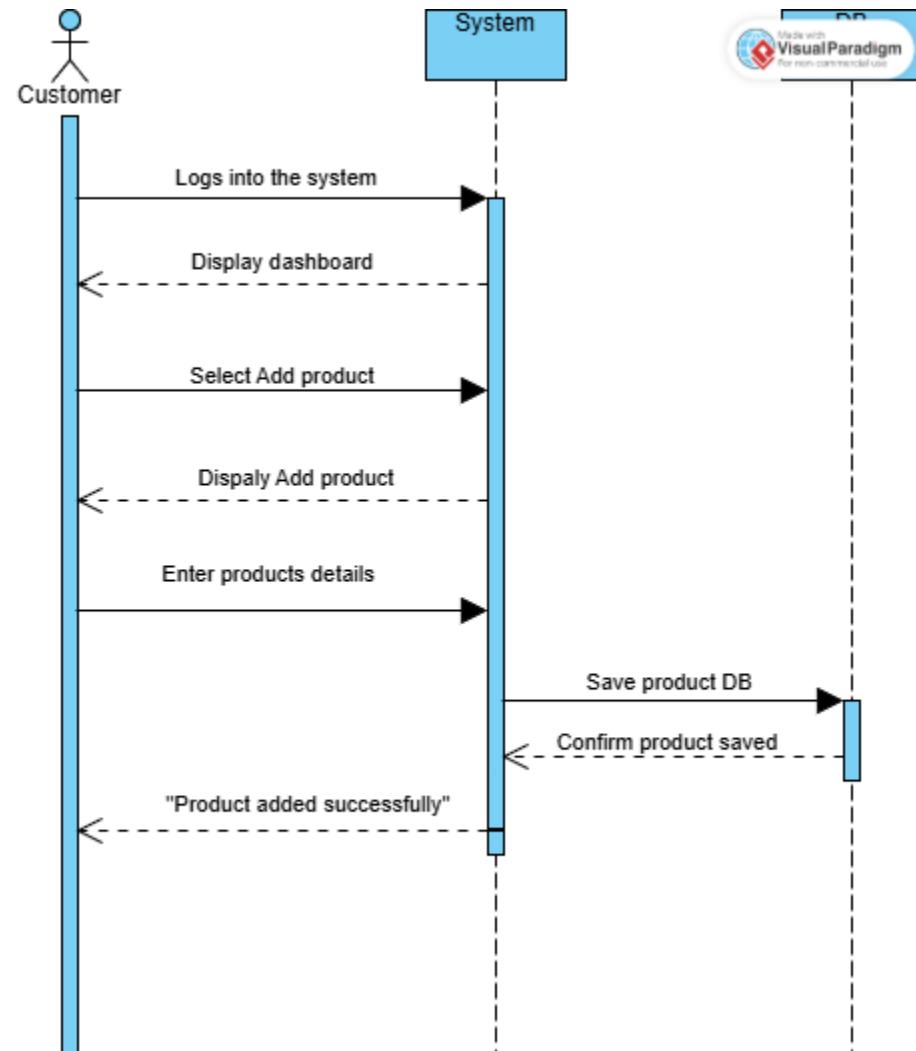
E-COMMERCE SYSTEM

Ahmad Hani

Track Orders



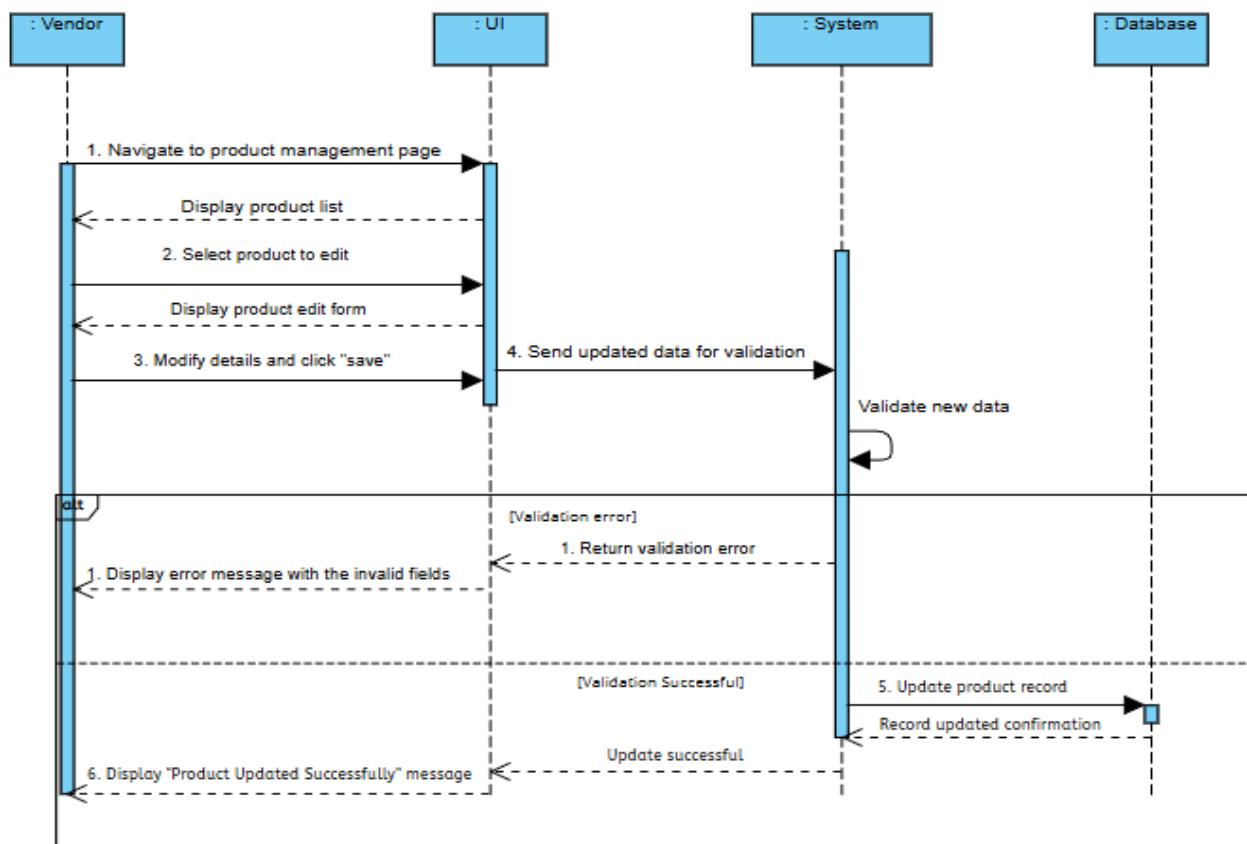
Add product



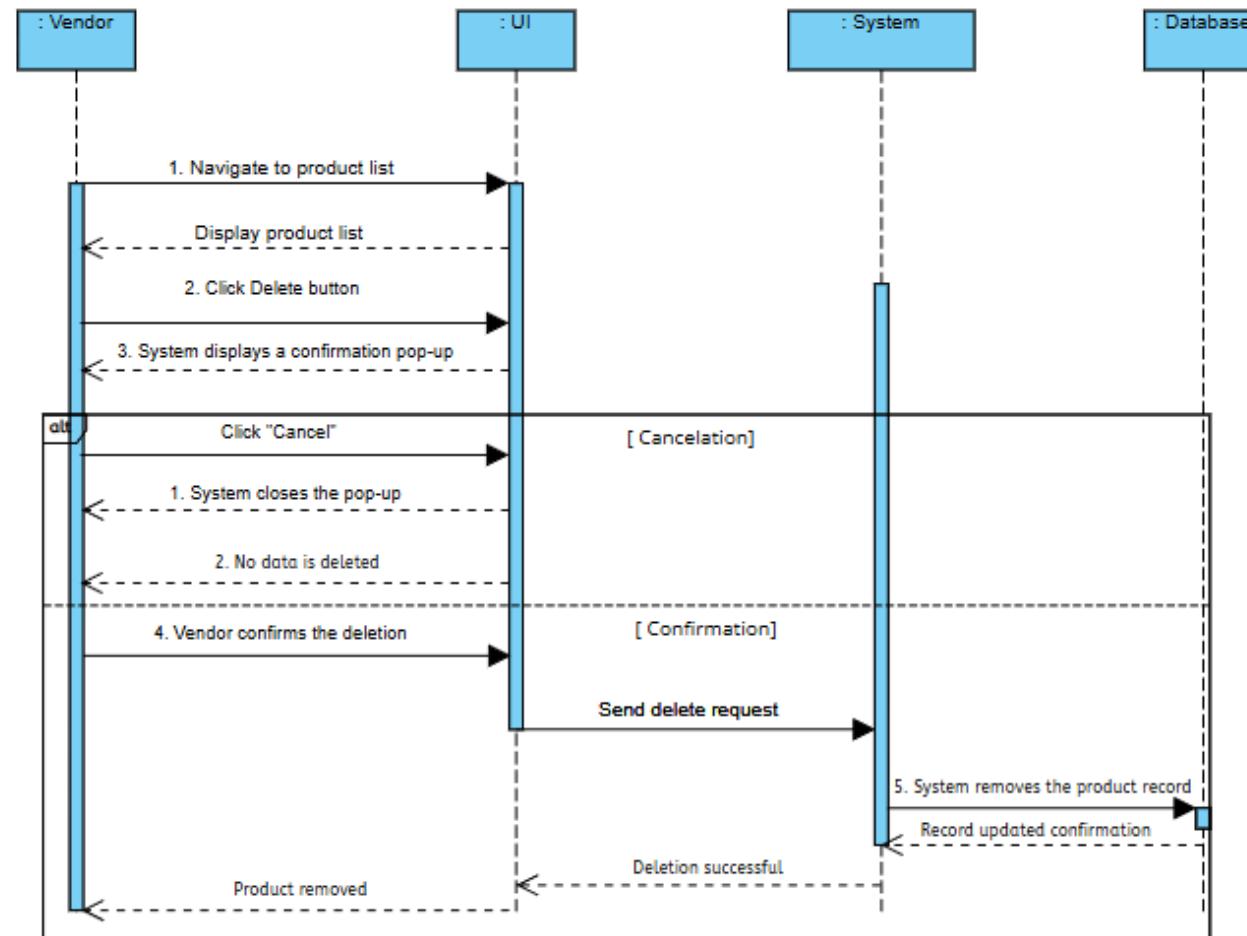
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Anas Nasef

Update Product



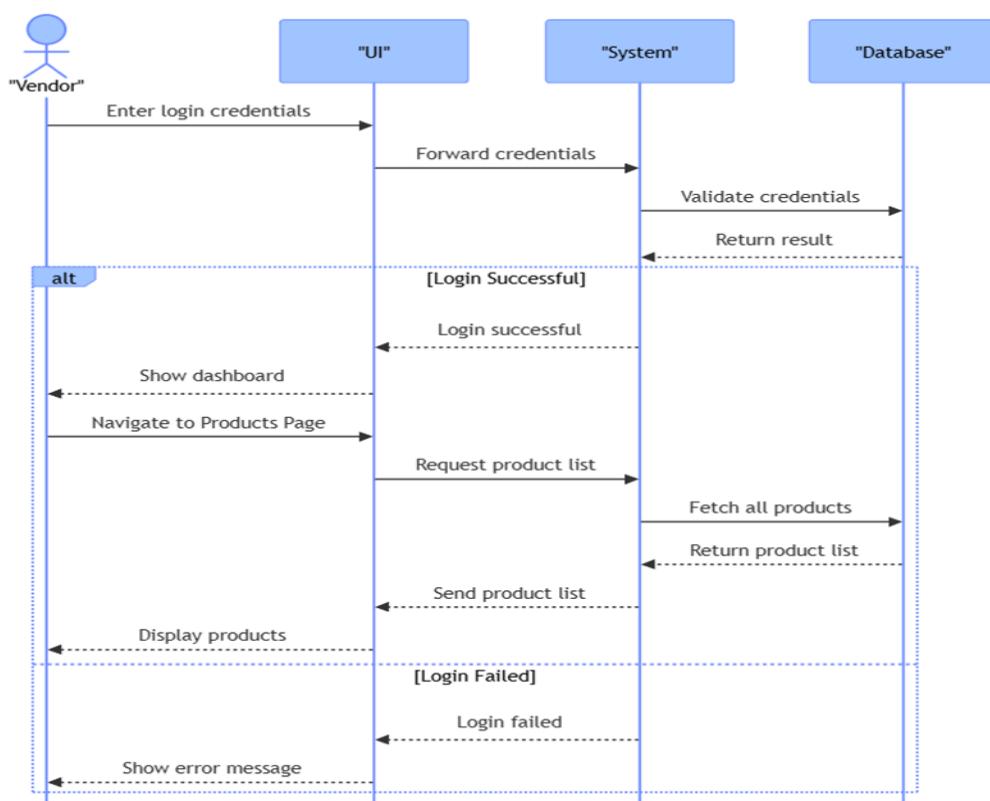
Delete Product



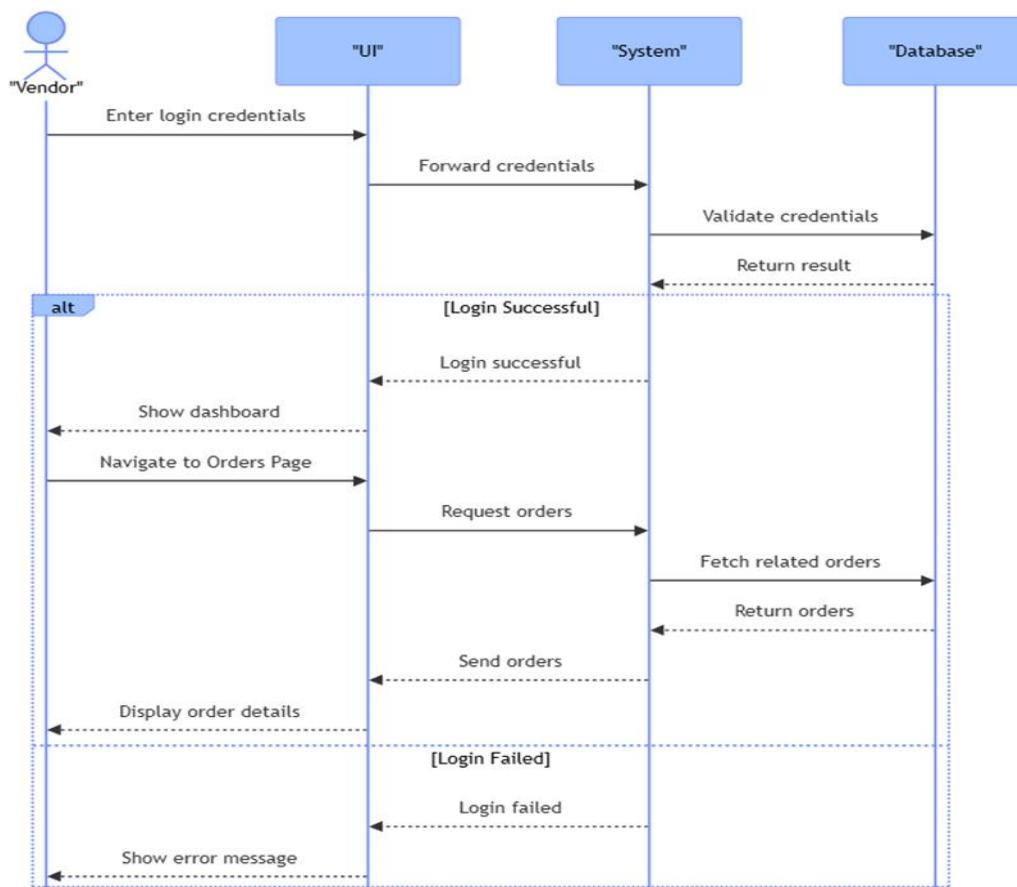
Ibrahim Gamal

Display products

E-COMMERCE SYSTEM



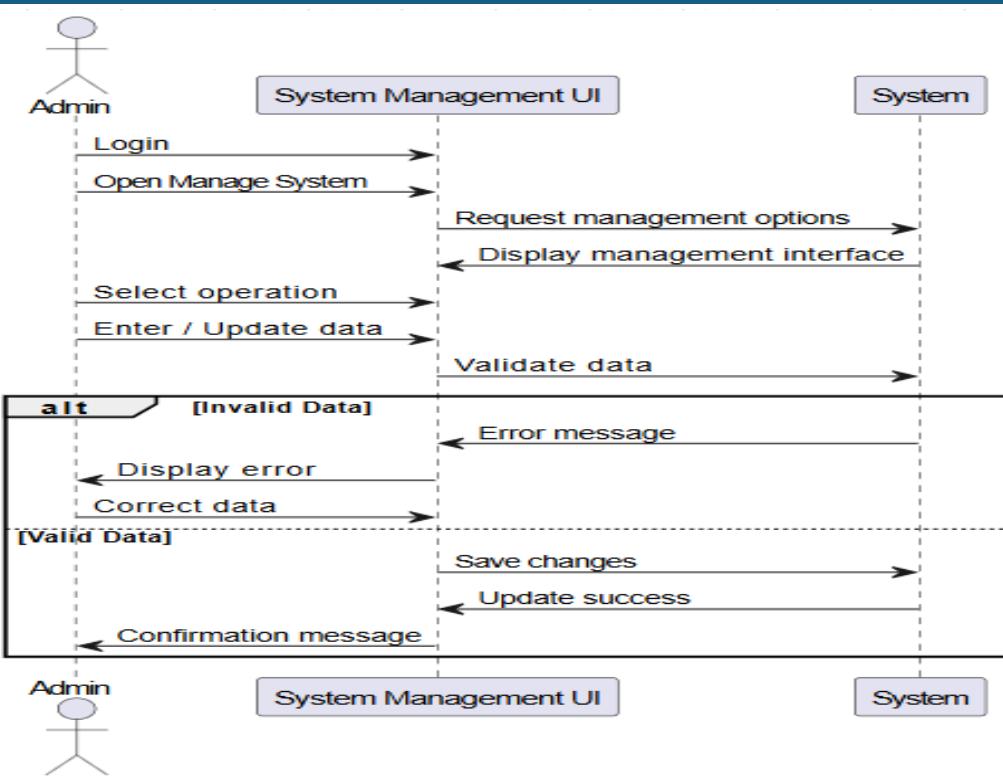
Track products orders



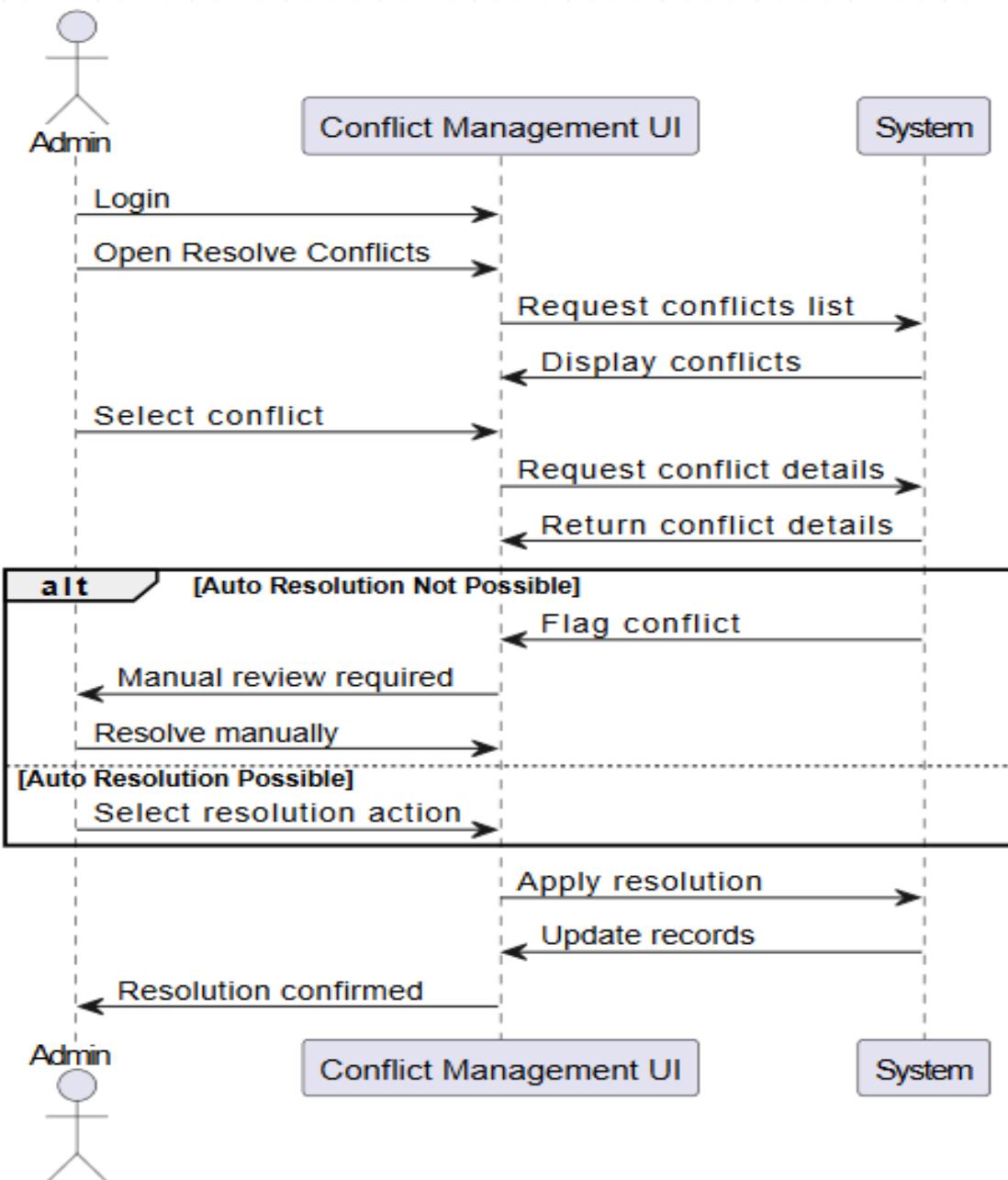
Anton Saeed

Manage system

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Resolve conflicts



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Ahmed Walaa
Login and logout

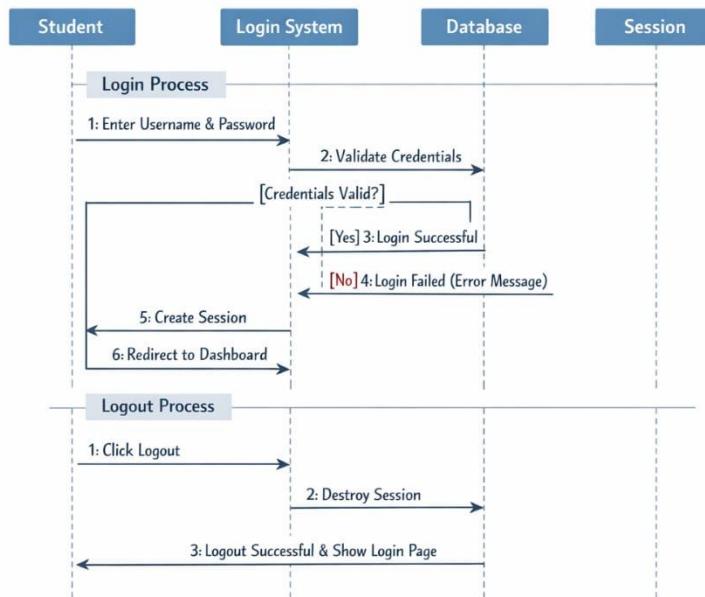
November 2025

Banha University

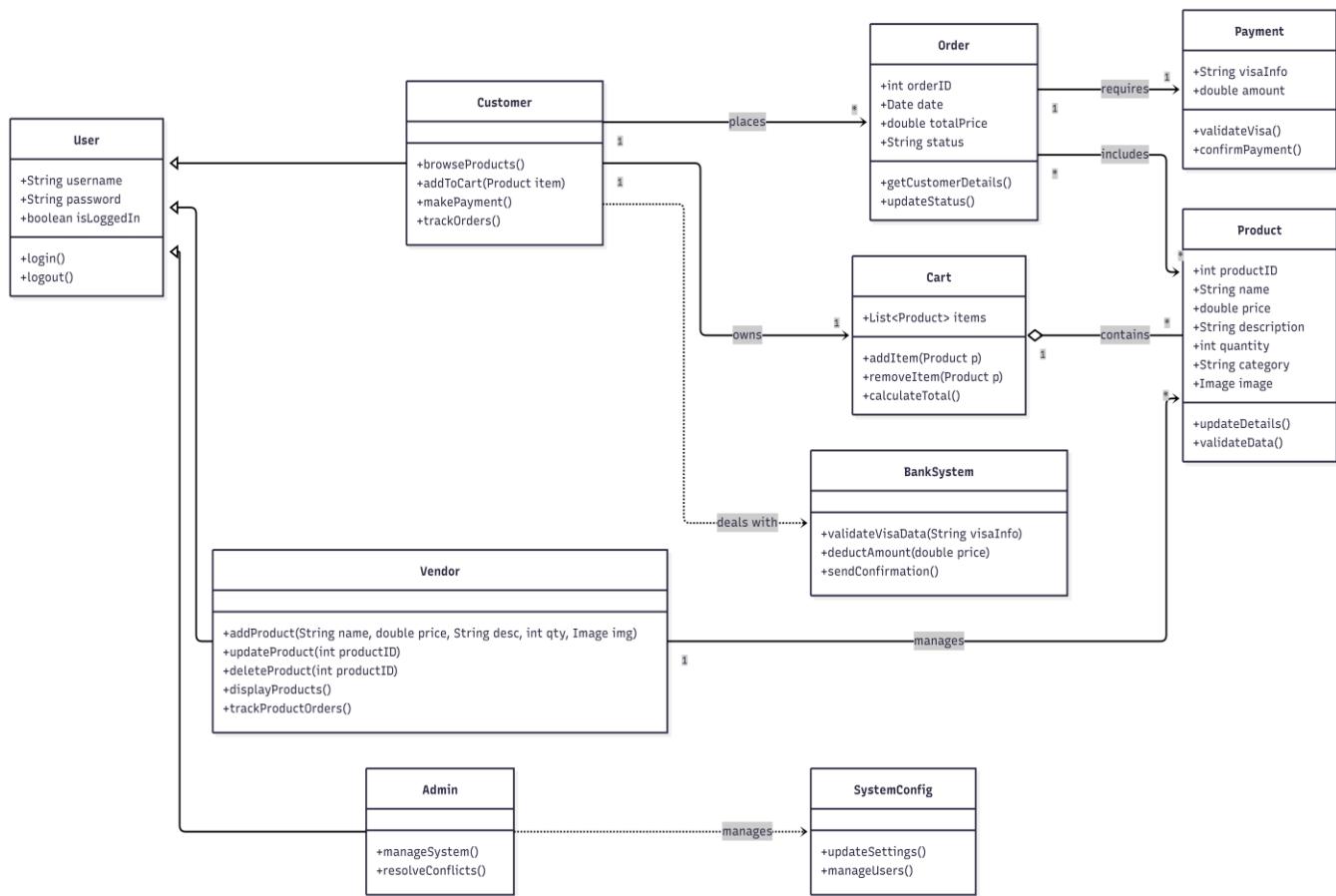
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E-COMMERCE SYSTEM

Login and Logout Sequence Diagram



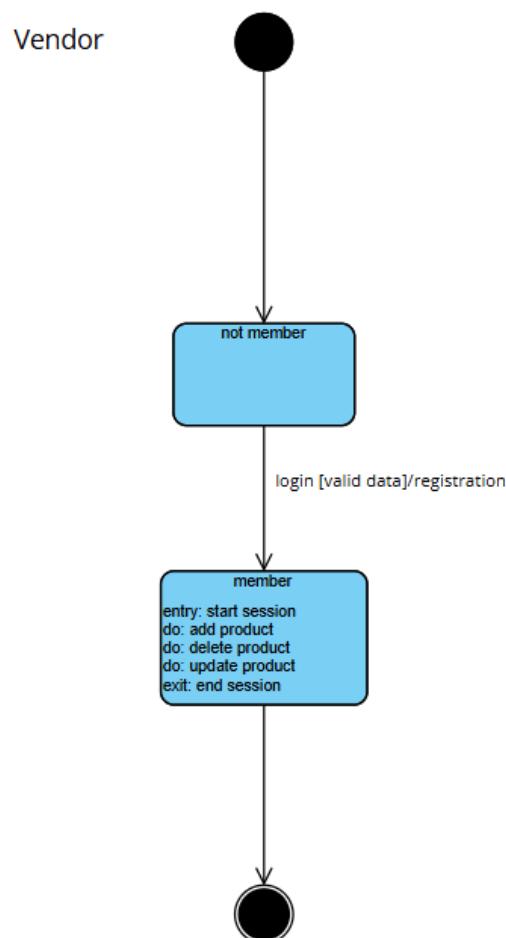
Class Diagram



State Diagram

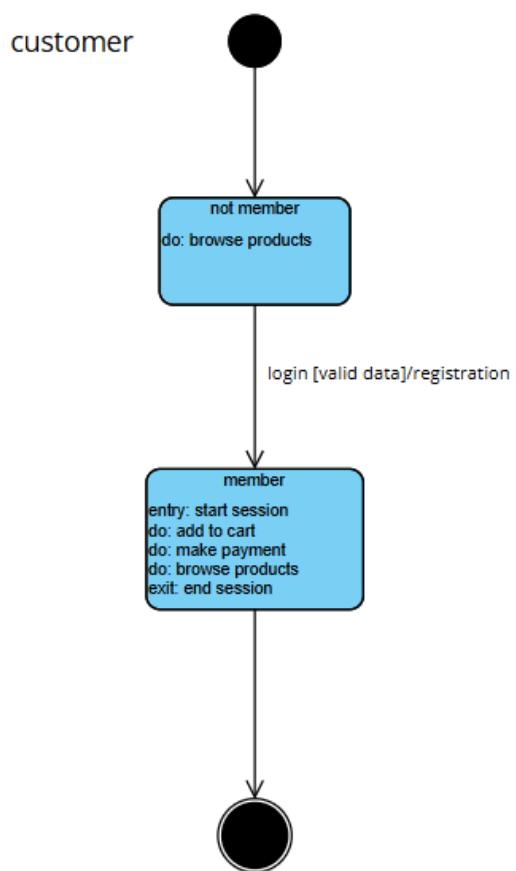
Al-Hussein Hassan

Admin

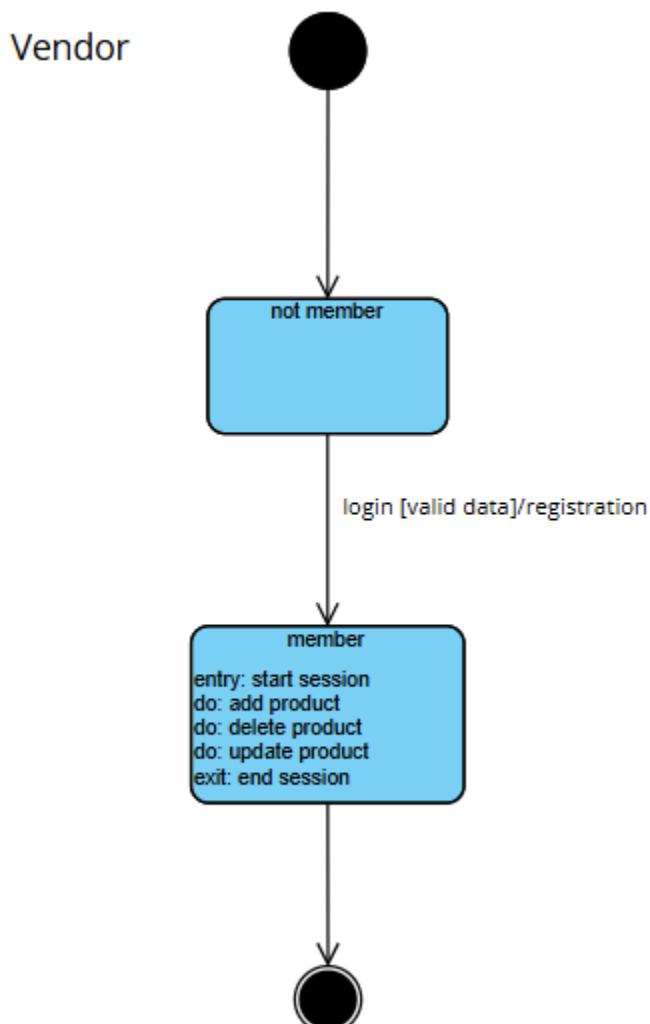


Customer

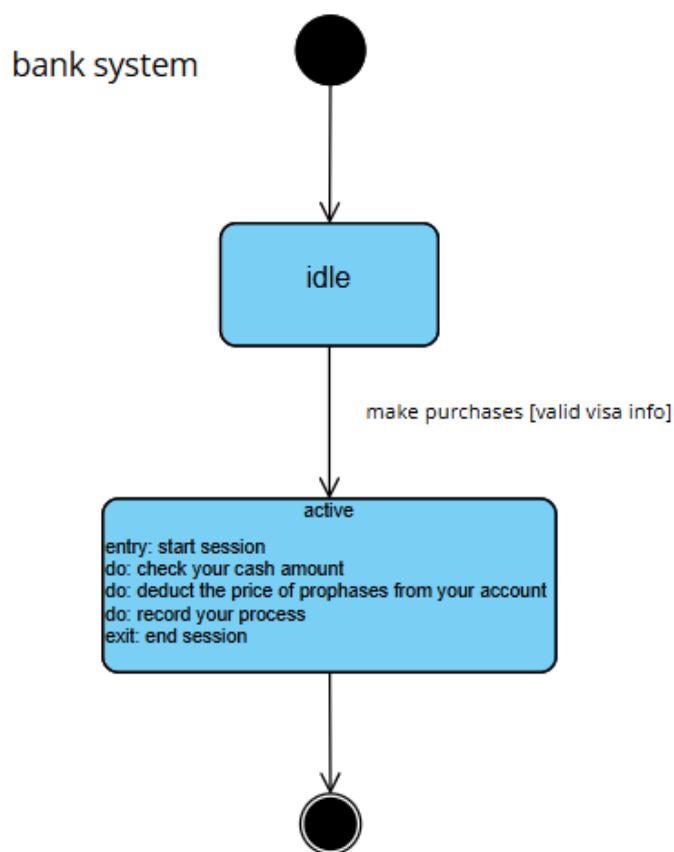
E-COMMERCE SYSTEM



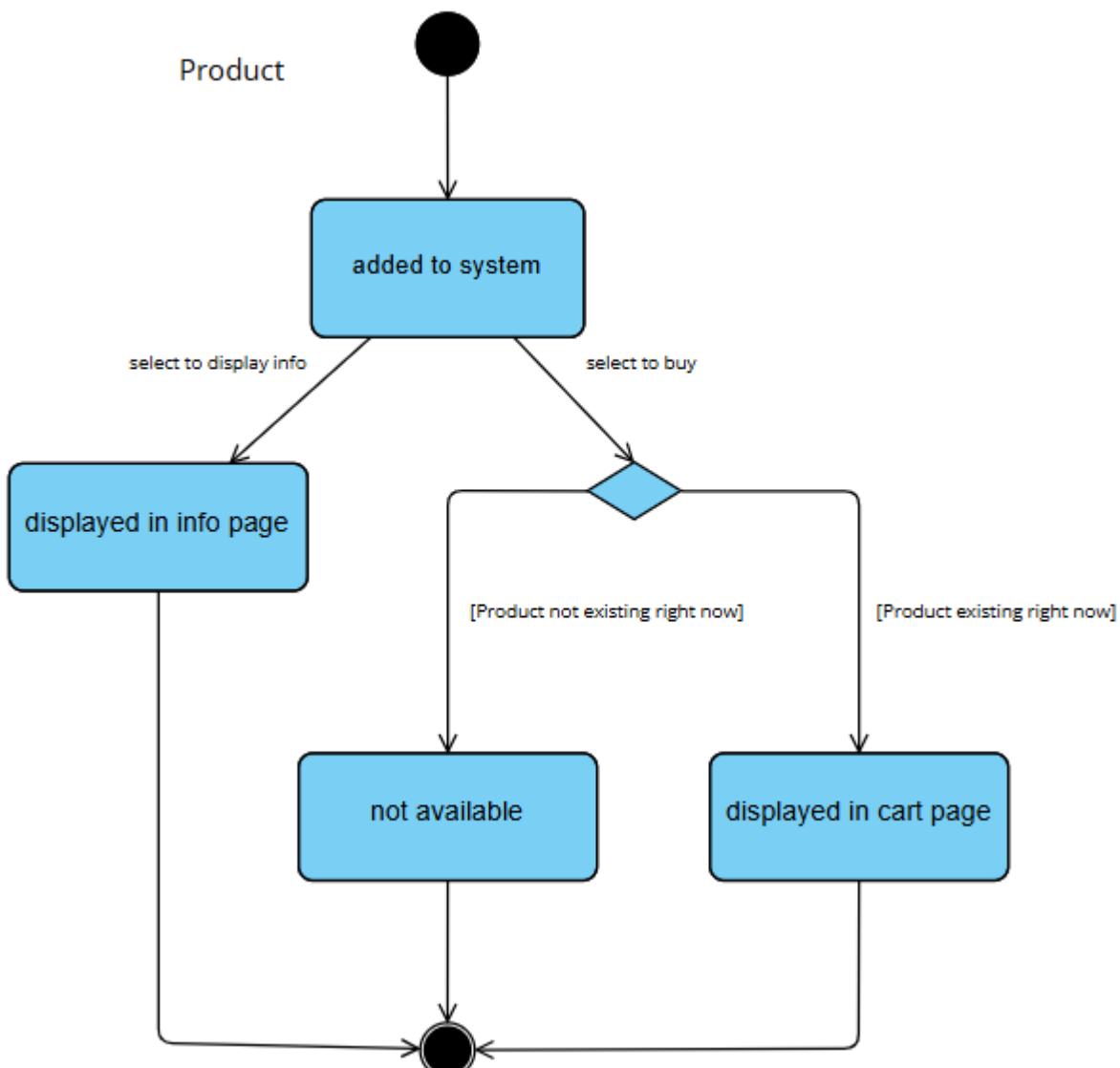
Vendor



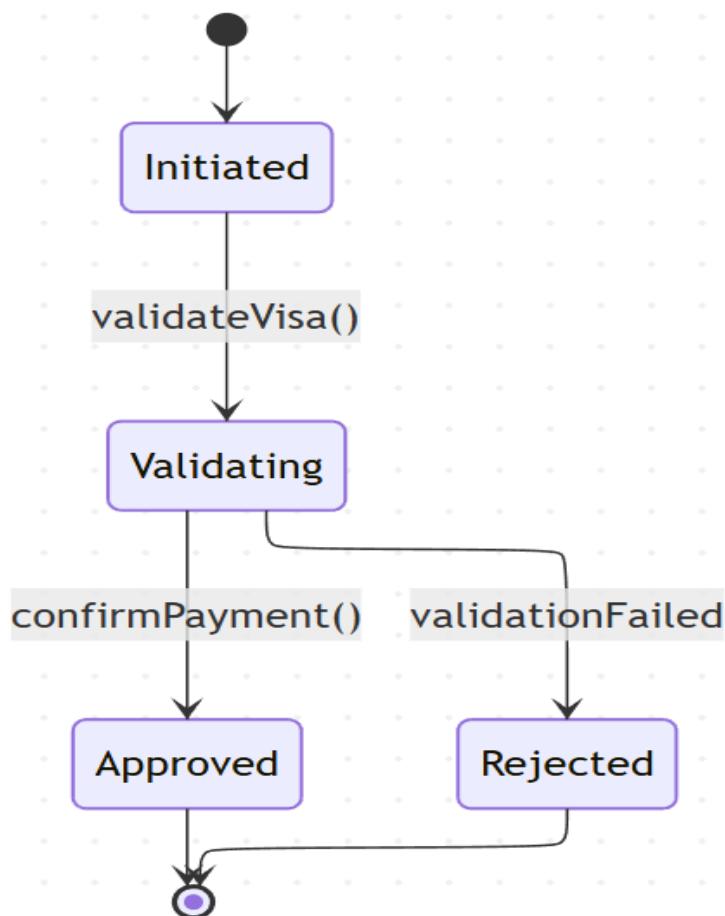
Bank system



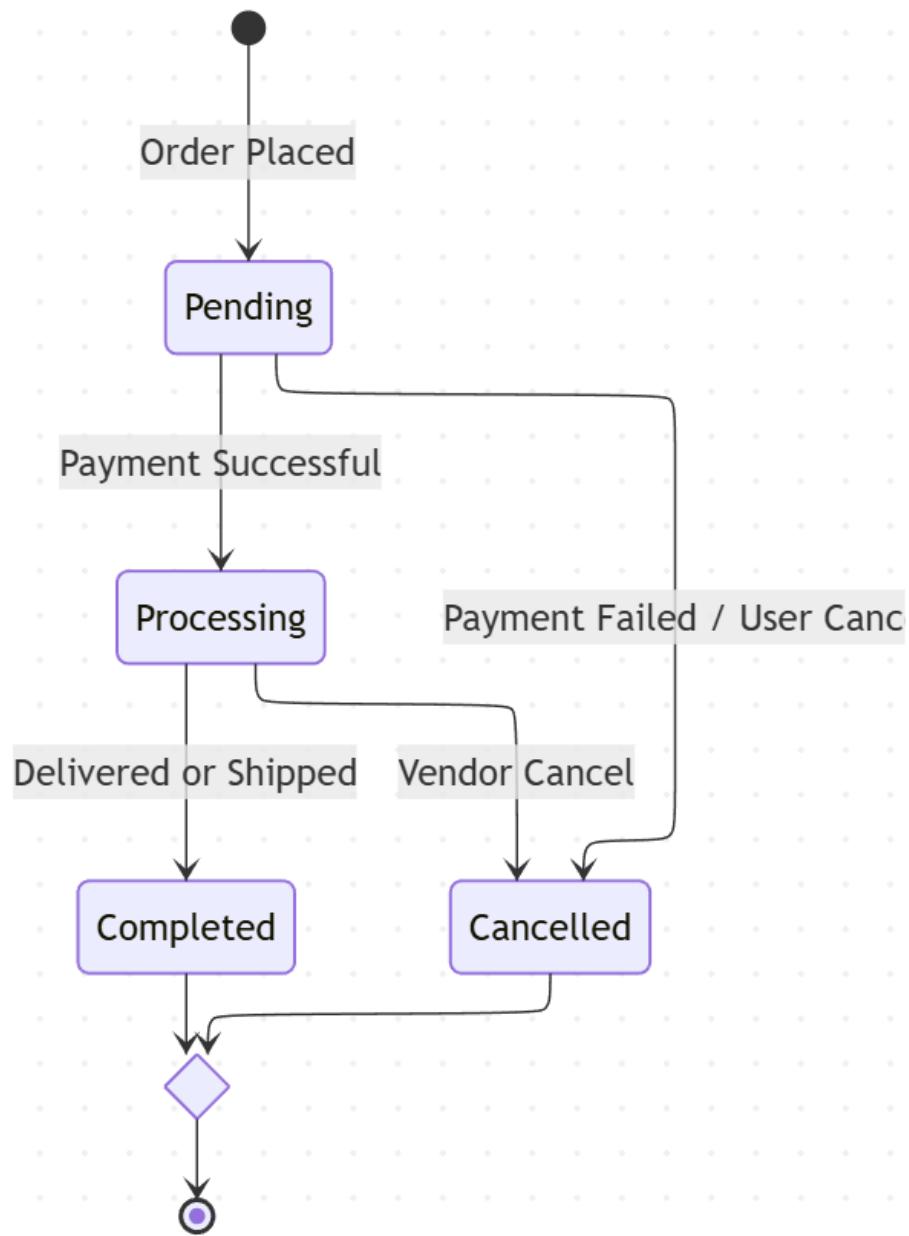
Product



Payment

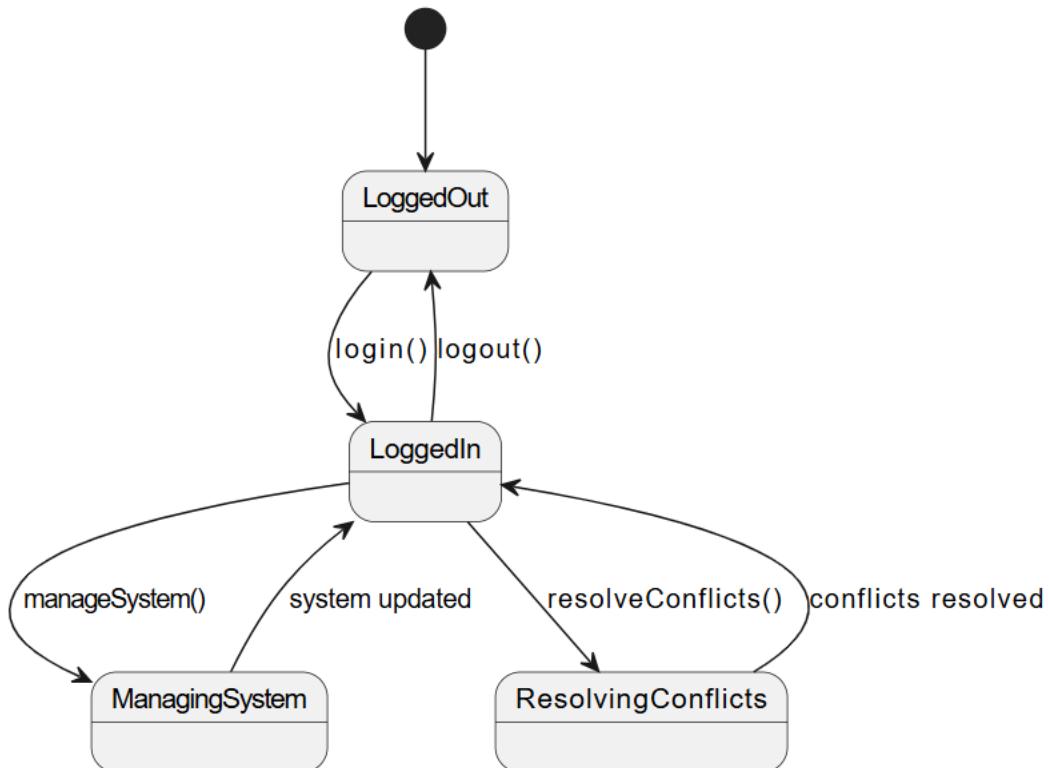


Order

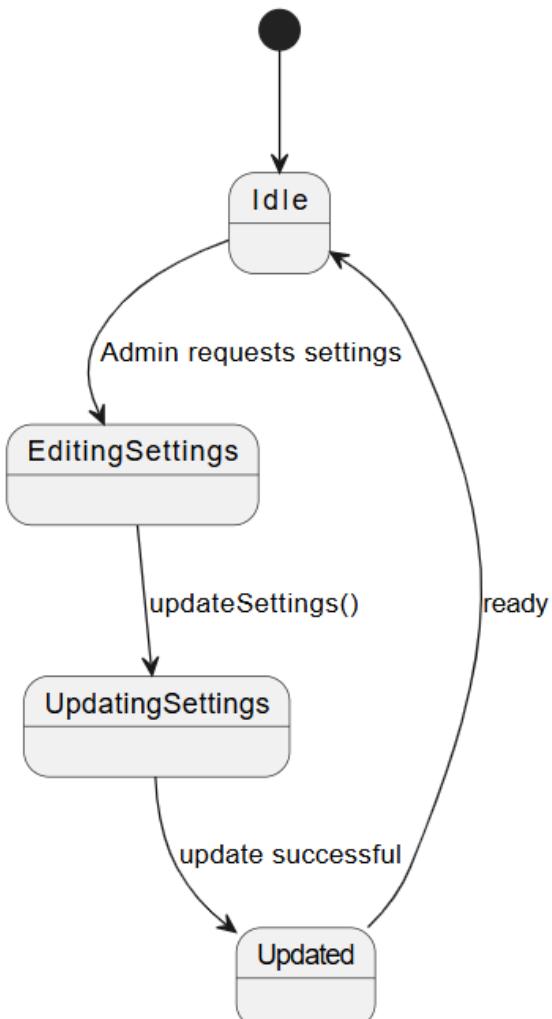


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admin

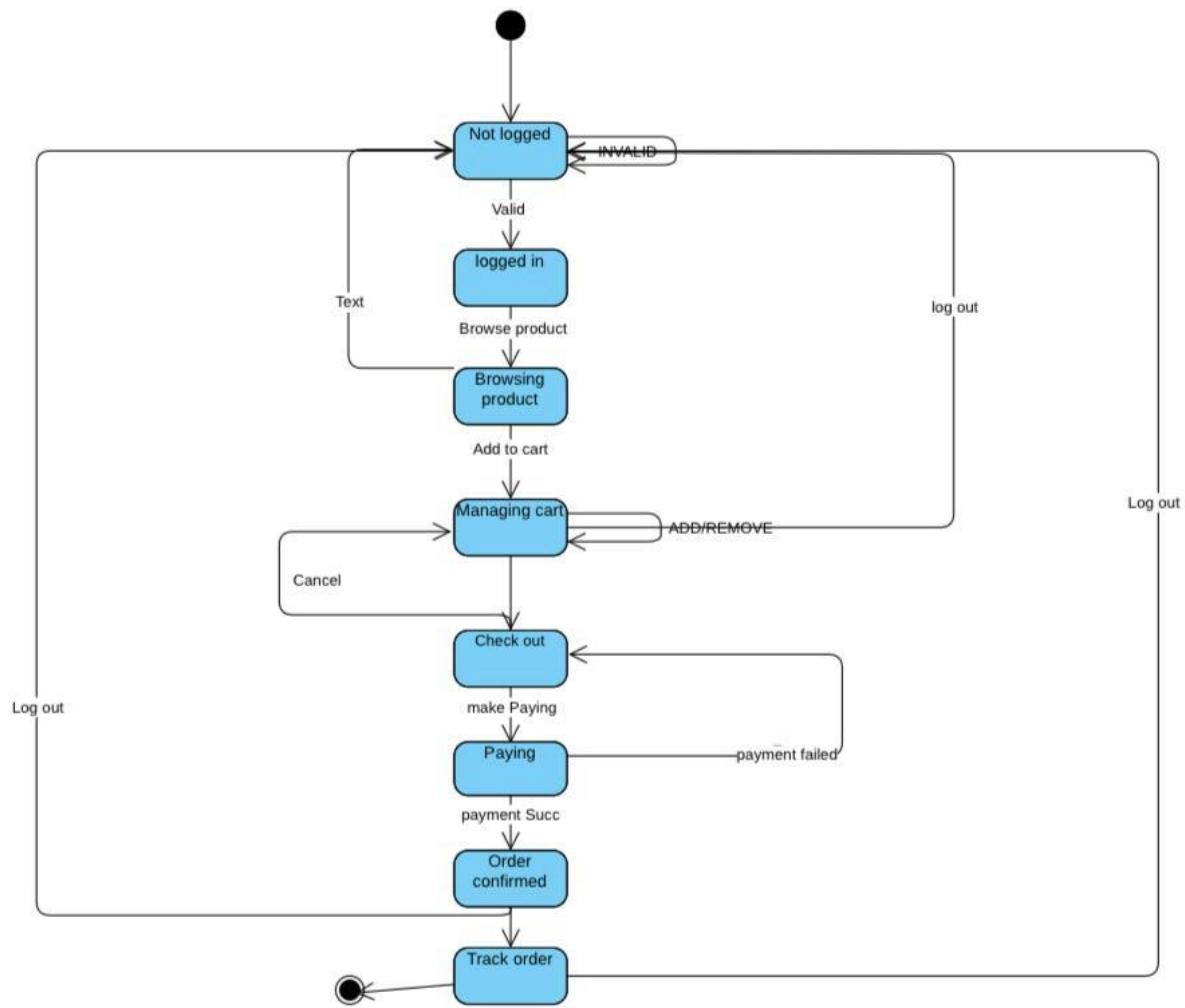


SystemConfig



E-COMMERCE SYSTEM

Customer



Cart

