Software Engineering and Mobile App Development

DarazPlus - Enhanced E-Commerce Platform

Group Assignment 1

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1. Introduction:

This report explains the requirements for building an enhanced e-commerce platform like Daraz, which connects buyers and sellers in a single online marketplace. The goal of the new system is to make shopping and selling easier, faster, and more secure by improving user experience, simplifying order handling, and ensuring smooth, safe transactions. It also identifies the key stakeholders involved, describes how the requirements were gathered, and outlines both the functional and non-functional needs required to design, develop, and maintain a reliable and efficient e-commerce platform.

2. System Stakeholders:

1. Owner
2. Employees
3. Administration Team
4. IT Department
5. Finance Department
6. Regulatory Authorities
7. Customers
8. Vendors/Sellers
9. Delivery Agent
10. Banks / Payment System
11. Suppliers
12. Investors
13. Marketing Team
14. Customer Support Staff
15. Mobile App Developers
16. Insurance Partners

Identifying stakeholders is a fundamental step in developing a comprehensive Requirements Specification Report, as it ensures that the perspectives, needs, and expectations of all individuals and entities interacting with the system are recognized and incorporated.

3. Requirements Gathering Methods:

To gather the requirements for the Daraz e-commerce system, two requirement gathering methods were used: interviews with selected participants and online surveys. These allow balancing deep, contextual insight with broader, generalizable input. Combining multiple elicitation techniques allows a more complete and validated requirements set, as recommended in requirements engineering research (Hickey & Davis, 2004).

3.1. Interviews with Selected Participants

Method Overview:
In order to replicate the roles of important stakeholders, a small group of participants—two peers playing the roles of vendors and two peers playing the roles of customers—were questioned. Understanding how users anticipate interacting with an e-commerce system, what features are necessary, and typical challenges in handling online transactions were the main goals of the interviews. Even in situations when access to actual stakeholders is restricted, semi-structured interviews are widely recognized as an effective technique for eliciting detailed, qualitative requirements because they allow flexibility while keeping discussions focused (Preece, Rogers, & Sharp, 2015).

Rationale for Use:

Interviews were chosen because they provide rich contextual insight into functional and non-functional needs. They are particularly effective for uncovering implicit requirements that users may not explicitly state in structured formats. Prior research shows that interviews enable deeper understanding of stakeholder expectations and are essential in early analysis stages (Pohl & Rupp, 2011; Zowghi & Coulin, 2005).

Findings:

- In order to satisfy functional needs like account authentication, product filtering, and real-time monitoring, interviewees posing as consumers emphasized the significance of a secure login, a simple product search with filters, and unambiguous order status updates.

- Simulated sellers emphasized the need to add, update, and manage product listings, as well as efficiently handle refunds or returns, informing system features for seller dashboards and inventory management.
- These interviews also revealed that participants value usability and clarity in the interface, which informed non-functional requirements like intuitive design and fast page loading.

3.2. Online Surveys

Method Overview:
An online survey was distributed to 20 peers and potential users familiar with e-commerce platforms. The survey included both closed-ended questions (e.g., expected page load times, preferred payment methods) and open-ended questions (e.g., suggestions for improving user experience). Surveys are a well-established technique for gathering large-scale user perspectives and quantifying requirement priorities (Kontio, Lehtola, & Bragge, 2004).

Rationale for Use:
Surveys were used to supplement the interviews and gather opinions from a larger, more diverse sample, providing evidence for the generalizability of the requirements. They were particularly useful for identifying non-functional needs such as performance, mobile compatibility, and multi-language support (Zowghi & Coulin, 2005).

Findings:

- 90% of respondents preferred quick page loads and mobile-friendly designs, supporting non-functional requirements for performance and device compatibility.

- Participants expressed a preference for secure online payments and clear refund policies, reinforcing functional requirements for payment handling and order management.

- Many respondents suggested multi-language support and simple navigation, which informed non-functional requirements around usability and accessibility.

References

Hickey, A. M., & Davis, A. M. (2004). *A Unified Model of Requirements Elicitation.* Journal of Management Information Systems, 20(4), 65–84.

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Preece, J., Rogers, Y., & Sharp, H. (2015). *Interaction Design: Beyond Human-Computer Interaction.* Wiley.

Pohl, K., & Rupp, C. (2011). *Requirements Engineering: Fundamentals, Principles, and Techniques.* Springer.

Zowghi, D., & Coulin, C. (2005). *Requirements Elicitation: A Survey of Techniques, Approaches, and Tools.* In Engineering and Managing Software Requirements (pp. 19–46). Springer.

Kontio, J., Lehtola, L., & Bragge, J. (2004). *Using the Focus Group Method in Software Engineering: Obtaining Practitioner and User Experiences.* Proceedings of the International Symposium on Empirical Software Engineering.

4. Functional and Non-functional requirements

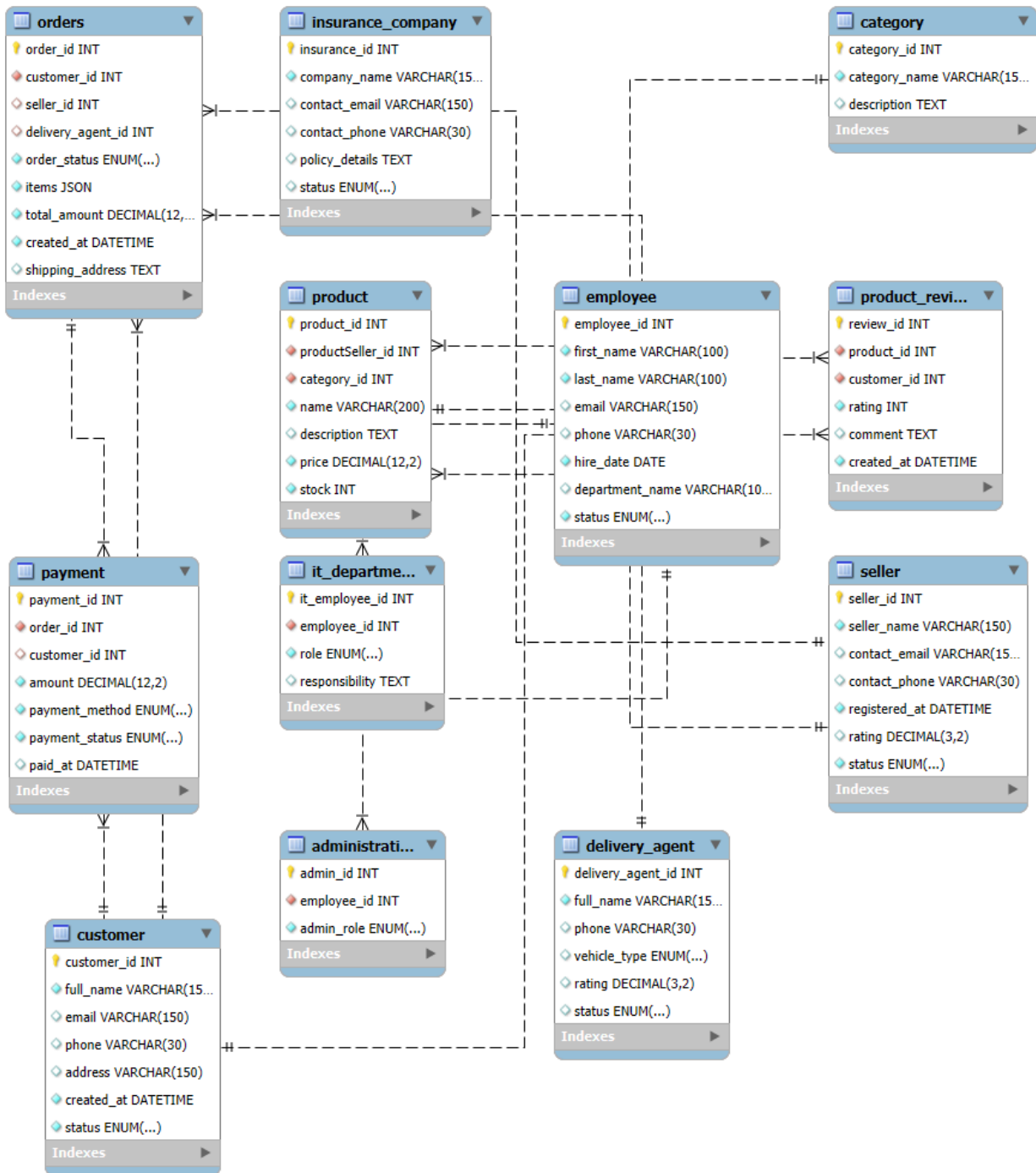### 4.1 *Functional Requirements*

1. The system must allow customers and sellers to create accounts and log in securely using email or phone number.
2. Sellers should be able to add, update, and remove product listings, including descriptions, prices, and stock levels.
3. Users must be able to search for products and apply filters (e.g., price, brand, rating, category) for efficient browsing.
4. The system should provide real-time order status updates and tracking for customers and sellers.
5. The system must send order confirmations and delivery updates via email or SMS.
6. Administrators should have access to a dashboard for monitoring user activity, orders, and system performance.
7. Customers should be able to rate products and provide written feedback after purchases.
8. Customers must be able to add products to a shopping cart and select the quantity.
9. The system should allow customers to request refunds or returns, and sellers or administrators must be able to process them efficiently.
10. The system must allow administrators to manage user accounts, including suspending or verifying sellers when necessary.
11. The system should allow customers to cancel pending orders before shipment.

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12. The system must generate sales, revenue, and performance reports for administrative review.
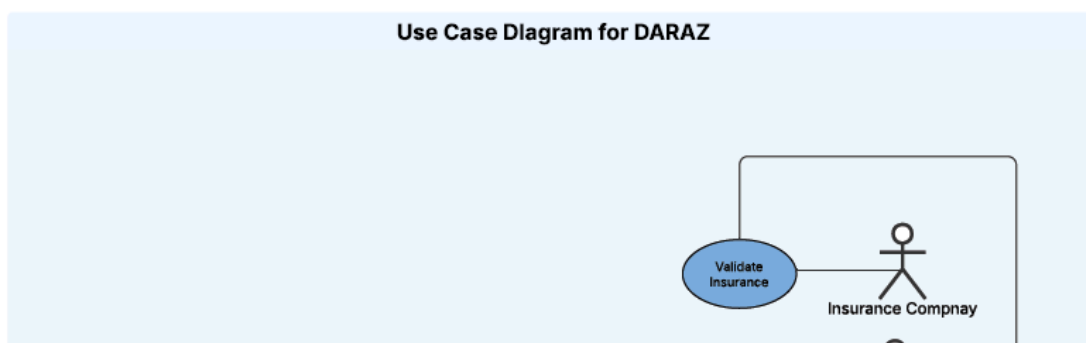13. Customers can pay online or Offline (COD / Card, etc).

4.2 *Non-functional Requirements*

1. The system should be capable of handling at least 10,000 concurrent users without performance degradation.
2. The system should maintain 99.5% uptime to ensure accessibility at all times.
3. The system should be user-friendly and easy to understand for new customers.
4. The system should be compatible with both desktop and mobile devices.
5. The system should be easily scalable to accommodate future growth in users and product listings.
6. The system should automatically back-up every 24 hours.
7. Each page should load within 3 seconds under normal network conditions.
8. The system should comply with relevant data protection and privacy regulations within the operating region.
9. The system should be designed for easy maintenance, allowing developers to update or fix issues without extended downtime.
10. The system should provide role-based access control to prevent unauthorized access to sensitive information.
11. The system should support the use of multiple languages to cater to different users.
12. The system should comply with the local e-commerce , tax and data protection laws.
13. Regular backups should be taken to restore data in case of failure.
14. The site should work across browsers (Chrome, Safari, etc.)

5. Entity Relationship Diagram

orders
- order_id INT
- customer_id INT
- seller_id INT
- delivery_agent_id INT
- order_status ENUM(...)
- items JSON
- total_amount DECIMAL(12,...
- created_at DATETIME
- shipping_address TEXT
- Indexes

insurance_company
- insurance_id INT
- company_name VARCHAR(15...
- contact_email VARCHAR(150)
- contact_phone VARCHAR(30)
- policy_details TEXT
- status ENUM(...)
- Indexes

category
- category_id INT
- category_name VARCHAR(15...
- description TEXT
- Indexes

product
- product_id INT
- productSeller_id INT
- category_id INT
- name VARCHAR(200)
- description TEXT
- price DECIMAL(12,2)
- stock INT
- Indexes

employee
- employee_id INT
- first_name VARCHAR(100)
- last_name VARCHAR(100)
- email VARCHAR(150)
- phone VARCHAR(30)
- hire_date DATE
- department_name VARCHAR(10...
- status ENUM(...)
- Indexes

product_revi...
- review_id INT
- product_id INT
- customer_id INT
- rating INT
- comment TEXT
- created_at DATETIME
- Indexes

payment
- payment_id INT
- order_id INT
- customer_id INT
- amount DECIMAL(12,2)
- payment_method ENUM(...)
- payment_status ENUM(...)
- paid_at DATETIME
- Indexes

it_departme...
- it_employee_id INT
- employee_id INT
- role ENUM(...)
- responsibility TEXT
- Indexes

seller
- seller_id INT
- seller_name VARCHAR(150)
- contact_email VARCHAR(15...
- contact_phone VARCHAR(30)
- registered_at DATETIME
- rating DECIMAL(3,2)
- status ENUM(...)
- Indexes

administrati...
- admin_id INT
- employee_id INT
- admin_role ENUM(...)
- Indexes

delivery_agent
- delivery_agent_id INT
- full_name VARCHAR(15...
- phone VARCHAR(30)
- vehicle_type ENUM(...)
- rating DECIMAL(3,2)
- status ENUM(...)
- Indexes

customer
- customer_id INT
- full_name VARCHAR(15...
- email VARCHAR(150)
- phone VARCHAR(30)
- address VARCHAR(150)
- created_at DATETIME
- status ENUM(...)
- Indexes

6. USE CASE DIAGRAM

Use Case Diagram for DARAZ

Validate Insurance

Insurance Compnay

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7. USE CASE DESCRIPTION:

Register/Login

USE CASE	Register/Login
GOAL DESCRIPTION	Allow customers and sellers to create accounts or log in securely to access personalized features and perform transactions.
ACTORS	**Primary:** Customer or Seller **Secondary:** Authentication System, Database
ASSUMPTIONS	- Users have internet access and a valid email or phone number. - The system must is operational and active
PRECONDITIONS	- Users must have internet access and a valid email or phone number. - The system must be operation

STEPS	Step	Action
	1	The user clicks the "Sign Up" or "Login" button.
	2	System prompts for username/email and password
	3	The user enters credentials and submits.
	4	The system validates details.
	5	If valid, access is granted; Otherwise, an error message is shown.
VARIATIONS	Step	Branching Action
	3a	Invalid email/password → Display error and prompt retry.
ISSUES		● Two-factor authentication implementation timing.
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Search and Browse Products

USE CASE	**Search and Browse Products**	
GOAL DESCRIPTION	Enable customers to browse and search for products using filters and categories	
ACTORS	• **Primary:** Customer • **Secondary:** Product Database, Search Engine Module	
ASSUMPTIONS	• The system displays relevant search results or product listings.	
PRECONDITIONS	• The user is on the home page or logged into the system.	
STEPS	**Step**	**Action**
	1	The user types a product name in the search bar or selects a category.
	2	The system retrieves matching products.
	3	The system displays product listings with name, price, and rating
	4	The user clicks a product to view details.

VARIATIONS	Step	Branching Action
	2a	No matching results → Show "No products found" message
ISSUES		• Whether to implement an AI-based recommendation engine.
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Checkout

USE CASE	Checkout
GOAL DESCRIPTION	Allow customers to add products to a cart and complete purchase using multiple payment methods.
ACTORS	**Primary:** Customer **Secondary:** Payment Gateway, Inventory System
ASSUMPTIONS	Order is successfully placed and stored in the database.
PRECONDITIONS	- Users must be logged in. - Product must be available in stock.

STEPS	Step	Action
	1	The user selects a product and clicks "Add to Cart."
	2	System updates cart and shows total price.
	3	The user clicks "Checkout."
	4	The user selects the payment method and delivery address.
	5	The system confirms payment and generates an order ID.

VARIATIONS	Step	Branching Action
	4a	Payment fails → Display error and prompt for retry.
	5a	Product out of stock → Notify user and suggest similar items.
ISSUES		● Whether to integrate third-party wallets or use an internal wallet system
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Manage Products (Seller)

USE CASE	Manage Products (Seller)	
GOAL DESCRIPTION	Allow sellers to add, update, or delete their products efficiently.	
ACTORS	**Primary:** Seller **Secondary:** Product Management Module, Admin	
ASSUMPTIONS	The product list is updated in the database and visible to customers.	
PRECONDITIONS	The seller is logged in and verified.	
STEPS	**Step**	**Action**
	1	Seller navigates to the "My Products" page
	2	Seller clicks "Add Product."
	3	Seller fills in details and uploads images.
	4	The system validates input and stores the product.
VARIATIONS	**Step**	**Branching Action**
	3a	Missing details → Display form error message.

ISSUES	● How to handle bulk upload of products efficiently.
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Track Orders (Delivery Partner & Customer)

USE CASE	Track Orders (Delivery Partner & Customer)	
GOAL DESCRIPTION	Provide real-time tracking of orders for both customers and delivery partners.	
ACTORS	**Primary:** Customer, Delivery Partner **Secondary:** Order Management System, Notification Service	
ASSUMPTIONS	Delivery status is updated to "Delivered" or "Returned."	
PRECONDITIONS	Order must be confirmed and assigned to a delivery agent.	
STEPS	**Step**	**Action**
	1	Delivery partner logs in and views assigned orders.
	2	Customer checks order status in "My Orders."
	3	The system displays current status (e.g., "In Transit").
	4	Delivery partner marks order as "Delivered."
	5	The system updates status and notifies customers.

VARIATIONS	Step	Branching Action
	4a	Delivery failed → System marked as "Returned" and alerts the seller.
ISSUES	● Integration with third-party logistics APIs.	
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Make Enquiries

USE CASE	**Make Enquiries**
GOAL DESCRIPTION	Allow users (customers or sellers) to ask questions or report issues about products, orders, or platform services to receive timely support, improving user satisfaction and trust.
ACTORS	**Primary Actor:** Customer or Seller **Secondary Actor:** Customer Support Representative / System Admin
ASSUMPTIONS	- The enquiry is successfully submitted and recorded in the system. - The user receives a confirmation message or tracking number for their enquiry.
PRECONDITIONS	- Users must be logged into their account. - The enquiry form or chat support system must be active.

STEPS	Step	Action
	1	User selects the "Help" or "Contact Us" option from the dashboard or product page.
	2	System displays enquiry categories (Product Issue, Order Problem, Payment Issue, etc.).
	3	User fills in the enquiry details and submits the form.
	4	System logs the enquiry and sends confirmation to the user.
	5	Support team reviews and responds through email, chat, or notification.
VARIATIONS	Step	Branching Action
	3a	If form submission fails due to network error → System prompts user to retry
	4a	If enquiry type is unclear → System suggests clarifying categories or provides FAQ links.
ISSUES	● Integration with live chat and AI-based chatbot features still under review.	
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Make Payment

USE CASE	Make Payment
GOAL DESCRIPTION	To allow customers to securely pay for their selected items using various payment methods (e.g., credit/debit card, mobile banking, cash on delivery, digital wallets), ensuring a smooth and reliable checkout process.
ACTORS	**Primary Actor:** Customer **Secondary Actors:** Payment Gateway, Bank Server, System Admin
ASSUMPTIONS	- Payment is successfully processed and recorded in the system. - Order status is updated to "Paid" or "Processing." - Customer receives a payment confirmation receipt or invoice
PRECONDITIONS	- Customer must be logged in. - Customer has items in the cart and confirmed the order details. - Payment gateway and internet connection are active

STEPS	Step	Action
	1	The customer proceeds to checkout and reviews the total amount.
	2	System displays available payment options (Card, Mobile Banking, Cash on Delivery, etc.).
	3	Customer selects a preferred payment method and enters payment details.
	4	System sends payment request to the selected payment gateway.
	5	Payment gateway verifies details and processes the transaction.
	6	System receives confirmation of successful payment.
	7	System updates the order status to "Paid" and generates a digital receipt for the customer.
VARIATIONS	Step	Branching Action
	5a	If payment fails due to insufficient funds → System notifies the user and asks to retry or choose another method.
	5b	If connection is lost → System saves payment attempt and allows user to resume later.
	7a	If payment confirmation is not received → System flags transaction for manual review.
ISSUES		● Integration with new local payment methods still under development. ● Refund and partial payment handling under review.

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Purchase Selling License

USE CASE	Purchase Selling License
GOAL DESCRIPTION	To enable potential sellers to officially register on the Daraz platform by purchasing a selling license, allowing them to list and sell products according to platform rules and policies.
ACTORS	**Primary Actor:** Seller **Secondary Actors:** System Admin, Payment Gateway, Bank Server
ASSUMPTIONS	- Seller account is upgraded to an active seller profile. - A digital selling license is issued and stored in the system. - Payment confirmation and license receipt are sent to the seller.
PRECONDITIONS	- User must have a valid Daraz account. - Seller registration form is completed and verified. - Payment system and license management system are active.

STEPS	Step	Action
	1	Seller logs into their Daraz account and navigates to the "Become a Seller" or "Seller Dashboard."
	2	Seller reviews license types, terms, and associated fees
	3	Seller selects a license plan and clicks "Purchase License."
	4	System displays payment options (credit card, mobile banking, etc.).
	5	System sends the payment request to the payment gateway.
	6	Upon successful transaction, the system generates a unique selling license ID
	7	Seller receives confirmation via email/SMS, and the license becomes active on the platform.
VARIATIONS	Step	Branching Action
	5a	If payment fails → System prompts the seller to retry or choose a different payment method.
	7a	If license activation fails → System logs the issue and notifies admin for manual verification.
	8a	If seller's verification is pending → License status remains "Inactive" until approved.
ISSUES		● Automatic license renewal process under development. ● Refund policy for license cancellation not finalized.

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Product Advertisement

USE CASE	Product Advertisement
GOAL DESCRIPTION	To allow sellers to promote their products through paid advertisements or featured listings, increasing product visibility and attracting more customers on the Daraz platform
ACTORS	**Primary Actor:** Seller **Secondary Actors:** System Admin, Marketing System, Payment Gateway
ASSUMPTIONS	- Product is successfully advertised or featured on the site. - System records payment and advertisement duration. - Advertisement metrics (views, clicks, reach) are updated in the seller dashboard
PRECONDITIONS	- Seller must have an active selling license. - Product must already be listed and approved on the platform. - Payment gateway and ad management system must be functional.

STEPS	Step	Action
	1	Seller logs into the seller dashboard and navigates to the "Advertisement" section
	2	System displays available advertisement options (e.g., Featured Product, Homepage Banner, Sponsored Listing).
	3	System displays available advertisement options (e.g., Featured Product, Homepage Banner, Sponsored Listing).
	4	System shows total cost and available payment options.
	5	Seller confirms the details and completes payment through the payment gateway.
	6	System verifies payment and schedules the product for promotion.
	7	Product is displayed in featured or sponsored sections as per plan.
	8	Seller can view advertisement performance reports from their dashboard.
VARIATIONS	Step	Branching Action
	5a	If payment fails → System notifies seller and prompts to retry or choose another method.
	6a	If ad scheduling fails → System alerts admin to manually schedule the ad.
	8a	If ad performance data not loading → System retries data retrieval or notifies technical team.
ISSUES		

	● Refund policy for failed or canceled ads under review. ● Integration with third-party marketing tools not yet implemented.
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OTP Verification

USE CASE	OTP Verification
GOAL DESCRIPTION	To verify the identity of a registered user attempting to log in by sending a One-Time Password (OTP) and ensuring secure access to their account on Daraz
ACTORS	Primary Actor: User (Customer / Seller / Employee) System: Daraz Authentication System
ASSUMPTIONS	● User has access to the registered phone number or email ● OTP service is available and functioning
PRECONDITIONS	● The user has entered valid login credentials (username/mobile number/email) ● Internet connection is available

STEPS	Step	Action
	1	User enters login credentials and proceeds to login
	2	System generates a unique OTP and sends it to user's registered phone number/email
	3	User receives OTP and enters it in the verification field
	4	System validates the user-entered OTP
	5	System grants access to the user if OTP is correct

VARIATIONS	Step	Branching Action
	3a	User does not receive OTP - - - User can request for OTP to be resent
	5a	If OTP is incorrect or expired → System displays error and denies access
ISSUES		● Delay or failure in OTP delivery due to network/service outage ● Possibility of SIM switching or unauthorized access if user mobile is compromised ● User frustration if OTP expires too quickly
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Budget Negotiation

USE CASE	Budget Negotiation	
GOAL DESCRIPTION	To negotiate and finalize the budget between the Owner of Daraz and the Investor to ensure alignment on financial terms for business operations or expansion	
ACTORS	Primary Actor: Owner (Daraz) Secondary Actor: Investor System: Finance Department	
ASSUMPTIONS	● Both parties are registered and authorized business stakeholders ● Proposed budget document/details are ready for review ● System supports negotiation workflow	
PRECONDITIONS	● Owner initiates a budget proposal ● Investor is available and notified for review	
STEPS	**Step**	**Action**
	1	Owner creates and submits a budget proposal to the Investor
	2	Investor reviews the budget proposal
	3	Investor decides whether to accept or counteroffer
	4	If accepted, Investor approves the budget
	5	If counteroffer is presented, owner decides to accept of reject

VARIATIONS	Step	Branching Action
	3a	If Investor rejects without counteroffer → Proposal is dismissed
	5a	If Owner rejects counteroffer → Proposal is dismissed
ISSUES	● Delay in review or approval process ● Disagreement may lead to project delays or cancellation ● Miscommunication regarding financial terms	
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Create Account

USE CASE	Create Account
GOAL DESCRIPTION	To allow a new user to register and create a valid Daraz account in order to access platform services such as browsing, purchasing, and selling products
ACTORS	Primary Actor: User (Customer / Seller) System: Daraz Registration System
ASSUMPTIONS	● User has a valid phone number or email ID ● Internet connection is available ● User has not previously registered using the same credentials
PRECONDITIONS	● Registration page is accessible ● User has provided required information (name, email/phone number, password, etc.)

STEPS	Step	Action
	1	User navigates to the registration/sign-up page
	2	User fills in account details and submits the registration form
	3	System validates the given information
	4	System sends OTP/email verification to confirm contact details
	5	User enters the verification code to activate the account
	6	System successfully creates the user account and grants access

VARIATIONS	Step	Branching Action
	3a	Invalid/Missing details - - - Account creation fails
ISSUES		● Duplicate accounts may be attempted with same credentials ● Incorrect information delays registration ● Email/SMS delivery issues may block verification
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System Maintenance

USE CASE	System Maintenance	
GOAL DESCRIPTION	To ensure system reliability by allowing users to report encountered errors, enabling the development team to verify and fix reproducible bugs and maintain system performance	
ACTORS	Primary Actor: User (Customer / Seller / Employee) Secondary Actor: Developer System: Daraz IT Department	
ASSUMPTIONS	● User is logged into the system or accessing Daraz services ● An unexpected error or malfunction occurs ● Developers have access to error logs and debugging tools	
PRECONDITIONS	● System is operational but has encountered a bug or error ● User has the option to report issues	
STEPS	**Step**	**Action**
	1	User encounters an error on the system
	2	User reports the error to the system (via error popup/report form)
	3	System logs the issue and notifies the developer team
	4	Developers analyze the issue and try to reproduce the bug
	5	If the bug is reproducible, developers fix the error and update the system

	6	If not reproducible, the system refreshes the page and allows the user to continue
VARIATIONS	**Step**	**Branching Action**
	4a	If developers need more info → User may be contacted for additional details
ISSUES		- Errors may occur inconsistently, making them difficult to reproduce - Fixing critical issues may require system downtime - Communication delays between users and developers
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Insurance Check

USE CASE	Insurance Check	
GOAL DESCRIPTION	**To verify the validity of insurance for system-related assets or seller products and ensure compliance by updating the insurance status or reissuing insurance if required**	
ACTORS	Primary Actor: Administration (Admin) Secondary Actor: Insurance Company, System	
ASSUMPTIONS	● Admin has authority to verify and update insurance information ● Insurance company services are active and accessible ● Insurance payment method is available	
PRECONDITIONS	● Insurance details already exist in the system ● Admin is logged in and accessing insurance validation screen	
STEPS	**Step**	**Action**
	1	Admin checks the insurance date in the system
	2	If valid, Admin updates status as "Valid" in the system
	3	If not valid, Admin requests reissue of insurance
	4	Insurance Company provides payment request for renewal

	5	System processes the payment and sends confirmation
	6	Insurance Company reissues the insurance
	7	Admin updates the insurance status as "Valid" in the system
VARIATIONS	**Step**	**Branching Action**
	2a	If connection to Insurance Company fails → Retry or notify Admin of delay
	6a	If payment fails → Admin notified and process halted until resolved
ISSUES		- Insurance company API may delay or fail to respond - Payment failures may interrupt the process - Admin may require multi-factor approval for payments
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Tracking Delivery

USE CASE	Tracking Delivery	
GOAL DESCRIPTION	To manage and track parcel delivery after pickup by enabling live location tracking, estimated delivery time, and handling acceptance or return of the parcel.	
ACTORS	Primary Actor: Customer, Seller Secondary Actors: Delivery Agent System	
ASSUMPTIONS	Parcel is packed and ready for pickup Delivery agent is available in the assigned region Live tracking service is functional (GPS / location API)	
PRECONDITIONS	Seller has confirmed and requested pickup Parcel is assigned to a delivery agent	
STEPS	Step	Action
	1	Seller requests pickup for the parcel
	2	Delivery agent picks up the parcel
	3	System activates live tracking and displays estimated delivery time
	4	Delivery agent attempts delivery to the customer

	5	If delivery is accepted by the customer, parcel is delivered successfully
	6	If delivery is not accepted, system notifies the seller and parcel is returned
	7	Once delivery is completed or returned, system disables live tracking and closes parcel status
VARIATIONS	**Step**	**Branching Action**
	5a	If customer not available → Reattempt delivery or mark return-to-seller
ISSUES	● GPS tracking may fail due to poor network ● Delivery refusal or failed attempts increase cost and time ● Delivery agent delay affects estimated delivery time accuracy	
DATE CREATED	29 October 2025	

8. Activity Diagrams:

Login
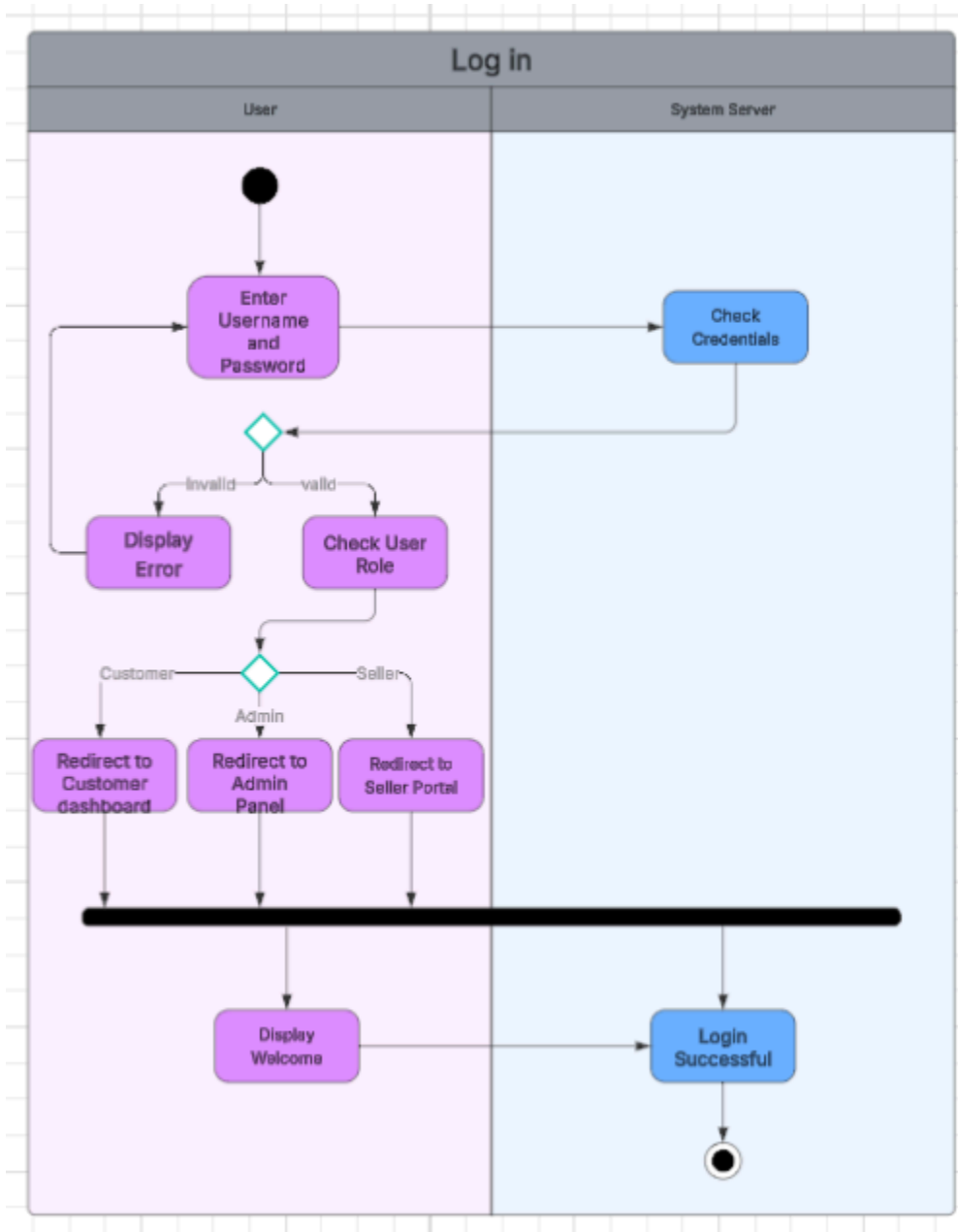
Browse Product
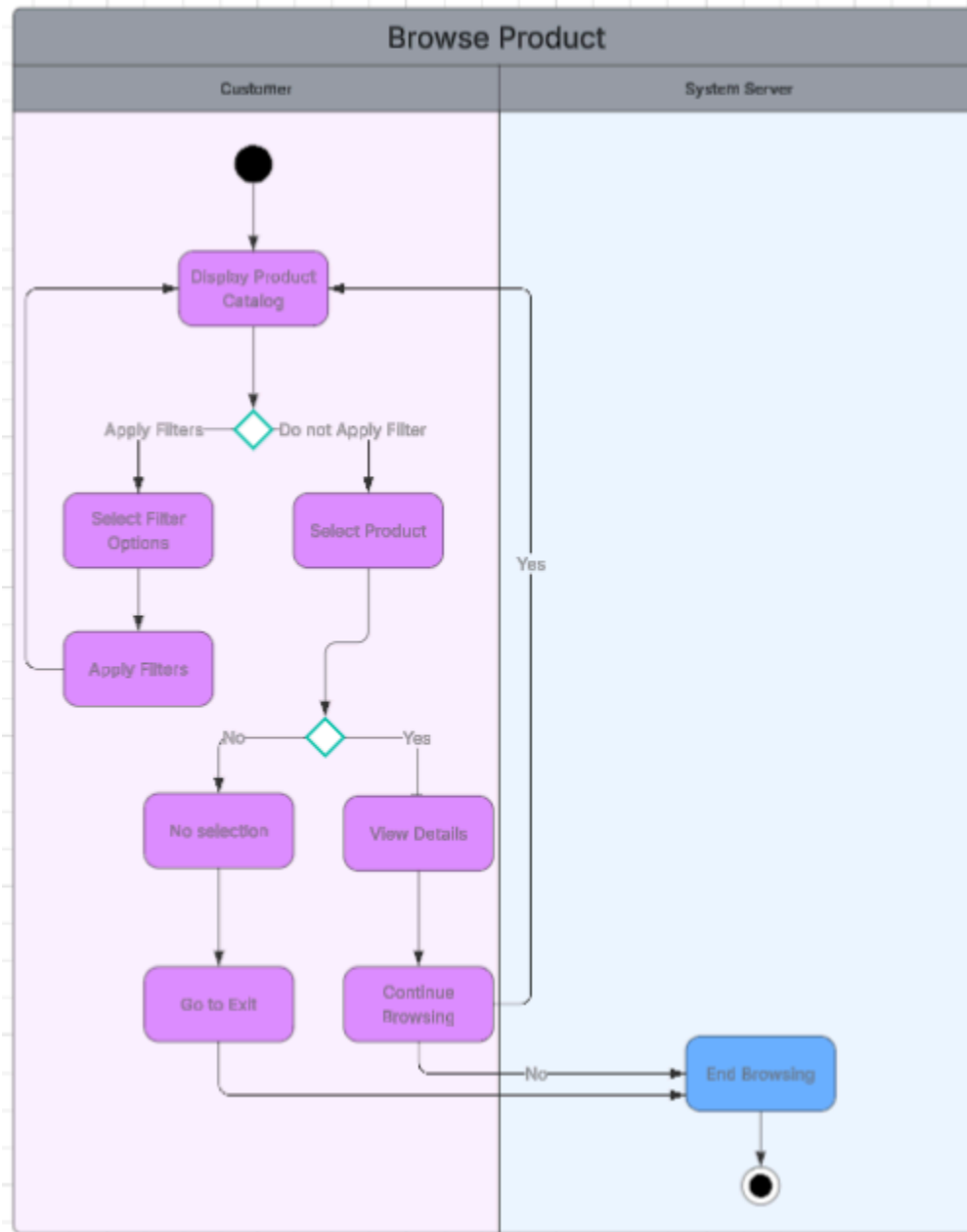
Make Queries
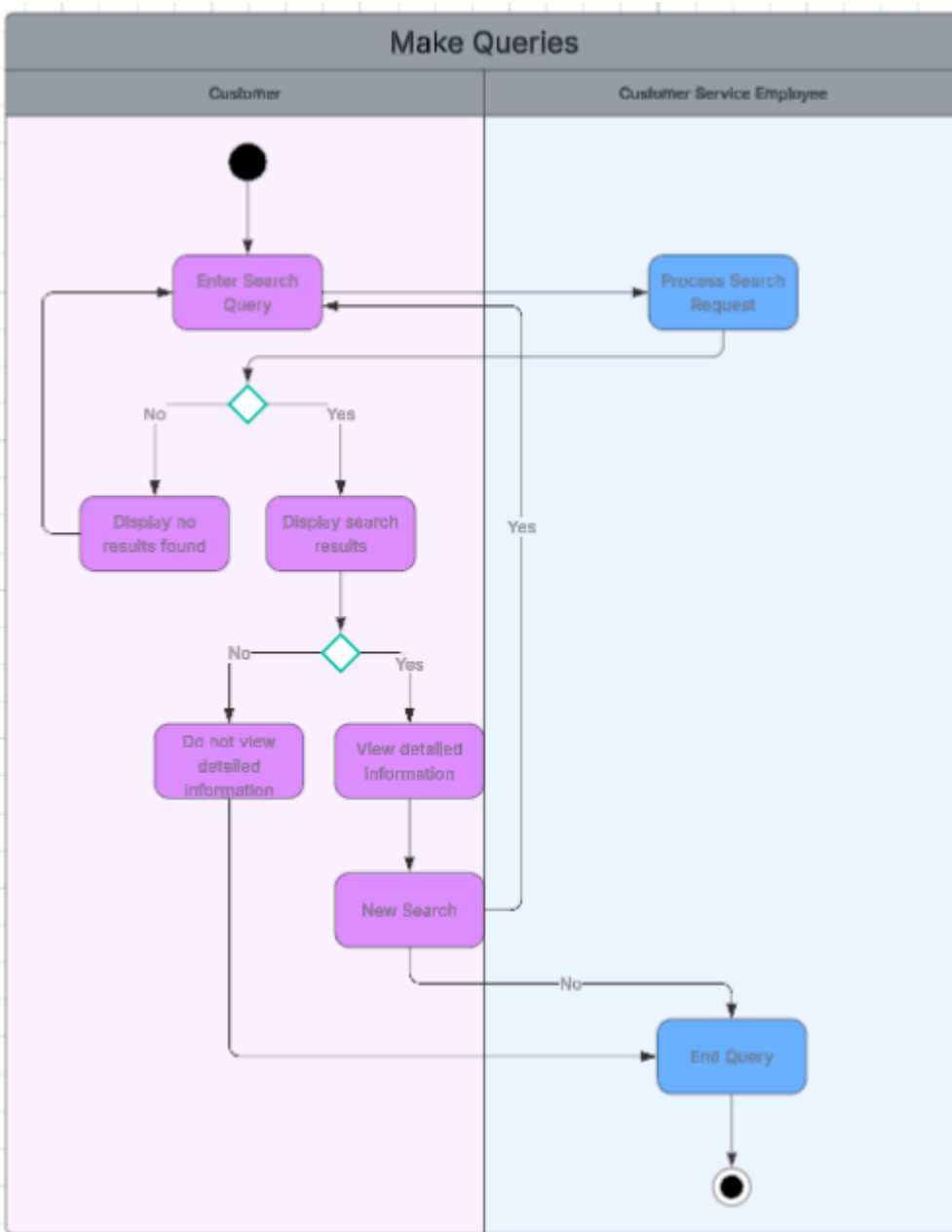
Add to Cart
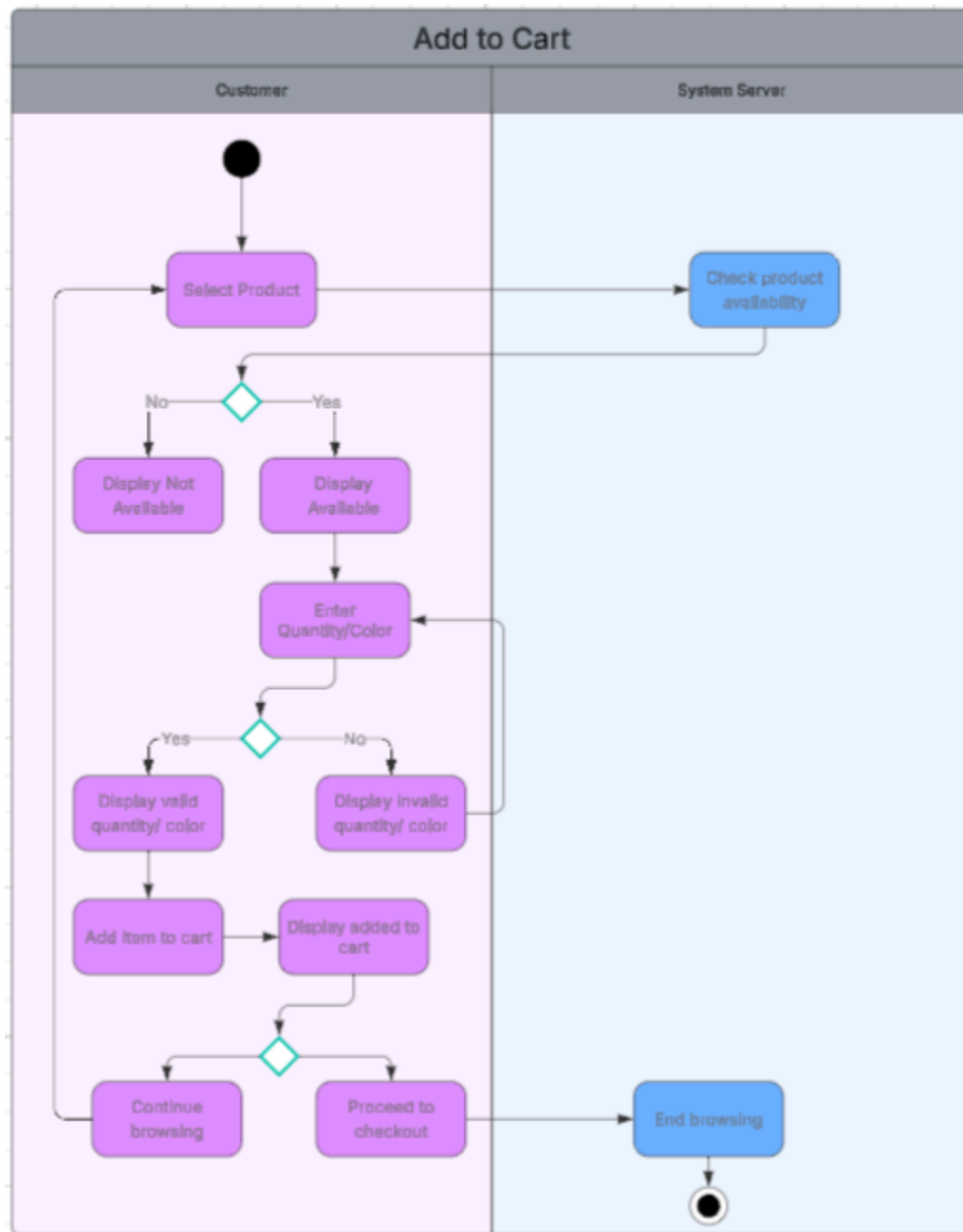
Make Payment
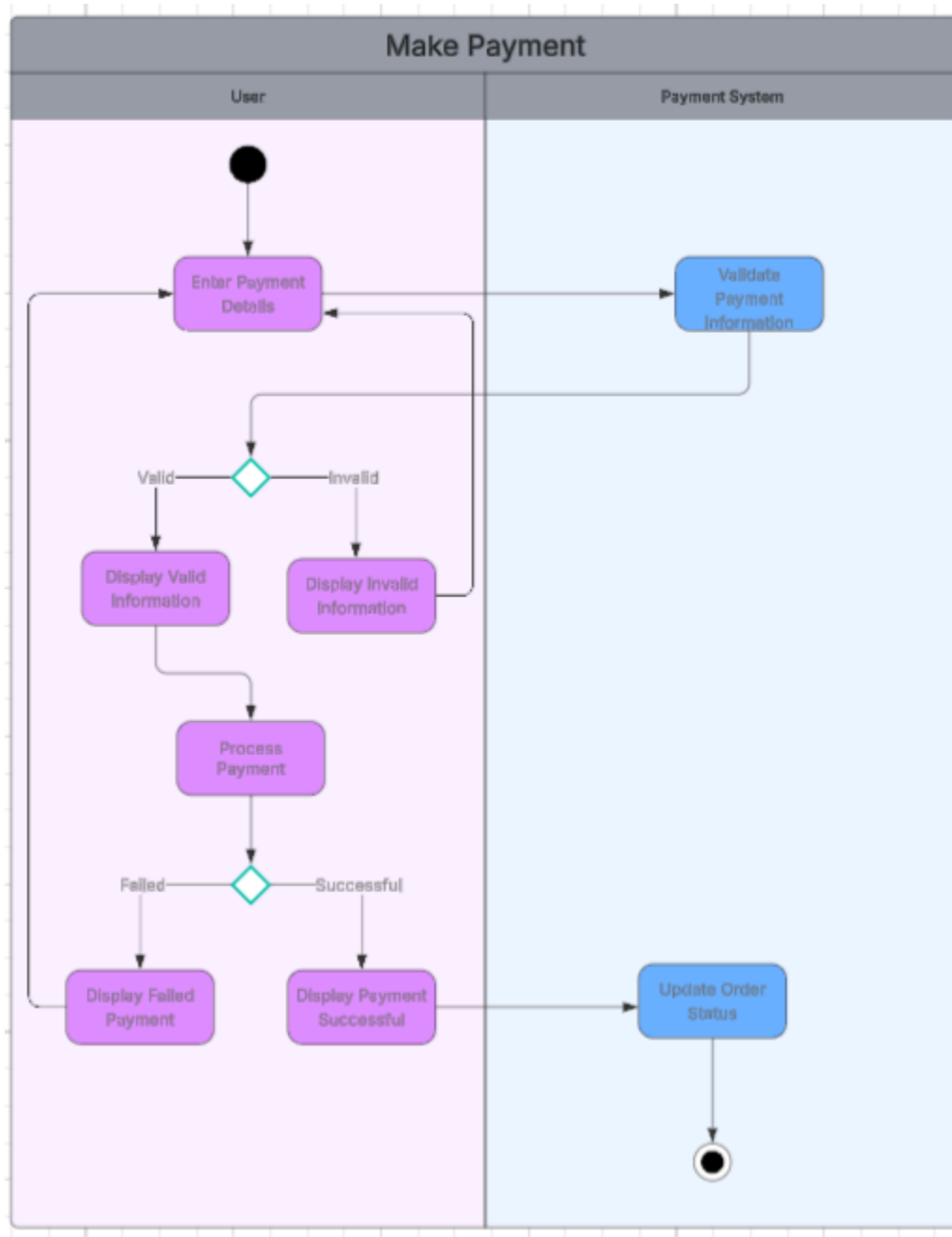
Arrange Delivery
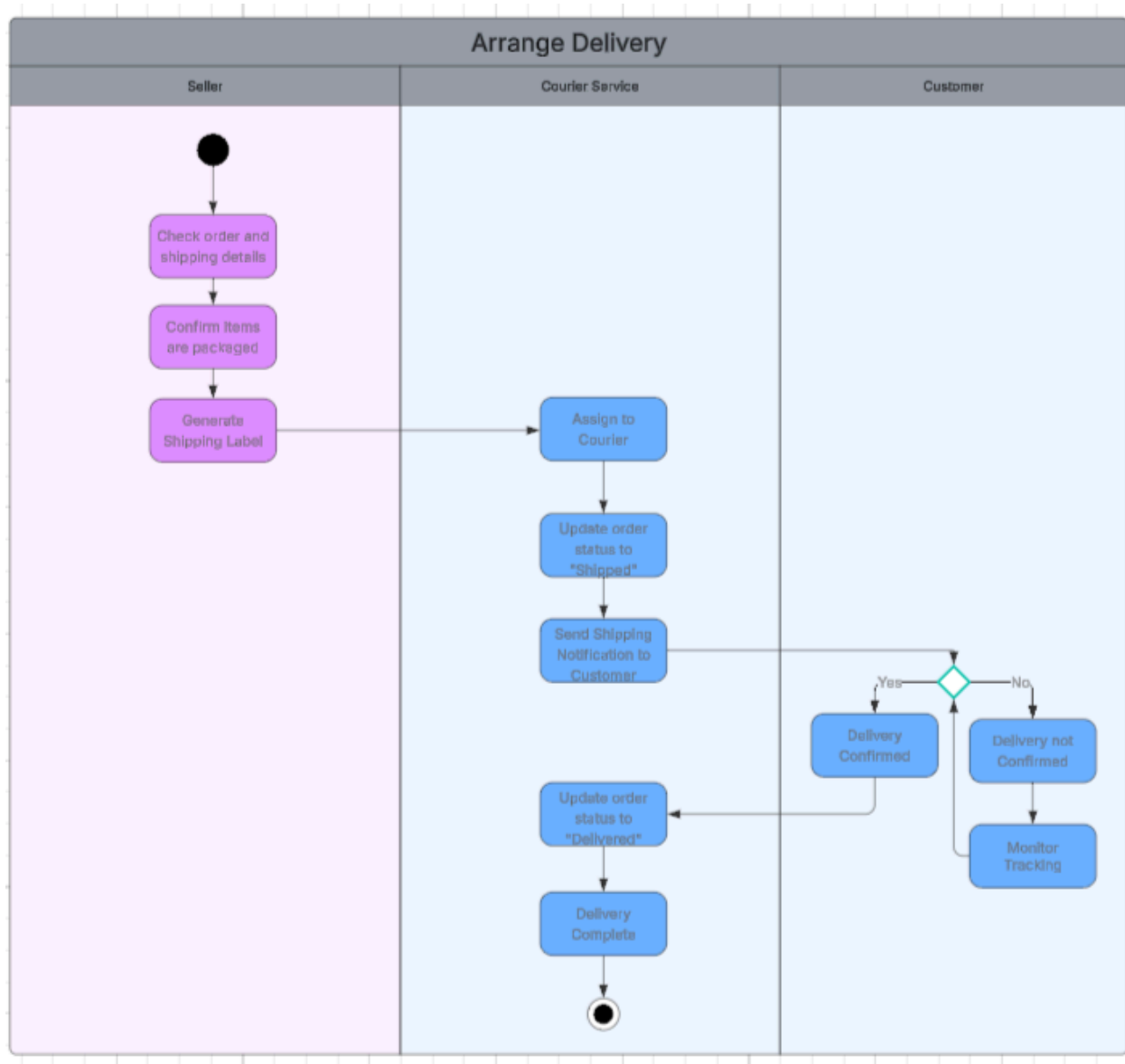
Update Products

Product Advertising

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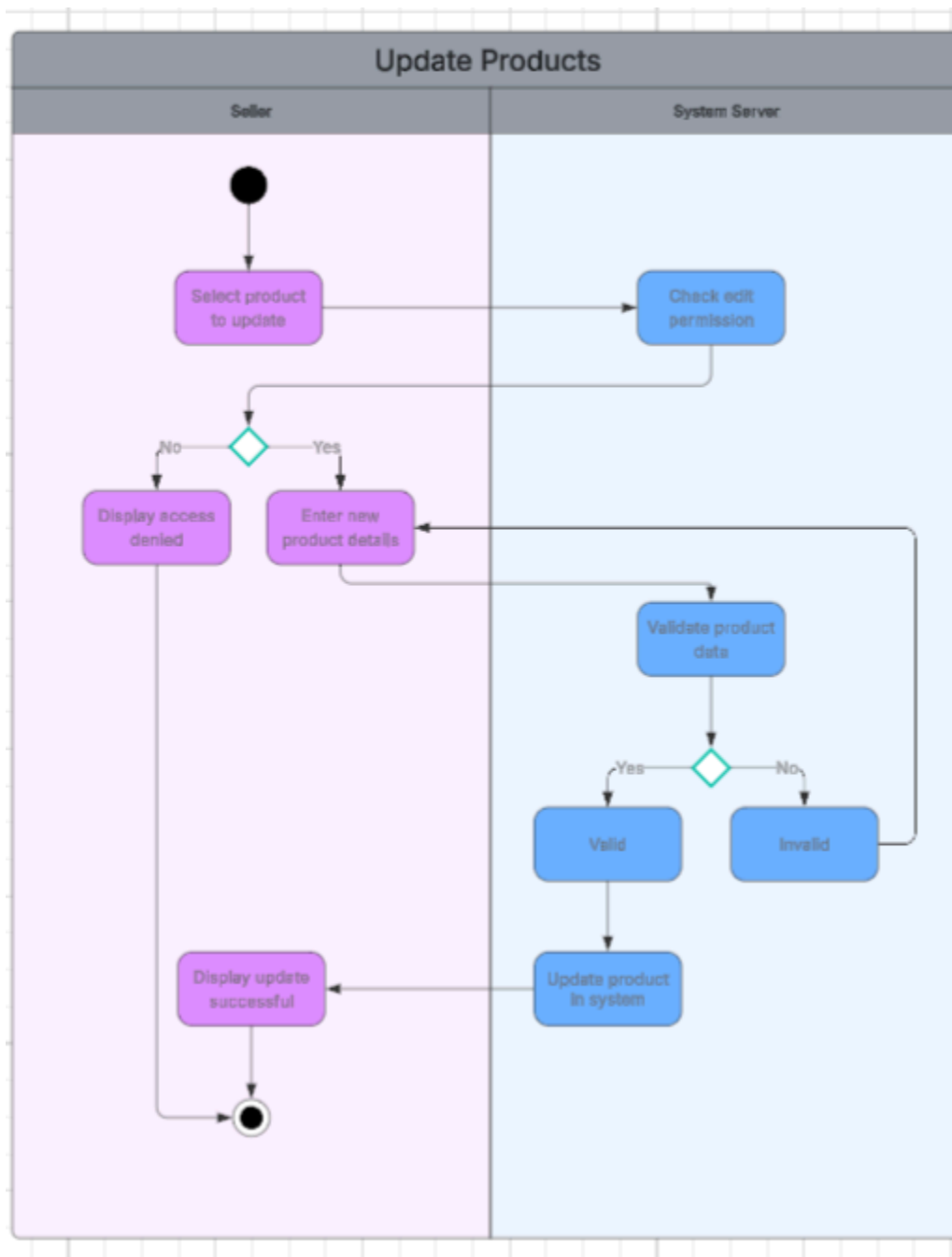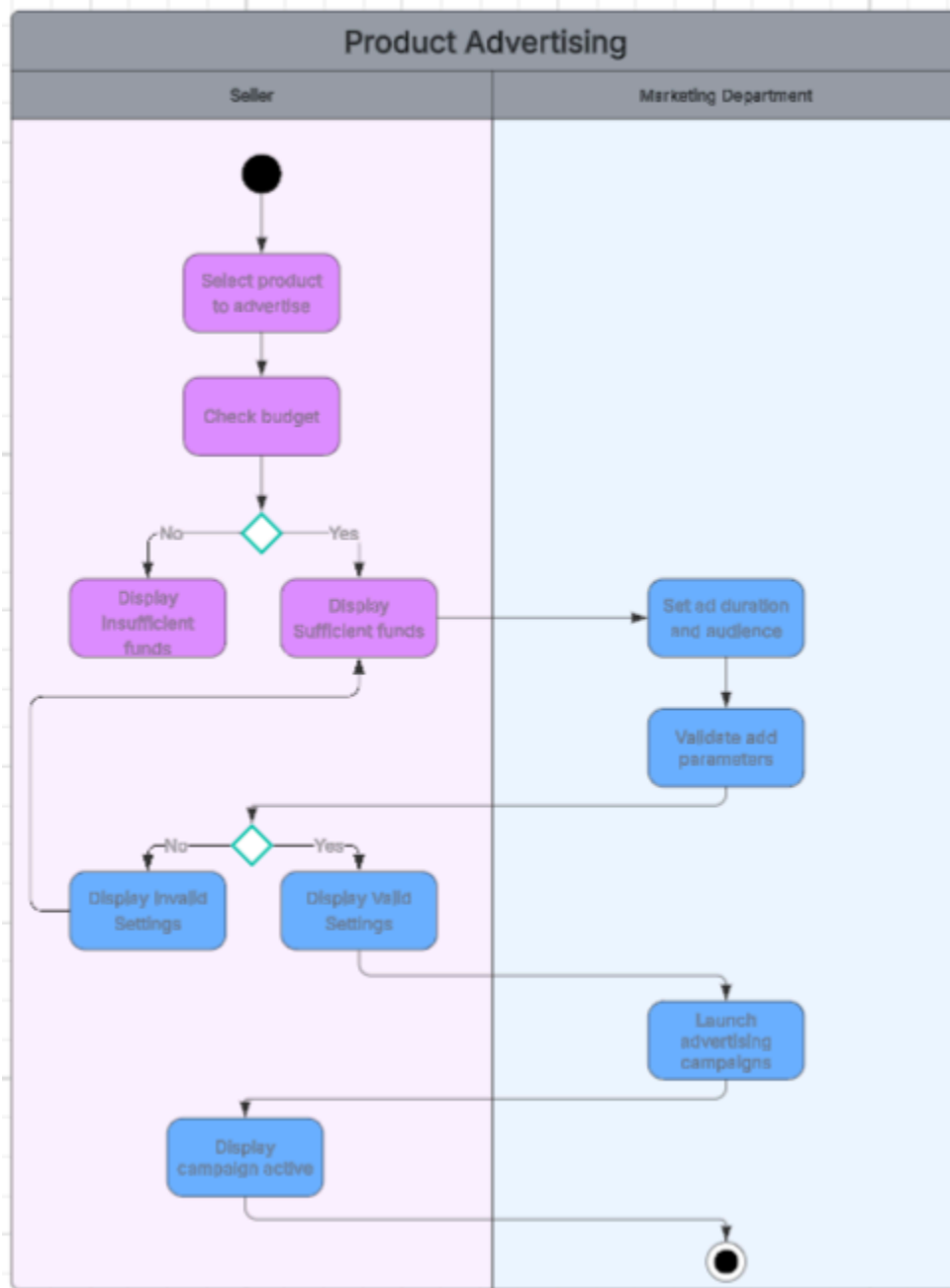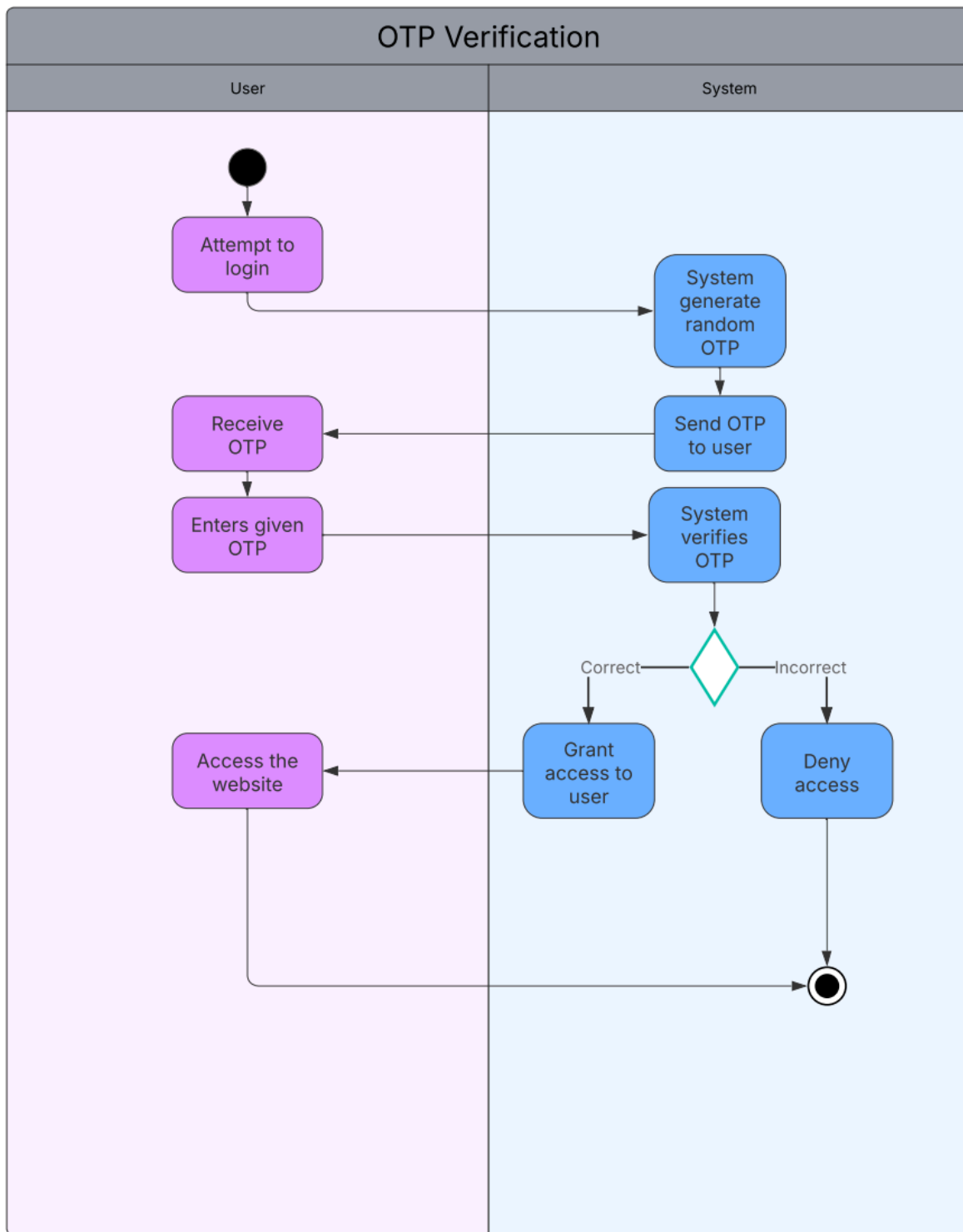
OTP Verification

Budget Negotiation
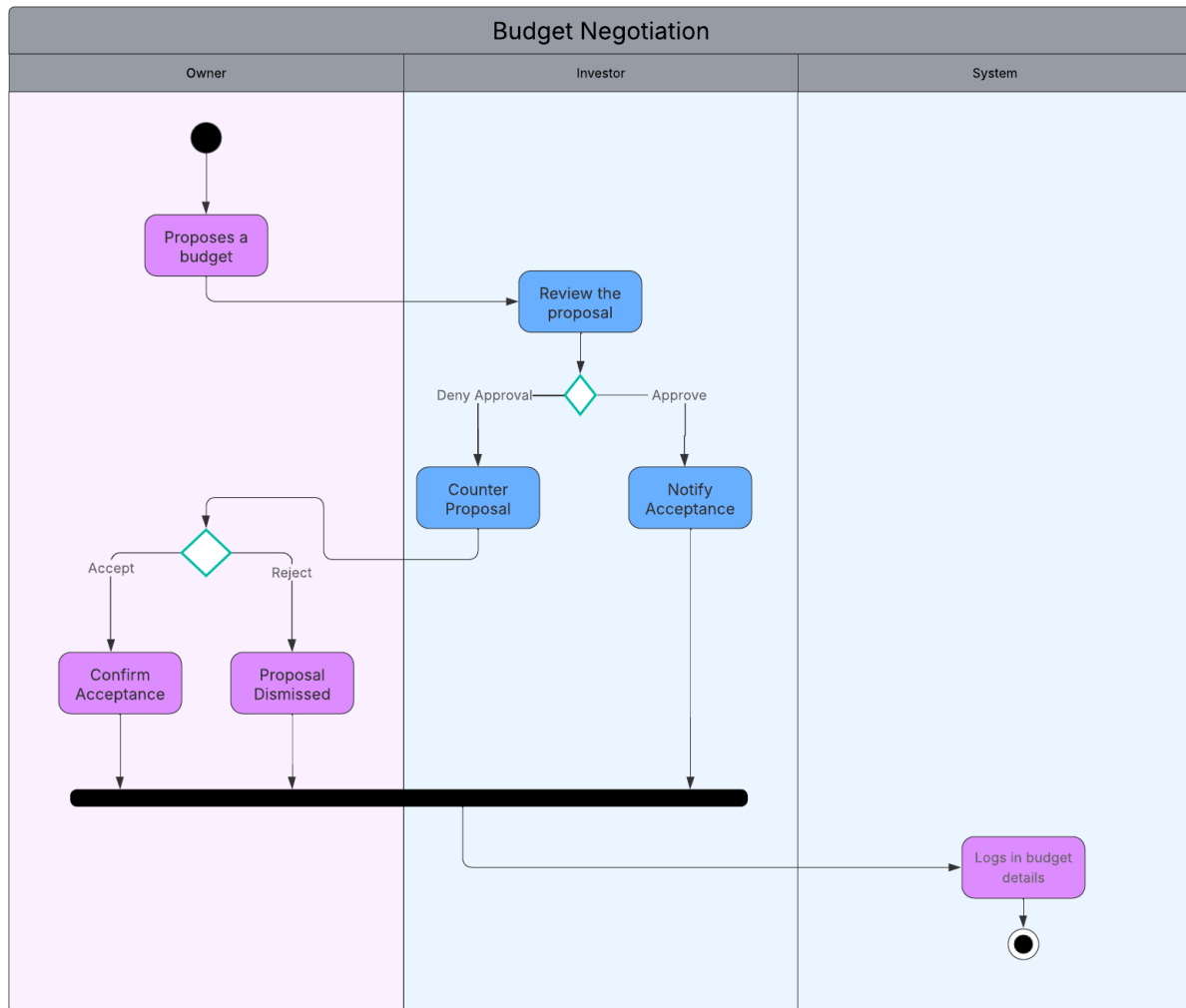
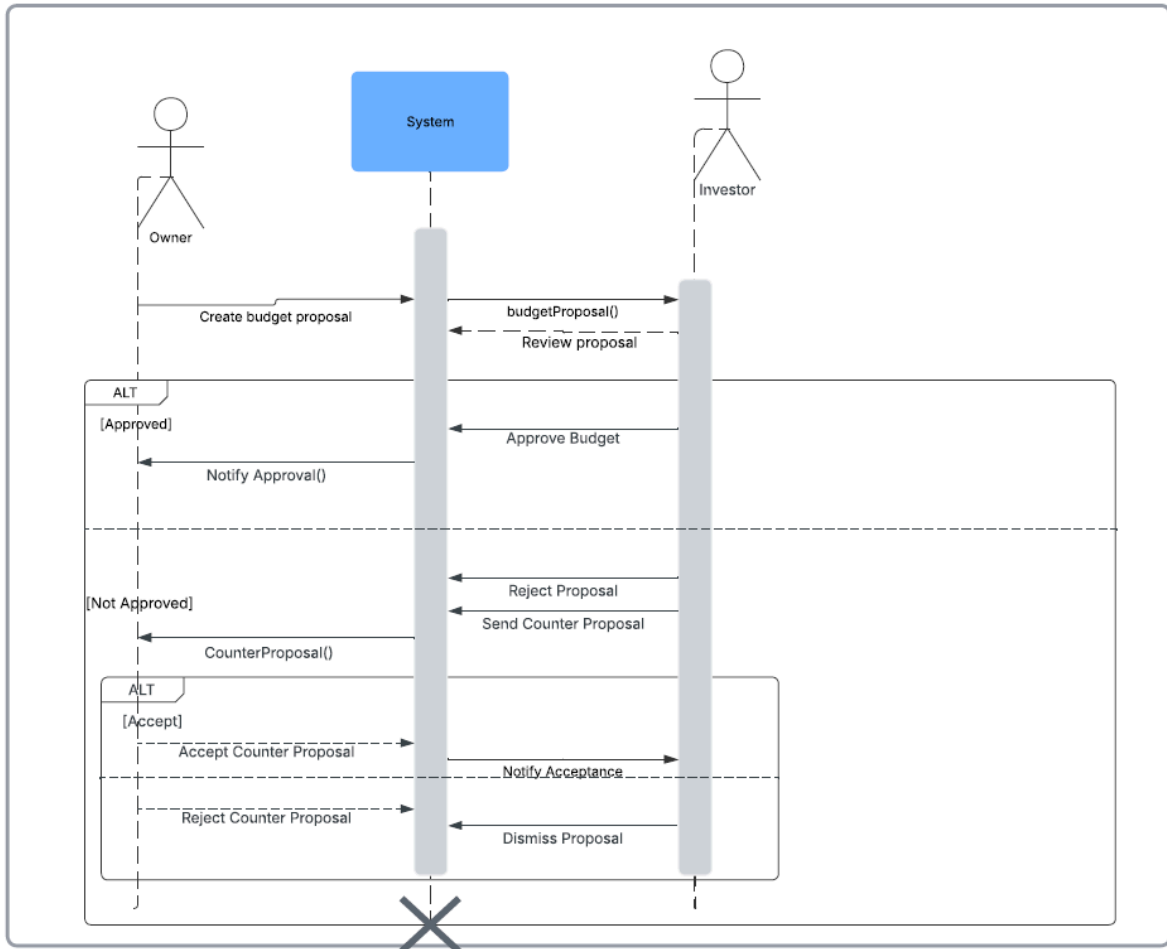# System Maintenance
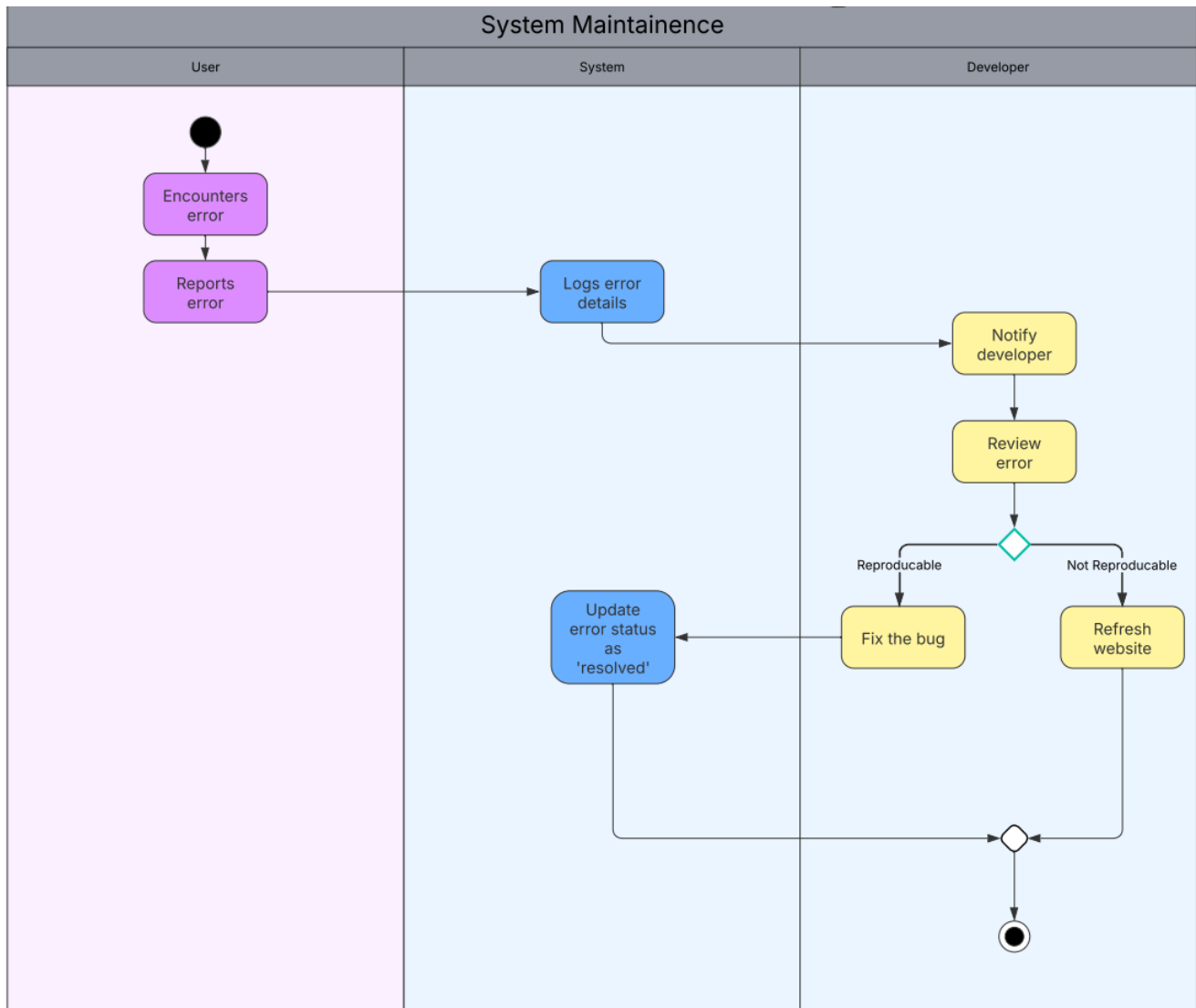
Create Account

Insurance Check

Insurance Check

Admin	Insurance Company

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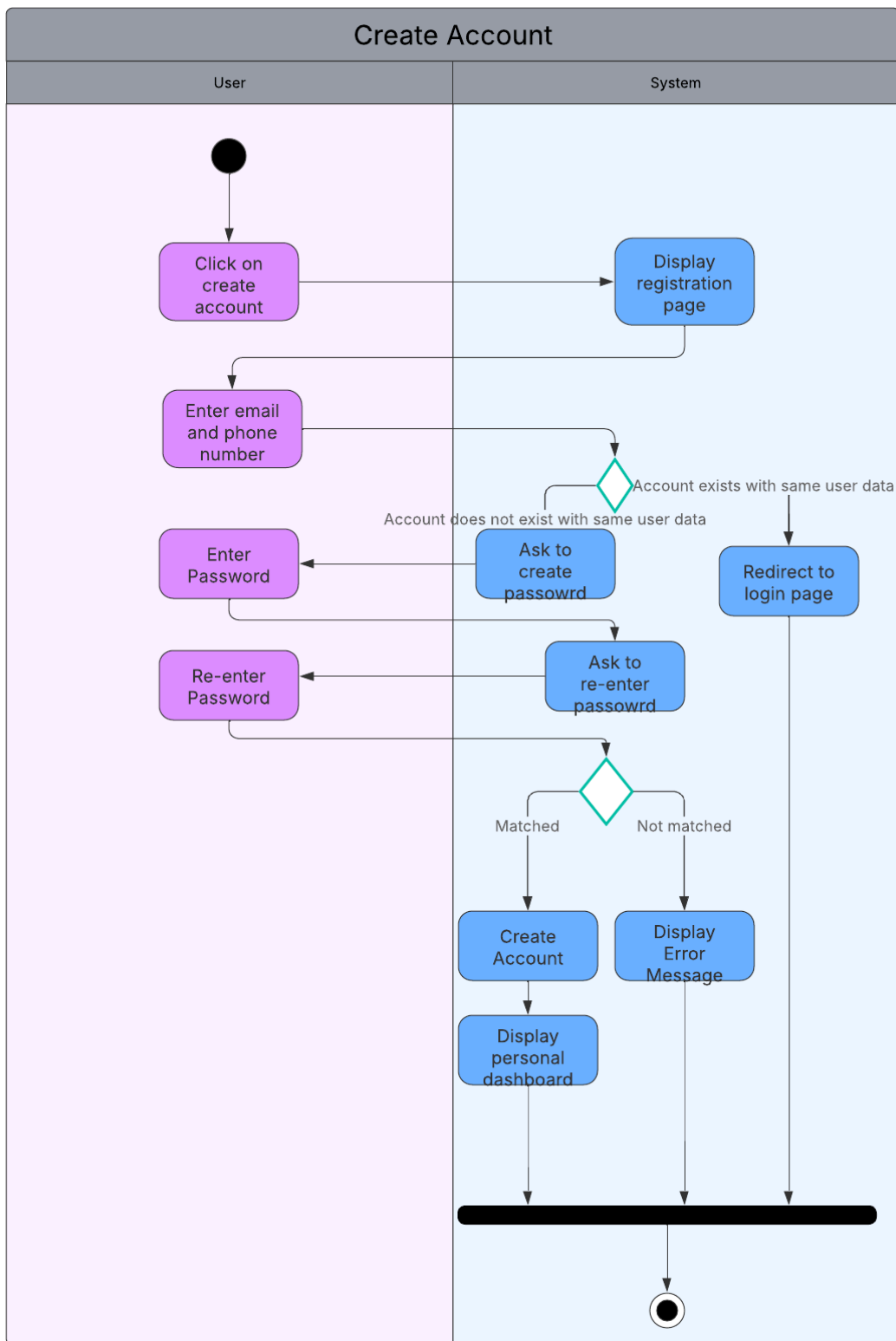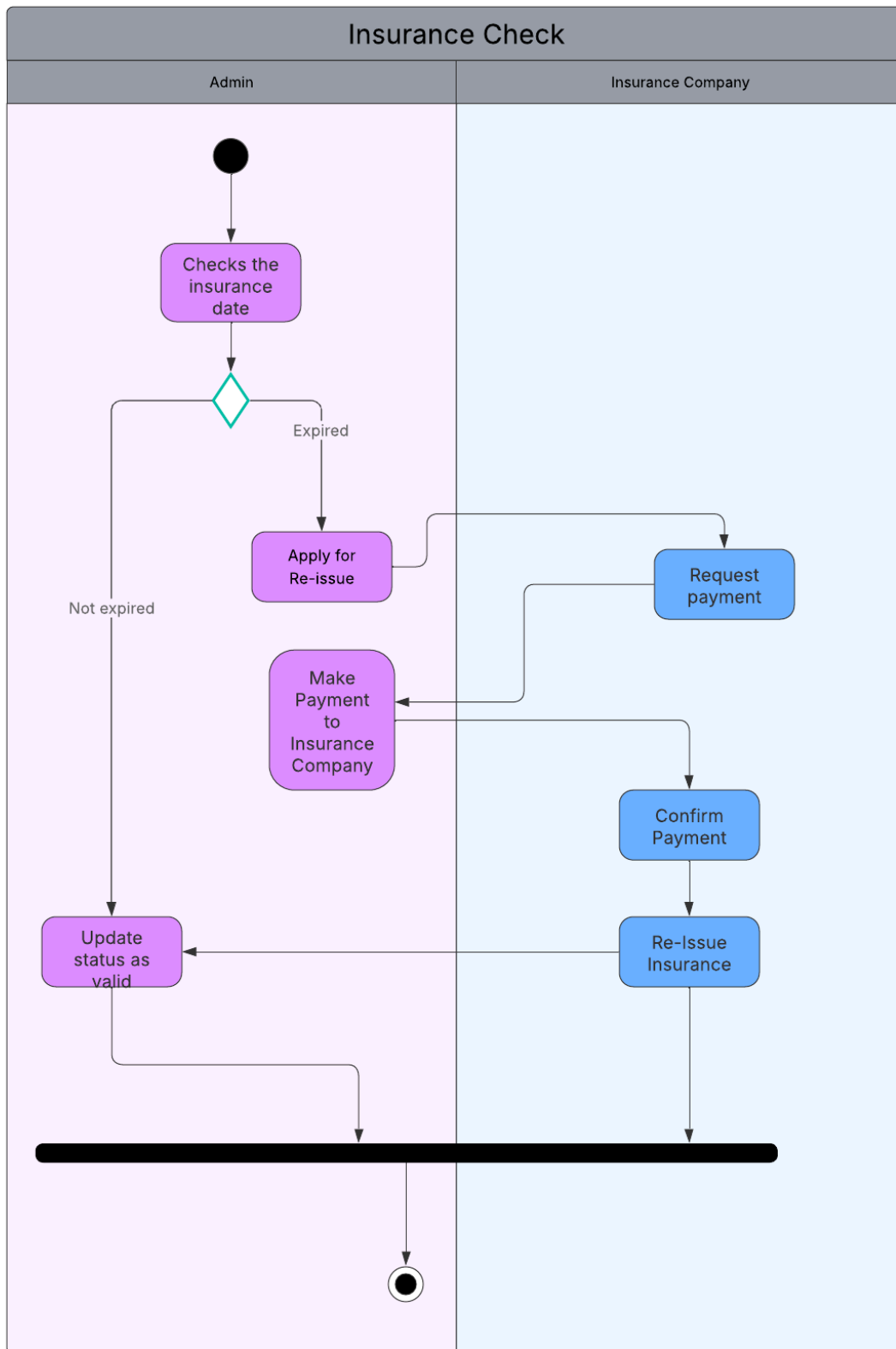
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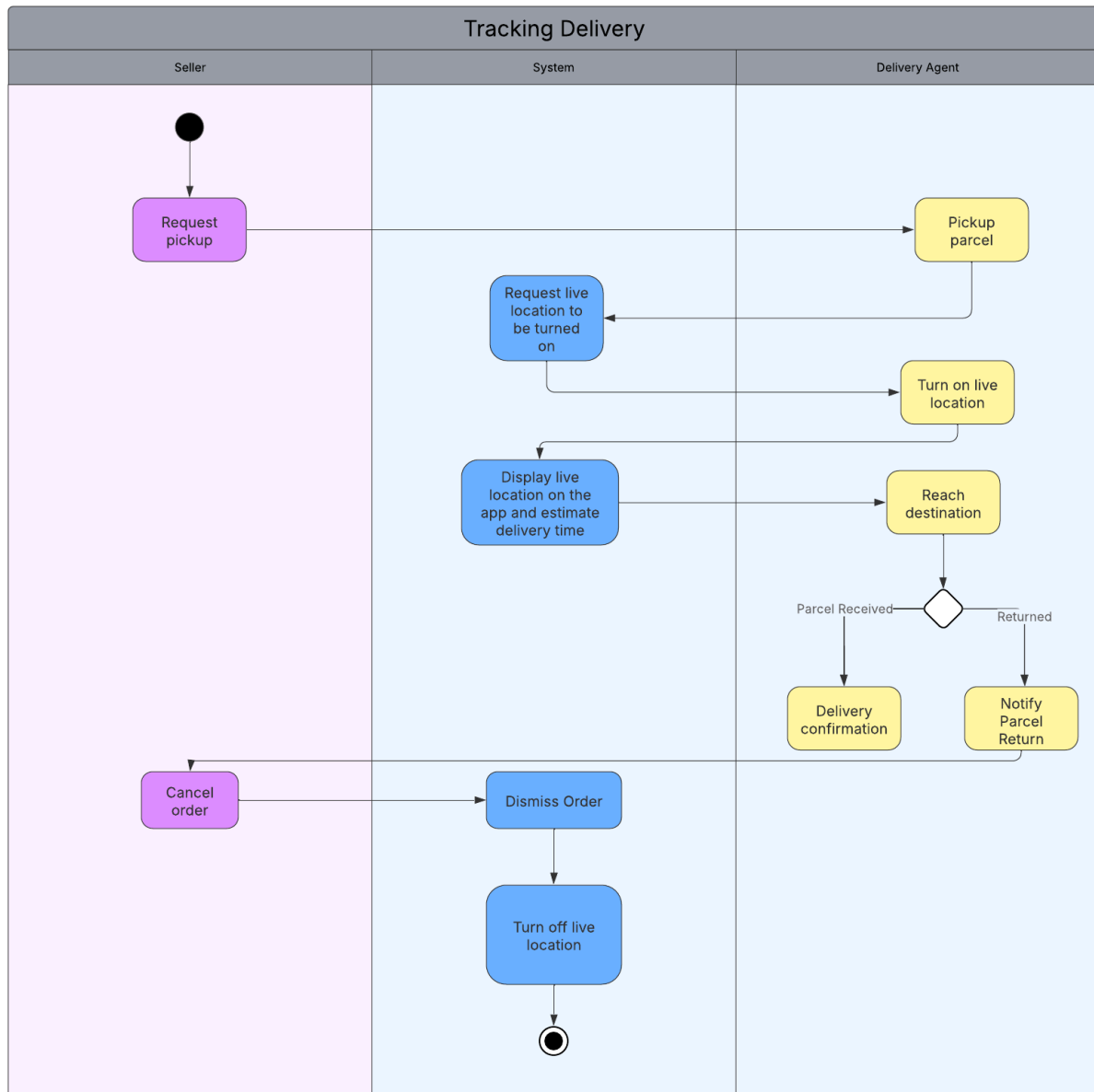
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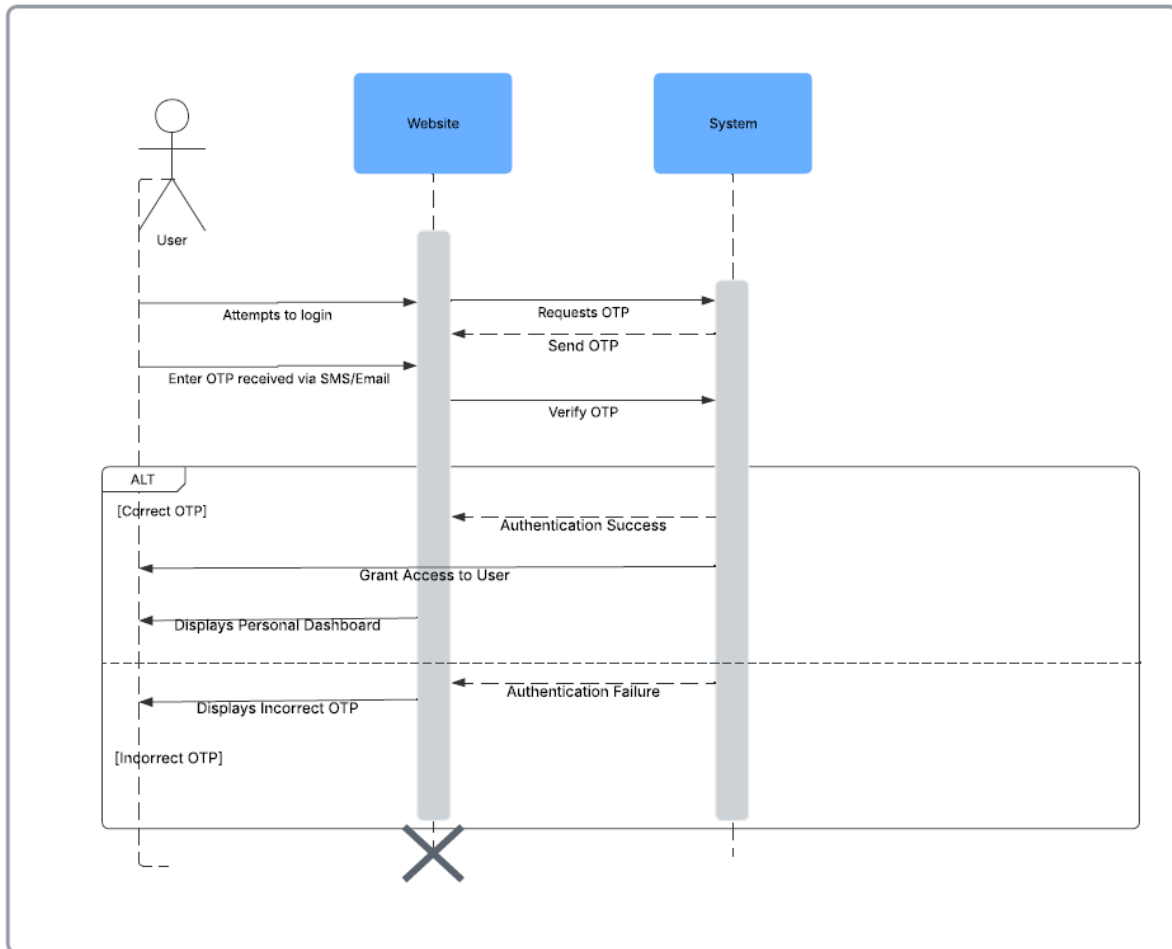
Budget Negotiation

10. State Machine Diagram
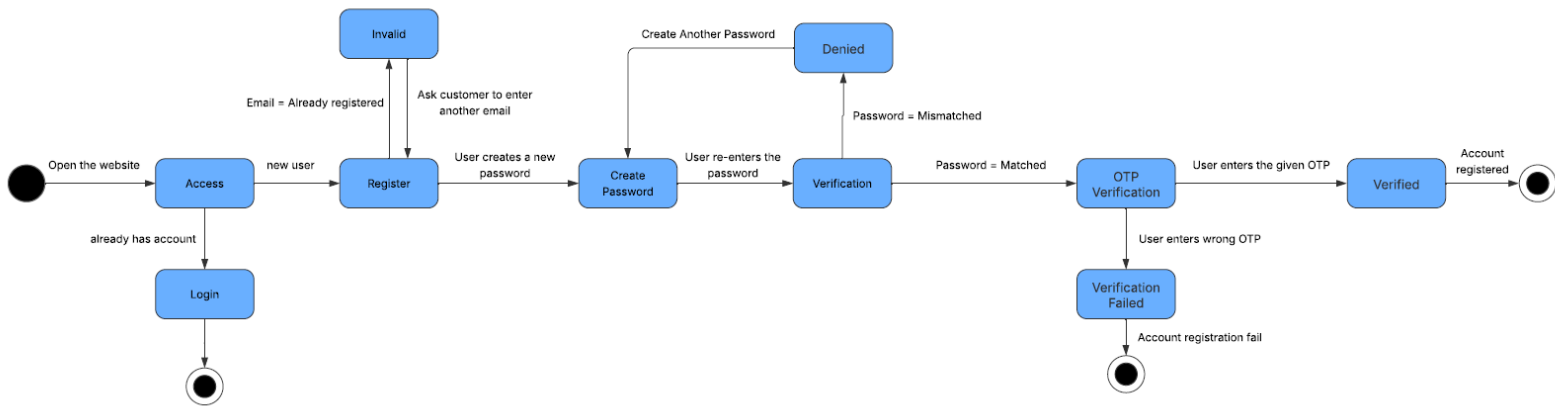
11. Class Diagram
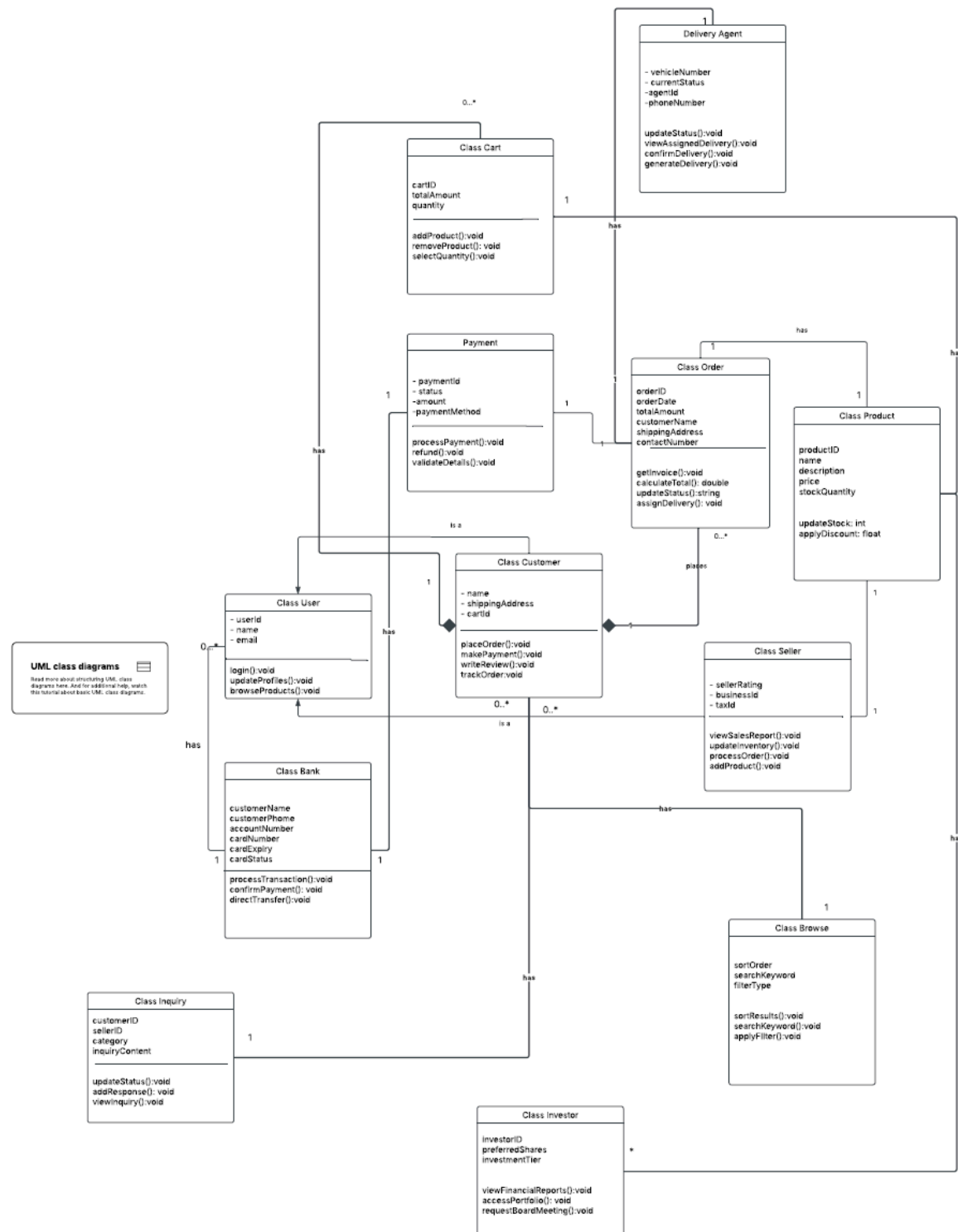
12. System Development Methodologies

1. Scrum (Agile)

Scrum is an Agile software development approach that emphasizes flexibility, teamwork, and software delivery in small segments known as sprints. Each sprint typically lasts two to four weeks, where a working element of the system is built and reviewed. The Development Team, Scrum Master, and Product Owner are crucial positions that collaborate closely to swiftly adjust to user input and shifting needs. Scrum enables faster updates, greater alignment with user needs, and continuous improvement for our e-commerce system "Daraz" (Schwaber & Sutherland, 2020).

Requirements Analysis Process:
In Scrum, a Product Backlog that includes user stories authored from the viewpoint of the end user is primarily used to collect and manage requirements. These narratives outline the goals that each user type—customer, seller, or administrator—has for the system. Stories from the backlog are divided them into manageable tasks during sprint planning. As fresh input is obtained following every sprint review, requirement specification continues throughout the development process (Cohn, 2004).

Tool Demonstration – Product Backlog with User Stories:
For the Daraz e-commerce website, the Product Backlog was used to record and prioritize the system features.
Example entries from our backlog include:

1. **Search:**
   User: As a customer, I want to filter search results by brand, price range and delivery time so that I can quickly find items I can afford and receive fast.

   Acceptance criteria: Search results include filters for brand, min/max price, delivery time; filter persists across pagination; results sorted by relevance by default.

2. **Seller bulk upload:**
   User: As a seller, I want a bulk CSV product upload so that I can list many products quickly.

Acceptance criteria: CSV template provided; upload validates required fields and reports row-level errors; successful uploads create pending listings for review.

3. **Reviews:**
    User: As a customer, I want verified purchase badges on reviews so that I can trust the review authenticity.

    Acceptance criteria: Reviews for completed purchase show "verified purchase" badge; non-purchased reviewers are flagged.

This tool helped organize work efficiently and focus on user-centered goals while remaining flexible to changing requirements. The backlog also supported continuous collaboration between stakeholders, improving the final product's quality and usability (Rubin, 2012).

2. Waterfall

The Waterfall model is a traditional and structured software development approach where each phase flows logically into the next, like a waterfall. The process begins with requirement gathering, followed by design, implementation, testing, deployment, and maintenance. It is most effective when the project requirements are clear, stable, and well-understood from the beginning. For an e-commerce platform like Daraz, the Waterfall model provides a systematic way to develop core features such as secure payments, product management, and user authentication, ensuring that every stage is well-documented and properly tested before moving on.

Requirements Analysis Process:
 In the Waterfall approach, requirements gathering is done at the start of the project. The development team conducts detailed interviews, surveys, and document reviews to understand what users, sellers, and administrators need from the system. These requirements are then documented in a Software Requirements Specification (SRS), which serves as the foundation for all later stages of the project. Once this document is finalized, it becomes the reference point for design, coding, and testing. The Waterfall method ensures clarity and discipline in the development process, although it is less flexible to changes once the project begins.

Tool Demonstration – Requirement Traceability Matrix (RTM):
 To manage and verify that all system requirements were implemented correctly, a Requirement Traceability Matrix (RTM) was used for the Daraz project. This tool helped the team track each functional and non-functional requirement from the SRS through design, implementation, and testing. For example, when the requirement stated that the system should allow users to register and log in, the RTM ensured that this feature was developed in the login module and verified through testing. Similarly, for the payment feature, the RTM linked the requirement for secure transactions with the implemented payment gateway and its related test cases.

By using the RTM, the development team maintained full visibility and accountability throughout the project. It ensured that no requirement was missed, all functionalities were tested, and the final system aligned with the user and business needs defined at the start. This structured and transparent approach made the Waterfall methodology particularly useful for managing complex but predictable parts of the Daraz e-commerce system, such as product listings, database management, and order processing.

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13. Appendix

Appendix: Interview Questions and Responses

A. Customer Interviews

Customer 1 – Regular Online Shopper (Age 24, Student)

Q1: How often do you shop online?
A1: I usually shop online two to three times a month, mostly for clothes and gadgets.

Q2: What problems do you face when shopping on Daraz?
A2: Sometimes the delivery takes too long, and I don't always get proper updates about my order status.

Q3: How do you feel about the payment process?
A3: It's mostly fine, but I feel more comfortable using cash on delivery because online payment sometimes fails.

Q4: What features would you like to see improved?
A4: I'd like faster order tracking and more accurate product descriptions.

Q5: Do you use product reviews when deciding to buy?
A5: Yes, always. Reviews and ratings really influence my decision.

Customer 2 – Occasional Shopper (Age 31, Office Worker)

Q1: How often do you buy from online platforms like Daraz?
A1: Maybe once every two months, mostly for household items.

Q2: What frustrates you most about online shopping?
A2: Sometimes I receive products that don't match the pictures, and returning them feels complicated.

Q3: What do you think about Daraz's customer service?
A3: It's okay but not very responsive at times — I've waited days for a reply.

Q4: Would you prefer faster delivery with a small extra charge?
 A4: Yes, I'd definitely pay a bit more for same-day or next-day delivery.

Q5: Any new features you'd like added?
 A5: Maybe a live chat option with sellers or customer support during checkout.

B. Seller Interviews

Seller 1 – Electronics Store Owner

Q1: How long have you been selling on Daraz?
 A1: Around three years now.

Q2: What challenges do you face as a seller?
 A2: Managing stock updates and getting visibility for my products is difficult — small sellers don't get much promotion.

Q3: How do you handle product advertisements?
 A3: I sometimes pay for ads, but the process is confusing, and I can't easily track ad performance.

Q4: What improvements would help your business?
 A4: A clear dashboard showing ad performance, customer reach, and real-time sales would be great.

Q5: Do you face payment delays from Daraz?
 A5: Yes, occasionally payments are delayed, which affects cash flow.

Seller 2 – Clothing Brand Representative

Q1: What's your experience selling on Daraz?
 A1: It's good overall, but competition is high, and it's hard to make your brand stand out.

Q2: How do you manage your product listings?
 A2: I upload them manually, but it takes a lot of time to update descriptions and stock levels.

Q3: Would you like to see automation features for stock and order management?
 A3: Absolutely — that would save a lot of time and reduce errors.

Q4: Have you used the advertisement options?
 A4: Yes, but it's hard to know which ad format works best. I'd prefer a suggestion tool based on sales data.

Q5: What additional features would you like on the seller dashboard?
 A5: A built-in chat system with customers and easier refund management.

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Survey Questions

Daraz Customer Experience Survey

Thank you for taking the time to participate in this short survey. Your responses will help us enhance the quality of our services and ensure that your future shopping experience with Daraz is more convenient, reliable and enjoyable.

labiba.taznuha@auw.edu.bd Switch account

Not shared

* Indicates required question

How often do you shop online using Daraz? *

○ Daily

○ Weekly

○ Monthly

○ Rarely

How would you rate the product search and filter option? *

	1	2	3	4	5	
Excellent	○	○	○	○	○	Very Poor

How easy was it to place your order? *

	1	2	3	4	5	
Very easy	○	○	○	○	○	Very difficult

How would you rate the customer service experience? *

	1	2	3	4	5	
Excellent	○	○	○	○	○	Very Poor

Overall, how satisfied are you with Daraz? *

	1	2	3	4	5	
Very Satisfied	○	○	○	○	○	Very Dissatisfied

If Daraz introduced a new feature, which would interest you the most? *

○ Faster Delivery Options

○ Better Seller Verification

○ Personalized Product Recommendations

○ Live Chat With Sellers

Did you face any issue during the payment process? *

○ No issues

○ Payment method not available

○ Confusing checkout process

How easy and convenient do you find the Daraz website or app? *

	1	2	3	4	5	
Very easy and convenient	○	○	○	○	○	Very difficult

Have you faced any issues while using Daraz? If yes, please specify:

Your answer

Submit   Clear form
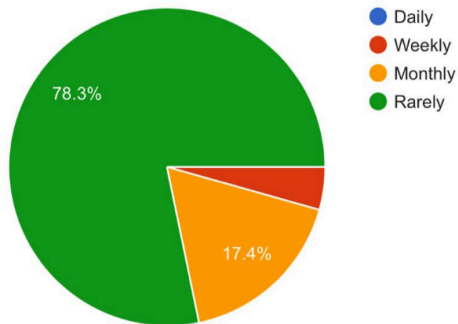
Never submit passwords through Google Forms.

This form was created inside of Asian University for Women. - Contact form owner

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Survey Results

How often do you shop online using Daraz?

□ Copy

23 responses

- Daily
- Weekly
- Monthly
- Rarely

78.3%

17.4%

How would you rate the product search and filter option?

□ Copy chart

23 responses

- 3 (13%) at 1
- 5 (21.7%) at 2
- 11 (47.8%) at 3
- 3 (13%) at 4
- 1 (4.3%) at 5
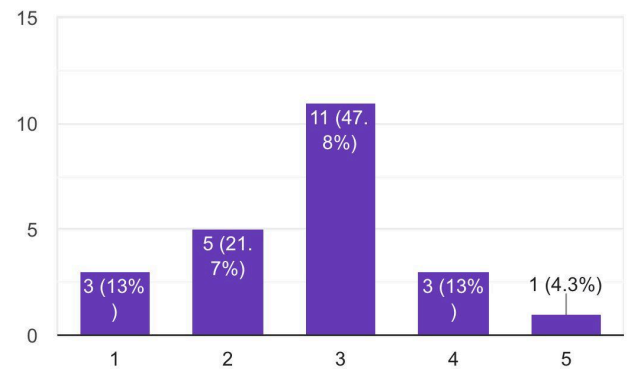
How would you rate the customer service experience?

□ Copy chart

23 responses

- 4 (17.4%) at 1
- 7 (30.4%) at 2
- 10 (43.5%) at 3
- 2 (8.7%) at 4
- 0 (0%) at 5
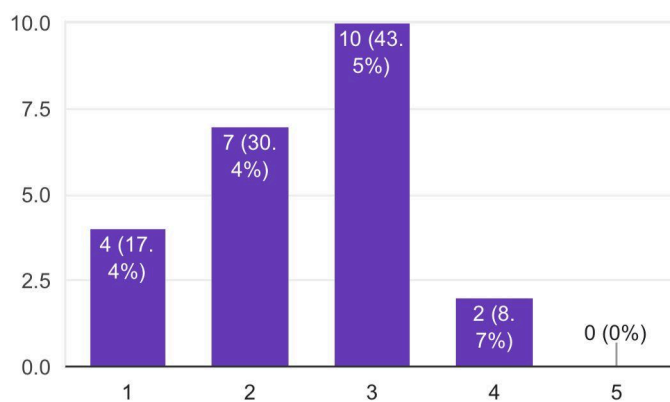
How easy was it to place your order?

□ Copy chart

23 responses

- 8 (34.8%) at 1
- 9 (39.1%) at 2
- 5 (21.7%) at 3
- 0 (0%) at 4
- 1 (4.3%) at 5
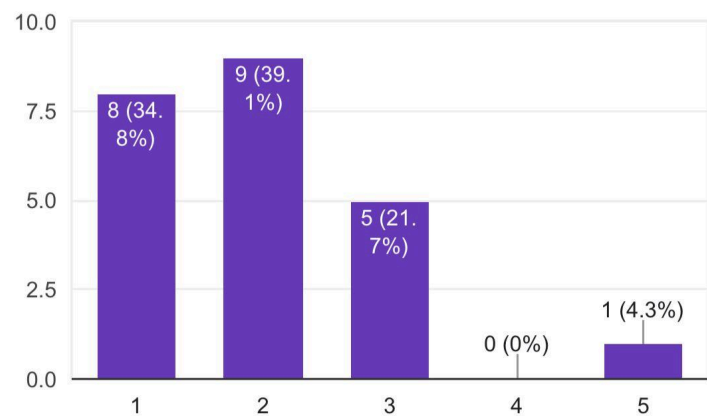
Did you face any issue during the payment process?

23 responses

- No issues
- Payment method not available
- Confusing checkout process

82.6%
8.7%
8.7%
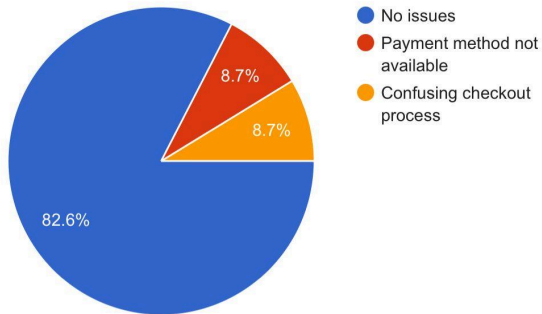
Overall, how satisfied are you with Daraz?

23 responses

3 (13%)
10 (43.5%)
9 (39.1%)
1 (4.3%)
0 (0%)
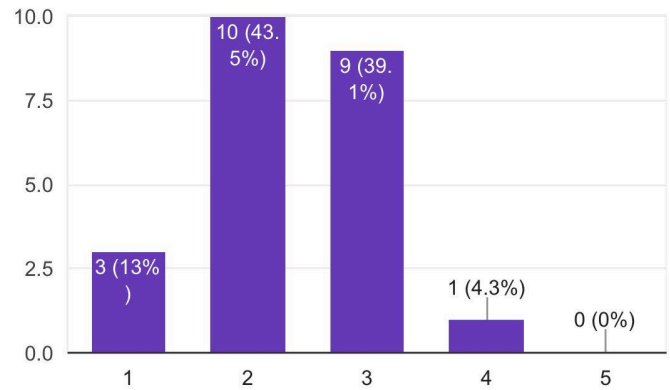
If Daraz introduced a new feature, which would interest you the most?

23 responses

- Faster Delivery Options
- Better Seller Verification
- Personalized Product Recommendations
- Live Chat With Sellers

13%
17.4%
39.1%
30.4%
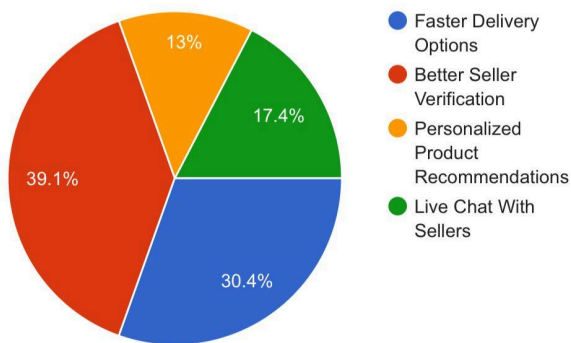
How easy and convenient do you find the Daraz website or app?

23 responses

8 (34.8%)
6 (26.1%)
8 (34.8%)
1 (4.3%)
0 (0%)
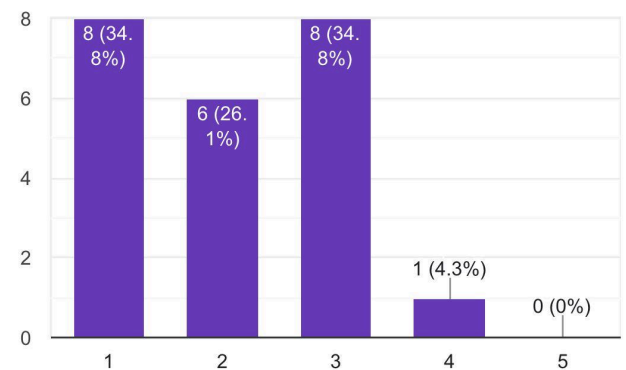
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