

F-Commerce based Client Management

Group 2

BSSE 09 Batch

Institute of Information Technology

F-Commerce based Client Management System

Submitted To

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Letter of Transmittal

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Subject: Submission of term report on “F-commerce based Client Management System”.

Ma'am,

With due respect, we would like to submit you the report on Software Requirement Specification on the above topic you assigned us. The report reflects our effort to gather requirements and analyzing them. We have included every steps what we have done through the whole time for requirement specification of the mentioned topic.

Therefore, we earnestly hope that you will excuse our error and oblige thereby.

Yours Sincerely,

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Abstract

F-Commerce, now-a-days, is popular strategy that focuses on developing or designing ecommerce content and storefront sites within the **Facebook** social networking site. Our study is to develop a system to handle the client management part of F-commerce. So, the objective is to make an SRS (Software Requirements Specification) of F-Commerce based Client Management System from the gathered requirements. The report represents the objective and also describes the need of this trendy strategy.

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Chapter 1: Introduction

This chapter is a part of “F-Commerce based Client Management System” intended to specify the purpose of this document and the intended audience of it.

1.1 Purpose

This document is the Software Requirements Specification (SRS) for “F-Commerce based Client Management System”. It contains detailed functional, non-functional, and support requirements and establishes a requirements baseline for development of the system. The requirements contained in the SRS are independent, uniquely numbered, and organized by topic. The SRS serves as the official means of communicating user requirements to the developer and provides a common reference point for both the developer team and stakeholder community. The SRS will evolve over time as users and developers work together to validate, clarify and expand its contents.

1.2 Intended Audience

This SRS is intended for several audiences, including the customer, as well as the project managers, designers, developers, and testers.

- The customer will use this SRS to verify that the developer team has created a product that is acceptable to the customer.
- The project managers of the developer team will use this SRS to plan milestones and a delivery date, and ensure that the developing team is on track during development of the system.
- The designers will use this SRS as a basis for creating the system’s design. The designers will continually refer back to this SRS to ensure that the system they are designing will fulfill the customer’s needs.
- The developers will use this SRS as a basis for developing the system’s functionality. The developers will link the requirements defined in this SRS to the software they create to ensure that they have created software that will fulfill all of the customer’s documented requirements.
- The testers will use this SRS to derive test plans and test cases for each documented requirement. When portions of the software are complete, the testers will run their tests on that software to ensure that the software fulfills the requirements documented in this SRS. The testers will again run their tests on the entire system when it is complete and ensure that all requirements documented in this SRS have been fulfilled.

1.3 Conclusion

This analysis of the audience helped us to focus on the users who will be using our analysis. This overall document will help each and every person related to this project to have a better idea about the project.

Chapter 2: Inception

In this chapter, the Inception part of the SRS will be discussed briefly.

2.1 Introduction

Inception is the beginning phase of requirements engineering. It defines how does a software project get started and what is the scope and nature of the problem to be solved. The goal of the inception phase is to identify concurrence needs and conflict requirements among the stakeholders of a software project. To establish the groundwork we have worked with the following factors related to the inception phases:

- Identifying Stakeholders
- Recognizing multiple viewpoints
- Working towards collaboration
- Asking the First Questions

2.1.1 Identifying Stakeholders

Stakeholder refers to any person or group who will be affected by the system directly or indirectly. Stakeholders include end-users who interact with the system and everyone else in an organization that may be affected by its installation. At inception, a list of people who will contribute input as requirements are elicited. The initial list will grow as stakeholders are contacted because every stakeholder will be asked: “whom else do you think I should talk to?”

The following stakeholders were identified for the “F-Commerce based Client Management System”.

- **Owner:** Owner owns the business, operates the business and recruits the employees. If she works alone then, she does not demand day to day transaction, she needs it once or twice a week. She also profits from the net gain of the business.
- **Employee:** Employee is an individual who works part-time or full-time under a contract of employment, whether oral or written, express or implied, and has recognized rights and duties. She carries out the instructions of the owner. After the day, she needs to clear out the transactions.
- **Customer:** A customer is an individual or business that purchases or consumes the goods or services produced by a business. Attracting customers is the primary goal of most businesses as it is the customer who creates demand for goods or services. Businesses most of the time compete through advertisements or lowered prices or bringing extra ordinary goods or services to attract customers.
- **Software Developer:** A software developer is concerned with facets of the software development process, including the research, design, programming, maintenance and testing of computer software. She will be responsible for the outcomes of the software.

- **Courier Service:** Courier service plays a vital role to deliver product to the customer. Products are delivered through courier service for those customer who are far from the business area. In this system, SA Paribahan serves the task.

2.1.2 Recognizing Multiple Viewpoints

Different stakeholders demand different features from the software. To satisfy the stakeholders, most of these features should be included in the software.

Owner's viewpoint

- Error free system
- Getting all the information about profit on a specific date
- Keeping all information regarding business maintenance
- Net profit after paying the due
- Keeping profit records on weekly basis
- Keeping record of registered users
- Update customers about the products
- Limited budget
- Strong authentication system

Employee's viewpoint

- User friendly
- Error free system
- Keeping a track on remaining products
- Getting accurate information of total received cash and profit of a day
- Identifying the profitable products
- Identifying the unpopular products among customers
- Being notified about the products near to out of stock
- Strong authentication system
- Keeping all information regarding the business maintenance
- Informing the suppliers about the needed products

- Keeping a backup of the data

Customers' viewpoint

- Getting a receipt of the purchase
- Allow any user to search and view products
- Allow registered user to shop
- Privileges of online shopping

Developer's viewpoint

- Easy to built
- Error free effective software
- No conflicting requirement
- Getting a decent amount of money for project budget

2.1.3 Working towards collaboration

While working with different stakeholders, some conflicting and common viewpoints can be noticed. For this reason, final requirements can be gotten by collaborating the viewpoints. We followed following steps to merge these requirements:

- Identify the common and conflicting requirements
- Categorize the requirements
- Take priority points for each requirements from stakeholders and on the basis of this voting prioritize the requirements
- Make final decision about the requirements

Common Requirements:

- Web based interfaces
- The application can be accessed from any computer that has internet access.
- Allow any user to search for product
- Maintain a database for all users and all products in the system

Conflicting Requirements:

- Strong authentication problem when check out
- Whether login required or not to use the system

Final Requirements:

- Error free easy accessible system
- Web-based interfaces
- Accessible via the Internet.
- Allow valid users to login and logout.
- Restrict access to functionality of the system based upon user roles
- Allow administrators of the system to change user types and configure parameters of the system
- Allow any user to search for products in the website without having to log in to the system
- Allow valid users that log in to shop products they have checked out.
- Allow Administrators to check-out and check-in items for valid users
- The application only needs to be installed and maintained on one computer
- Allows valid users to renew items online by logging into the system
- Maintain a database of all products and all users.
- Allows user payment method to be online and cash on delivery
- Allows user to give opinion and rating of product and service
- Allows user to contact with admin through email if needed

Restrict access to functionality of the system based upon user roles. For example, only Administrators of the system will be provided functionality to change user types, configure product availability and stock.

2.1.4 Asking the First Questions

We set our first set of context-free questions focuses on the customer and other stakeholders, overall project goals and benefits. The questions are mentioned above. These questions helped us to identify all stakeholders, measurable benefit of the successful implementation and possible alternatives to custom software development. Next set of question helped us to gain a better understanding of problem and allows the customer to voice his or her perception about the solution. The final set of question focused on the effectiveness of the communication activity itself.

2.2 Conclusion

Inception phase helped us to establish basic understanding about “F-Commerce based Client Management System” in a library, identify the people who will be benefited if book circulation system becomes automated, define the nature of the book circulation software and establish a preliminary communication with our stakeholders. More studies and communication will help both side (developer and client) to understand the future prospect of the project. Our team believes that the full functioning document will help us to define that future prospect.

Chapter 3: Elicitation

This chapter specifies the Elicitation phase.

3.1 Introduction

Requirements Elicitation is a part of requirements engineering that is the practice of gathering requirements from the users, customers and other stakeholders. Many difficulties were faced, like understanding the problems, making questions for the stakeholders, limited communication with the stakeholders due to a short amount of time and volatility. Though it is not easy to gather requirements within a very short time, these problems have been surpassed in an organized and systematic manner.

3.2 Eliciting Requirements

The main task of this phase is to combine the elements of problem solving, elaboration, negotiation and specification. The collaborative working approach of the stakeholders is required to elicit the requirements. The following tasks were done for eliciting requirements:

1. Collaborative Requirements Gathering
2. Quality Function Deployment
3. Usage Scenarios
4. Elicitation work products

3.3 Collaborative Requirements Gathering

Many different approaches to collaborative requirements gathering have been proposed. Each makes use of a slightly different scenario. We completed following steps to do it.

- The meetings were conducted with the Facebook page owner the librarian was questioned about their requirements and expectations from the F-commerce based client management system
- The owner was asked about the problems she is facing with the current system.
- At last we selected our final requirements from the meetings

3.4 Quality Function Deployment

Quality Function Deployment (QFD) is a technique that translates the needs of the customer into technical requirements for software. It concentrates on maximizing customer satisfaction from the Software engineering process. With respect to our project the following requirements are identified by a QFD.

3.4.1 Normal Requirements

The normal requirements are generally the objectives and goals that are stated for a product or system during meetings with the customer. The presence of these requirements fulfills customers' satisfaction. These are the normal requirements for the project.

1. Accessible via the Internet.
2. Allow any user to search for items.
3. Allow Administrators to check items for valid users.
4. Allow valid users to login and logout
5. Restrict access to functionality of the system based upon user roles
6. Allow valid users that log in to shop products they have checked out.
7. Getting information about daily, weekly, monthly and yearly profit
8. The application only needs to be installed and maintained on one computer.
9. Help feature to explain what they are looking for
10. Storing information regarding shop maintenance
11. Net profit after paying the due
12. Storing profit records
13. Using limited budget for making the software
14. Keeping track of remaining products
15. Storing accurate records of transactions
16. Identifying profitable and unpopular products
17. Get notified about products near expiration
18. Contacting suppliers for goods
19. Calculating transport expenses for carrying goods

3.4.2 Expected Requirements

These requirements are intrinsic to the product or system and may be so elementary that the customer does not explicitly state them. Their absence will be a cause for significant dissatisfaction. Below the expected requirements for our project are briefly described.

1. Error free software
2. Strong authentication system
3. User friendly
4. Effective system
5. No ambiguous feature
6. Data backup
7. Cash on delivery
8. Advance online payment through mobile banking and credit card
9. Send email and SMS for new product and offer
10. Allow administrators to change data for the user
11. The system shall automatically check the product availability
12. The system shall allow the user to login based upon an assigned login id and password.
13. Sending notification to users if necessary.

3.4.3 Exciting requirements

These requirements are for features that go beyond the customer's expectations and prove to be very satisfying when present

1. The user interface should provide appropriate error messages for invalid input as well as tool-tips and online help
2. The user interface should follow standard web practices such that the web interface is consistent with typical internet applications.
3. Offer log in with mobile phone
4. Customer able to rate and comment about product
5. Connect user account with Facebook or other social media
6. Can chat with administrator if necessary
7. System automatically sends sms to customer if a new product arrives

Usage scenario

Authentication

Sign Up:

In the “F-Commerce based Client Management System”, there is an authentication part, where it allows the user to access the system. Administrators, employees, suppliers and customers are the users of this system. To access the system, a user requires an account and for that he/she must fill up a form. Users have to give first name, last name, email id, address, phone number, password and account type (types control the access to the system. No user name can contain any number, punctuation mark or any special character and the length of the name should be between 2 characters and 30 characters. There will be duplicity and validity (syntax) checking for email and mobile number. If all the information is correct, user will be sent a verification code to his/her email. If the account type is “Employee” or “Administrator”, he/she will have to wait for any of the current owner’s approval. There will be one preinstalled account as “Administrator” type.

Sign in:

If any user has an account, he/she can sign in to the system. To sign in, user has to give his/her email id or mobile number and password. The email id or mobile number and password will be verified. If the verification is successful, the user can sign in to the system successfully and his/her login information (date and time of login) will be stored. If the password is wrong, there is a retry option. If the retry count is 5, the user will be blocked for 2 minutes. After block time has finished user can attempt to sign in to the system again. If the user forgets password, he has an option to change password by entering email address. New password is sent to the email address and then the user can sign in again using the new password.

Sign Out:

User has an option to log out from the system. User will automatically be logged out of his/her account if the account remains idle for more than two hours. User’s log out information (date and time of logout) will be stored.

Manage Account:

Any user can change their information. To change information, he/she has to sign in then change information. He/she has to confirm the changes and the changes will be confirmed.

Browse by Category

Type wise View:

User can select the category of browsing type wise. As the system has different type of product (Saree, Salwar kamij, Designer Dress) user can select product type and view product type wise.

Alphabetically View:

If user want to view the products alphabetically, he can select this in the system and view the product alphabetically.

Recommended Product:

The system will keep a cache of user's choice ad make a list of recommended product for the user. If user wants to see, system can show a list of recommended product for him/her.

Popular Product View:

If the user wants to see the popular products, the system will show the most popular product chosen by the users to him/ her.

Price Range wise view:

If user wants to select a product in a price range, he/she has to give the price range and the system will show the products accordingly. Moreover, a user can sort the products from high price range to low price range or low price range to high price range.

Offered/ Discounted Product View:

If user wants to view the discounted product, he/she can select the option and the system will show him/ her accordingly.

Search and View:

User can view the products by searching them with keywords. He/she has to give keyword and the system will find the products related with the keyword and show the product to the user.

Order**Add to Cart:**

To order a product a user has to login to the system first. User can view product type wise or by searching, then by viewing the product pictures, product description and price the customer can choose product for him/her. Then he/she can select the quantity of the product, select color(if color available), select size (if the dress is stitched). Then the system will check the availability of the product and add it to the cart. The system will add the product to the cart.

Purchase:

If a user wants to purchase a product, he/she can add the product(s) to the cart. If she/he wants to add more product to the cart, then she/he can edit cart. If he/she want to make the order confirm, she/he has to give his/her location, the by selecting payment method (cash-on or online delivery) if he/she confirms the order, the system will make an order summary with total cost of the products and the delivery charge. By confirming the order, the user will get a confirmation SMS.

Cancel Order Before Delivery:

A user has opportunity to cancel order before delivery. If she/he changes decision about buying the product, he/she can view the ordered product and select the particular product(s) she/he wants to cancel.

The system will check if the product has been delivered yet or not. If not delivered, then it is available for cancellation. Then the admin has to approve the cancellation of the order.

Return Product:

If any customer gets the wrong product, he/she can return the product immediately. She/he has to give the product to the delivery man and return the product. No additional delivery charge will cost if there is any wrong with the product from the owner.

Review

Rate and Comment:

User can rate for any product and add comment for the product. Simply, he/she can express review about product, service, quality. Admin can work on their review. To give review of a product, he has to be a registered user. So sign in is required. After that, he/she can view product from the list and select product. If he/she wants to rate he/she can give rating where one-star means that the product is not good at all, below the customers' expectation. A two-star means that the product is not good enough. It did not meet up the customers' all expectations. A three-star means that the product is okay. A four-star rating means that the customer is happy with the product. A five star is the highest rating a customer can give which means that the customer has just loved the product.

Payment Method

Cash On Delivery:

If user confirms his/her order, then he/she has to select a payment method. Cash on payment method gives a user an opportunity to pay after the product delivery. If a user chooses this option, then the administrators check the address. If the delivery is within Dhaka city, then the product is sent via "Pathao" Service. If the address is outside Dhaka city, then product is sent via "S.A. Paribahan" courier service.

Advance Online Payment:

If any user wants to pay online, he/she can pay via mobile banking or via credit card. If he/she wants to pay via mobile banking he/she can pay via bKash or DBBL mobile banking. To pay he/she has to give the information and complete the payment. If user wants to use credit card, he/she has to give card no. and pin no. of the card to complete the payment.

Product Management

Add product:

Only Administrators have access to add any product to the system. When a product is stocked, the administrator updates the database and add product on the database. To add a product in the database, an administrator has to give product id, product price, available color, size and quantity of that product.

Edit Product:

Only Administrators have access to edit any product details to the system. By selecting the product admin can change the information of the product. Then by confirming changes the edited version is updated in the system.

Remove Product:

Only administrators have access to remove any product and product details from the system. He/she can select a particular product, which is unpopular or not going to be stocked again soon. Then by confirming removal of the product will remove the product from the system.

Manage Product Advertisement:

Administrator can manage product advertisement. When a new product arrives administrator can advertise about the product in the website. Also discount and offers are advertised among the users. When a new product arrives, the users are sent email and SMS about the product. Any ongoing discount and offer is notified by giving SMS to the customers.

Contact

Chat:

If any user wants to contact with the admin, he/she can chat. To do so login is required. The system will check availability of any admin and if available a user can start chat instantly. Otherwise he/she has to send a request to chat with the admin.

Helpline:

If any user wants an immediate help he/she can always use helpline within the office hours. If the user is accessing through mobile, then the number will be loaded in the phone. If she/he is accessing through PC, the helpline contact no. will be displayed.

Emailing:

User can contact the admin via email. By selecting the option from the system, he/she can enter the message and send the email to the dedicated email for the users.

Follow on Social Media:

Any user can follow the website on various social media such as Facebook and Twitter. If a user wants to follow it on Facebook, he/she has to login to Facebook and like the page to start following. If he/she wants to follow on Twitter he/she has to sign in to Twitter and go to the Twitter profile.

Chapter 4: Scenario Based Modeling

4.1 Introduction

In this model the system is described from the user's point of view. As this is the first model, it serves as input for creation of other modeling elements.

4.2 Use Case Scenario

Table 1: Use Case Scenario

Level 0	Level 1	Level 2
F-commerce based client management system	Authentication	Sign up
		Sign in
		Sign out
		Manage account
	View	Browse Category
		Search
		Discounted Product view
	Order	Add to cart
		Purchase
		Cancel order before delivery

		Return product
Review		Comment
		Rate product
Payment		Cash on delivery
		Advance online payment
Product management		Add product
		Edit product
		Remove product
		Manage product advertisement
Contact		Chat
		Email
		Helpline
		Follow on social media

4.3 Use Case Descriptions

4.3.1 Authentication

4.3.1.1 Sign up

Use Case: Sign up

Primary Actor: Admin, Customer

Goal in context: to create an account

Preconditions:

1. System has been designed for Sign up
2. System has interface for Sign up

Triggers: Admin and customer has to sign up

Scenario:

1. Visit page and sign up
2. Provided the required information
3. Check availability of user name, email and password
4. Verify information
5. Send email for confirmation

Exception:

- Same user name
- Same password
- Same email
- Verification failed

Priority: Essential, must be implemented.

When Available: First increment

4.3.1.2 Login

Use Case: Login

Primary Actor: Admin, Customer

Goal in context: To enter the system

Preconditions:

1. System has been designed for login
2. System has interface for login

Triggers: Admin and customer has to login

Scenario:

1. Visit page and login
2. Provide the required information
3. Proceed for shopping

Exception:

Unrecognized Username

Wrong Password

User is blocked

Priority: Essential, must be implemented.

When Available: First increment

4.3.1.3 Sign out

Use Case: Sign out

Primary Actor: Admin, Customer

Goal in context: sign out from site

Preconditions:

1. System has been designed for sign out
2. System has interface for sign out
3. User must be logged in

Triggers: Admin and customer has to sign out

Scenario:

1. Visit page
2. Click Sign out button

Exception:

User not logged in

Priority: Essential, must be implemented.

When Available: First increment

4.3.1.4 Manage Account

Use Case: Manage Account

Primary Actor: Admin, Customer

Goal in context: to manage an account (change user information)

Preconditions:

1. System has been designed to change username and password
2. System has interface to Change username and password

Triggers: customer has to change username and password

Scenario:

1. Visit page and login
2. Click change username or password button
3. Provide required information for login
4. Provide information that need to be change
5. Send message for successful change

Exception:

- Information is same as the previous one
- Username ambiguous
- Password not in range

Priority: Depends on user

When Available: First increment

4.3.2 View

4.3.2.1 Browse Category

Use Case: Browse

Primary Actor: Admin, Customer

Goal in context: to browse category and view

Preconditions:

1. System has been designed for browse category
2. System has interface for browse category
3. Has list of product

Triggers: Customer wants to browse product category wise to buy product

Scenario:

1. Visit page
2. Users have something to view to shop
3. Users have to browse category

Exception:

- Product not available
- Invalid Input

Priority: Essential, depends on user.

When Available: First increment

4.3.2.2 Search

Use Case: Search

Primary Actor: Admin, Customer

Goal in context: To search specific product and view product

Preconditions:

1. System has been designed for search
2. System has interface for search
3. Has list of product with keywords

Triggers: Admin and customer has to search and view product for shopping

Scenario:

1. Visit page
2. Users have something to search
3. Users have to enter keyword or price range to search and view products

Exception:

- Product not available
- Invalid Input

Priority: Essential, depends on user

When Available: First increment

4.3.2.3 Discount Product

Use Case: Discount product

Primary Actor: Admin, Customer

Goal in context: To view any offer or discount available

Preconditions:

1. System has been designed for discount product view
2. System has interface for discount product view
3. Has list of product with discount price

Triggers: Customer wants to view discounted product

Scenario:

1. Visit page
2. Users have something to view

3. Users have discounted product with discount item

Exception:

- Offer has expired
- Discount not available for particular product

Priority: Essential, must be implemented.

When Available: First increment

4.3.3 Order

4.3.3.1 Add to cart

Use Case: Add to cart

Primary Actor: Customer

Goal in context: To add product to cart for shopping

Preconditions:

1. System has been designed for Add to cart
2. System has interface for Add to cart
3. Has list of product

Triggers: Customer has to add product to card

Scenario:

1. Visit page
2. Users have something to order
3. Users have something to select
4. Users have to add product to cart

Exception:

System not ready

Priority: Essential, must be implemented.

When Available: First increment

4.3.3.2 Purchase

Use Case: Purchase

Primary Actor: Customer

Goal in context: To purchase a product

Preconditions:

1. System has been designed for purchase
2. System has interface for purchase
3. System has list of product from which user can purchase

Triggers: customer has to purchase the product

Scenario:

1. Visit page
2. Users have something to view from the list of product
3. Users select product(s) and add them to cart

4. Users have something to purchase

Exception:

- Products out of stock
- Product not available

Priority: Essential, must be implemented.

When Available: First increment

4.3.3.3 Cancel order before delivery

Use Case: Cancel order before delivery

Primary Actor: Customer

Goal in context: To cancel an order before delivery

Preconditions:

1. System has been designed for cancel order before delivery
2. System has interface for cancel order before delivery
3. System has list of product
4. System has deadline time for cancel

Triggers: Customer has to cancel order before delivery

Scenario:

1. Visit page
2. Users must know deadline time for canceling the order
3. Users should cancel the order before delivery
4. Admin has to confirm the cancellation

Exception:

- Cancel request not approved by admin
- Deadline for request to cancel has crossed

Priority: Essential, depends on user

When Available: First increment

4.3.3.3 Return Product

Use Case: Return Product

Primary Actor: Customer

Goal in context: To return product

Preconditions:

1. System has been designed for return product
2. System has deadline time for return
3. System has list of reason about returning product

Triggers: Customer has to return product

Scenario:

1. Users must know deadline time for returning product
2. Users must select the reason for returning product
3. Users must know that they will be penalized some amount

Exception:

1. The deadline of returning the product is over

Priority: Essential, depends on user

When Available: First increment

4.3.4 Review

4.3.4.1 Comment

Use Case: comment

Primary Actor: Customer

Goal in context: To comment on product

Preconditions:

1. System has been designed for comment
2. System has interface for comment
3. System has list of product

Triggers: customer wants to comment on product

Scenario:

1. Visit page
2. Users have something to view
3. Users have to add comment

Exception:

- Invalid Input
- Product is not available for commenting

Priority: Essential, depends on user.

When Available: First increment

4.3.4.2 Rate product

Use Case: Rate product

Primary Actor: Customer

Goal in context: to rate product

Preconditions:

1. System has been designed for rating the product
2. System has interface for rating the product
3. System has list of product

Triggers: customer wants to comment on item

Scenario:

1. Visit page
2. Users have something to view
3. Users have to rate product

Exception:

- Decimal point not allowed
- Product not available for rating

Priority: Essential, must be implemented.

When Available: First increment

4.3.5 Payment Method

4.3.5.1 Cash on Delivery

Use Case: Cash on delivery

Primary Actor: Customer

Goal in context: To pay cash on delivery

Preconditions:

1. System has been designed for Cash on delivery
2. System has interface for cash on delivery

Triggers: customer wants to pay cash on delivery

Scenario:

1. Customer has an order list for which he/she wants to pay
2. Customer should select payment method.
3. Admin should check place
4. Inside Dhaka pathao delivery
5. Outside Dhaka Courier delivery (S.A Paribahan)

Exception:

- Delivery organization currently not available for delivery
- Location ambiguous

Priority: Essential, must be implemented.

When Available: First increment

4.3.5.2 Advance Online Payment

Use Case: Advance Online Payment

Primary Actor: Customer

Goal in context: To pay cash online

Preconditions:

1. System has been designed for Advance online payment
2. System has interface for Advance online payment
3. System has list of online payment method

Triggers: customer wants to pay cash online

Scenario:

1. Customer has an order list for which he/she wants to pay
2. Customer should select Payment method
3. Customer should give required information
4. Admin should verify the given information
5. Send message for complete payment

Exception:

- system not working properly
- pin number may not matching

Priority: Essential, must be implemented.

When Available: First increment

4.3.6 Product Management

4.3.6.1 Add Product

Use Case: Add Product

Primary Actor: Admin

Goal in context: To add Product

Preconditions:

1. System has been designed for adding Product
2. System has interface for adding Product
3. System has a database of products

Triggers: Admin has to add product

Scenario:

1. Is a Admin
2. Admin has something to add
3. Admin should set category with number of product.
4. Admin adds product with corresponding product id, quantity and price

Exception:

- Product ID wrong

Priority: Essential, must be implemented.

When Available: First increment

4.3.6.2 Remove Product

Use Case: Remove Product

Primary Actor: Admin

Goal in context: To remove Product

Preconditions:

1. System has been designed for removing Product
2. System has interface for removing Product
3. System has a database of products

Triggers: Admin has to remove product

Scenario:

1. Is a Admin
2. Admin has something to remove
3. Admin can remove the product

Exception:

- Product does not exist
- Doesn't get product by searching

Priority: Essential, must be implemented.

When Available: First increment

4.3.6.3 Edit Product

Use Case: Edit Product

Primary Actor: Admin

Goal in context: To edit Product

Preconditions:

1. System has been designed for editing Product
2. System has interface for editing Product
3. System has a database of products

Triggers: Admin has to edit product

Scenario:

1. Is a Admin
2. Admin has something to edit
3. Admin has search product and edit required information
4. Admin confirms the changes

Exception:

- product may not exist
- New information is wrong

Priority: Essential, must be implemented.

When Available: First increment

4.3.6.4 Manage Product Advertisement

Use Case: Manage Product Advertisement

Primary Actor: Admin

Goal in context: To manage product advertisement

Preconditions:

1. System has been designed for managing product advertisement
2. System has interface for managing product advertisement
3. System has a database of products

Triggers: Admin has to manage product advertisement

Scenario:

1. Is a Admin
2. Admin has something to manage
3. Admin has advertisement options
4. Send notification message via SMS or Email for particular products

Exception:

- System not ready for sending Email or SMS

Priority: Essential, must be implemented.

When Available: First increment

4.3.7 Contact

4.3.7.1 Chat

Use Case: Chat, Email

Primary Actor: Admin and Customer

Goal in context: To chat with admin

Preconditions:

1. System has been designed for chat
2. System has interface for chat

Triggers: Admin and customer has to chat and Email

Scenario:

1. Admin availability is required
2. User sends messages
3. Admin retrieves messages
4. If admin not available message request is sent

Exception:

- Invalid input

Priority: Essential, must be implemented.

When Available: First increment

4.3.7.2 Help Line

Use Case: Help Line

Primary Actor: Customer

Goal in context: To help customer

Preconditions:

1. System has been designed for help line
2. System has interface for help line

Triggers: customer has to request for help through help line

Scenario:

1. Is a customer
2. Customer should request for help
3. If on phone, number is loaded
4. If on Computer, number is displayed

Exception:

- contact number not available

Priority: Essential, must be implemented.

When Available: First increment

4.3.7.3 Follow on Social Media

Use Case: Follow on Social Media

Primary Actor: customer

Goal in context: To follow on social media

Preconditions:

1. System has been designed for follow on social media
2. System has interface for follow on social media
3. Has list of Social media

Triggers: Customer has to follow on social media

Scenario:

1. Is a customer
2. Visit page

3. Customer has to follow on social media
4. Customer has to login on social media

Exception:

- some social media may not be available
- Login to social media failed

Priority: Essential, must be implemented.

When Available: First increment

4.3.7.5 Chat

Use Case: Email

Primary Actor: Admin and Customer

Goal in context: To Email to admin

Preconditions:

1. System has been designed for Email
2. System has interface for Email

Triggers: Customer has to Email to Admin

Scenario:

1. Admin has an email address
2. Customer sends email to admin

Exception:

- Invalid input

Priority: Essential, must be implemented.

When Available: First increment

4.4 Use Case Diagram

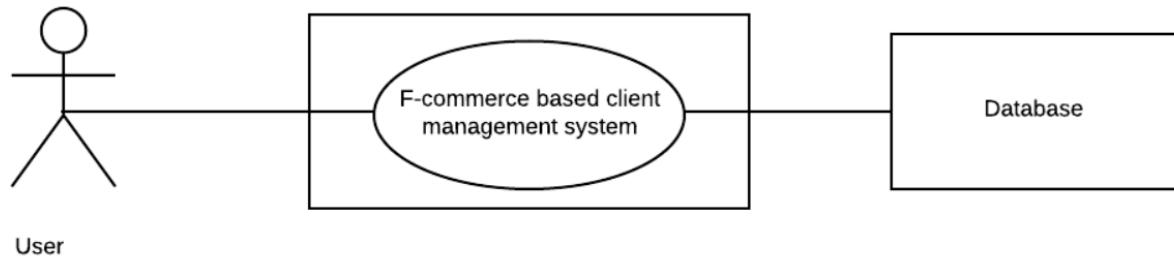


Figure 1: Level 0 for F-commerce based client management system

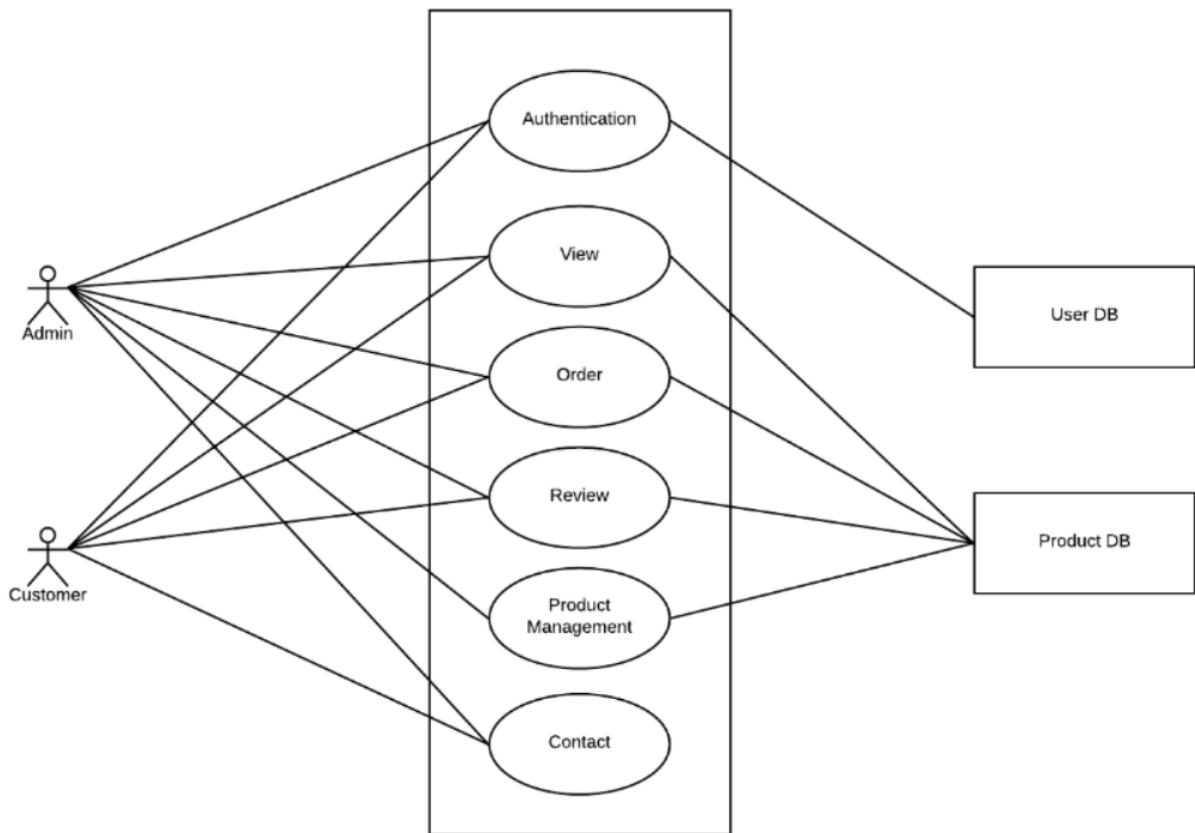


Figure 2: Level 1 for F-commerce based client management system

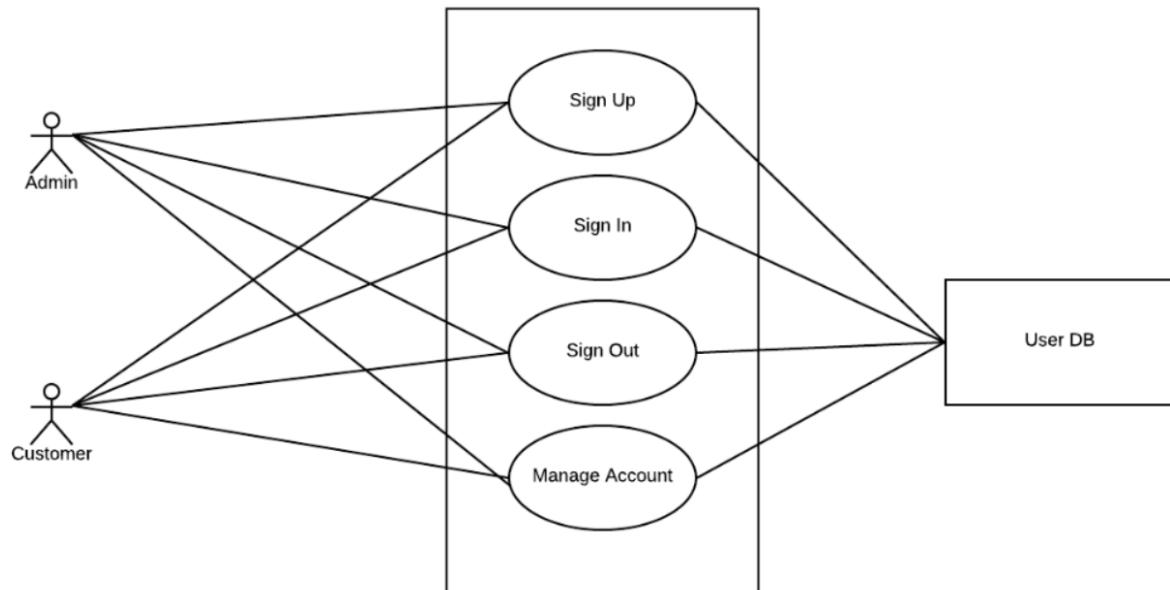


Figure 3: Level 2.1 for F-commerce based client management system

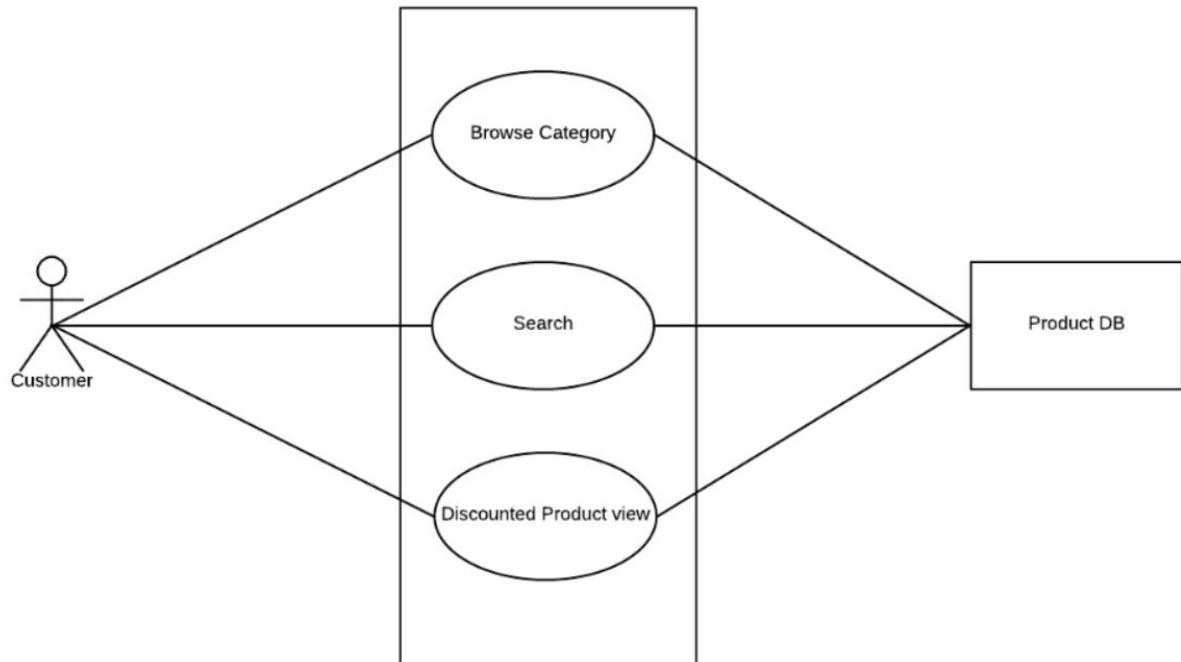


Figure 4: Level 2.2 for F-commerce based client management system

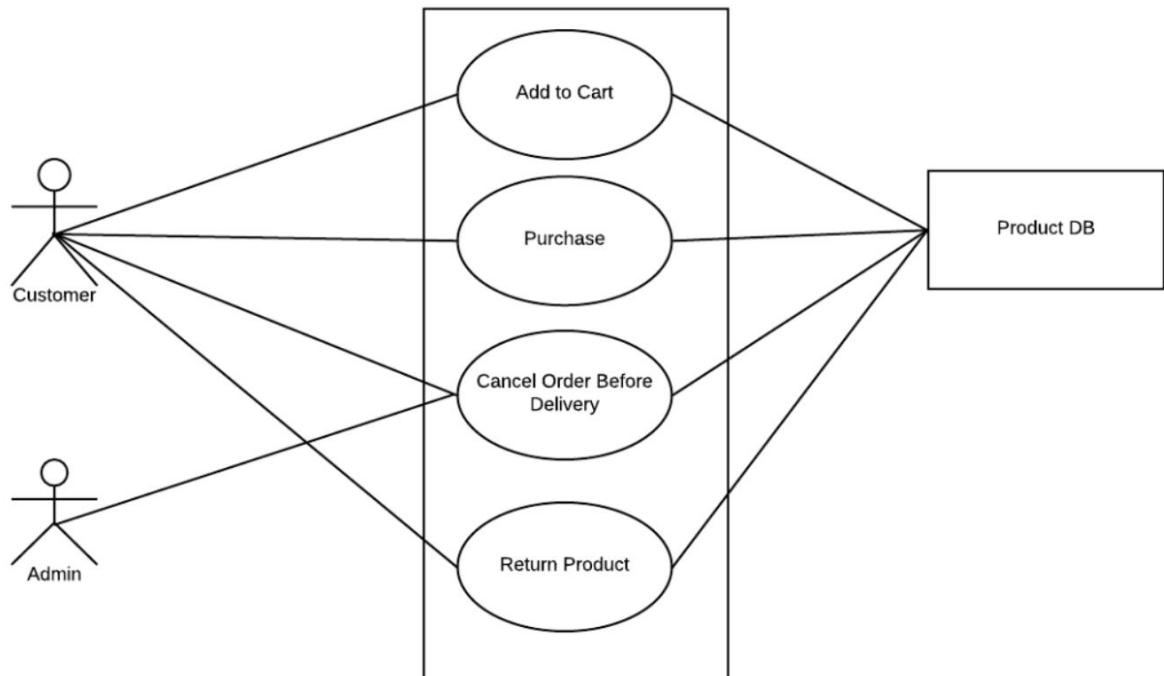


Figure 5: Level 2.3 for F-commerce based client management system

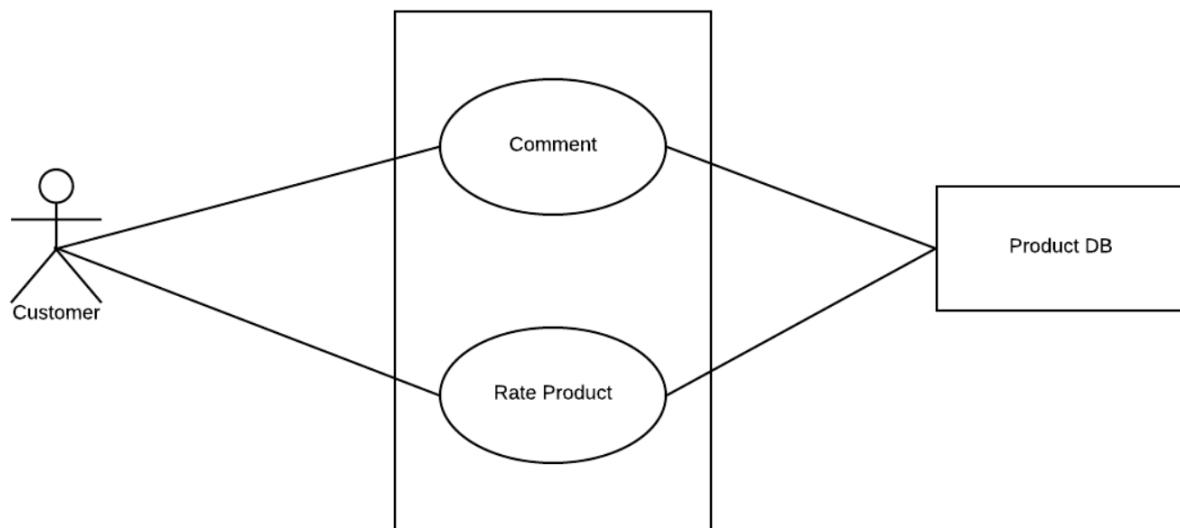


Figure 6: Level 2.4 for F-commerce based client management system

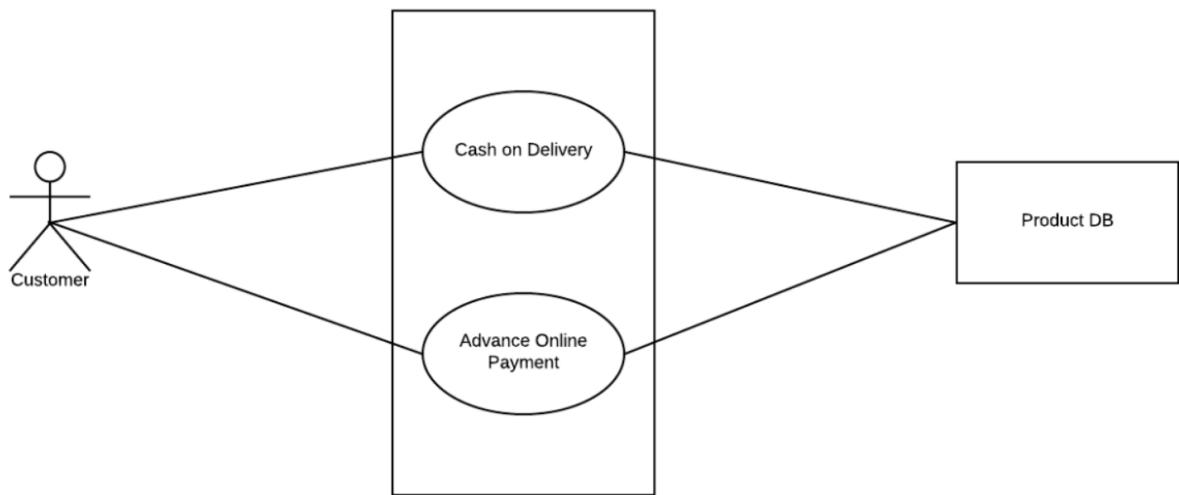


Figure 7 : Level 2.5 for F-commerce based client management system

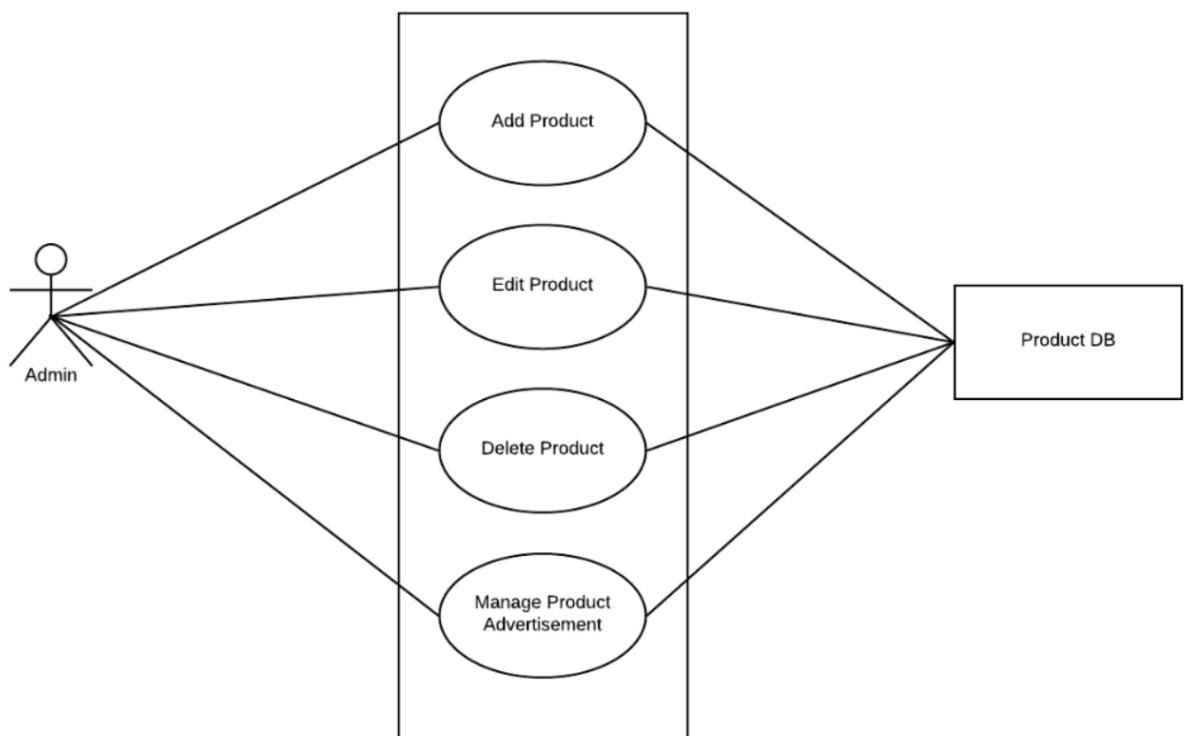


Figure 8: Level 2.6 for F-commerce based client management system

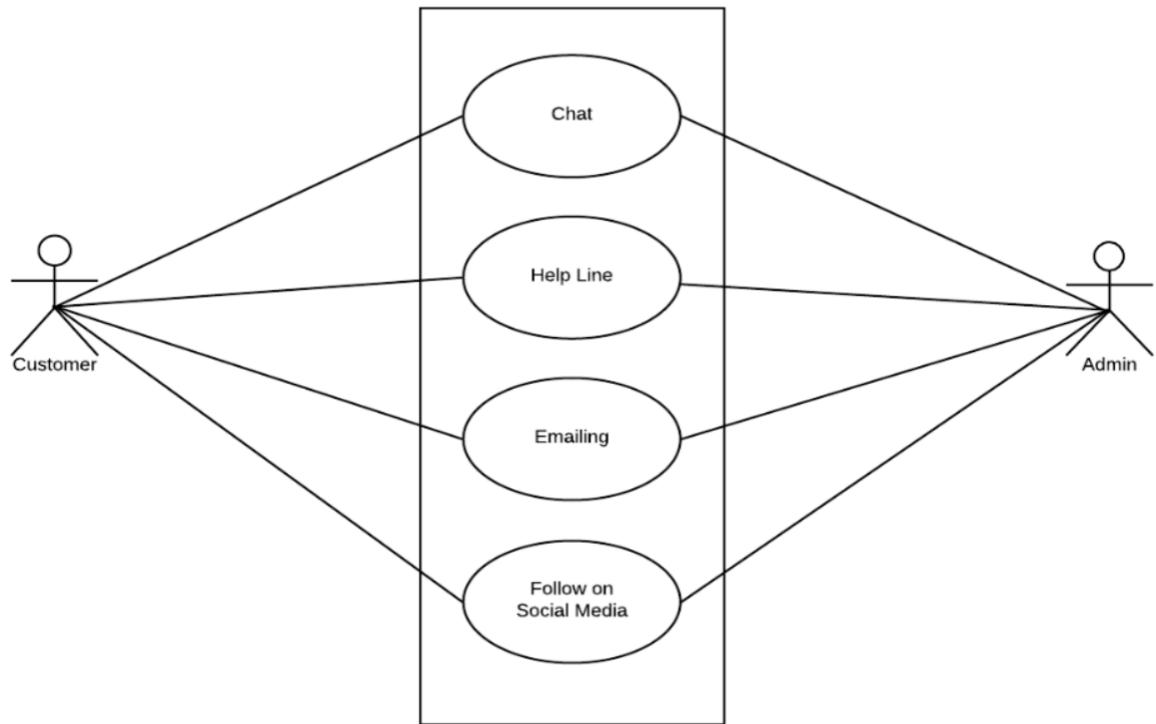


Figure 9: Level 2.7 for F-commerce based client management system

4.5 Activity Diagram and Swimlane Diagram of generated Use Cases:

Use case 1: Sign Up

Activity Diagram:

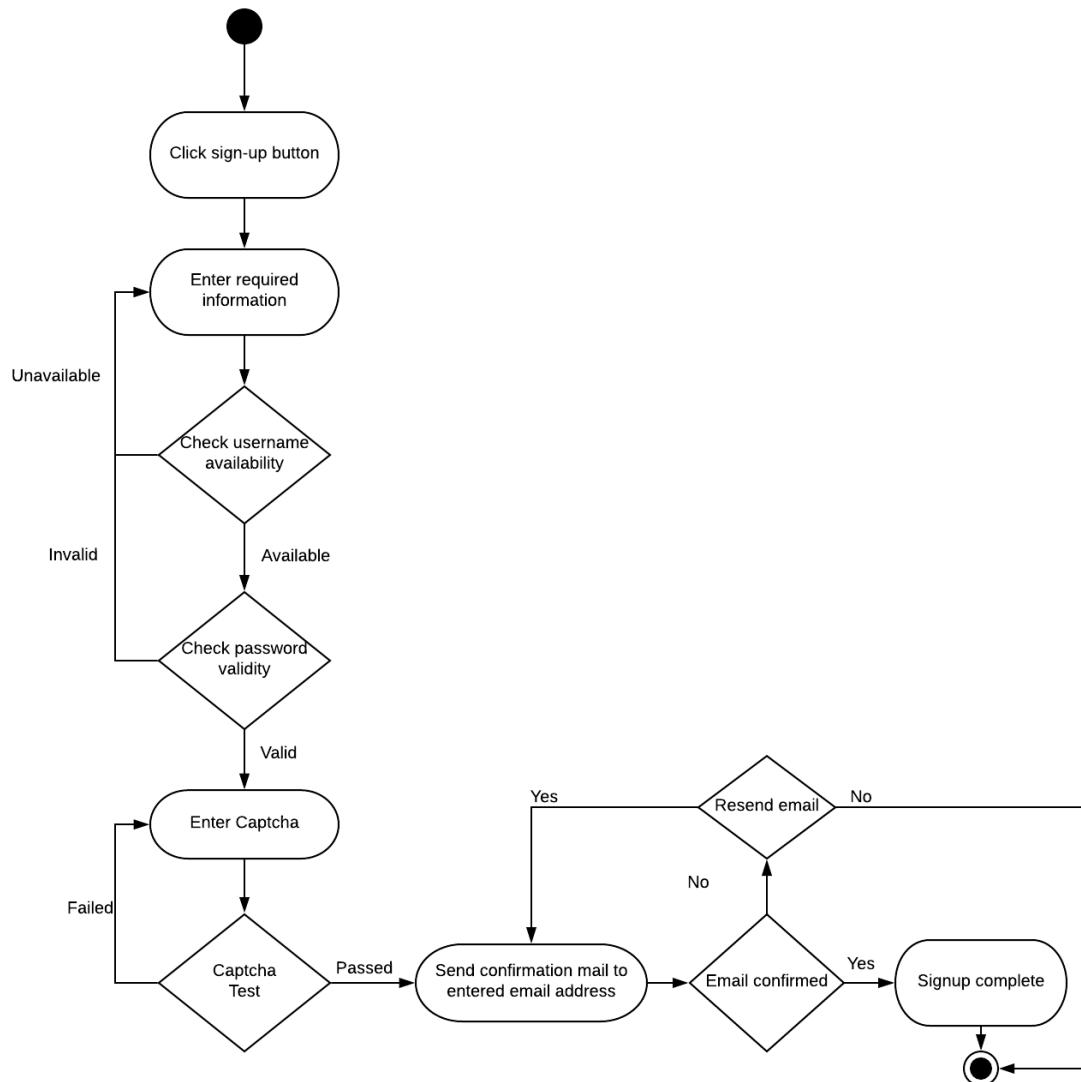


Figure 10: Activity Diagram for Sign-Up

Swimlane Diagram:

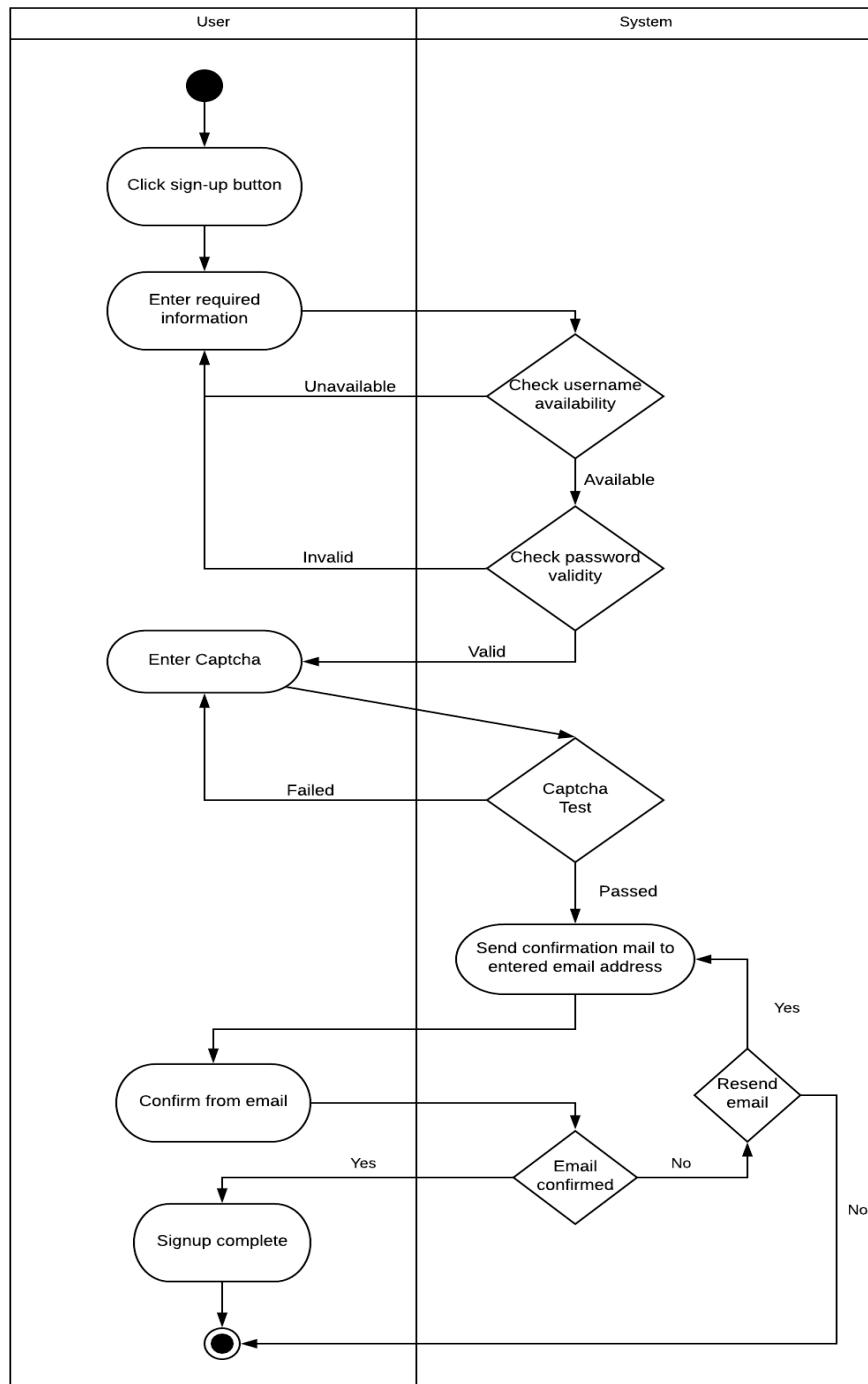


Figure 11: Swimlane Diagram for Sign-Up

Use case 2: Sign In

Activity Diagram:

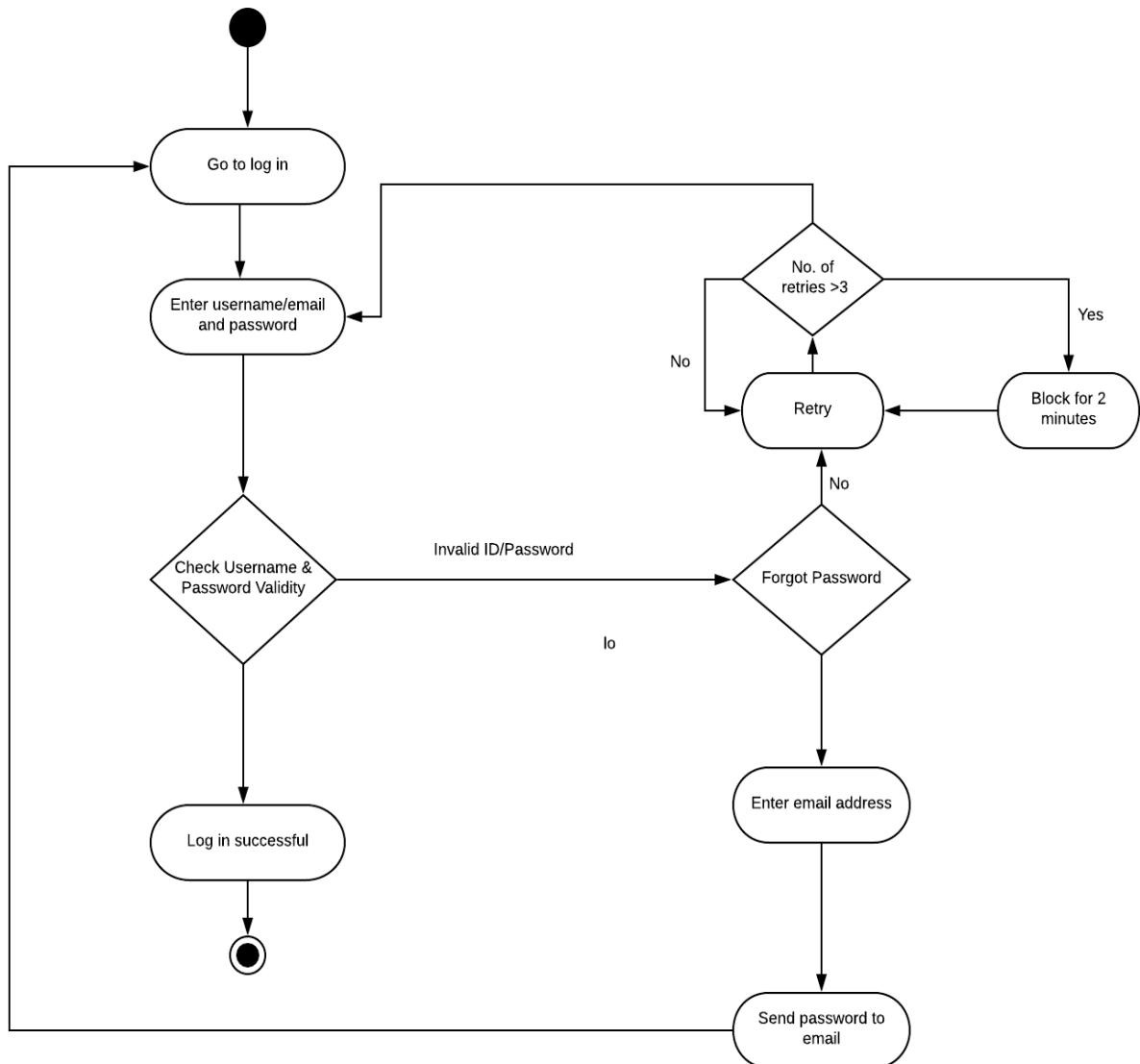


Figure 12: Activity Diagram for Login

Swimlane Diagram:

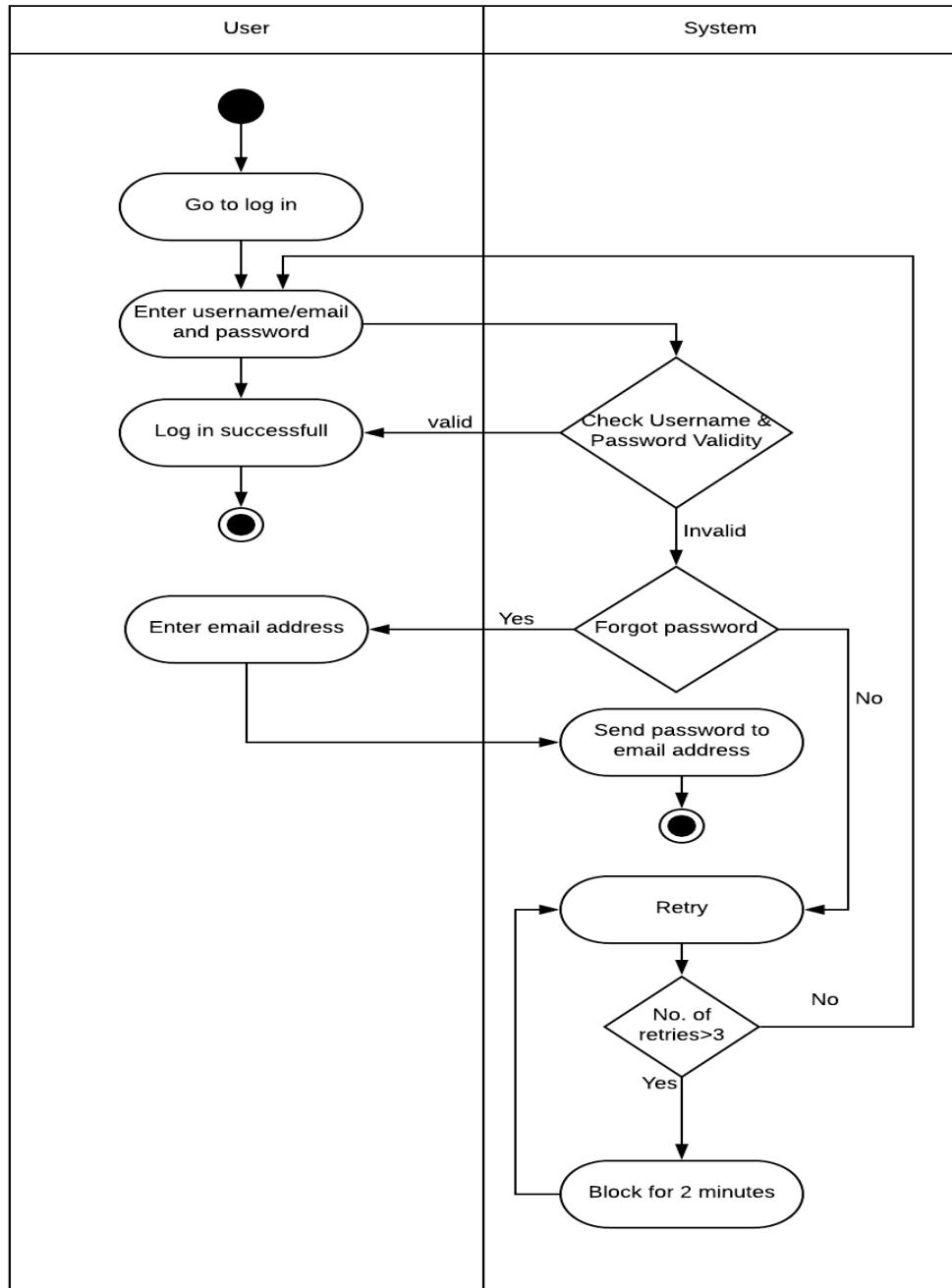
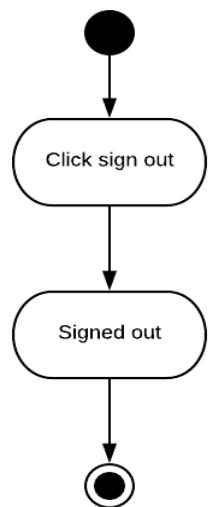


Figure 13: Swimlane Diagram for Login

Use case 3: Sign Out

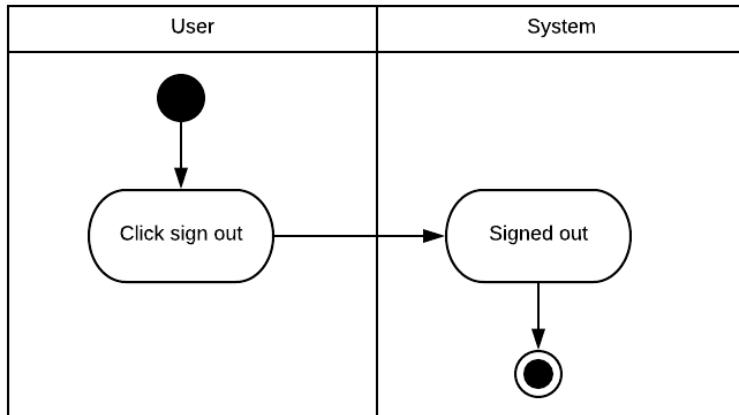
Activity Diagram:



Activity Diagram for Sign-out

Figure 14: Activity Diagram for Sign-Out

Swimlane Diagram:



Swimlane Diagram for Sign-out

Figure 15: Swimlane Diagram for Sign-out

Use case 4: Manage Account

Activity Diagram:

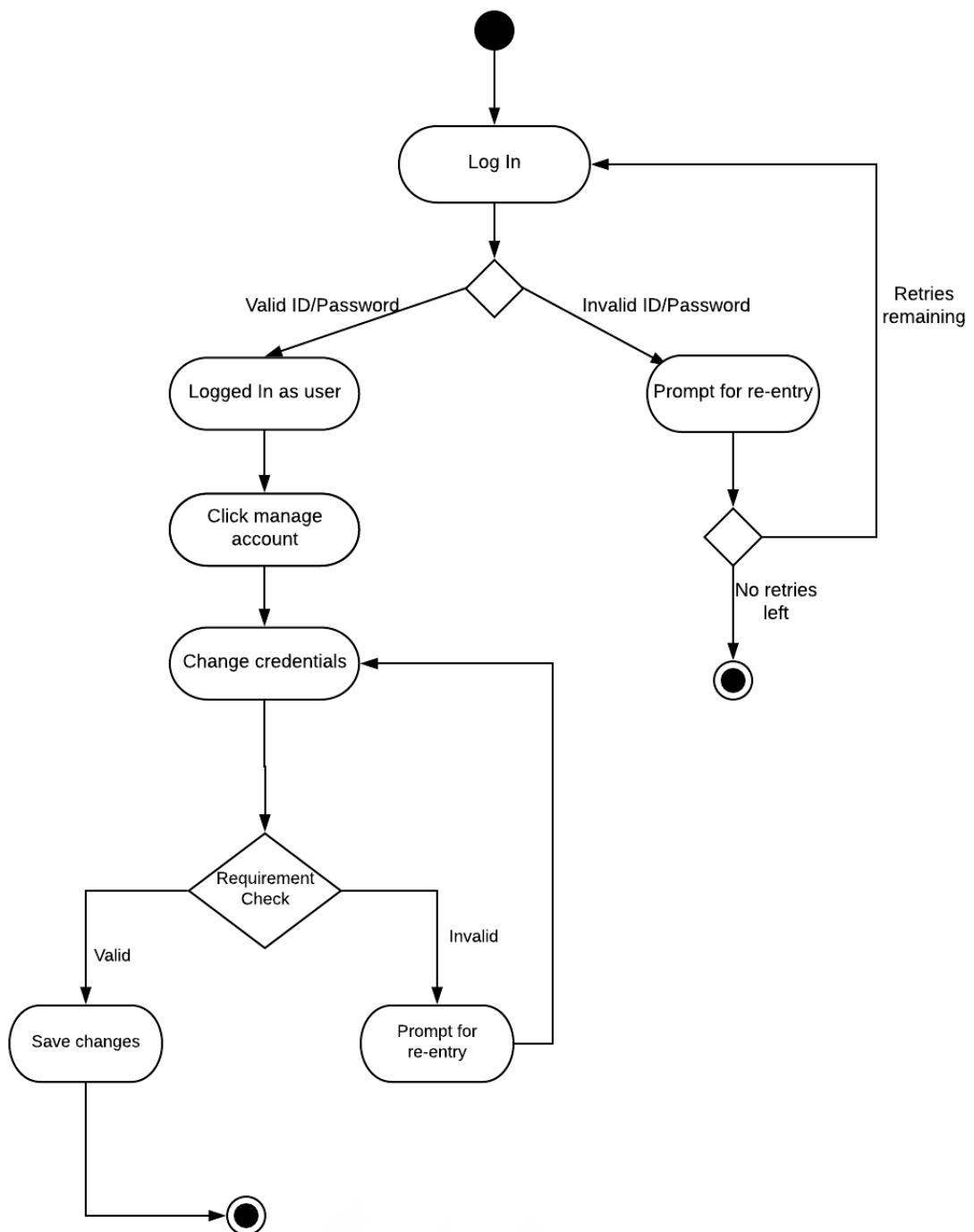


Figure 16: Activity Diagram for Manage Account

Swimlane diagram:

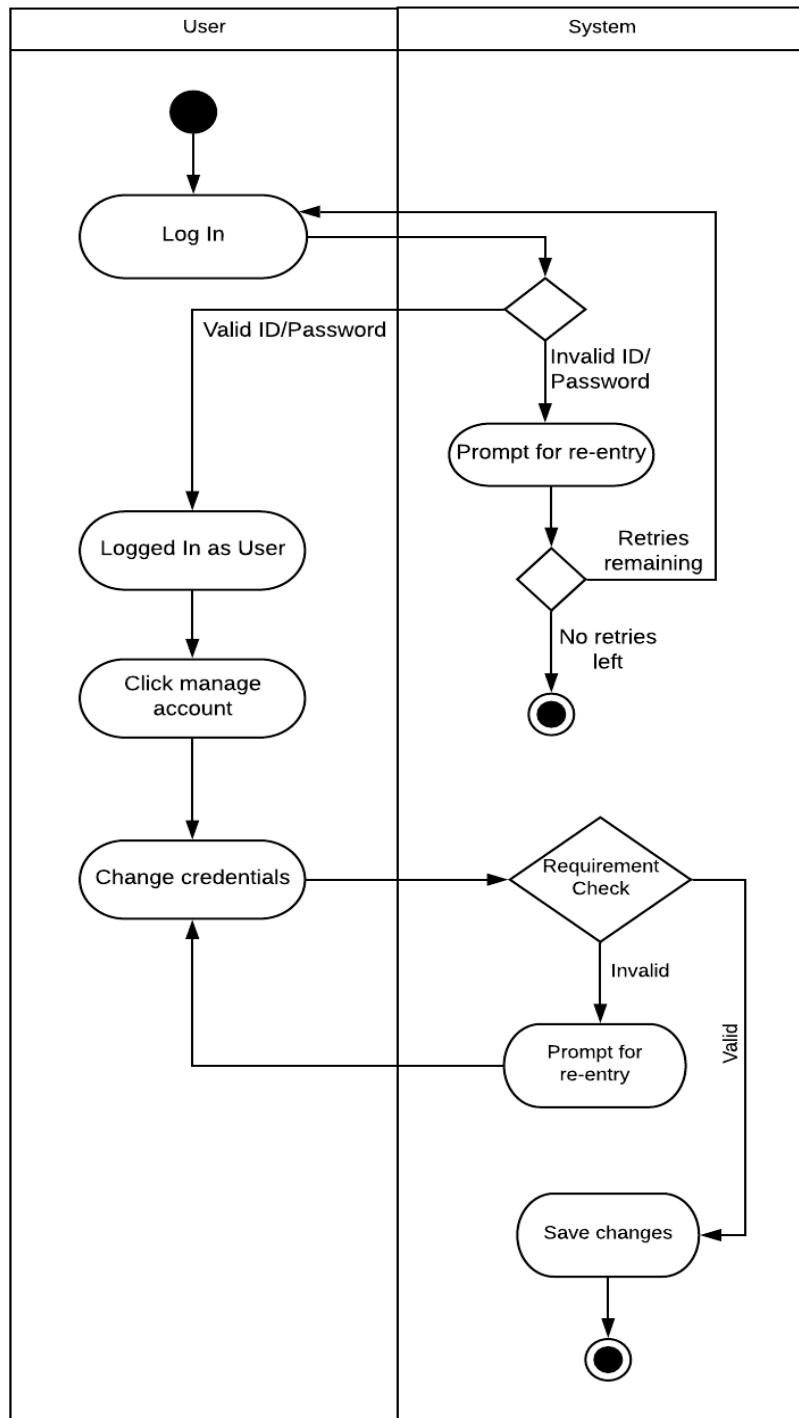


Figure 17: Swimlane Diagram for Manage Account

Use case 5: Browse Category and Search

Activity Diagram:

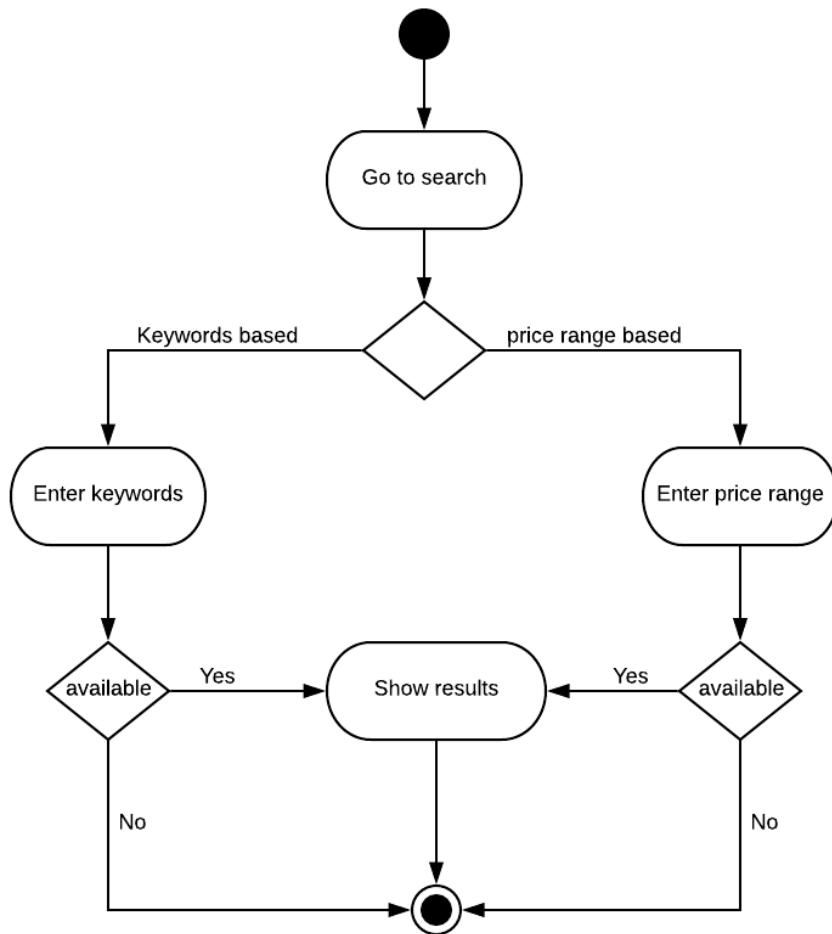


Figure 18: Activity Diagram for Browse Category and Search

Swimlane Diagram:

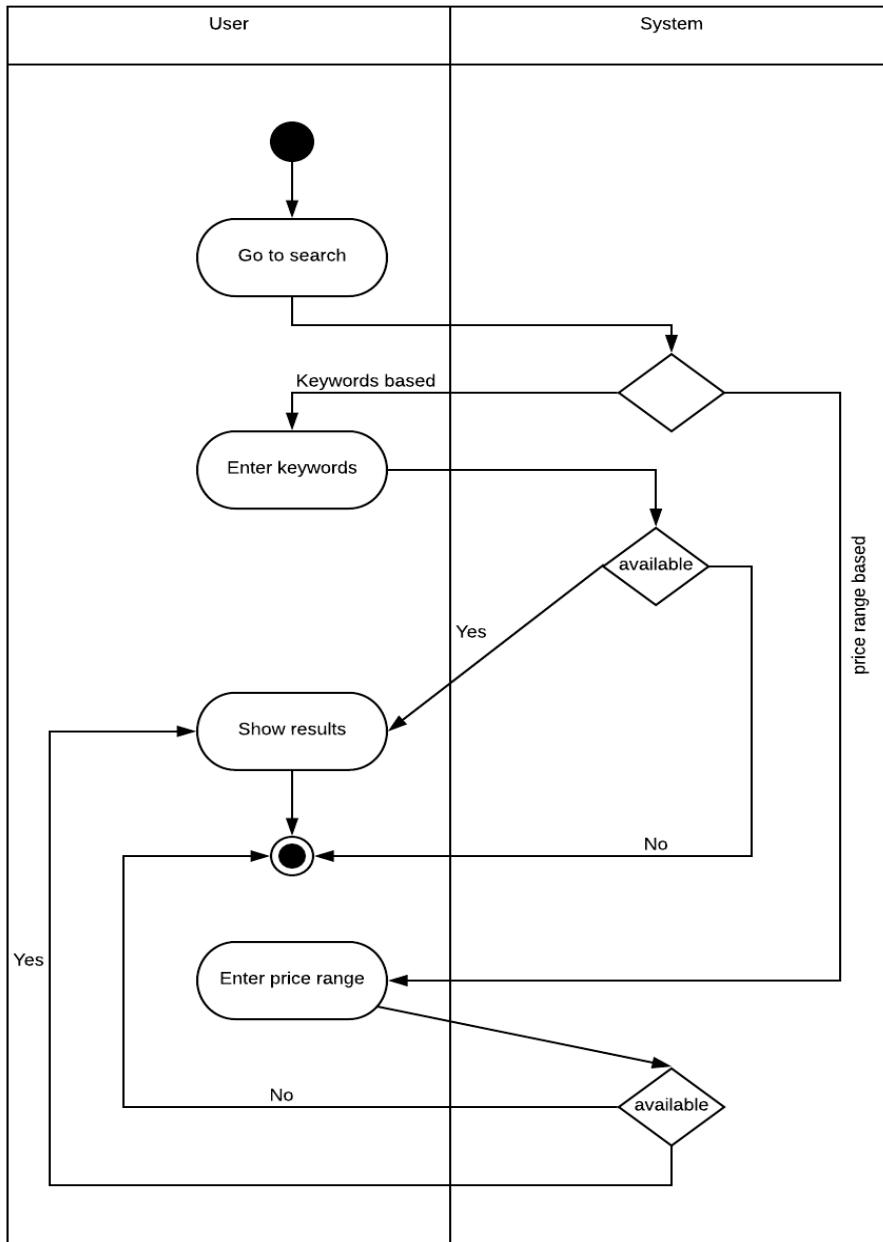


Figure 19: Swimlane Diagram for Browse Category and Search

Use case 6: Add to cart

Activity Diagram:

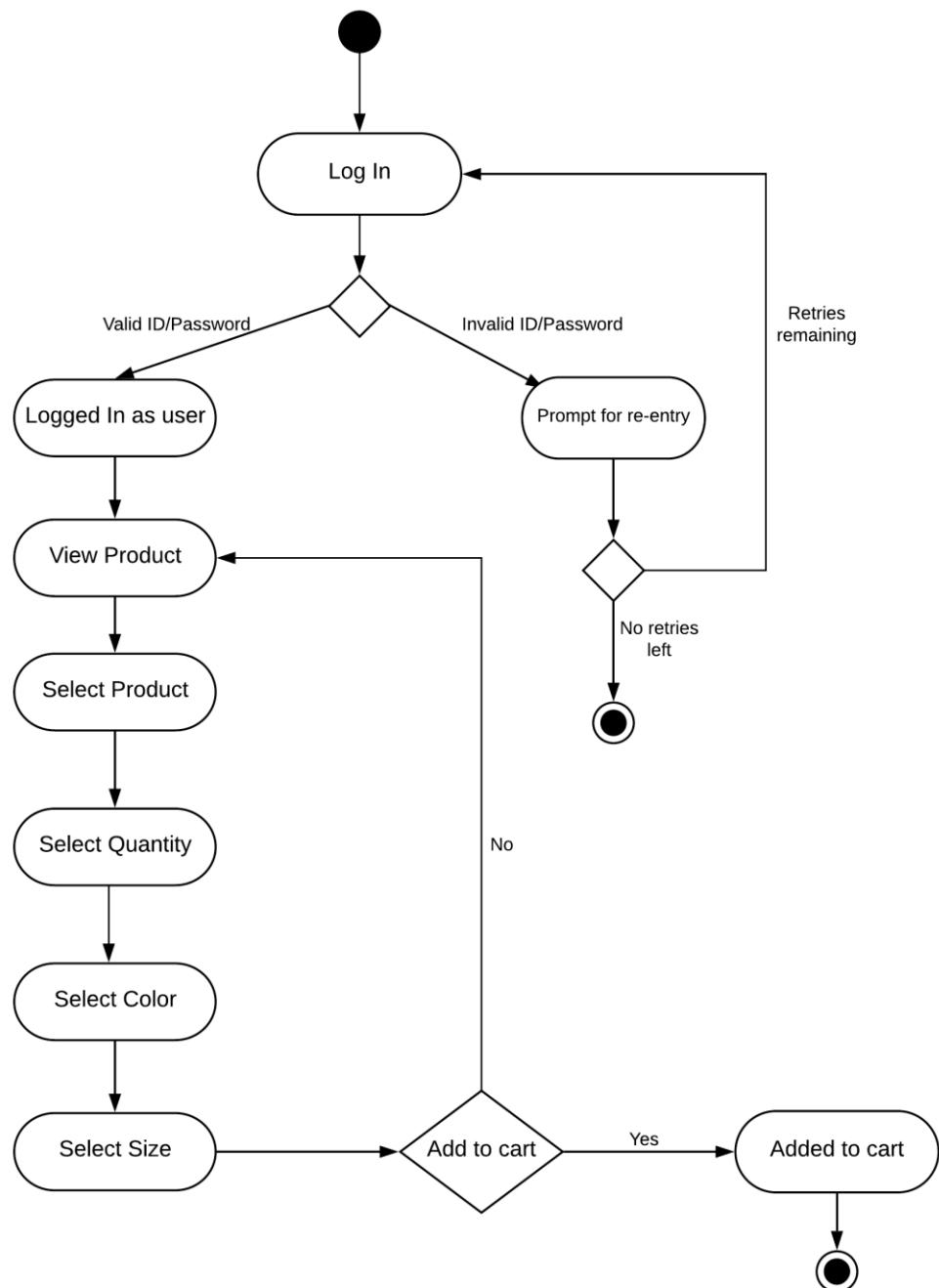


Figure 20: Activity Diagram for Add to Cart

Swimlane Diagram:

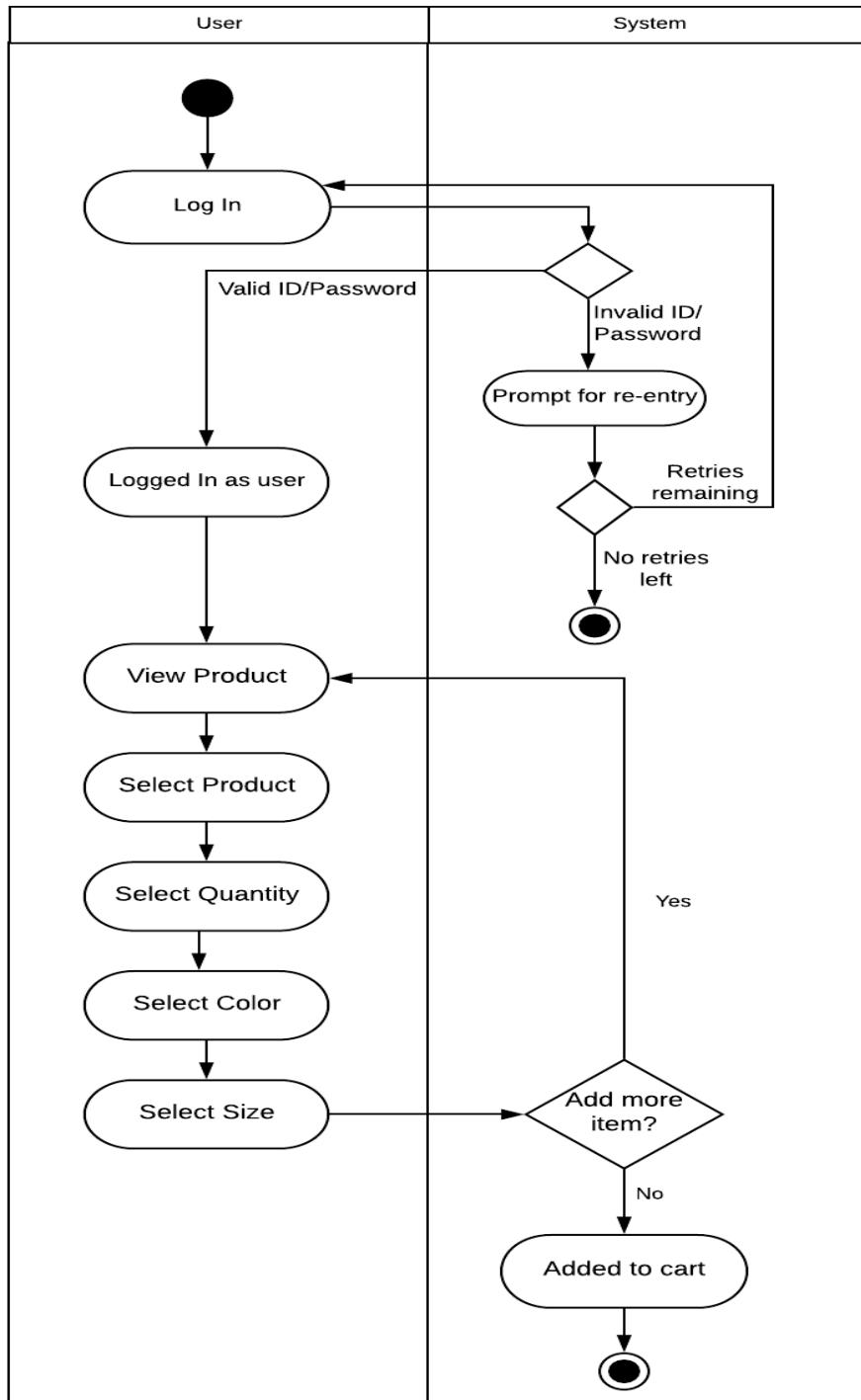


Figure 21: Swimlane Diagram for Add to Cart

Use case 7: Purchase
Activity Diagram:

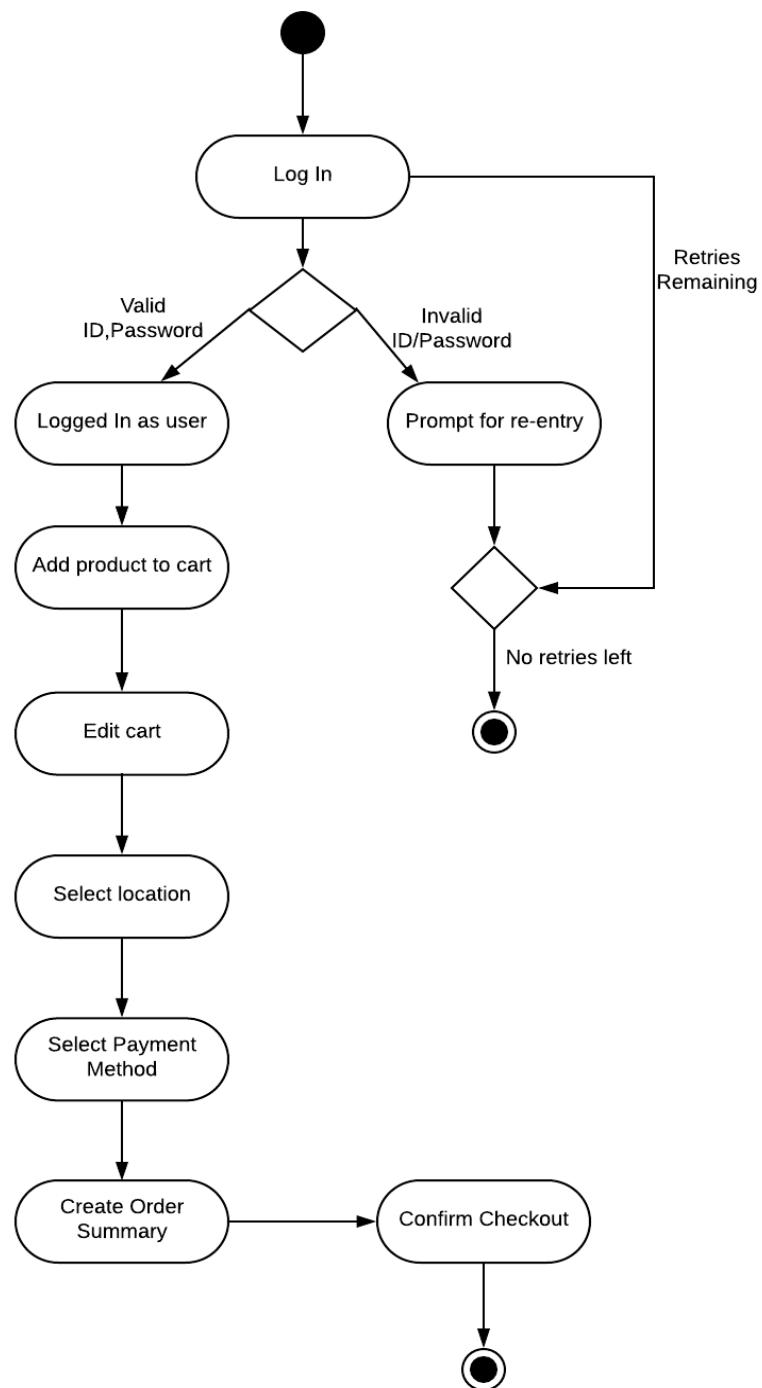


Figure 22: Activity Diagram for Purchase

Swimlane Diagram:

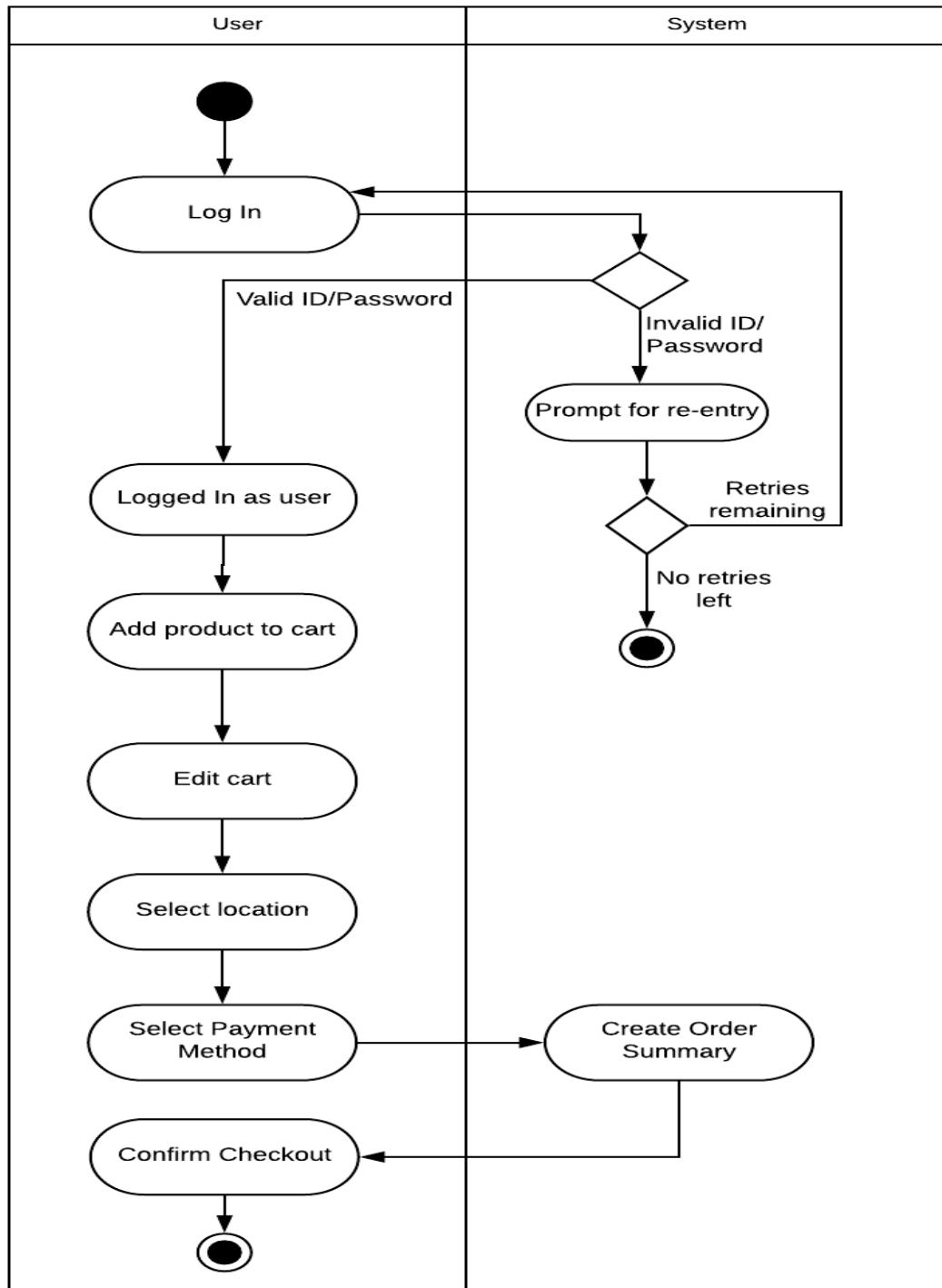


Figure 23: Swimlane Diagram for Purchase

Use case 8: Cancel order before delivery

Activity Diagram:

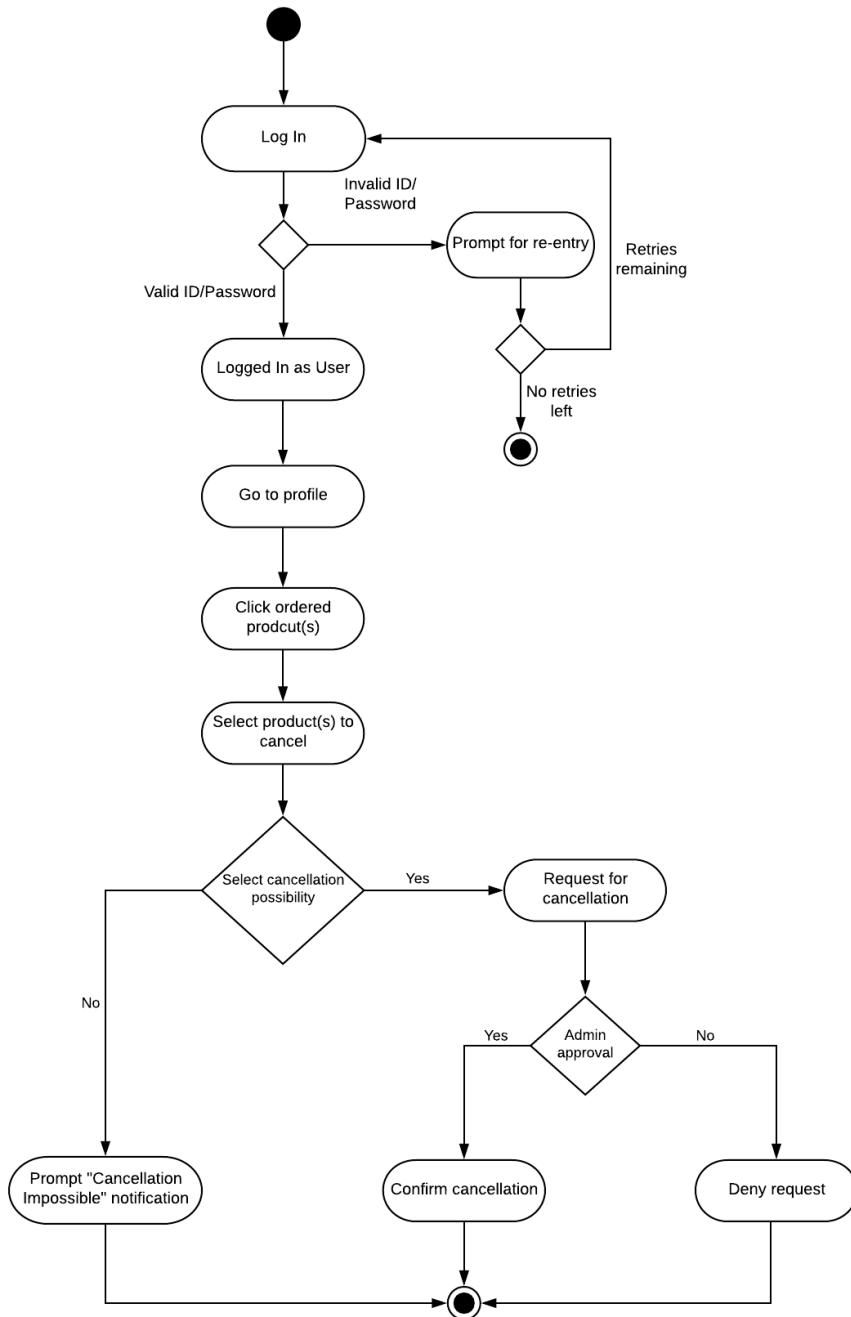


Figure 24: Activity Diagram for Cancel Order Before delivery

Swimlane Diagram:

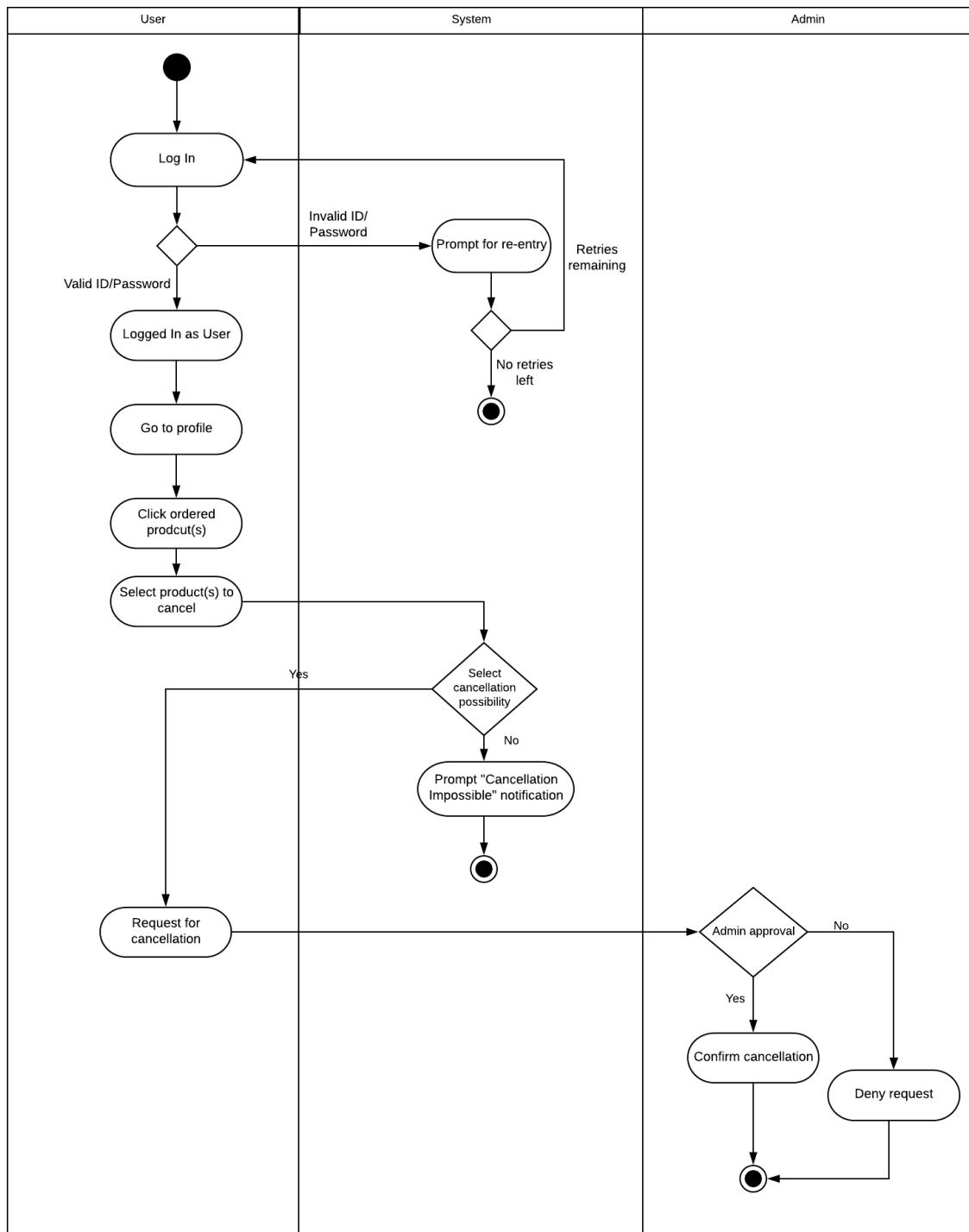


Figure 25: Swimlane Diagram for Cancel Order Before delivery

Use case 9: Return product

Activity Diagram:

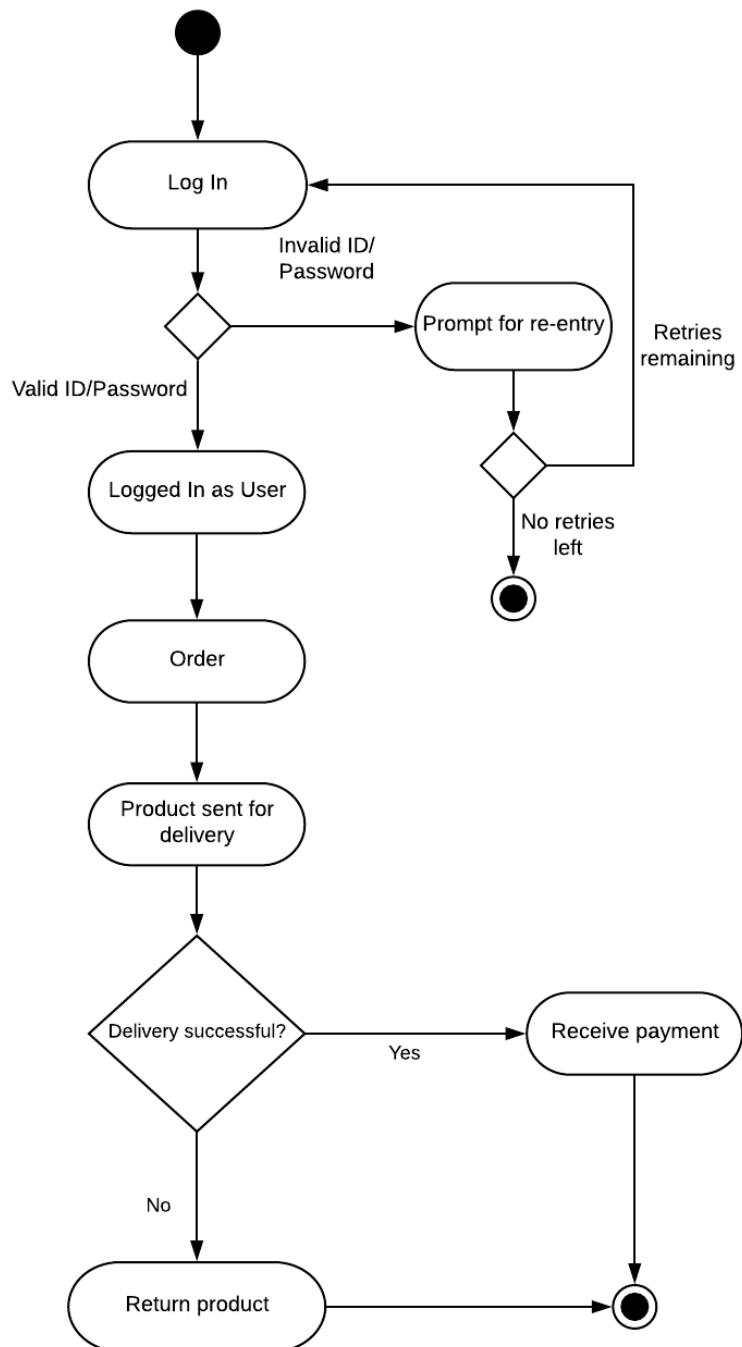


Figure 26: Activity Diagram for Return Product

Swimlane Diagram:

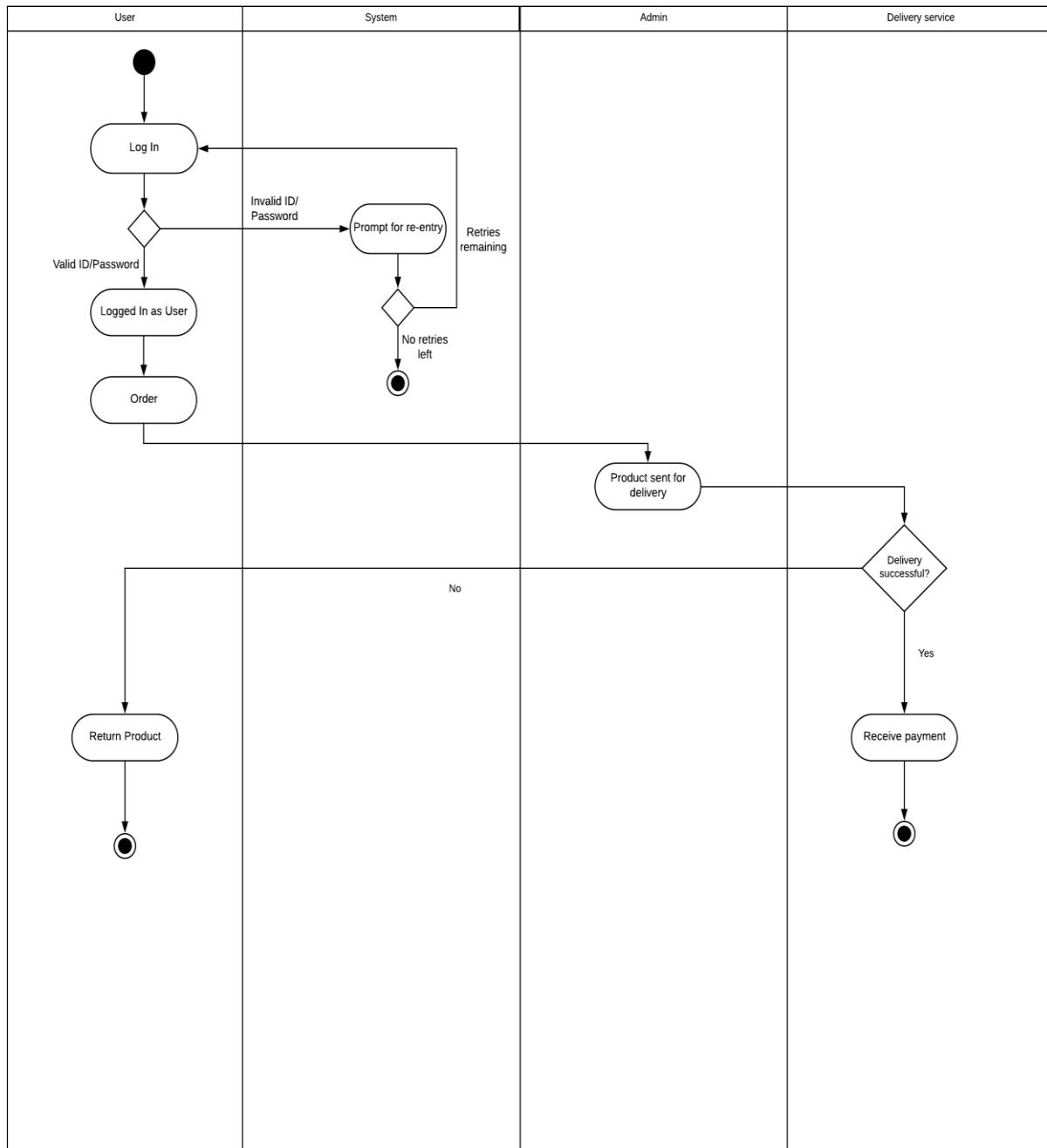


Figure 27: Swimlane Diagram for Return Product

Use case 10: comment and rate

Activity Diagram:

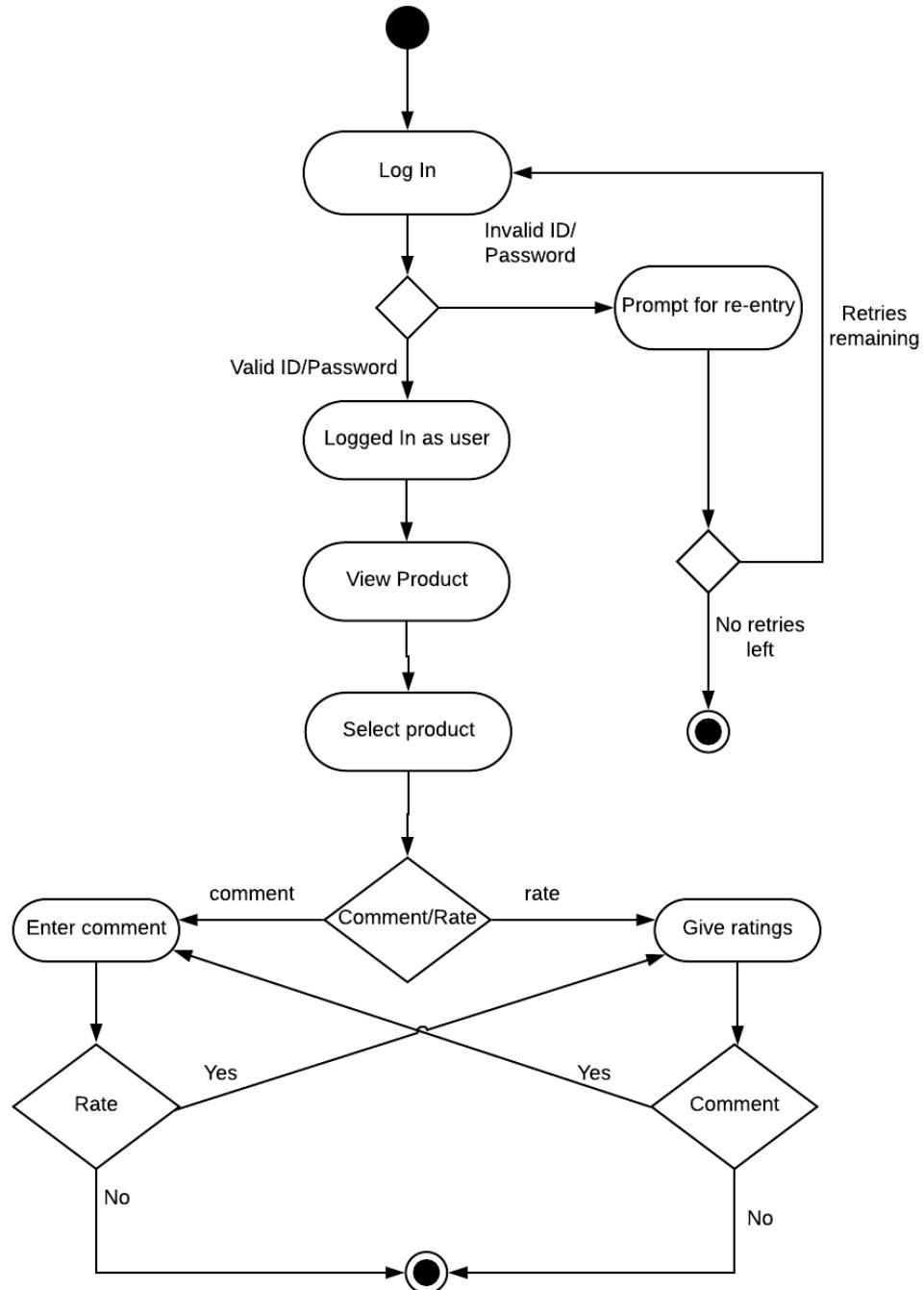


Figure 28: Activity Diagram for Comment and rate

Swimlane Diagram:

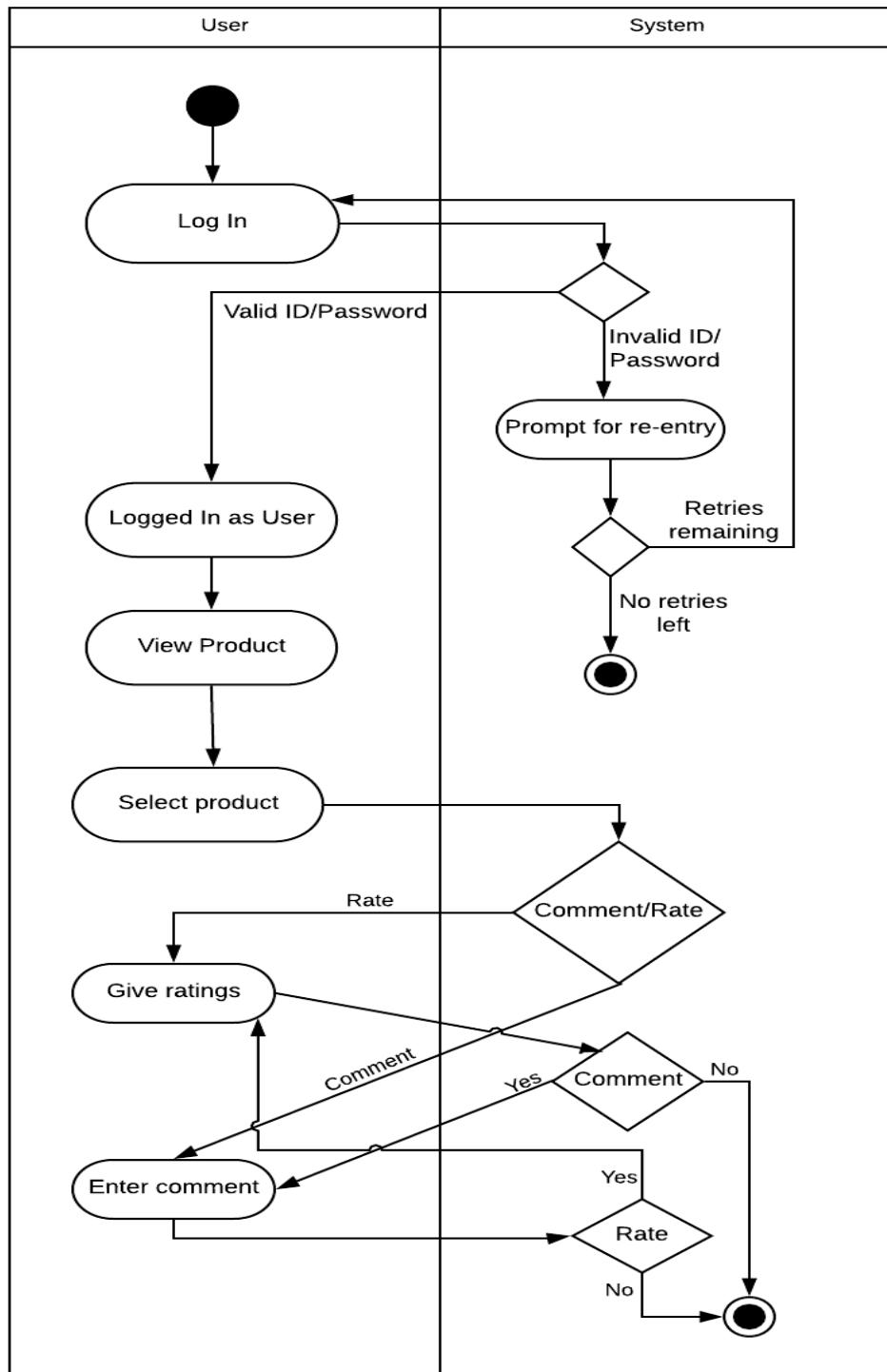


Figure 29: Swimlane Diagram for Comment and rate

Use case 11: Cash on delivery

Activity Diagram:

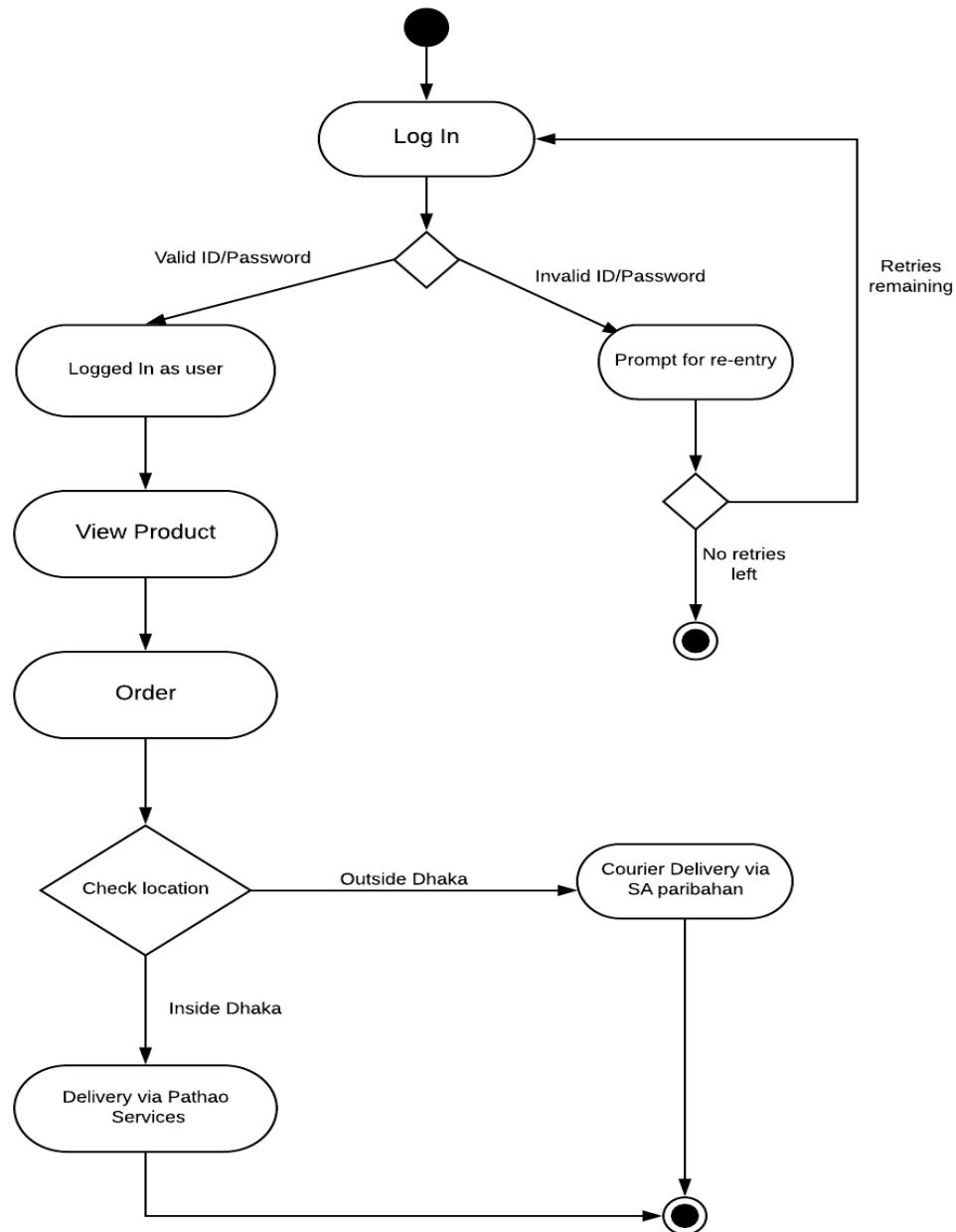


Figure 30: Activity Diagram for Cash on Delivery

Swimlane Diagram:

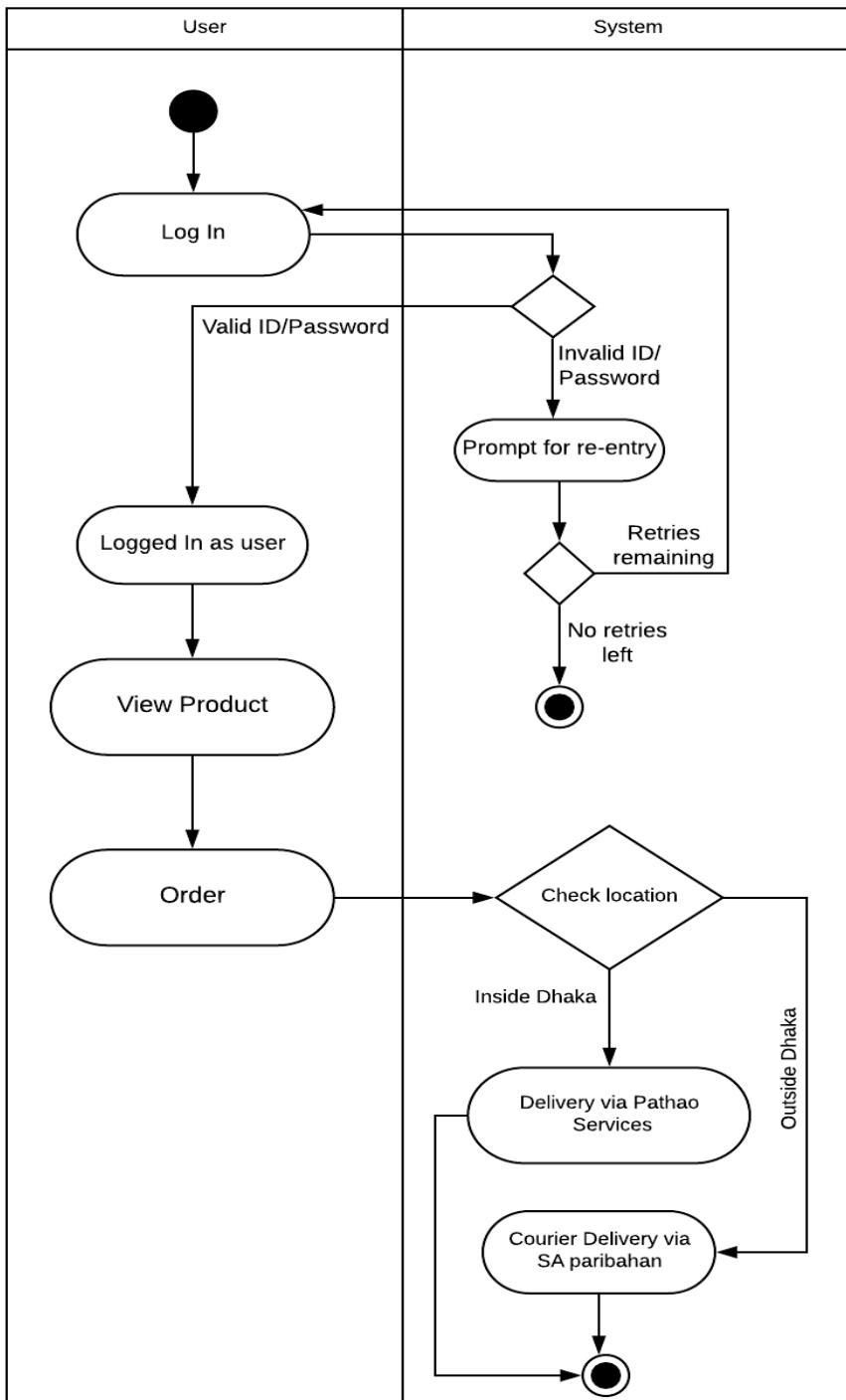


Figure 31: Swimlane Diagram for Cash on Delivery

Use case 12: Online payment

Activity Diagram:

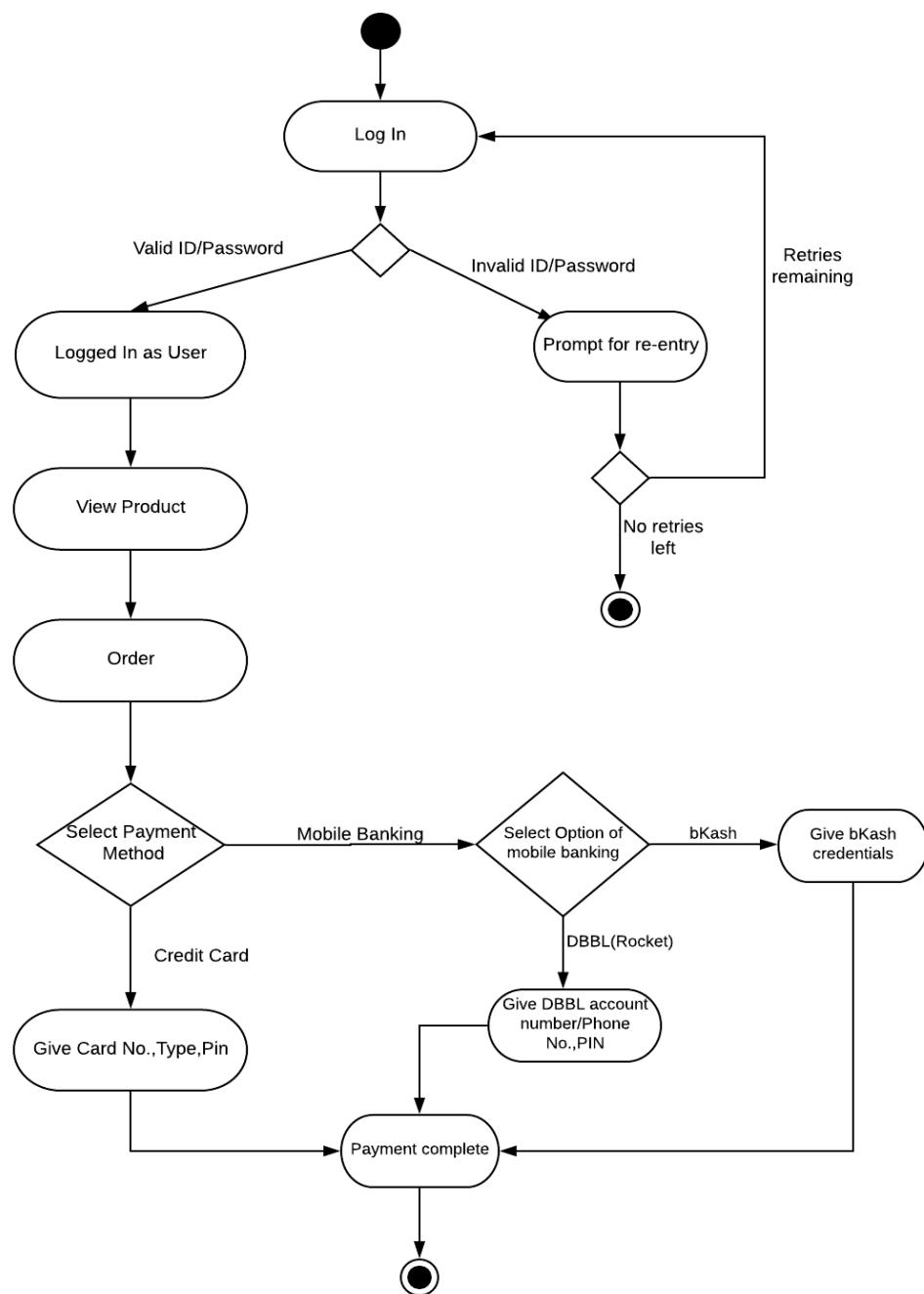


Figure 32: Activity Diagram for Online Payment

Swimlane Diagram:

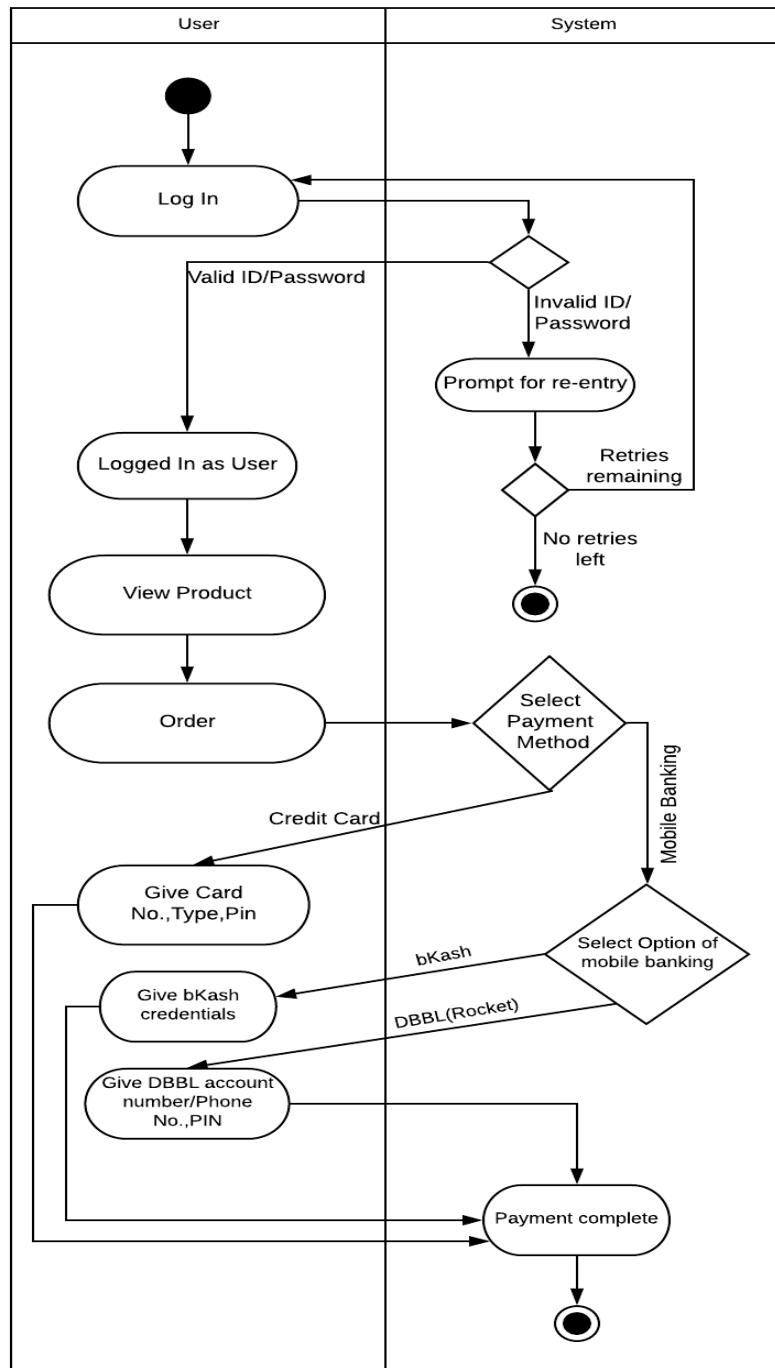


Figure 33: Swimlane Diagram for Online Payment

Use case 13: Add Product

Activity Diagram:

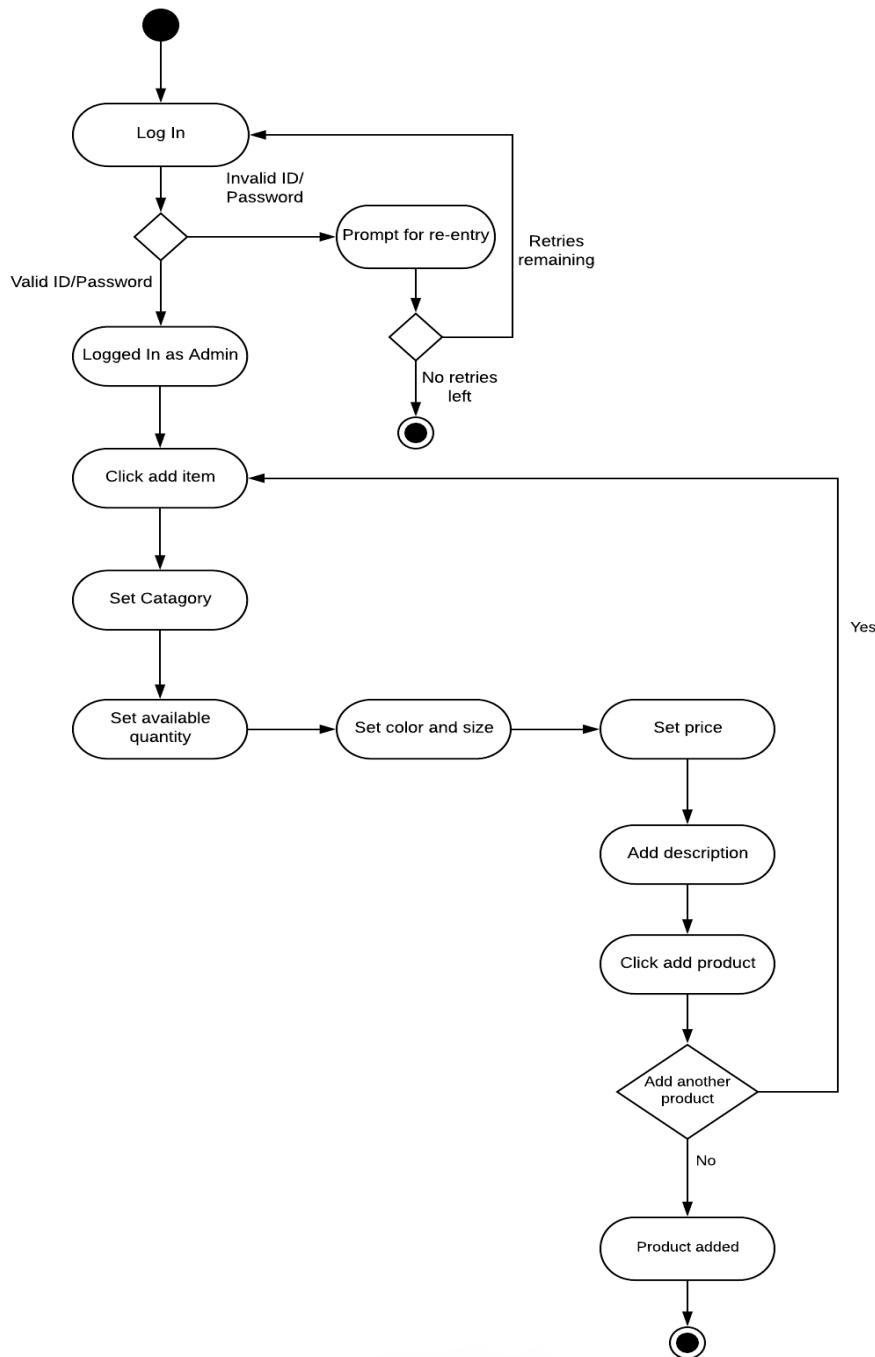


Figure 34: Activity Diagram for Add Product

Swimlane Diagram:

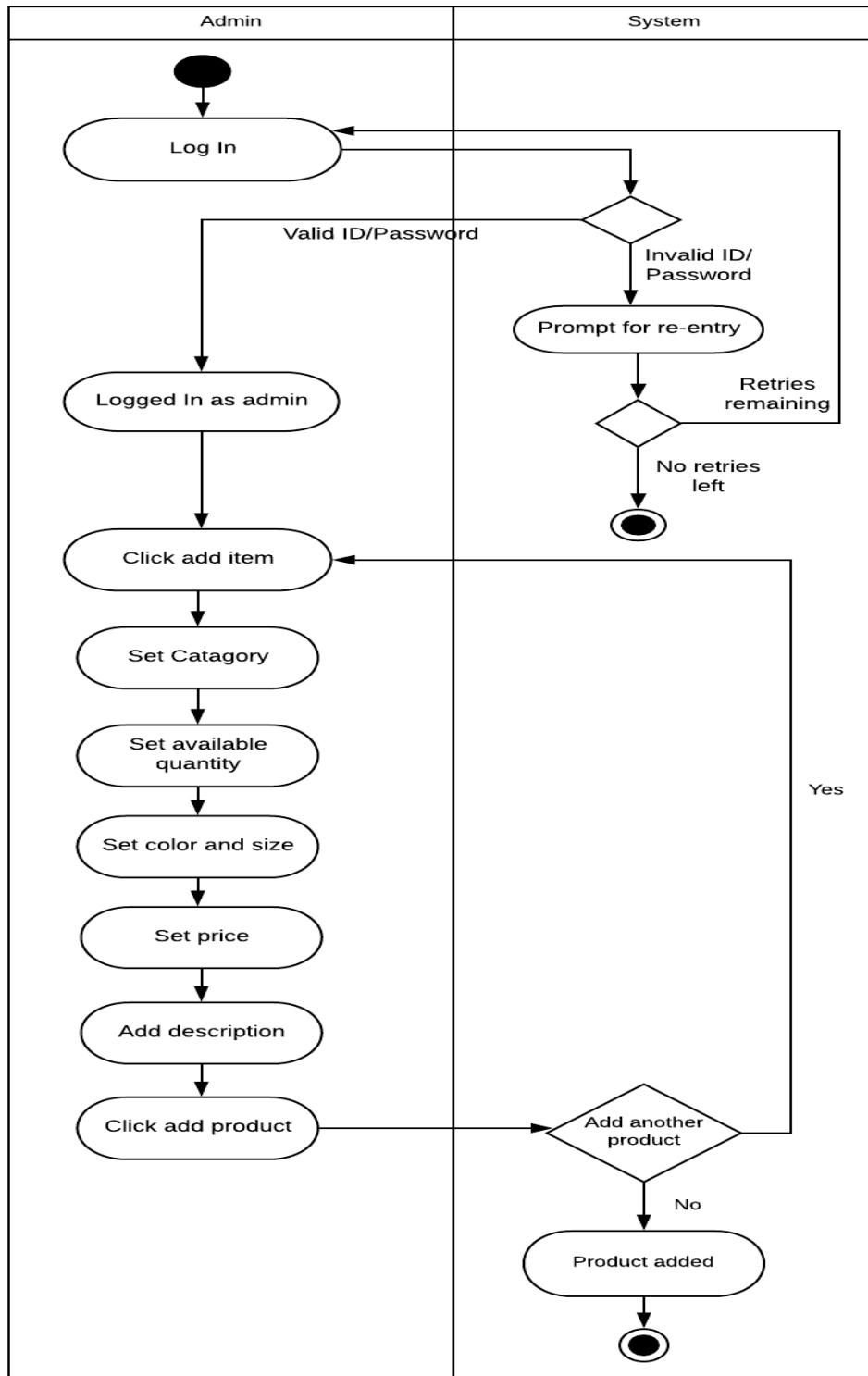


Figure 35: Swimlane Diagram for Add Product

Use case 14: Edit Product

Activity Diagram:

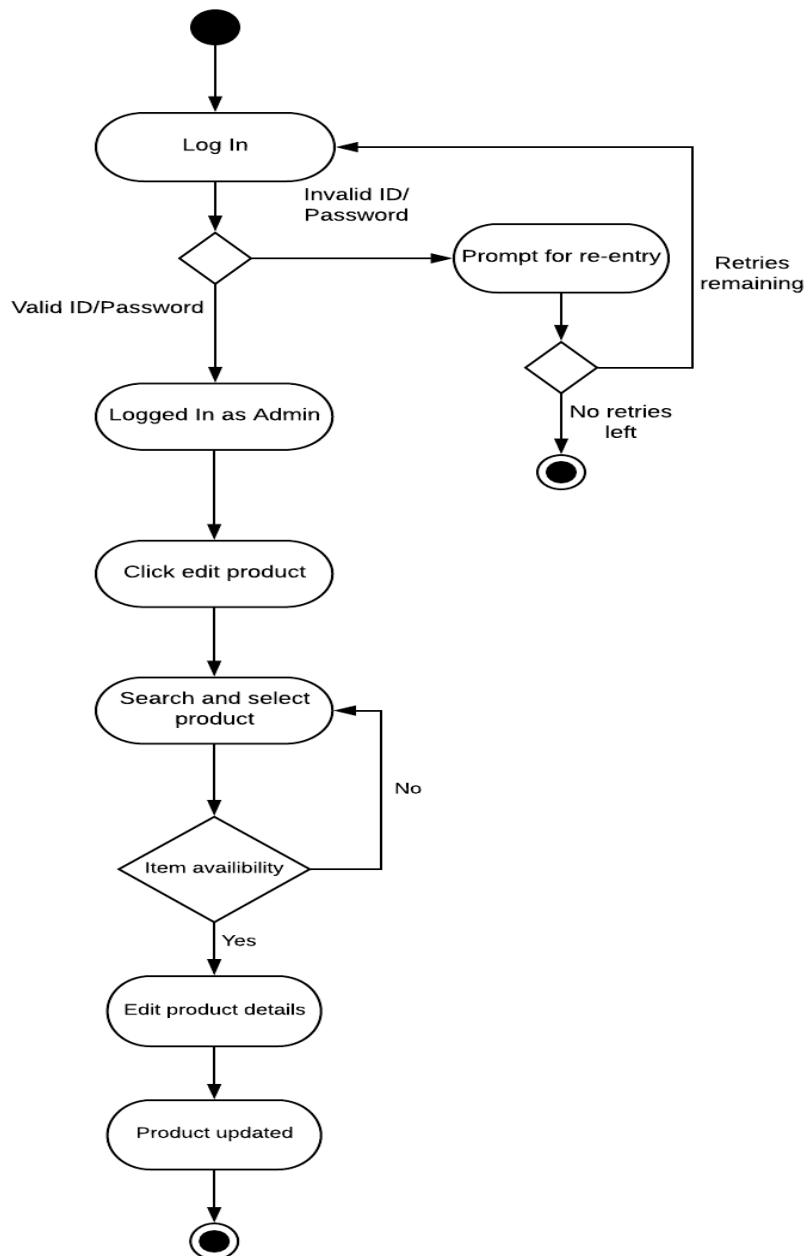


Figure 36: Activity Diagram for Edit Product

Swimlane Diagram:

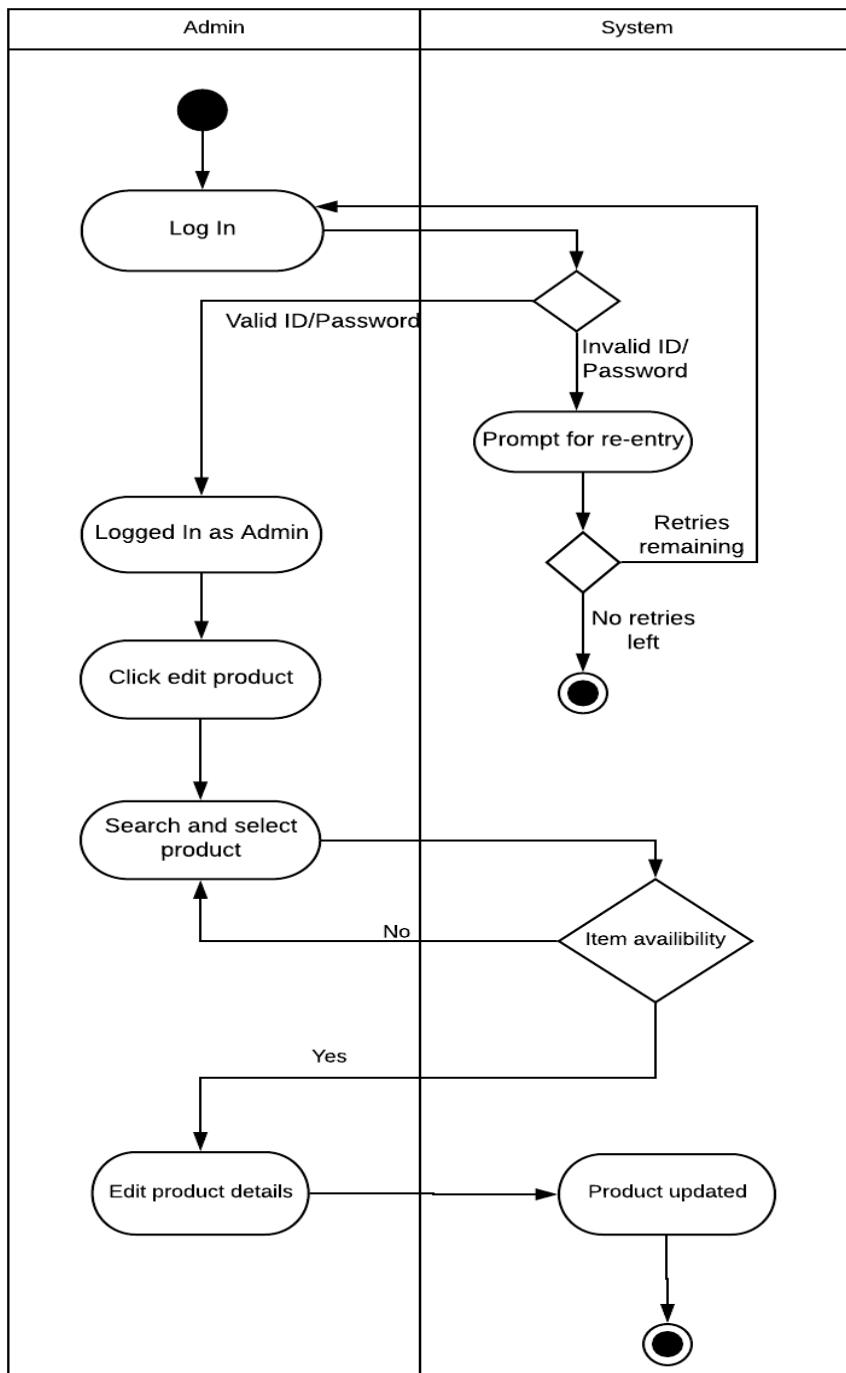


Figure 37: Swimlane Diagram for Edit Product

Use case 15:

Remove Product

Activity Diagram:

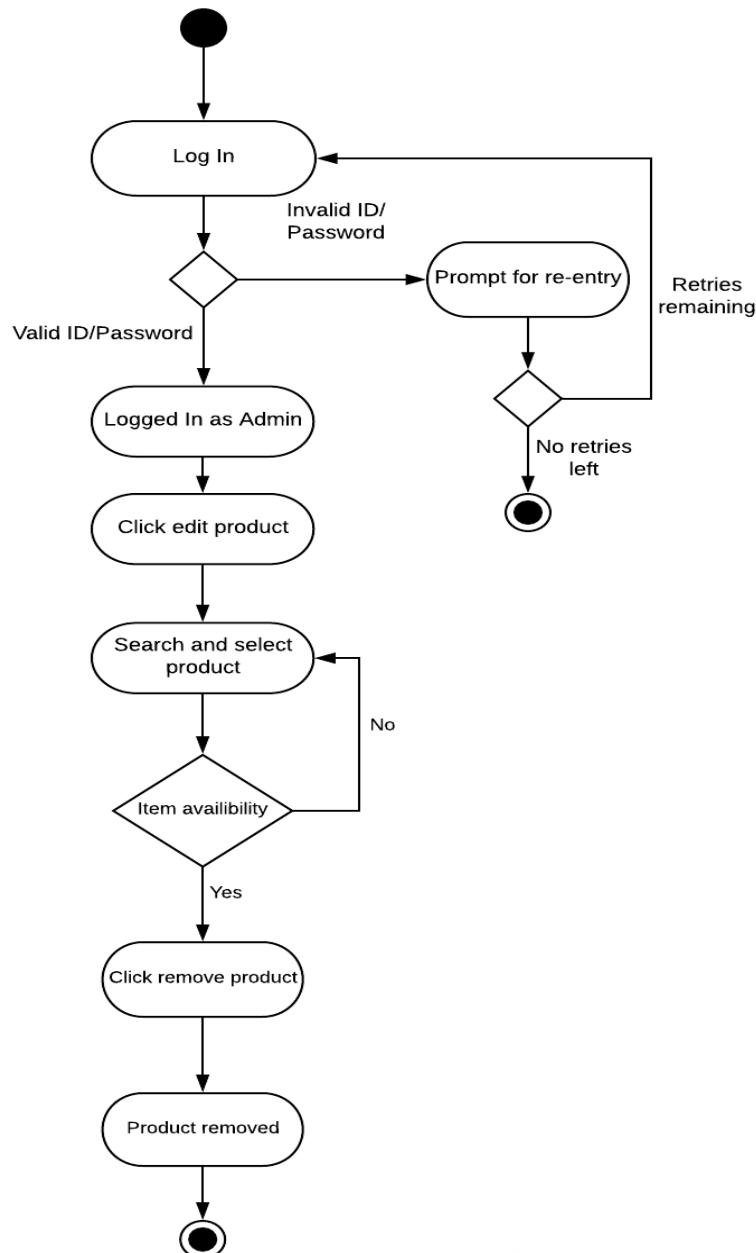


Figure 38: Activity Diagram for Remove Product

Swimlane Diagram:

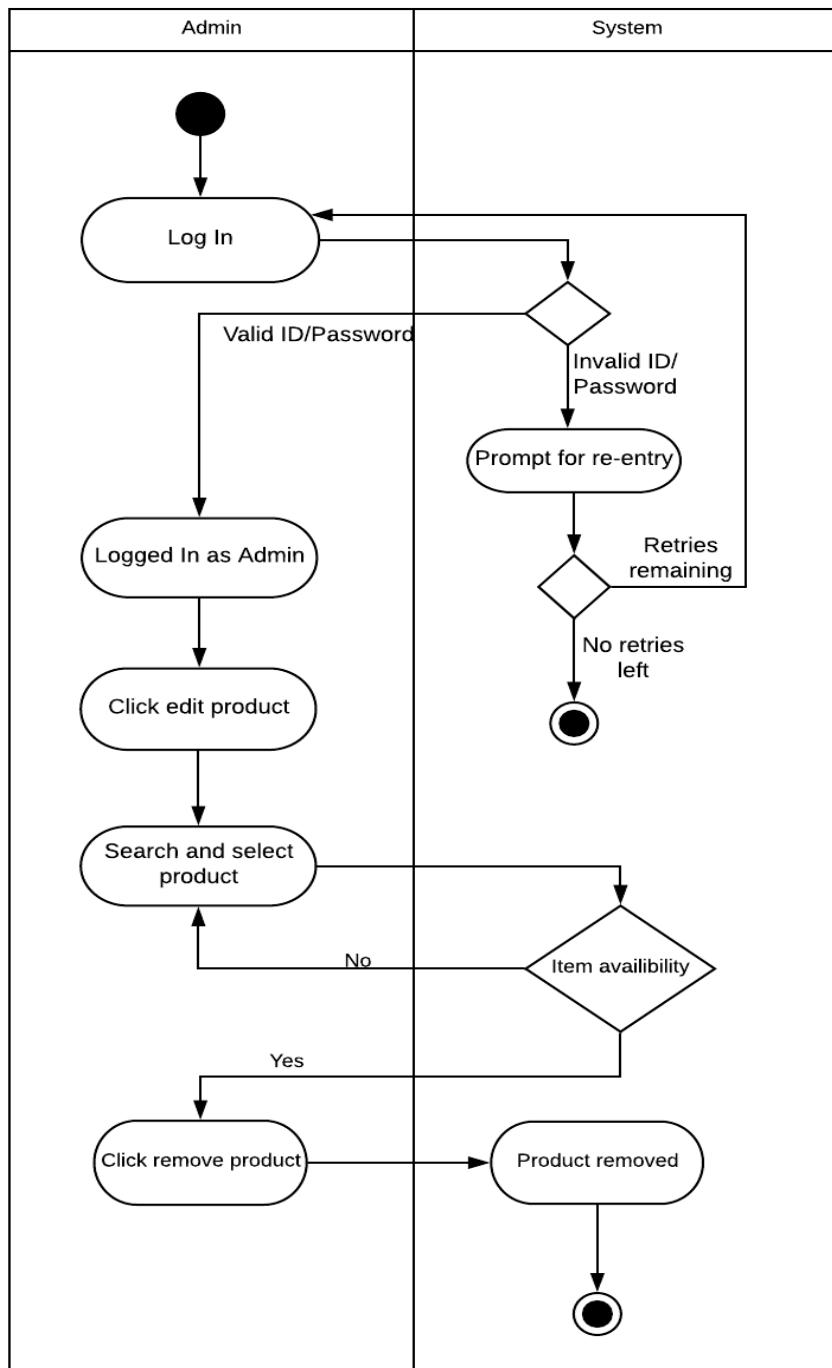


Figure 39: Swimlane Diagram for Remove Product

Use case 16: Manage product advertisement

Activity Diagram:

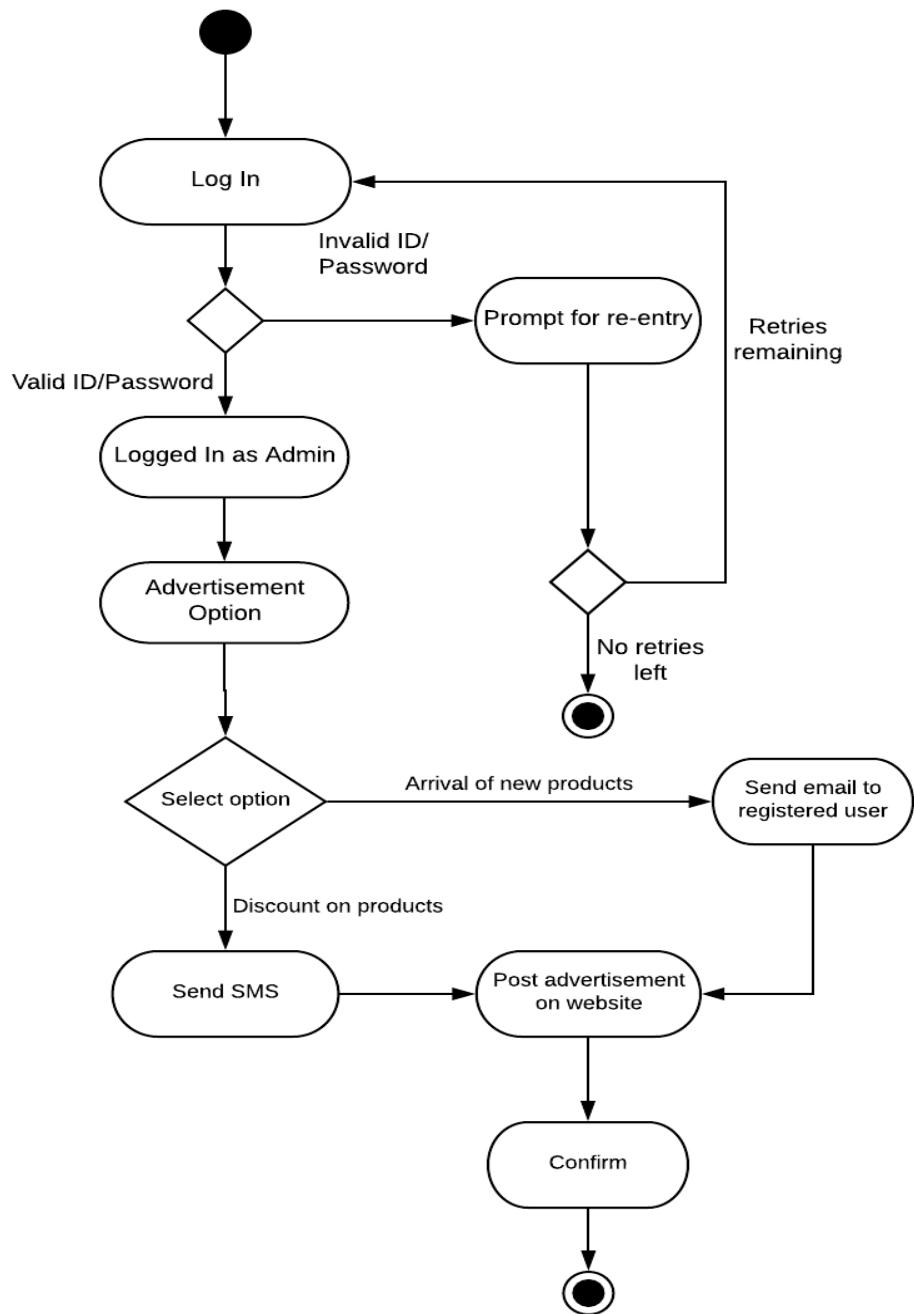


Figure 40: Activity Diagram for Manage Product Advertisement

Swimlane Diagram:

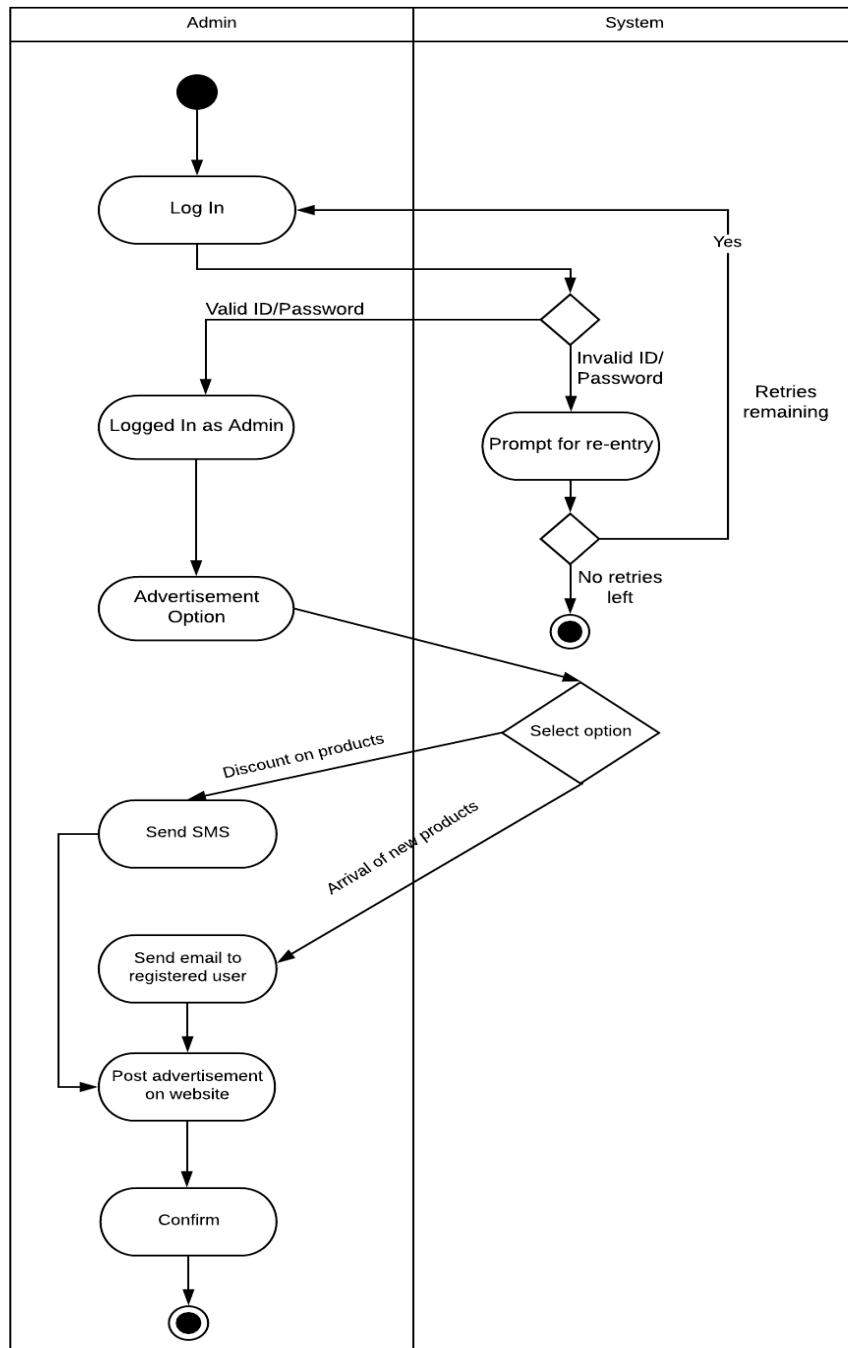


Figure 41: Swimlane Diagram for Manage Product Advertisement

Use case 17: Chat

Activity Diagram:

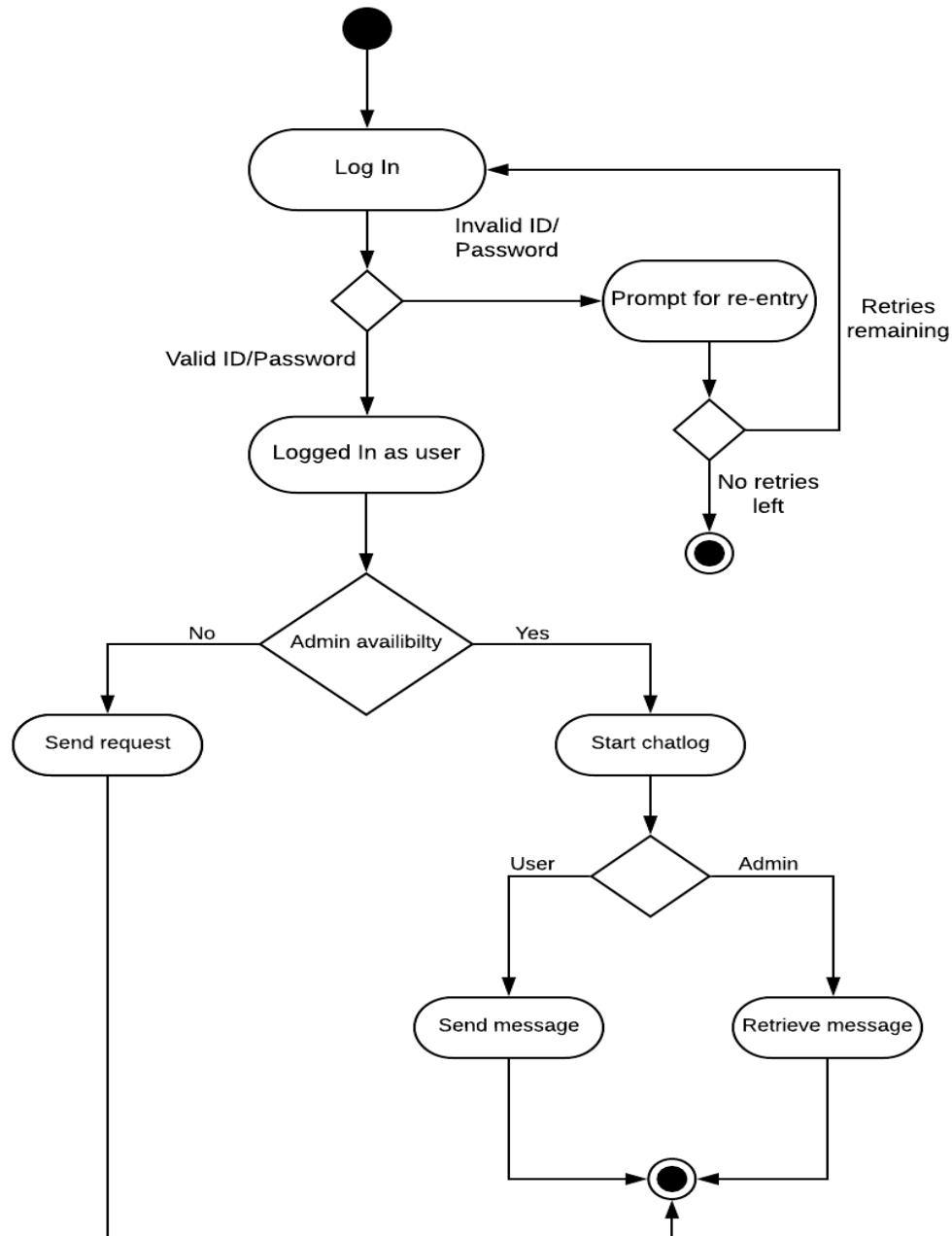


Figure 42: Activity Diagram for Chat

Swimlane Diagram:

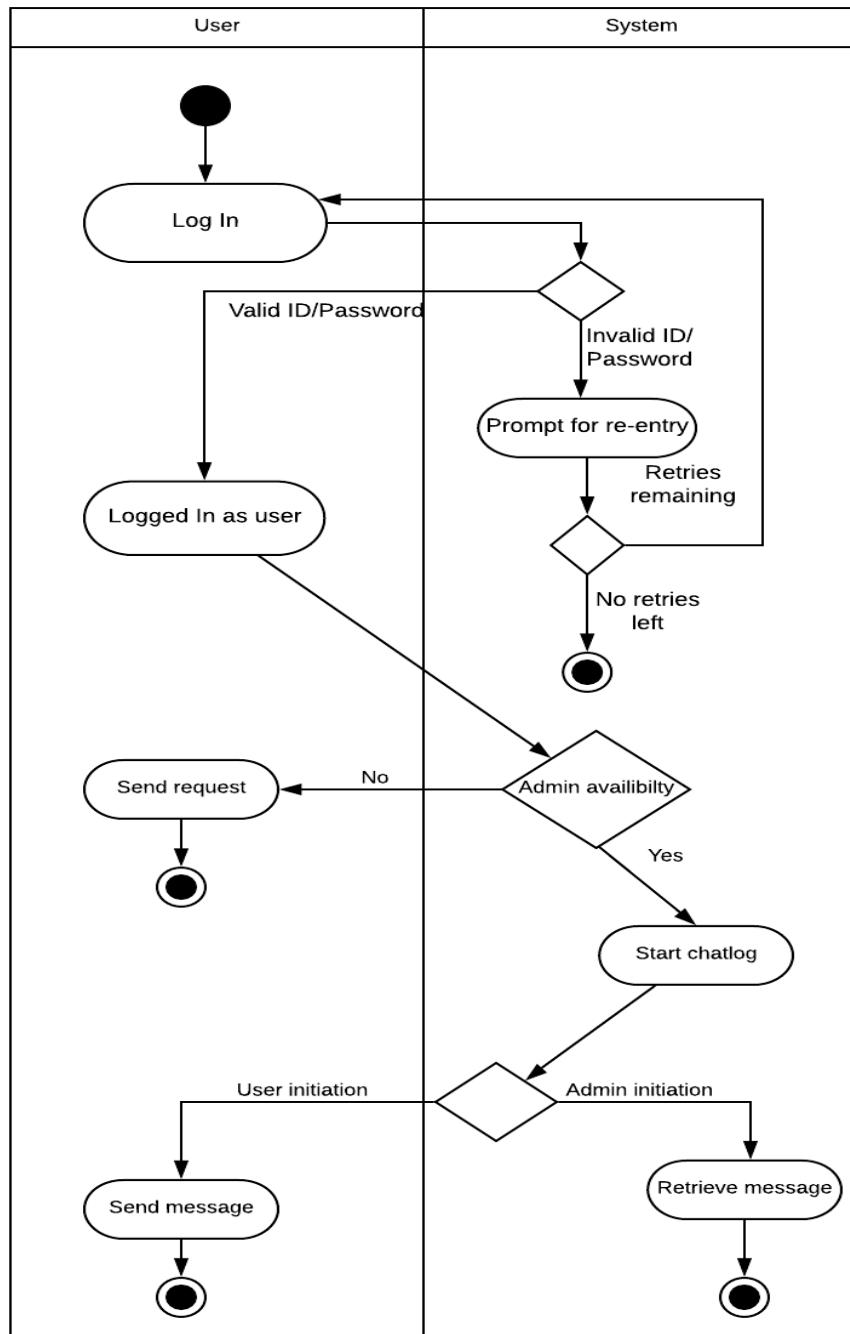


Figure 43: Swimlane Diagram for Chat

Use case 18: Email
Activity Diagram:

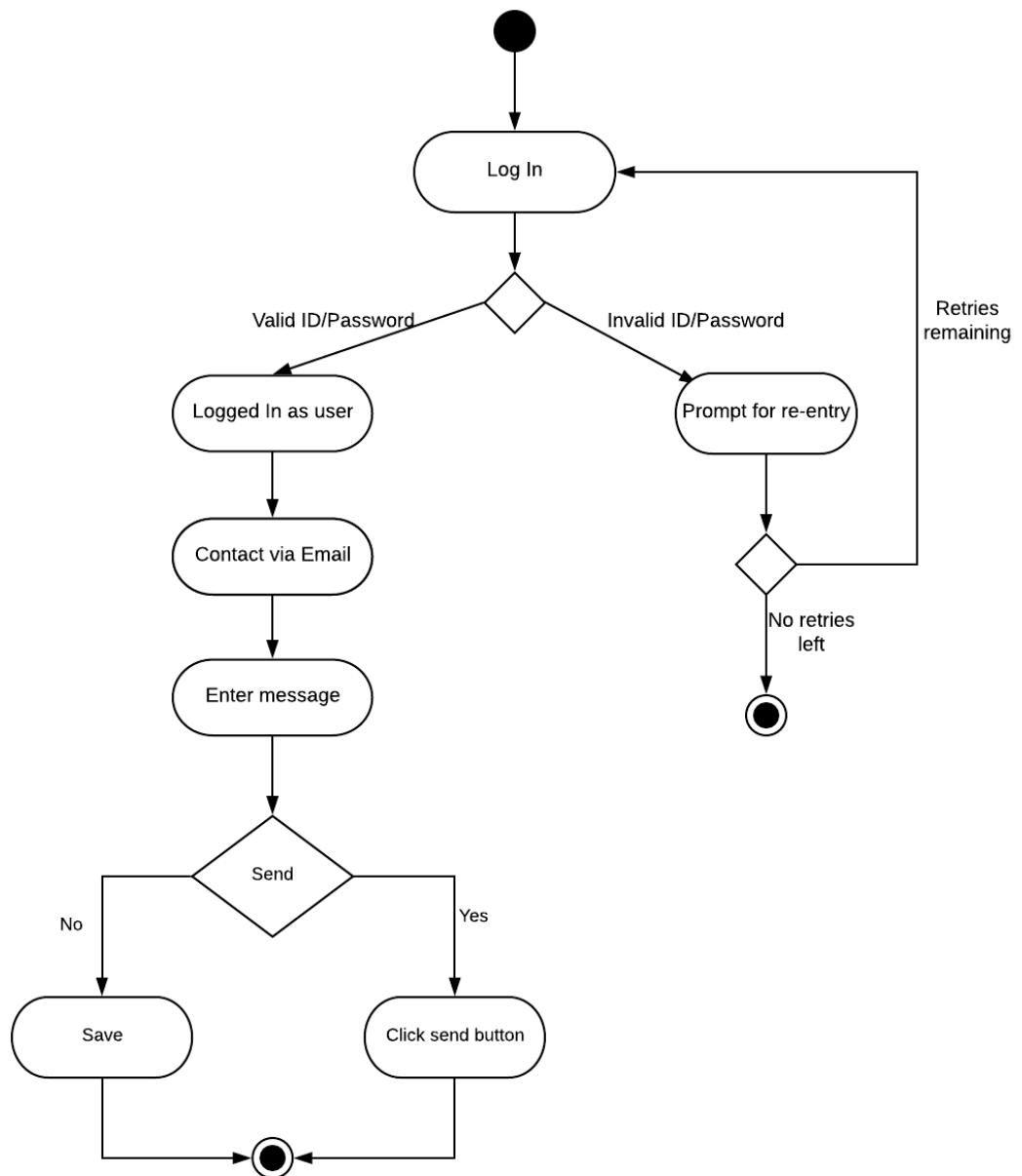


Figure 44: Activity Diagram for Email

Swimlane Diagram:

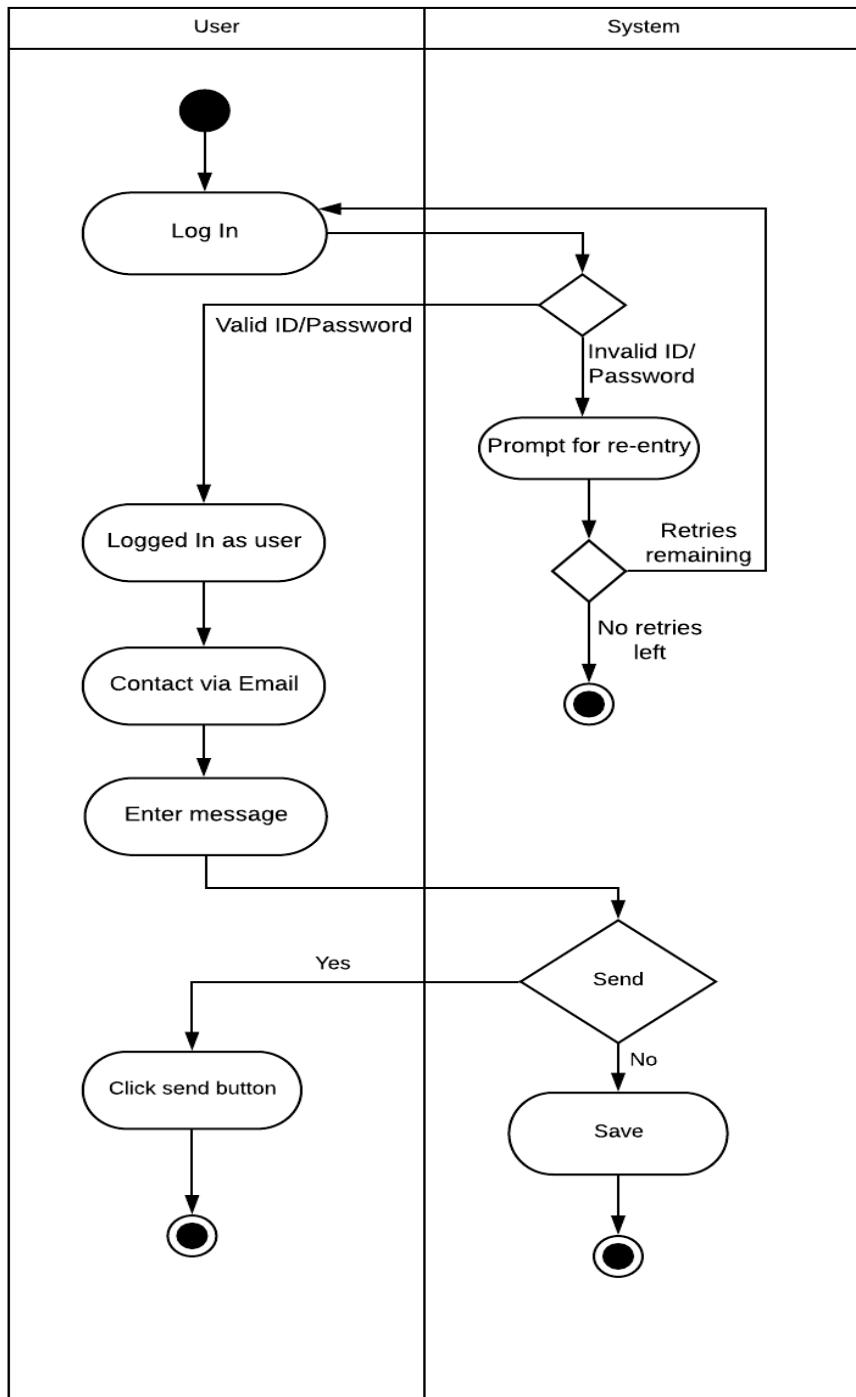


Figure 45: Swimlane Diagram for Email

Use case 19: Helpline

Activity Diagram:

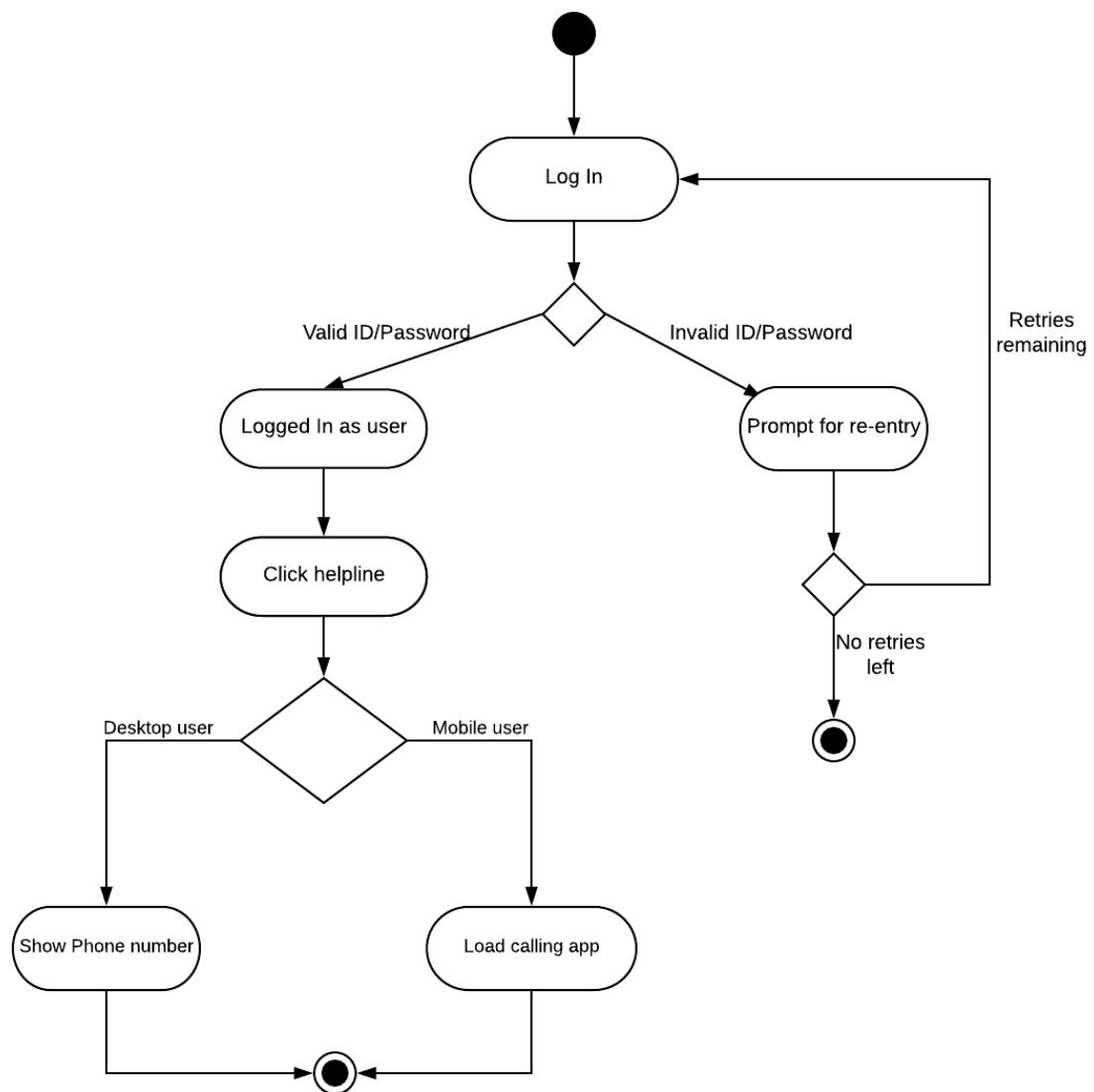


Figure 46: Activity Diagram for Helpline

Swimlane Diagram:

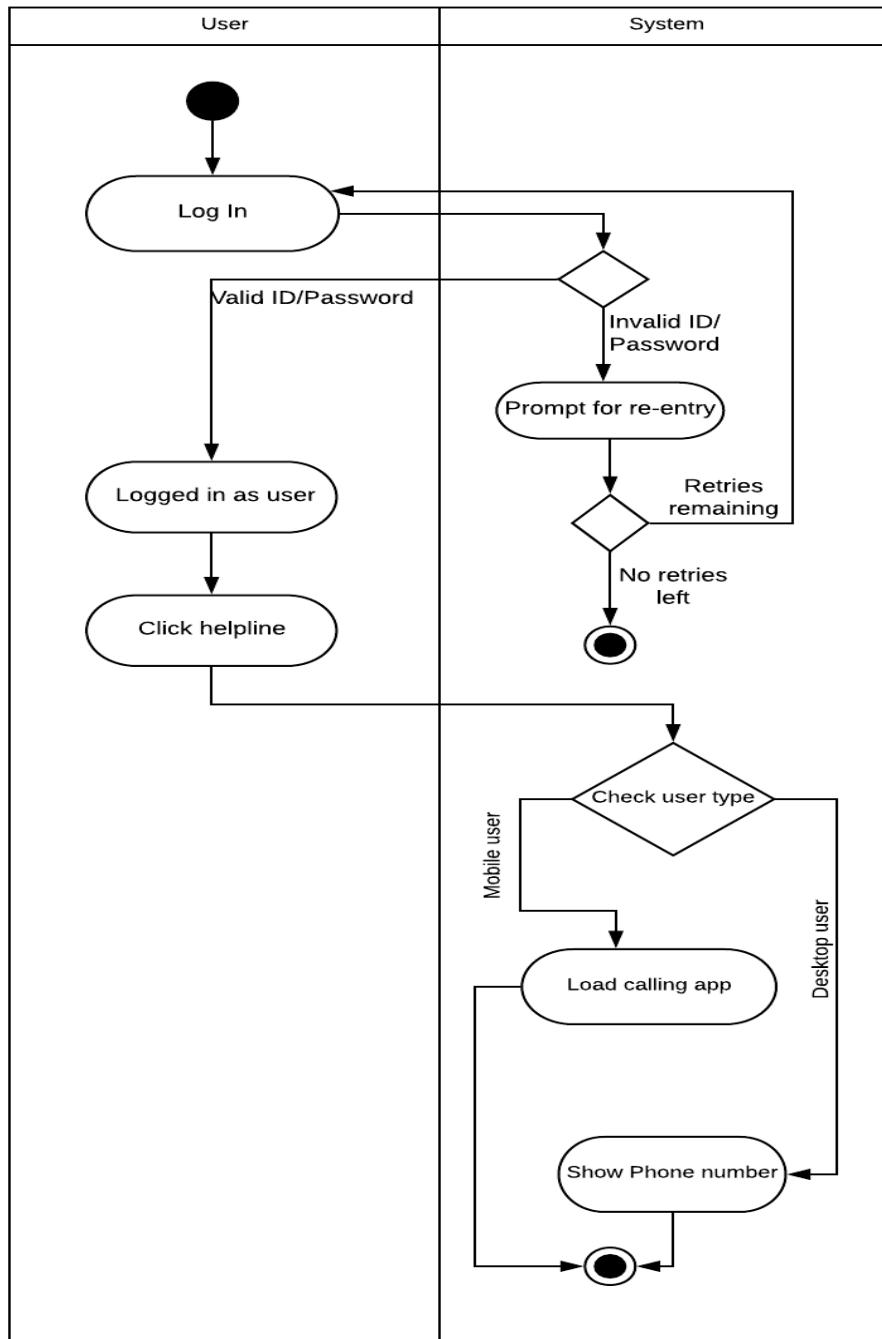


Figure 47: Swimlane Diagram for Helpline

Use case 20: Follow on social media

Activity Diagram:

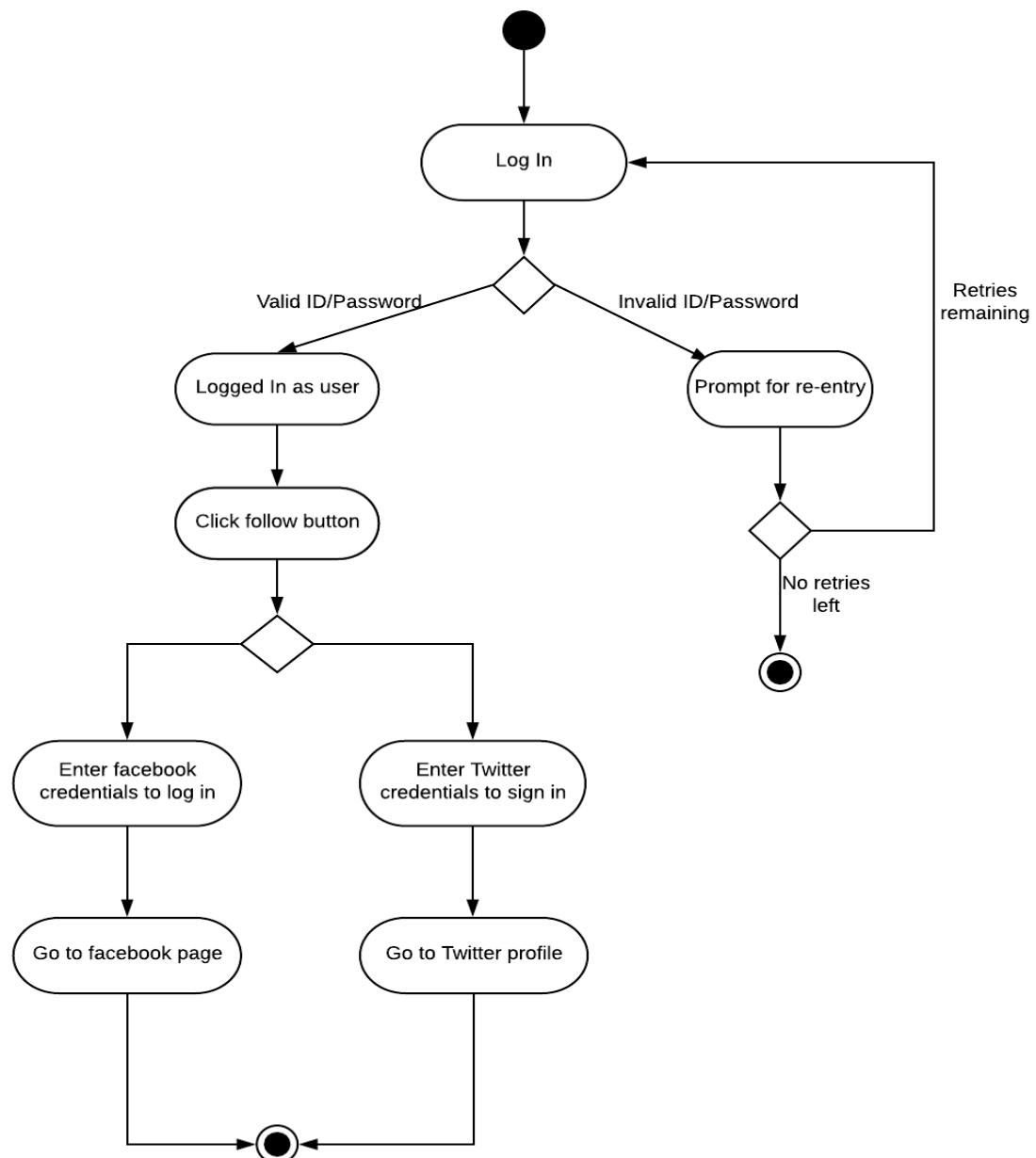


Figure 48: Activity Diagram for Follow on Social Media

Swimlane Diagram:

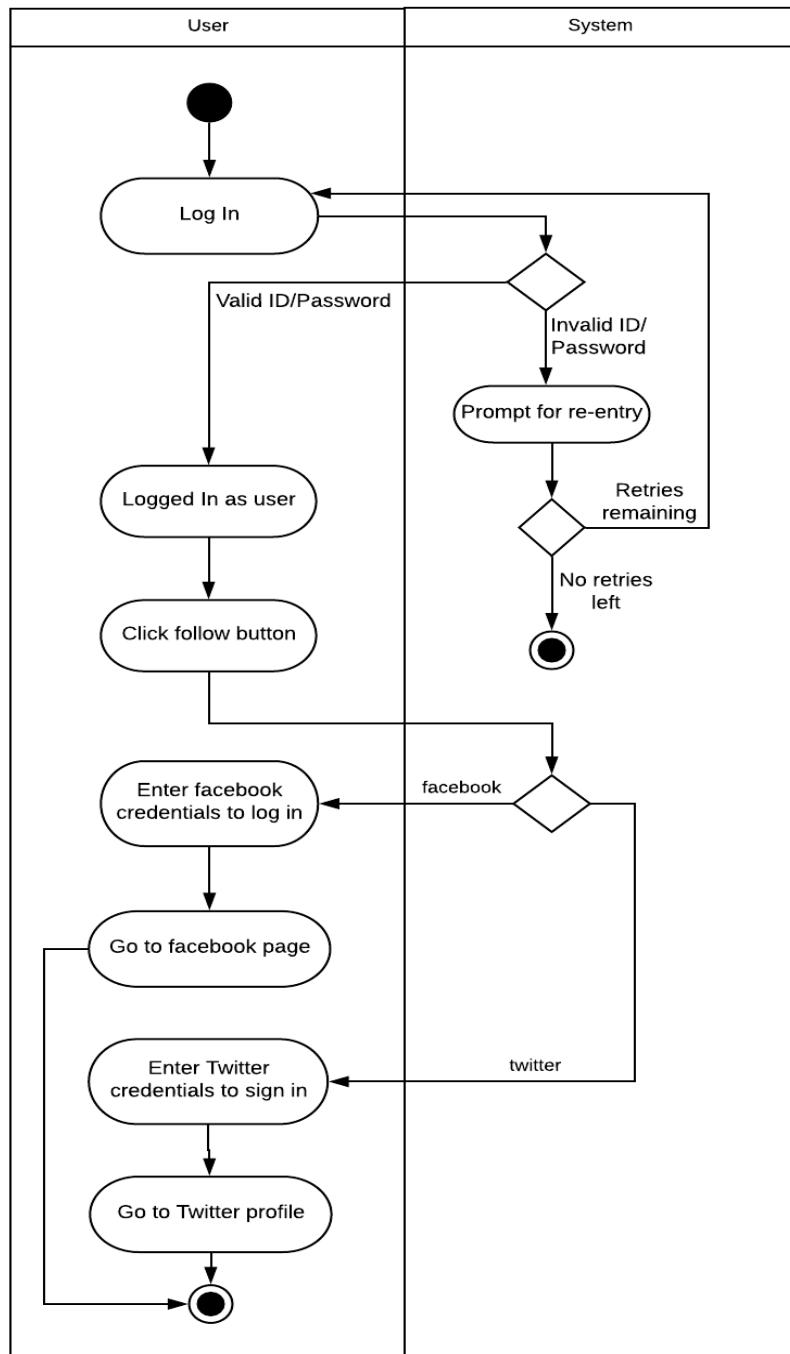


Figure 49: Swimlane Diagram for Follow on Social Media

Chapter 5: Data Modeling

5.1 Data modeling concept

If software requirements include the necessity to create, extend or interact with a database or complex data structures need to be constructed and manipulated, then the software team chooses to create data models as part of overall requirements modeling. The entity-relationship diagram (ERD) defines all data objects that are processed within the system, the relationships between the data objects and the information about how the data objects are entered, stored, transformed and produced within the system.

5.2 Data objects

A data object is a representation of composite information that must be understood by the software. Here, composite information means an information that has a number of different properties or attributes. A data object can be an external entity, a thing, an occurrence, a role, an organizational unit, a place or a structure.

Noun Identification

- All the nouns in the scenario were identified.

Table 2: Noun Identification for data modelling

	NOUN	P/S	Attributes
1	Authentication	S	
2	Customer	S	5
3	System	P	
4	Administrator	S	
5	User	P	
6	Account	P	3
7	Form	S	
8	First name	S	2,4,5,92,51
9	Last name	S	2,4,5,92,51
10	Email	S	2,4,5,51

11	Address	S	2,4,5,52,51,92
12	Password	S	2,4,5
13	Information	S	
14	Verification	S	
15	Sign up	S	
16	Sign in	S	
17	Profile	S	
18	Category	P	
19	Product	P	
20	Product type	P	19
21	View	P	
22	Cache	S	
23	Price	P	19
24	Discount	P	19
25	Searching	P	
26	Keyword	S	25
27	Order	P	
28	Cart	S	
29	Color	P	19
30	Size	P	19
31	Quantity	P	19,27
32	Purchase	P	
33	Confirmation	S	
34	Timestamp	S	
35	Payment	P	
36	SMS	S	
37	Cost	P	
38	Credit	S	
39	Card	S	
40	Customer ID	S	2,109
41	User name	S	2
42	Cancellation	S	
43	Delivery	P	
44	Product ID	S	19,27
45	Rate	S	19
46	Comment	S	
47	Service	P	
48	Quality	P	
49	Review	P	

50	Star	S	45
51	Pathao	P	107
52	Courier	P	107
53	Card no.	S	
54	Bkash	P	35
55	DBBL	P	35
56	Banking	P	
57	Database	S	
58	Product name	S	19
59	Version	S	
60	Advertisement	P	
61	Website	P	
62	Notification	S	
63	Contact	S	92,51
64	Chat	S	
65	Helpline	S	
66	Office	S	
67	Social media	S	
68	Facebook	S	67
69	Twitter	S	67
70	Friends	S	67
71	One	S	50
72	Five	S	50
73	Punctuation	S	
74	Character	S	
75	Length	S	
76	Duplicity	S	
77	Validity	S	
78	Approval	S	
79	Retry	S	
80	Option	P	
81	Customer ID	S	
82	Return	P	
83	Date	P	60,109,27
84	Stock	P	
85	Amount	P	
86	Status	S	109
87	Sale	P	
88	Limit	P	

89	Icon	S	
90	Month	S	
91	Year	S	
92	SA Paribahan	P	107
93	Syntax	S	
94	Kamij	P	19,27
95	Sharee	P	19,27
96	Alphabet	S	
97	Management	S	
98	Delivery date	P	27
99	Courier name	P	107
100	Advertisement ID	S	60
101	Code	S	
102	Event	S	
103	Deadline	P	27
104	File	S	
105	Message	S	
106	Activity	S	
107	Delivery service	S	
108	period	S	60
109	Order summary	S	
110	Notification_id	S	62
111	Via	S	62
112	Data	S	62

Potential Data Objects:

- User: 2,8,9,10,11,12
- System: 6
- Customer: 8-12,40,41
- Administrator: 8,9,10,11,12,40,41
- Product: 20,23,24,44,45,58,94,95
- Searching: 26
- Order: 31,44,83,94,95,98,103
- Rate: 50,71,72
- Payment: 54,55
- Advertisement: 83,100,108
- Delivery Service: 51,52,8-12

- Notification: 110-112
- Order summary: 40,83,86
- Star: 45
- Pathao: 8-12
- Courier: 8-12

Analysis for finalizing Data objects

- User can be separated into Administrator and Customer data object,
- System, searching, rate, payment and star are attributes of other data object. So they are not considerable
- All other data objects can be used as data objects as they have enough importance in the system.

Final Data objects

Table 3: Final Data Objects

1	Customer: customer_id, email, first_name3, last_name, password
2	Administrator: admin_id, email, password, joined_date
3	Product: product_id, rating, stock_amount, price, size, color, product_name
4	Order: Order_id, quantity, status, cost, payment_type
5	Delivery_service: service_id, delivery_destination
6.	Pathao: pathao_id, name, contact_no
7.	Courier: courier_name, address, phone_no
8.	Notification: <u>notification Id</u> , via, data
9.	Advertisement: ad_id, date
10.	Oreder_summary: order_date, total_price, total_quantity

Entity Relationship Diagram

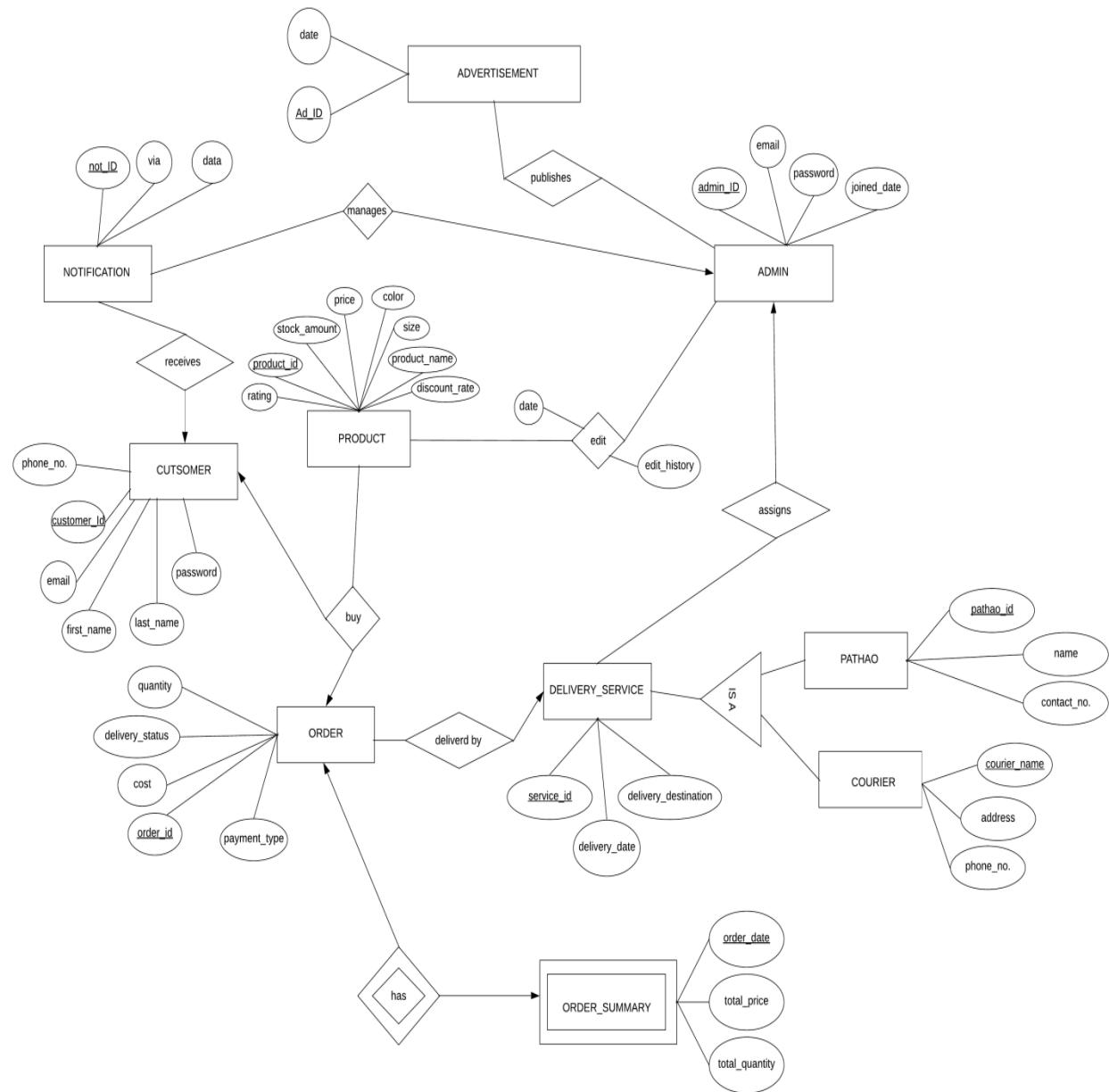


Figure 50: ER diagram of F-commerce based client Management System

Relational Schema

Table 4: Schema for Admin

Admin		
Attribute	Type	Size
<u>Admin_id</u>	Number	30
Email	Varchar2	40
Joined_date	Varchar2	20
Password	Varchar2	10

Table 5: Schema for Customer

Customer		
Attribute	Type	Size
<u>Customer_id</u>	Number	30
Email	Varchar2	40
First_name	Varchar2	20
Last_name	Varchar2	20
Password	Varchar2	10

Table 6: Schema for Product

Product		
Attribute	Type	Size
<u>Product_id</u>	Number	30
<u>Product_name</u>	Varchar2	20
Stock_amount	Number	10
Price	Number	10
Size	Varchar2	10
Color	Varchar2	10
Rating	Number	2
Discount-rate	Number	10

Table 7: Schema for Order

Order		
Attribute	Type	Size
<u>Order_id</u>	Number	30
<u>Customer_id</u>	Number	30
<u>Product_id</u>	Number	30
<u>Service_id</u>	Number	30
Quantity	Number	10
Cost	Number	10
Delivery_status	Varchar2	10
Payment_type	Varchar2	10

Table 8: Schema for Pathao Service

Pathao Service		
Attribute	Type	Size
<u>pathao_id</u>	Number	30
<u>service_id</u>	Number	30
Contact_no	Number	16
Name	Varchar2	20

Table 9: Schema for Courier Service

Courier Service		
Attribute	Type	Size
<u>Service_id</u>	Number	30
Courier_name	Number	30
Address	Varchar2	30
Phone_no	Number	16

Table 10: Schema for Delivery_Service

Delivery_service		
Attribute	Type	Size
<u>Service_id</u>	Number	30
admin_id	Number	30
Delivery_destination	Varchar2	50
Delivery_date	Varchar2	20

Table 11: Schema for Notification

Notification		
Attribute	Type	Size
<u>notification_id</u>	Number	30
Customer_id	Number	30
admin_id	Number	30
Via	Varchar2	30
Data	Varchar2	50

Table 12: Schema for Order Summary

Order_summary		
Attribute	Type	Size
<u>order_id</u>	Number	30
<u>Order_date</u>	Varchar2	20
Total_price	Number	10
Total_quantity	Number	10

Table 13: Schema for Advertisement

Advertisement		
Attribute	Type	Size
<u>ad_id</u>	Number	30
Date	Number	30
Product_id	Number	30

Table 14: Schema for Advertisement_publish

Advertisement_publish		
Attribute	Type	Size
<u>ad_id</u>	Number	30
<u>admin_id</u>	Number	30

Table 15: Schema for Product_edit

Product_edit		
Attribute	Type	Size
<u>admin_id</u>	Number	30
<u>Product_id</u>	Number	30
Date	Varchar2	20
Edit history	Varchar2	50

Chapter 6: Class Based Modeling

6.1 Class Based Modeling Concept

Class-based modeling represents the objects that the system will manipulate, the operations that will be applied to the objects, relationships between the objects and the collaborations that occur between the classes that are defined.

6.2 General Classification

To identify the potential classes, nouns were selected from the solution space of the story. These were then characterized in seven general classifications. The seven general characteristics are as follows:

1. External entities
2. Things
3. Events
4. Roles
5. Organizational units
6. Places
7. Structures

Following are the specifications of the nouns according to the general classifications.

Table 16: General Classifications of Nouns

No	NOUN	GC
1	Authentication	3,5
2	Customer	4,5,7
3	System	4,5
4	Administrator	4,5,7
5	User	4,5,7

6	Account	4,5
7	Form	
8	First name	
9	Last name	
10	Email	
11	Address	
12	Password	
13	Information	
14	Verification	
15	Sign up	3
16	Sign in	3
17	Profile	
18	Category	
19	Product	2,5,7
20	Product type	
21	View	
22	Cache	
23	Price	
24	Discount	
25	Searching	2,3
26	Keyword	
27	Order	2,5,7
28	Cart	
29	Color	
30	Size	
31	Quantity	
32	Purchase	3
33	Confirmation	

34	Timestamp	
35	Payment	2,3,5,7
36	SMS	2
37	Cost	
38	Credit	
39	Card	
40	Customer ID	
41	User name	
42	Cancellation	
43	Delivery	3,7
44	Product ID	
45	Rate	3
46	Comment	3
47	Service	3
48	Quality	
49	Review	
50	Star	
51	Pathao	
52	Courier	
53	Card no.	
54	Bkash	
55	DBBL	
56	Banking	
57	Database	1,5,6
58	Product name	
59	Version	
60	Advertisement	
61	Website	

62	Notification	2,3,5,7
63	Contact	
64	Chat	
65	Helpline	
66	Office	
67	Social media	2,3,7
68	Facebook	
69	Twitter	
70	Friends	
71	One	
72	Five	
73	Punctuation	
74	Character	
75	Length	
76	Duplicity	
77	Validity	
78	Approval	
79	Retry	
80	Option	
81	Customer ID	
82	Return	
83	Date	
84	Stock	
85	Amount	
86	Status	
87	Sale	
88	Limit	
89	Icon	

90	Month	
91	Year	
92	SA Paribahan	
93	Syntax	
94	Kamij	
95	Sharee	
96	Alphabet	
97	Management	3,5,7
98	Delivery date	
99	Courier name	
100	Advertisement ID	
101	Code	
102	Event	
103	Deadline	
104	File	
105	Message	2,3
106	Activity	3,5,7
107	Delivery service	
108	Period	
109	Order summary	
110	Notification_id	
111	Via	
112	Data	

6.3 Selection Criteria

The potential classes were then selected as classes by six Selection Criteria. A potential class becomes a class when it fulfills all six characteristics.

1. Retained Information
2. Needed Services
3. Multiple Attributes
4. Common attributes
5. Common operations
6. Essential requirements

Table 17: Selection Criteria of Potential Classes

No.	Noun	AC
1	Account	1,2,3
2	User	1,2,3, 4,5
3	Admin	1,2,3, 4,5
4	Customer	1,2,3, 4,5
5	System	1,2,3
6	Product	2,3,4, 5
7	Notification	2,3,4, 5
8	Database	6
9	Search	1,2,3
10	Activity	1,2,3
11	Payment	3,4,5
12	Delivery Service	3,4,5
13	Order	3,4,5
14	Social Media	1,2,4

6.4 Associate Noun and Verb Identification

The nouns and the verbs associated with the potential classes are identified to find out the attributes and methods of each class.

Table 18: Associate Noun and Verbs

No	Potential Class	Noun	Verb
1	Account	Verification code, user	Log in, sign up, log out, lock account, send verification code
2	User	Id, first name, last name, email, phone number,	Requires an account, can log in to the system, sends message, receives message, search, update user information, recover his/her password
3	Admin	address, message, status(av ailable or not)	Approves request, can add product, can edit product, remove product, order product, receive product, advertise product, remove advertise product, block customer, change type, inputs type of shop management, identifying the needed products, can monitor order, can manage discount and discounted products, change discount, manage social media

4	Customer	Type, amount paid online, total amount paid, message	Can search product, View or buy products online, can rate and comment products, share products with friends, can chat with admin and edit own information
5	System	Product, user.	Show popular product(s), show viewing options, show searched items, can generate SMS and send SMS, set connection for chat, set items to add to cart.
6	Product	Id, name, quantity, price, color, discount, insufficient quantity, rate, advertisement	Quantity will be updated, editing, product details, product color and price will be updated, discount will be set with each product advertisement and rating by users will also be updated
7	Notification	Id, receiver, type	Will be generated and sent
8	Database	User, product	Will be stored, will be updated, will be removed

9	Search	User, product, date. Keyword, price	Search by keyword, search by popular, search type wise, search recommended, search by price and discounted price
10	Order	Quantity,Product, Price,Customer	calculate total price of product(s),make order summary, set an order date and ID
11	Activity	Product,Admin,Customer	Store authentication information,store ratings and comments of product(s), update product information, store advertisement details and store order information
12	Delivery Service	Destination, date, delivery service info	Sets destination, sets date, provide delivery service

13	Payment	Payment method, payment info	Selects payment method, stored payment info
14	Social Media	Connection status	Establishes connection with social media, stores social media information

6.5 Attribute Selection

Table 19: Attribute Selection of Classes

No	Potential Class	Noun
1	Account	Verification code User
2	User	Id first name last name email phone number

3	Admin	Address message status(available or not)
4	Customer	Type amount paid online total amount paid message
5	System	Product User
6	Product	Id Name Quantity Price Color Discount Insufficient quantity Rate Advertisement
7	Notification	ID Receiver Type
8	Database	User Product

9	Search	User Product Date Keyword Price
10	Order	Quantity Product Price Customer
11	Activity	Product Admin Customer
12	Delivery Service	Destination Date Delivery service info

13	Payment	Payment method Payment info
14	Social Media	Connection status

6.6 Methods Identification:

Table 20: Methods of Class

No.	Class	Methods
1.	Account	<ul style="list-style-type: none"> • signUp() • login() • signOut() • lockAccount() • sendVerificationCode() • recoverPassword() • verifyEmail() • verifyUser() • manageForgotPassword()
2	User	<ul style="list-style-type: none"> • setCustomerID() • getCustomerID() • setFirstName() • getFirstName() • setLastName()

		<ul style="list-style-type: none"> • getLastname() • setEmail() • getEmail() • setPhoneNo() • getPhoneNo()
3	Admin	<ul style="list-style-type: none"> • approveRequest() • chat() • addProduct() • removeProduct() • editProduct() • advertiseProduct() • monitorOrder() • manageDiscount() • editProfile() • manageDeliveryService() • manageSocialMedia()
4	Customer	<ul style="list-style-type: none"> • setCustomerID() • getCustomerID() • setFirstName() • getFirstName() • setLastName() • getLastName() • setEmail() • getEmail() • setPhoneNo() • getPhoneNo() • setAddress() • getAddress() • receiveMessages() • chat() • orderProduct() • purchase()

		<ul style="list-style-type: none"> • editProfile() • comment() • rateProduct() • shareWithFriends()
5	System	<ul style="list-style-type: none"> • viewOptions() • showSearchedItem() • generateSMS() • sendSMS() • setConnection() • addToCart()
6	Product	<ul style="list-style-type: none"> • setProductID() • getProductID() • getProductName() • setProductName() • setQuantity() • getQuantity() • setColor() • getColor() • setPrice() • getPrice() • setDiscount() • getDiscount() • attachAdvertisement() • calculateDiscountedPrice() • setRating() • getRating()
7	Notification	<ul style="list-style-type: none"> • setNotificationID() • getNotificationID() • getSender() • setSender() • setReceiver() • getReceiver()

		<ul style="list-style-type: none"> • getDescription() • setDescription() • sendNotification() • generateNotification()
8	Database	<ul style="list-style-type: none"> • insertInfo() • updateInfo() • deleteInfo() • retrieveInfo()
9	Search	<ul style="list-style-type: none"> • searchbykeywords() • searchPopular() • searchTypewise() • searchRecommended() • searchbyprice() • searchDiscountedPrice()
10	Order	<ul style="list-style-type: none"> • setOrderID() • getOrderID() • makeOrderSummery() • getOrderDate() • setOrderDate() • manageCancelOrder()
11	Activity	<ul style="list-style-type: none"> • storeAuthenticationInfo() • storeRatingAndComment() • storeProductModificationInfo() • storeAdvertisementRecord() • storeOrderInfo()
12	Delivery Service	<ul style="list-style-type: none"> • setDeliveryDestination() • getDeliveryDestination() • manageDeliveryDate() • setServiceID() • getServiceID()

		<ul style="list-style-type: none"> • storePathaoDeliveryInfo() • storeCourierDeliveryInfo()
13	Payment	<ul style="list-style-type: none"> • payViaCreditCard() • payViaBKash() • payViaDBBL() • storePaymentInfo() • storeCashOnDeliveryInfo()
14	Social Media	<ul style="list-style-type: none"> • establishConnection() • connectWithFacebook() • connectWithTwitter()

6.7 Finalizing Classes

To identify the final classes, it was required to check if there can be any hierarchies, merges, additional attributes, methods or classes. These identifications are given below:

1. There are two types of users in the system. So the user class could be the parent class of the admin class and customer class. But, as the customer class and the admin class has different attributes and methods there is no need of user class.
2. System and User classes will have an additional method (viewOptions()) so that it can be used to get to other methods.

6.8 Class Cards

Table 21: Class Card of Customer

Customer	
Attributes	Methods
Type amount paid online	<ul style="list-style-type: none"> • setCustomerID() • getCustomerID() • setFirstName()

total amount paid message	<ul style="list-style-type: none"> • getFirstName() • setLastName() • getLastname() • setEmail() • getEmail() • setPhoneNo() • getPhoneNo() • setAddress() • getAddress() • receiveMessegges() • chat() • signOut() • orderProduct() • browseProduct() • showOrderList() • addTocart() • SearchProduct() • purchase() • editProfile() • comment() • rateProduct() • shareWithFriends()
Responsibilities	Collaborator
Customer Information Storing	Database
Customer authentication	Account
Connection for sharing	Social Media
Shopping	Order
Viewing product	Searching

Table 22: Class Card of Admin

Administrator	
Attributes	Methods
Address Message status(available or not)	<ul style="list-style-type: none"> approveRequest() chat() signOut() addProduct() removeProduct() editProduct() advertiseProduct() monitorOrder() manageDiscount() editProfile() manageDeliveryService() manageSocialMedia() approveCancelOrder()
Responsibilities	Collaborator
Admin Authentication	Account
Edit product Info	Product
Delivery of Product	Delivery Service

Table 23: Class Card of Database

Database	
Attributes	Methods
User Product	<ul style="list-style-type: none"> insertInfo() updateInfo() deleteInfo() retrieveInfo() sendConfirmation()
Responsibilities	Collaborator

Store product Info	Product
Store admin Information	Admin
Store customer Information	Customer
Product Selected	Order

Table 24: Class Card of Product

Product	
Attributes	Methods
Id	<ul style="list-style-type: none"> • setProductID() • getProductID() • getProductName() • setProductName() • setQuantity() • getQuantity()
Name	<ul style="list-style-type: none"> • setProductName() • setQuantity() • getQuantity()
Quantity	<ul style="list-style-type: none"> • setQuantity() • getQuantity()
Price	<ul style="list-style-type: none"> • setColor() • getColor() • setPrice() • getPrice() • setDiscount() • getDiscount()
Color	<ul style="list-style-type: none"> • setPrice() • getPrice()
Discount	<ul style="list-style-type: none"> • attachAdvertisement() • calculateDiscountedPrice() • setRating() • getRating()
Insufficient quantity	<ul style="list-style-type: none"> • showPopularProduct() • showRecommendedProduct()
Rate	
Advertisement	
Responsibilities	Collaborator
Stores Product Info	Database
Edit Product Info	Admin
Manage activity	Activity

Table 25: Class Card of System

System	
Attributes	Methods
Product User	<ul style="list-style-type: none"> viewOptions() showSearchedItem() generateSMS() sendSMS() setConnection() manageCart() manageNotification() checkCancellationAvailability()
Responsibilities	Collaborator
Login	Social Media
Check Destination	Delivery service
Get searched Items	Searching
Generate Notifications	Notification

Table 26: Class Card of Account

Account	
Attributes	Methods
<ul style="list-style-type: none"> User Verification Code 	<ul style="list-style-type: none"> signUp() login() signOut() lockAccount() sendVerificationCode() recoverPassword() verifyEmail() verifyUser() manageForgotPassword()
Responsibilities	Collaborator

Authenticate Admin	Admin
Authenticate Customer	Customer
Manage activity	Activity

Table 27: Class Card of Activity

Activity	
Attributes	Methods
Product	<ul style="list-style-type: none"> storeAuthenticationInfo() storeRatingAndComment() storeProductModificationInfo() storeAdvertisementRecord() storeOrderInfo()
Admin	
Customer	
Responsibilities	Collaborator
Take info from user	Account
Manage product activity	Product

Table 28: Class Card of Searching

Searching	
Attributes	Methods
User	<ul style="list-style-type: none"> searchbykeywords() searchPopular() searchTypewise() searchRecommended() searchbyprice() searchDiscountedPrice()
Product	
Date	
Keyword	
Price	
Responsibilities	Collaborator
Generating Search	System
Search for Product	Customer
Get Products	Product

Table 29: Class Card of Payment

Payment	
Attributes	Methods
Payment method Payment info	<ul style="list-style-type: none">• payViaCreditCard()• payViaBKash()• payViaDBBL()• storePaymentInfo()• storeCashOnDeliveryInfo()
Responsibilities	Collaborator
Calculate payment as per Order	Order

Table 30: Class Card of Notification

Notification	
Attributes	Methods
ID Receiver Type	<ul style="list-style-type: none">• setNotificationID()• getNotificationID()• getSender()• setSender()• setReceiver()• getReceiver()• getDescription()• setDescription()• sendNotification()• generateNotification()
Responsibilities	Collaborator
Generate Notification	System
Gets Notification	User

Table 31: Class Card of SocialMedia

SocialMedia	
Attributes	Methods
Connection status	<ul style="list-style-type: none">• establishConnection()• connectWithFacebook()• connectWithTwitter()
Responsibilities	Collaborator
Verifies info	Admin
Login to Social Media	System, Customer

Table 32: Class Card of DeliveryService

DeliveryService	
Attributes	Methods
Destination	<ul style="list-style-type: none">• setDeliveryDestination()• getDeliveryDestination()• manageDeliveryDate()
Date	
Delivery service info	<ul style="list-style-type: none">• setServiceID()• getServiceID()• storePathaoDeliveryInfo()• storeCourierDeliveryInfo()
Responsibilities	Collaborator
Set Delivery Service	Admin
Get Delivered Products	Customer
Set Destination	Order

Table 33: Class Card of Order

Order	
Attributes	Methods
Quantity Product Price Customer	<ul style="list-style-type: none"> • setOrderID() • getOrderID() • makeOrderSummery() • getOrderDate() • setOrderDate() • manageCancelOrder() • calculateOrderPrice()
Responsibilities	Collaborator
Order for product	Customer, Product
Calculate Total Price to pay	Payment
Selected via Order	Delivery service

6.9 UML Diagram

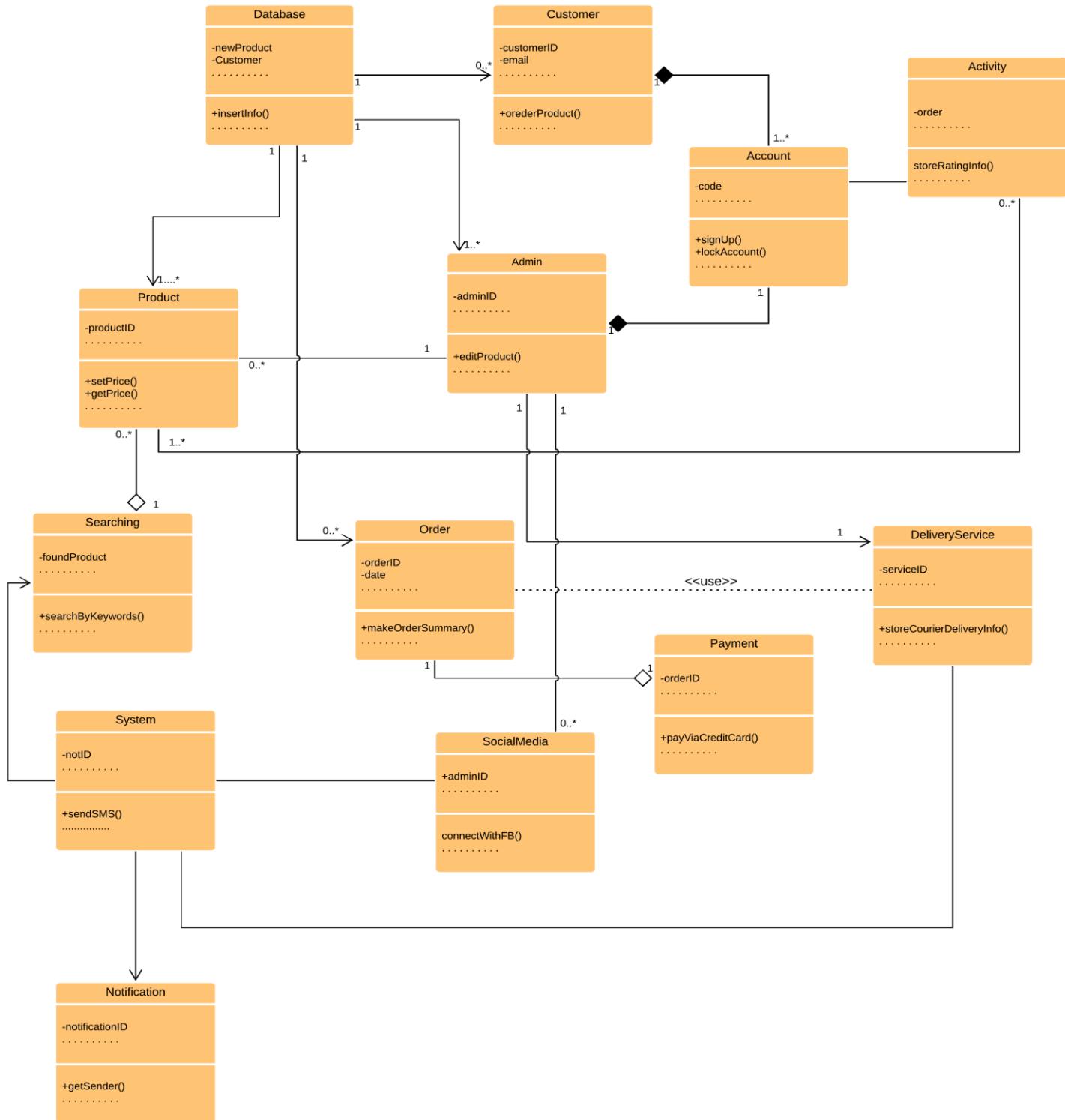


Figure 51: UML Diagram of F-Commerce Based Client Management System

Chapter 7: Flow-Oriented Model

This chapter focuses on the flow oriented modeling.

7.1 Introduction

Although data flow-oriented modeling is perceived as an outdated technique by some software engineers, it continues to be one of the most widely used requirements analysis notations in use today. It provides additional insight into system requirements and flow.

7.2 Data Flow Diagram (DFD)

The DFD takes an input-process-output view of a system. In the figures, data objects are represented by labeled arrows and transformations are represented by circles.

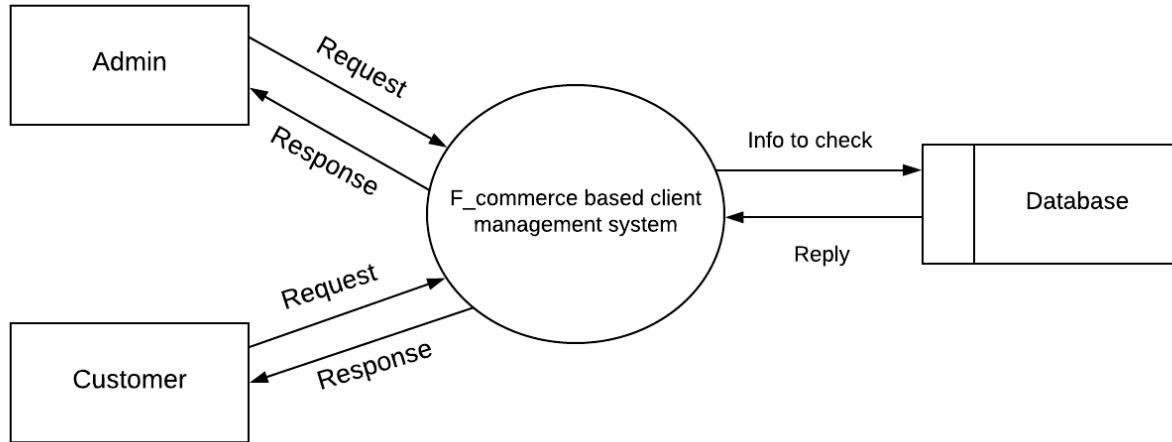


Figure 52: Level 0 for F-commerce based client management system

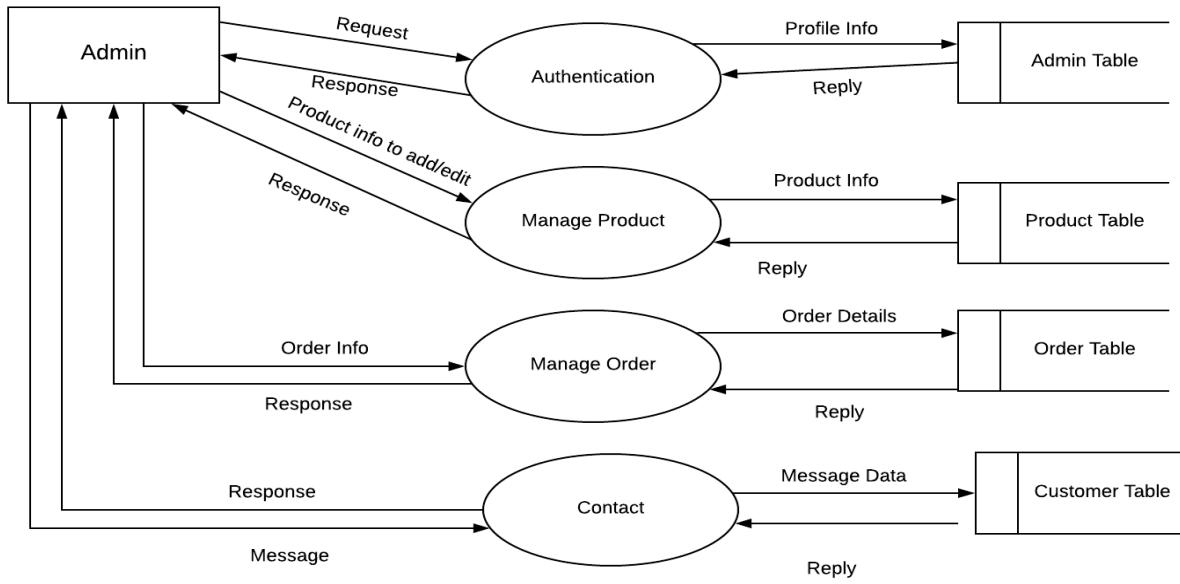


Figure 53: Level 1.1 for F-commerce based client management system

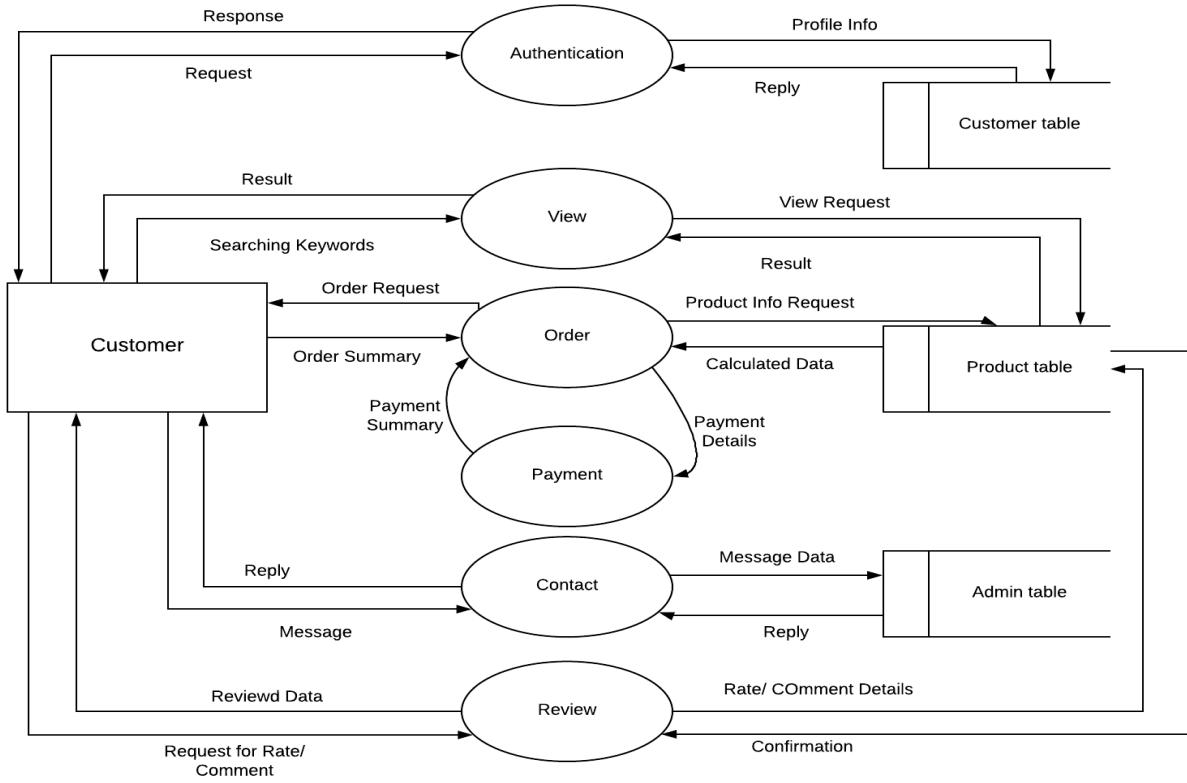


Figure 54: Level 1.2 for F-commerce based client management system

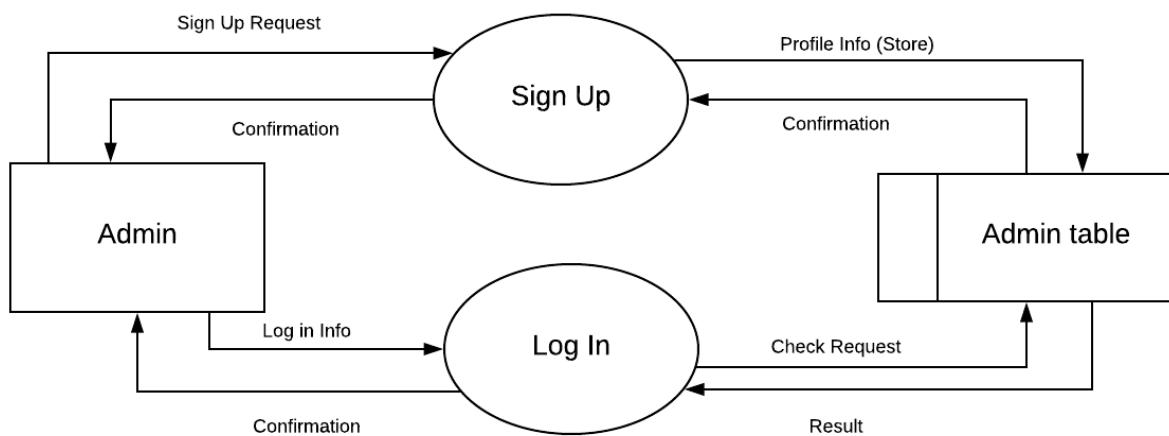


Figure 55: Level 2.1 for F-commerce based client management system

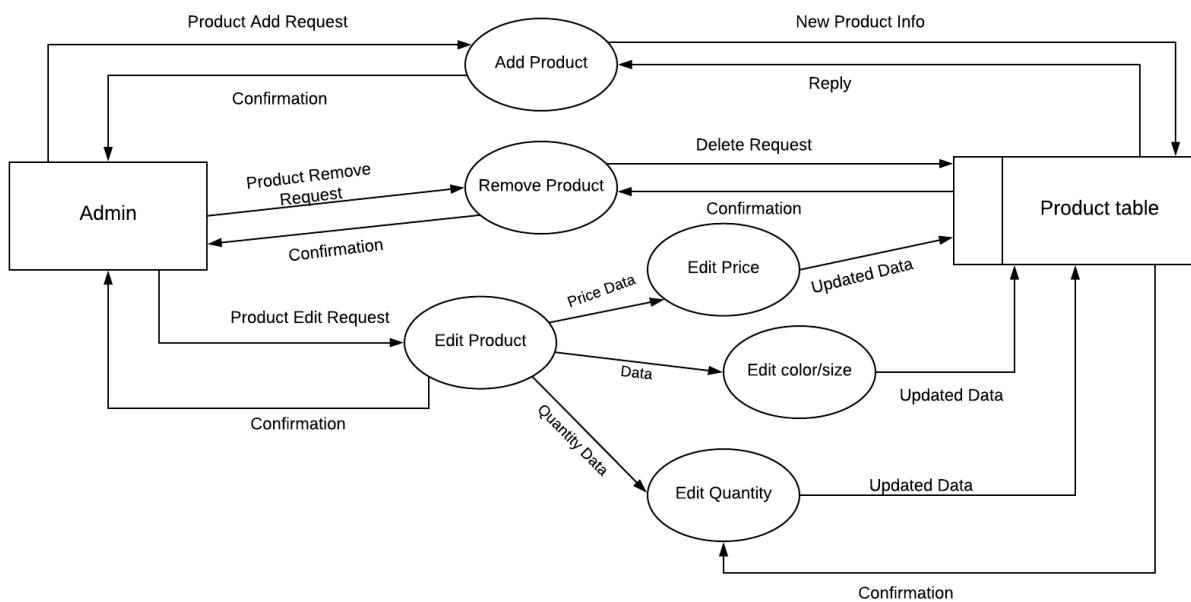


Figure 56: Level 2.2 for F-commerce based client management system

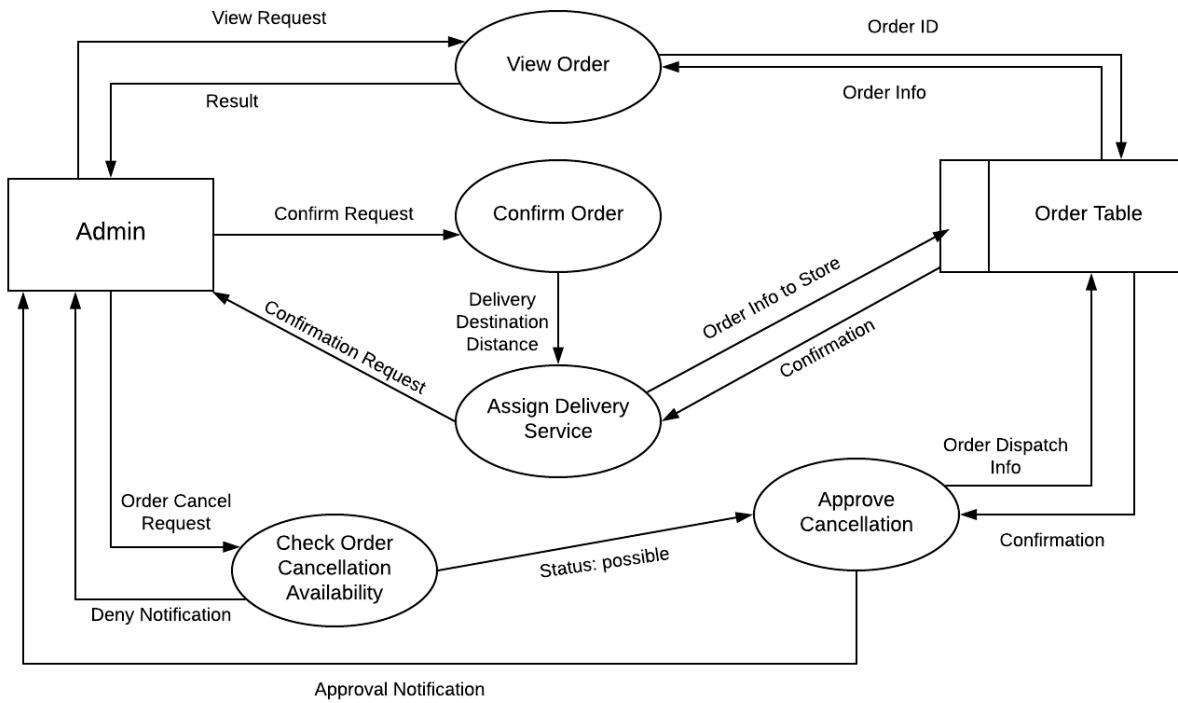


Figure 57: Level 2.3 for F-commerce based client management system

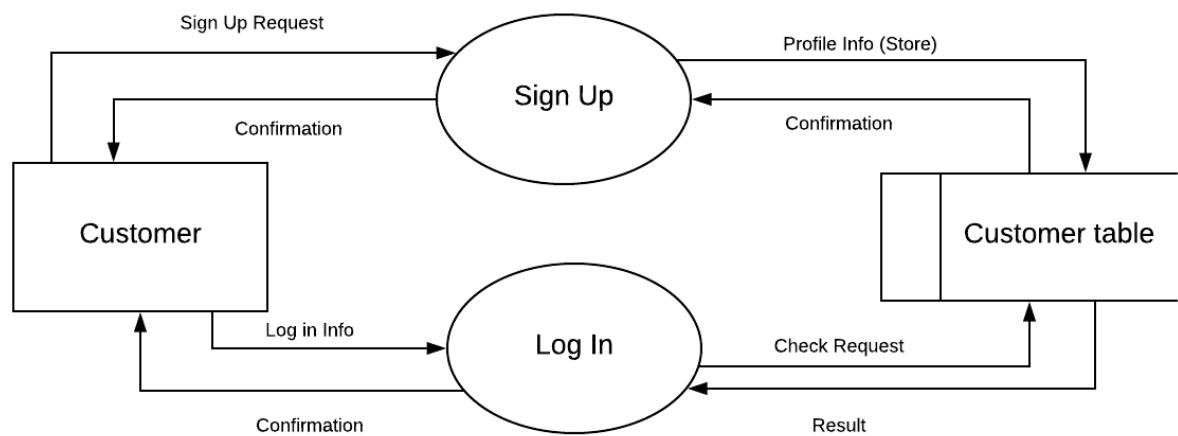


Figure 58: Level 2.4 for F-commerce based client management system

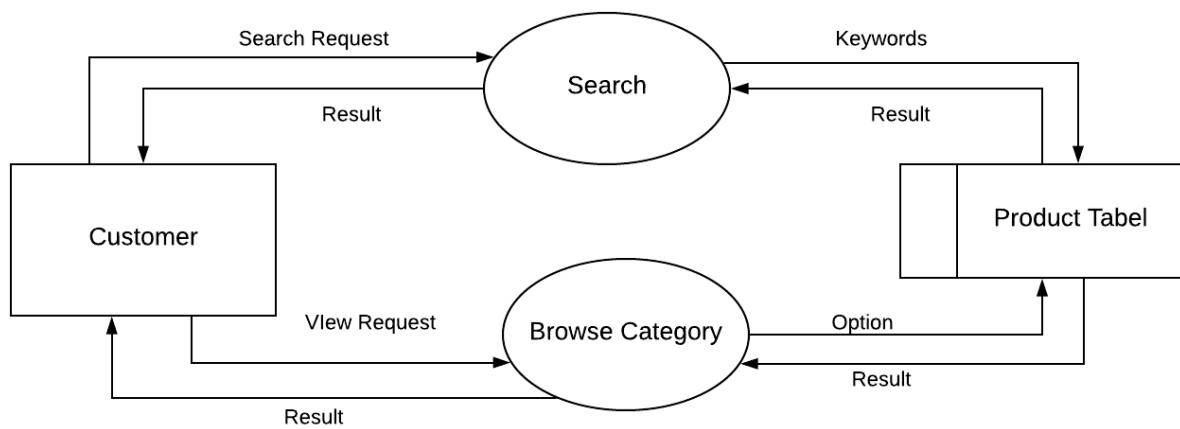


Figure 59: Level 2.5 for F-commerce based client management system

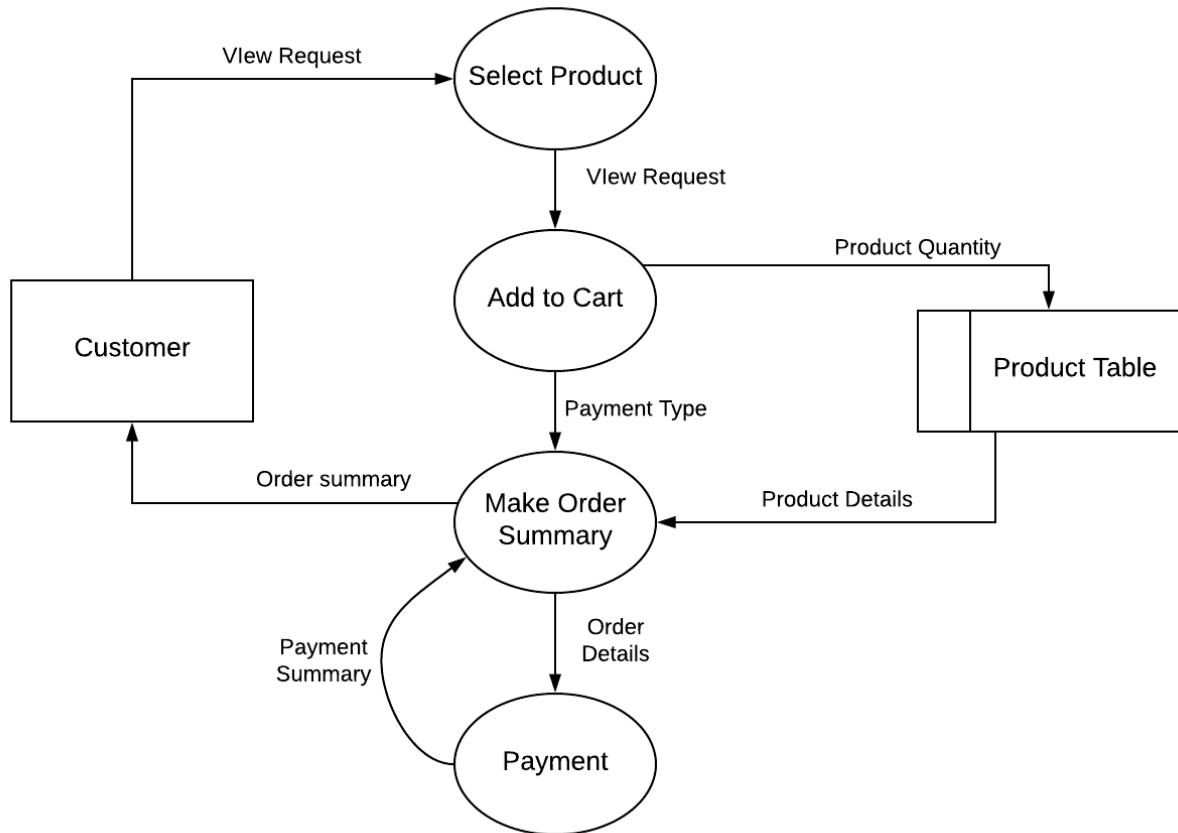


Figure 60: Level 2.6 for F-commerce based client management system

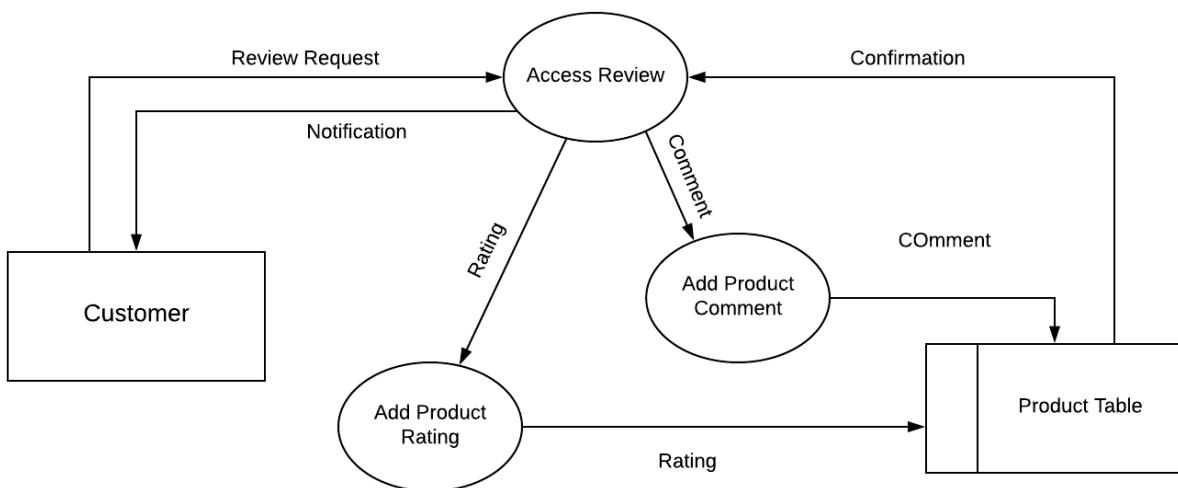


Figure 61: Level 2.7 for F-commerce based client management system

Chapter 8: Behavioral Model

The behavioral model indicates how software will respond to external events.

8.1 State Diagram

State diagram represents active states for each class the events (triggers).

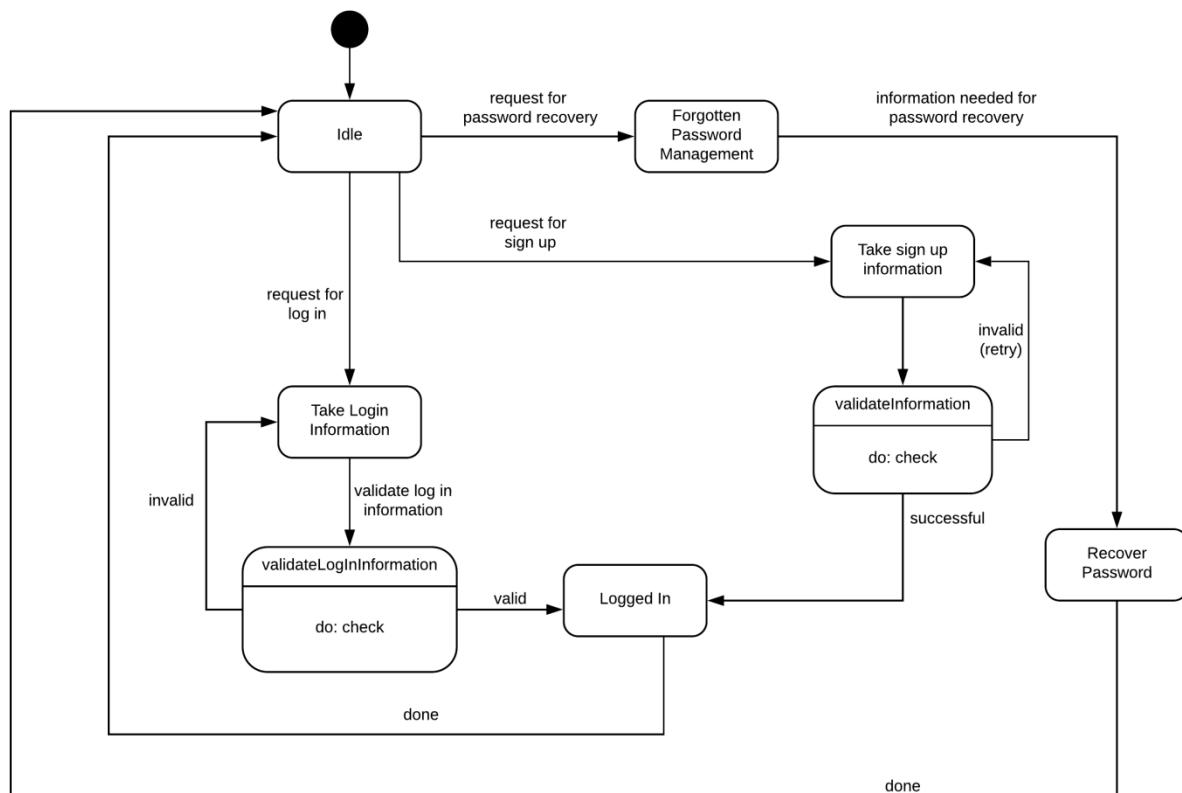


Figure 62: State Diagram (Account Class)

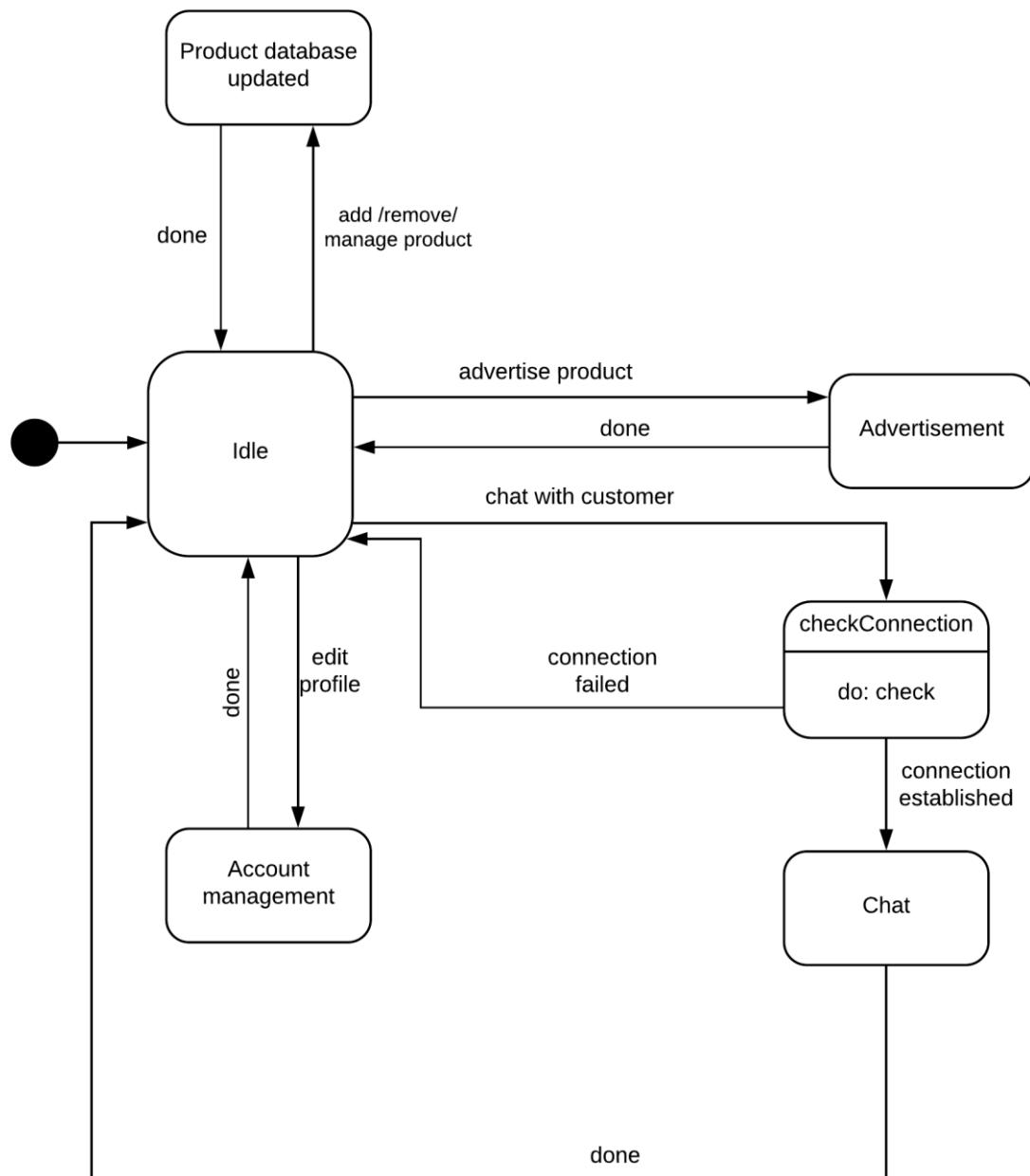


Figure 63: State Diagram (Admin Class)

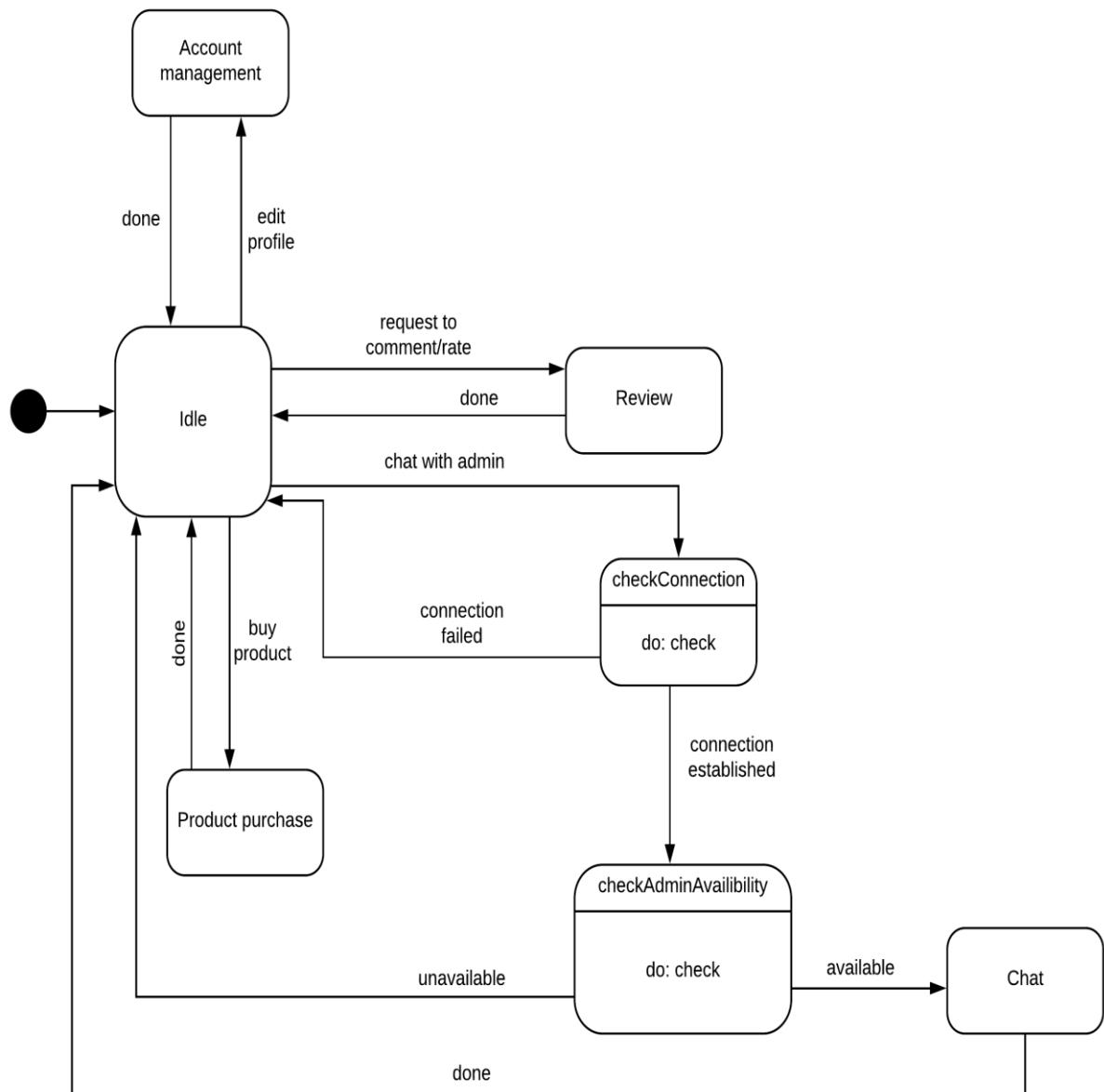


Figure 64: State Diagram (Customer Class)

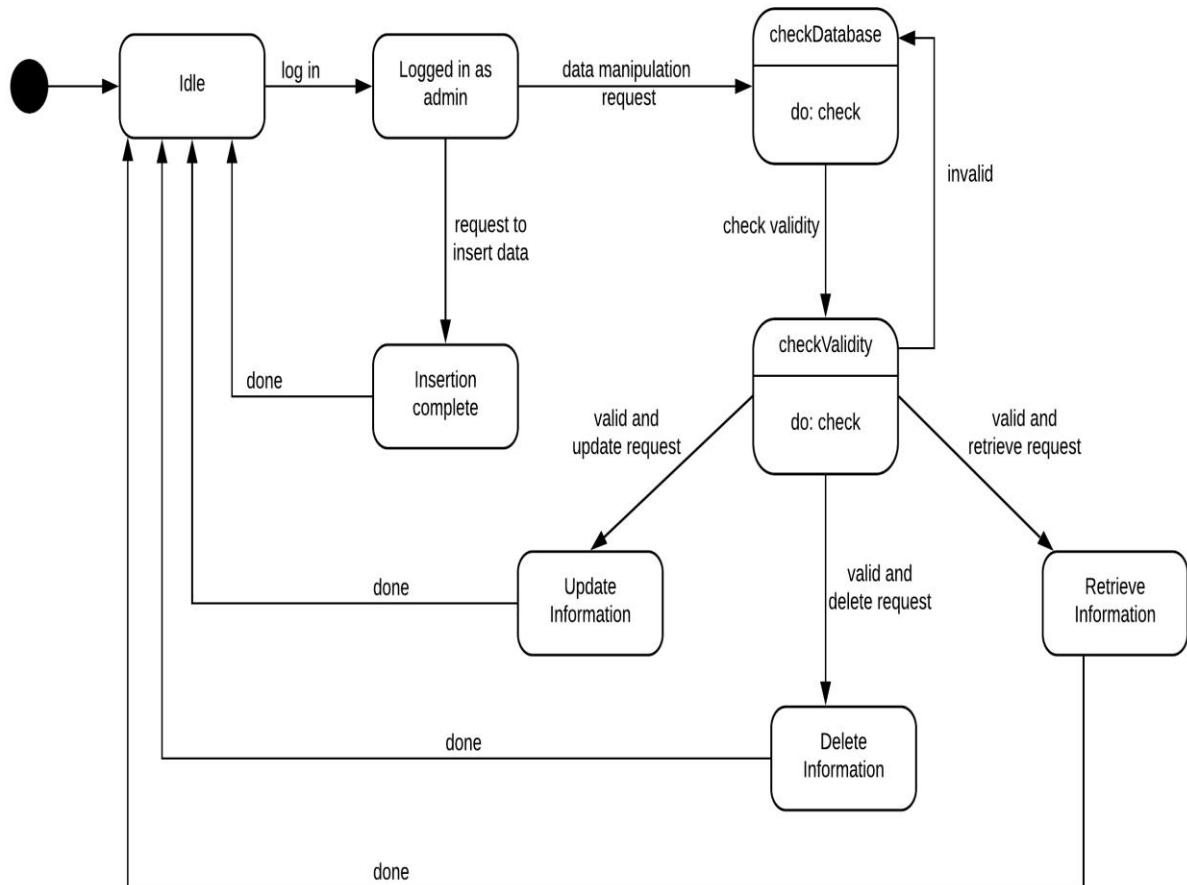


Figure 65: State Diagram (Database Class)

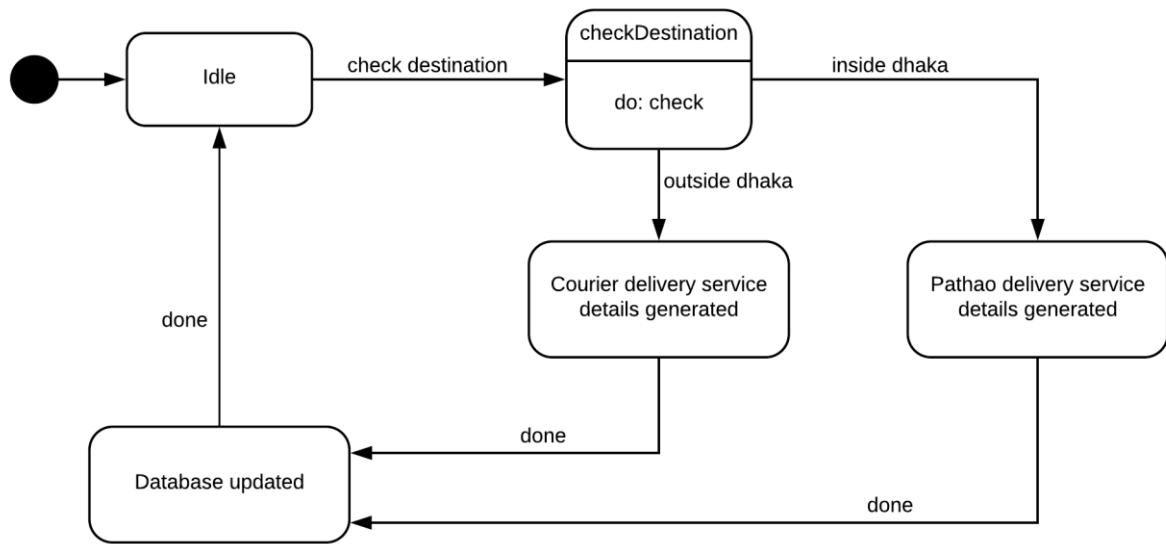


Figure 66: State Diagram (Delivery Service Class)

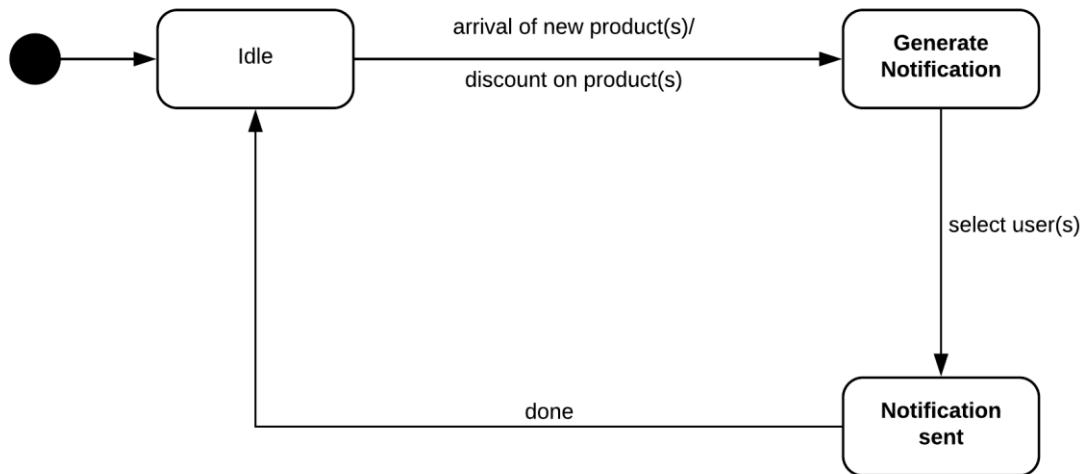


Figure 67: State Diagram (Notification Class)

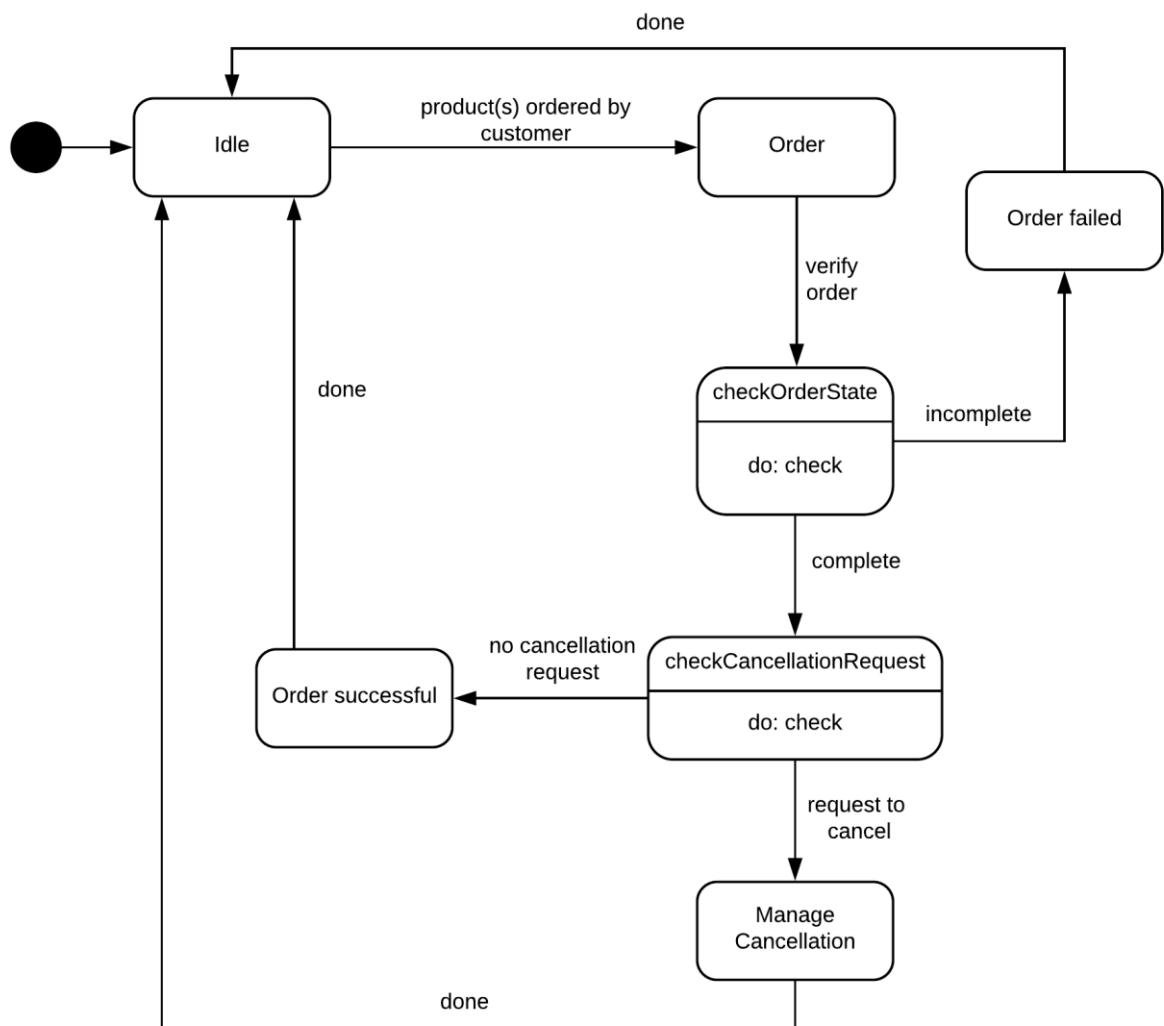


Figure 68: State Diagram (Order Class)

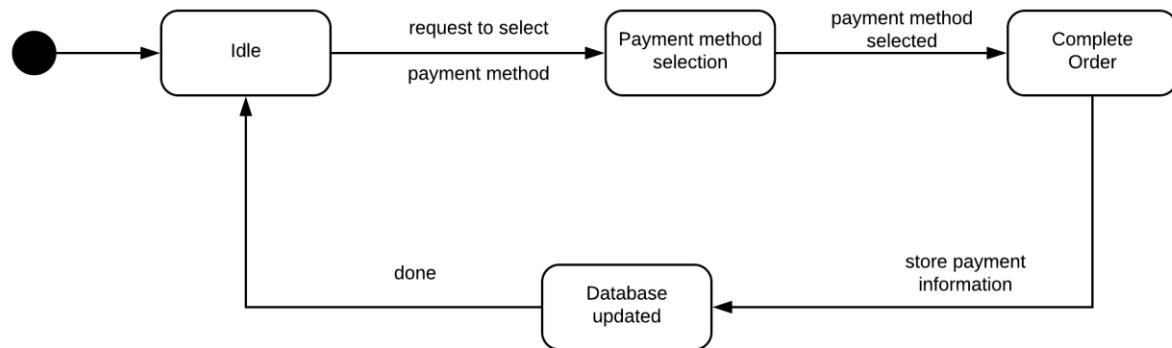


Figure 69: State Diagram (Payment Class)

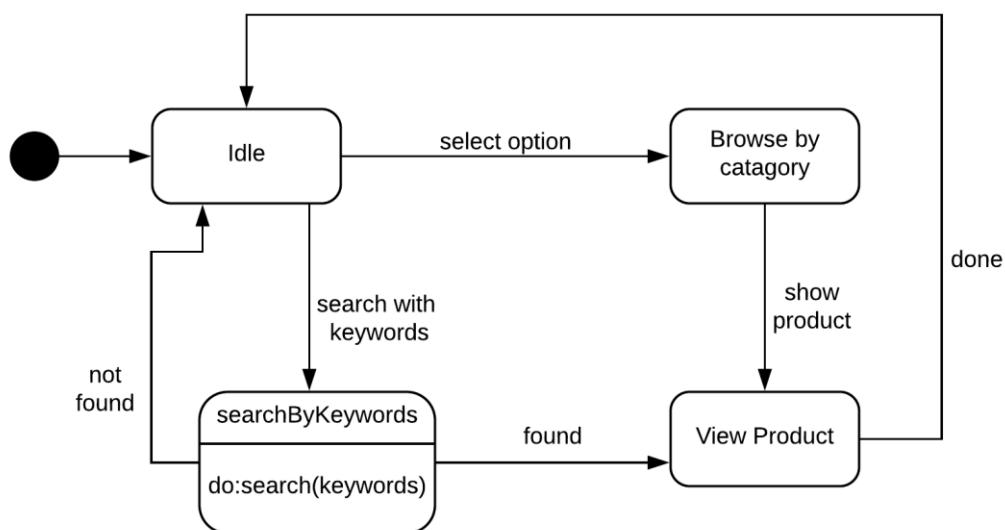


Figure 70: State Diagram (Search Class)

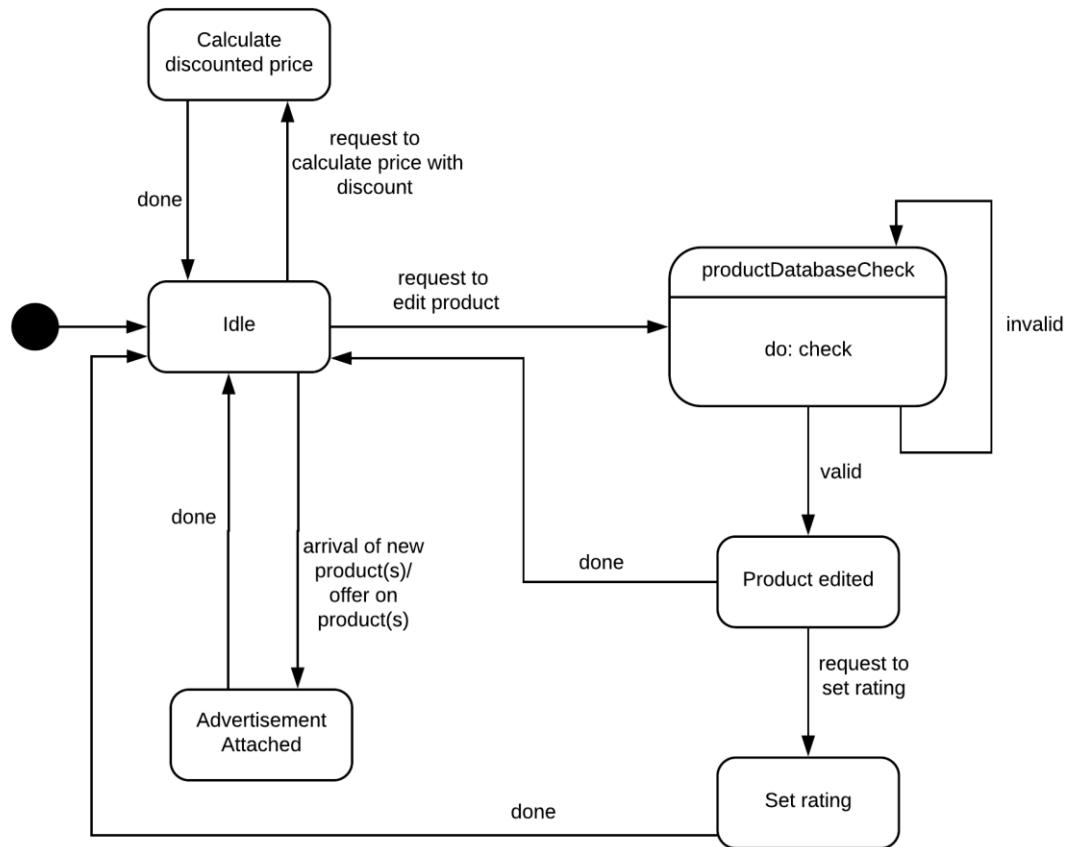


Figure 71: State Diagram (Product Class)

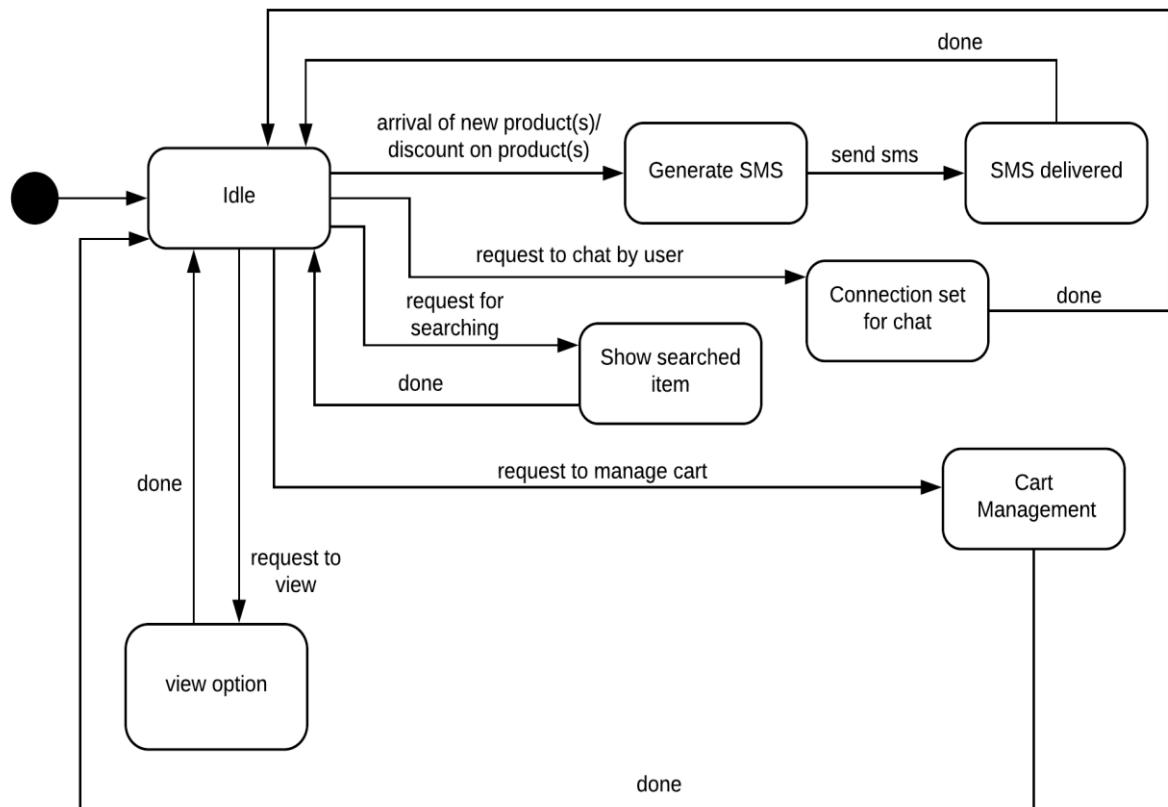


Figure 72: State Diagram (System Class)

8.2 Sequence Diagram

Sequence diagram indicates how events cause transitions from object to object.

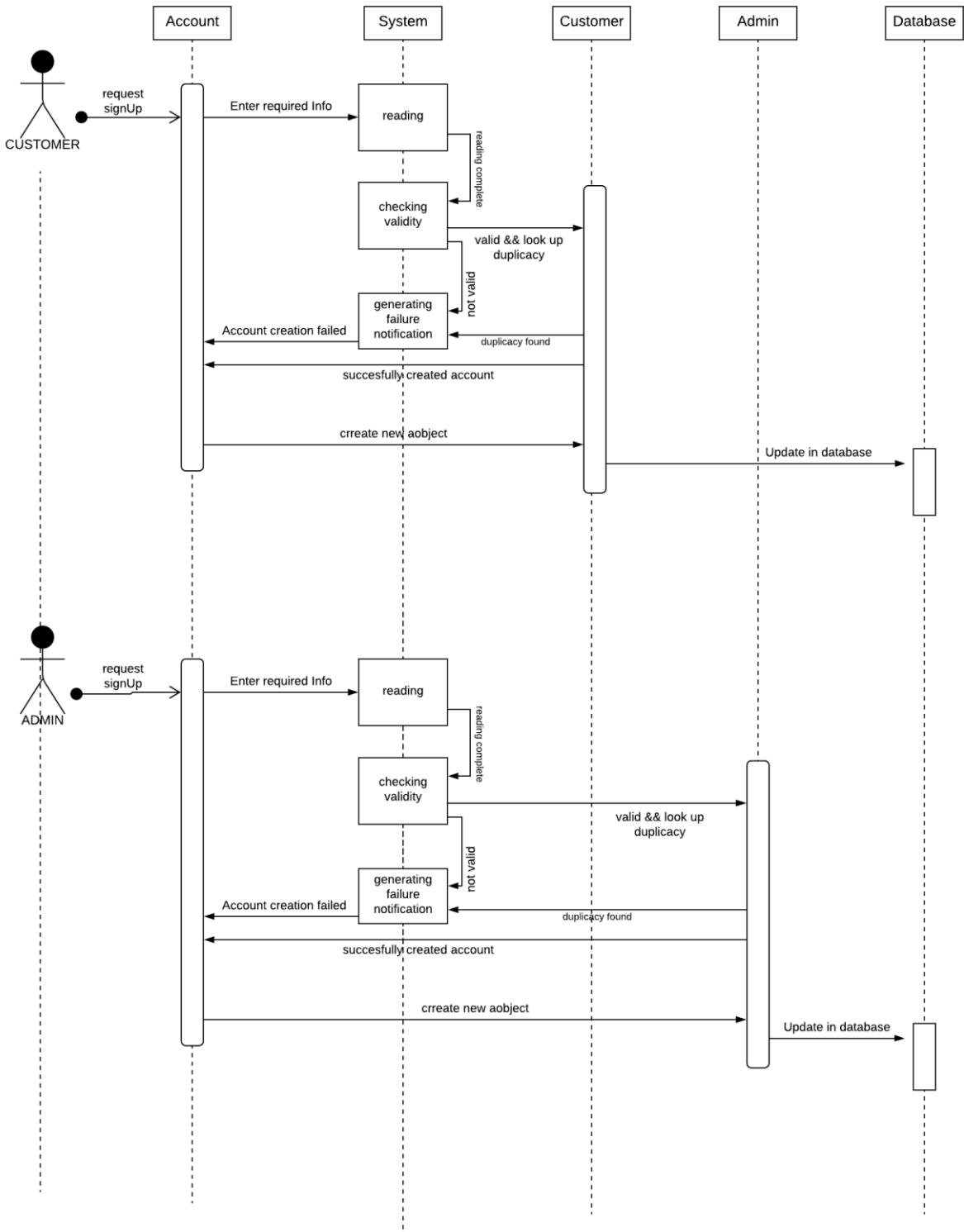


Figure 73: Sequence diagram (Sign Up)

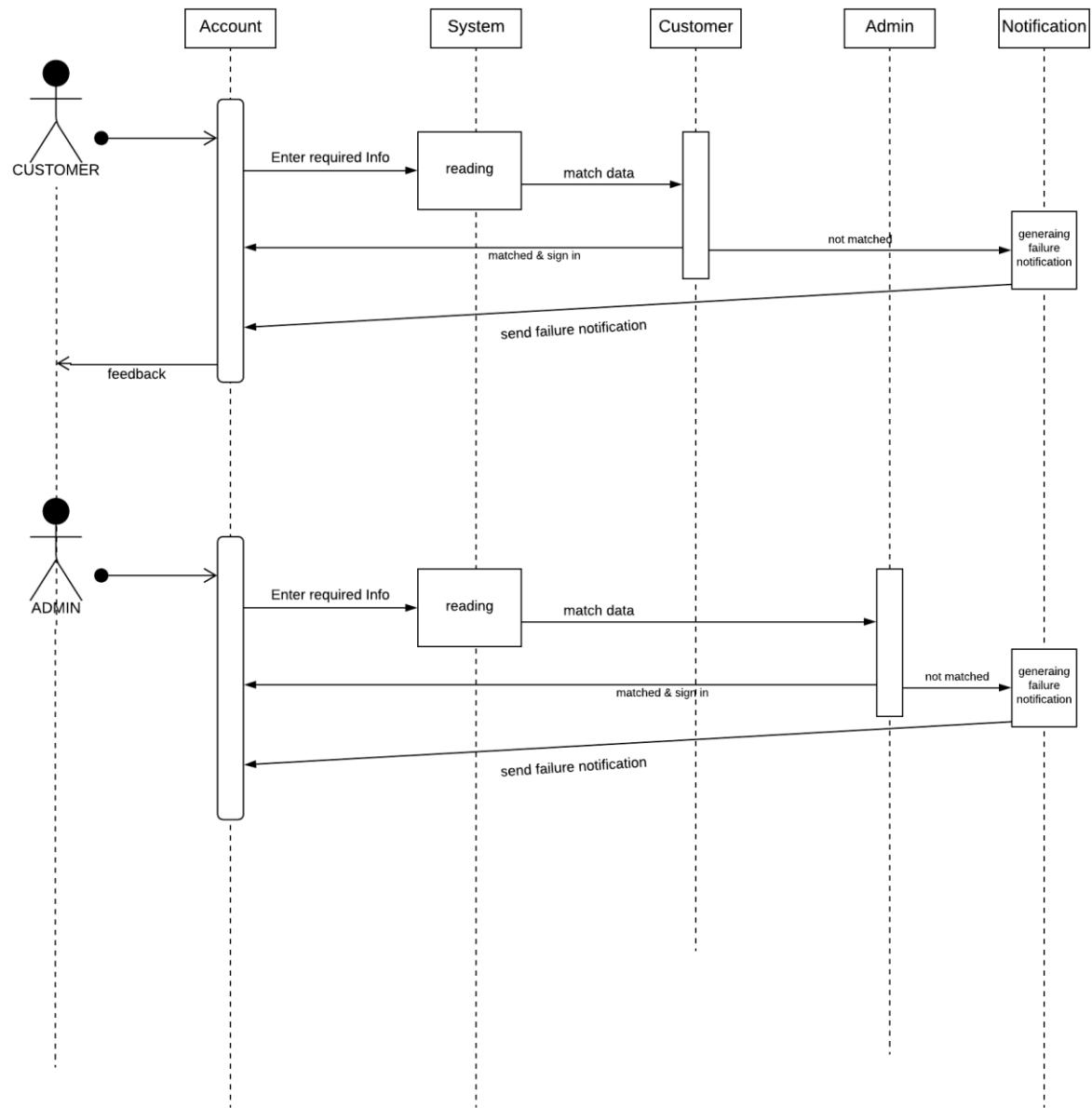


Figure 74: Sequence diagram (Sign In)

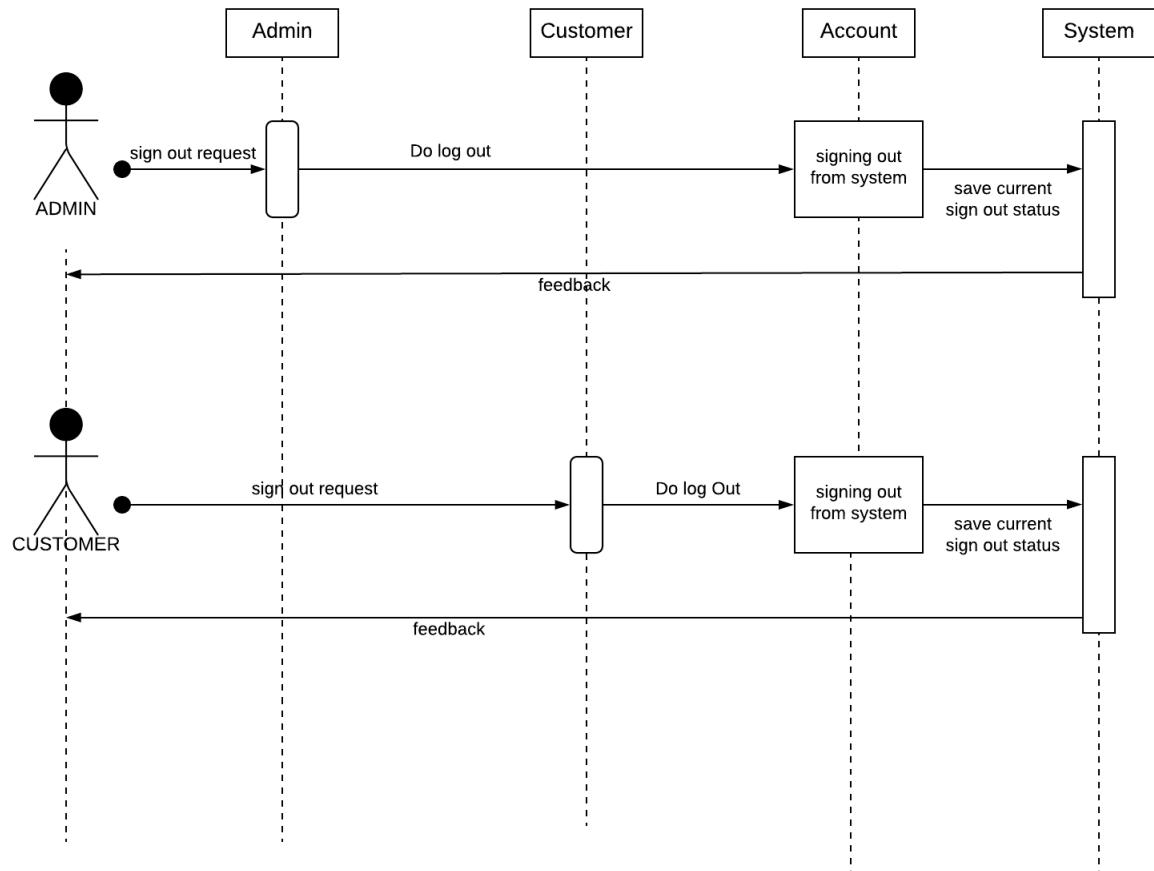


Figure 75: Sequence diagram (Sign Out)

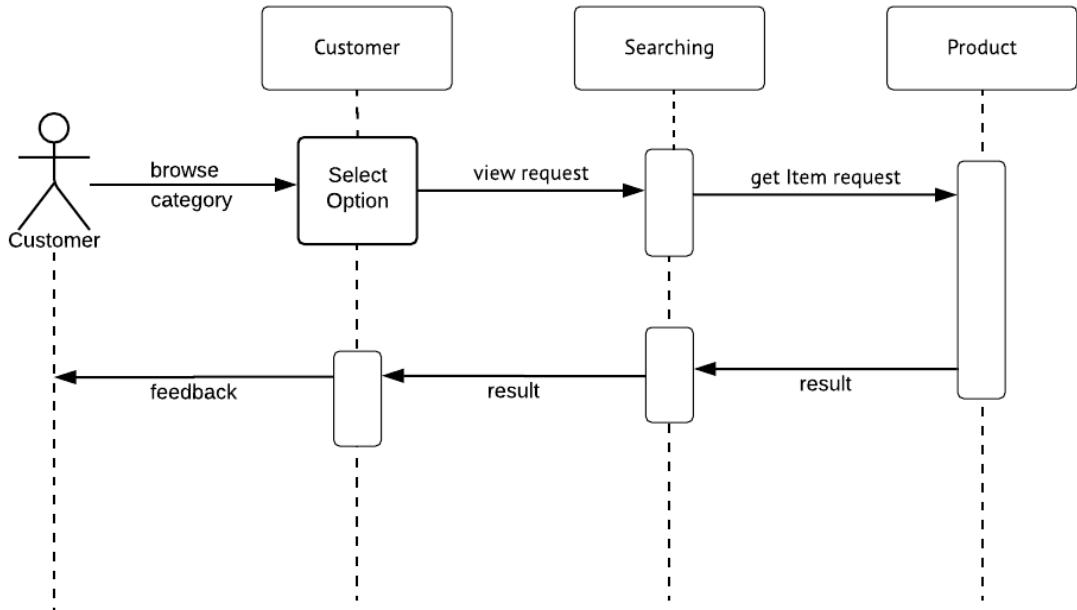


Figure 76: Sequence diagram (Browse Category)

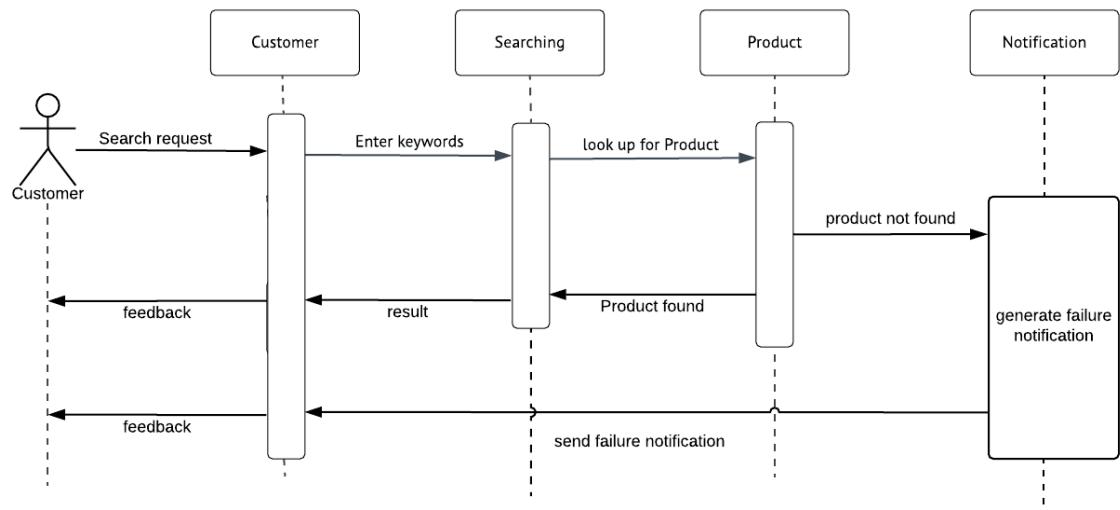


Figure 77: Sequence diagram (Search)

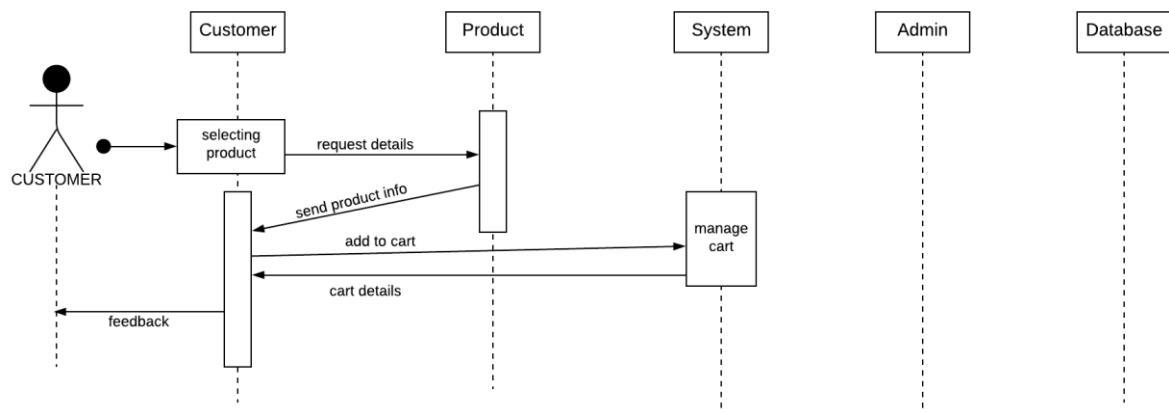


Figure 78: Sequence diagram (Add to Cart)

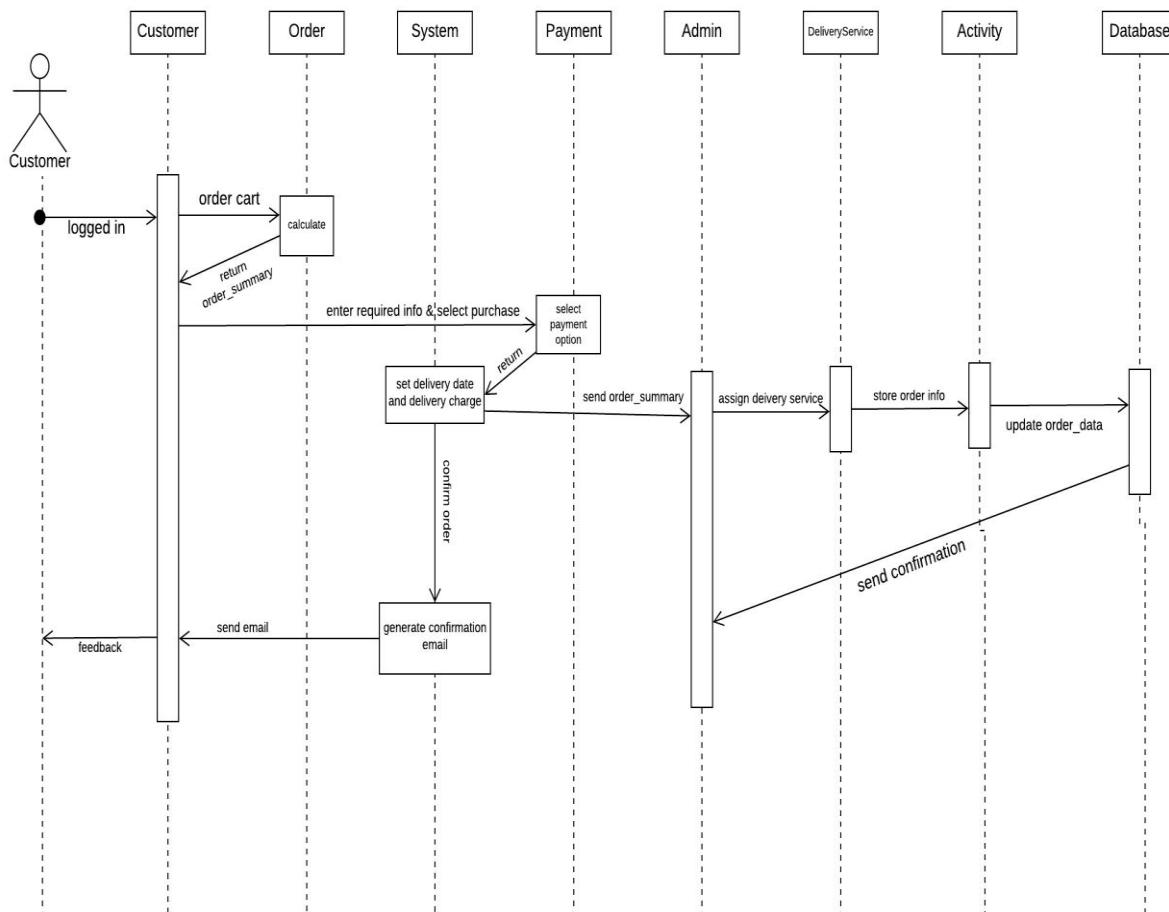


Figure 79: Sequence diagram (Purchase)

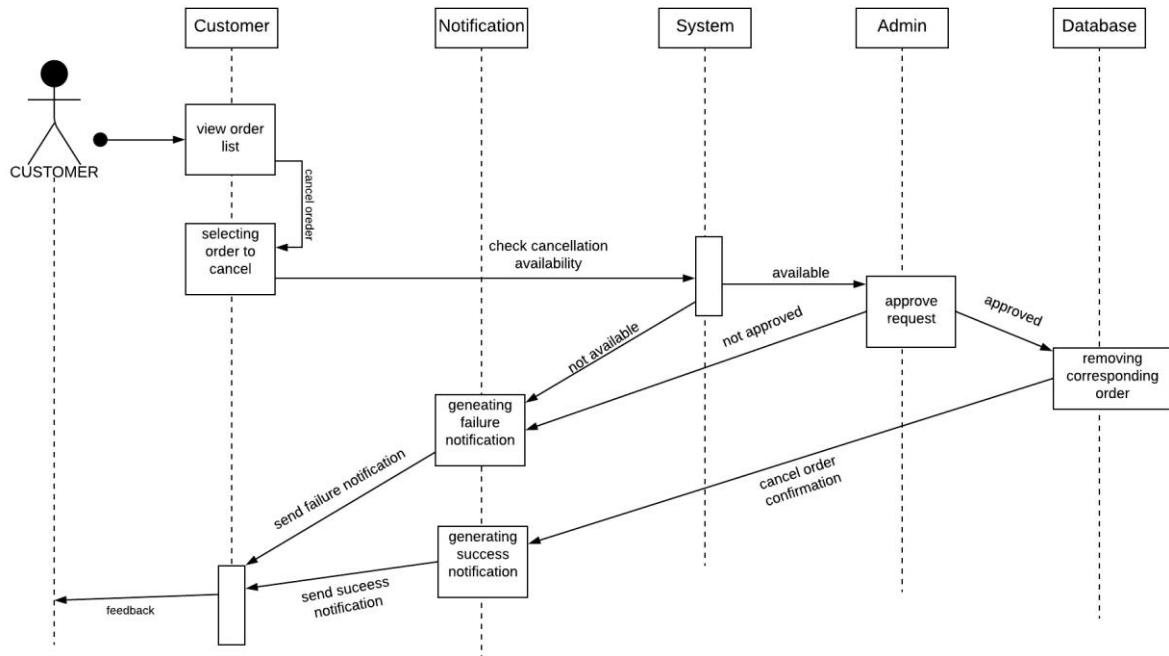


Figure 80: Sequence diagram (Cancel Order)

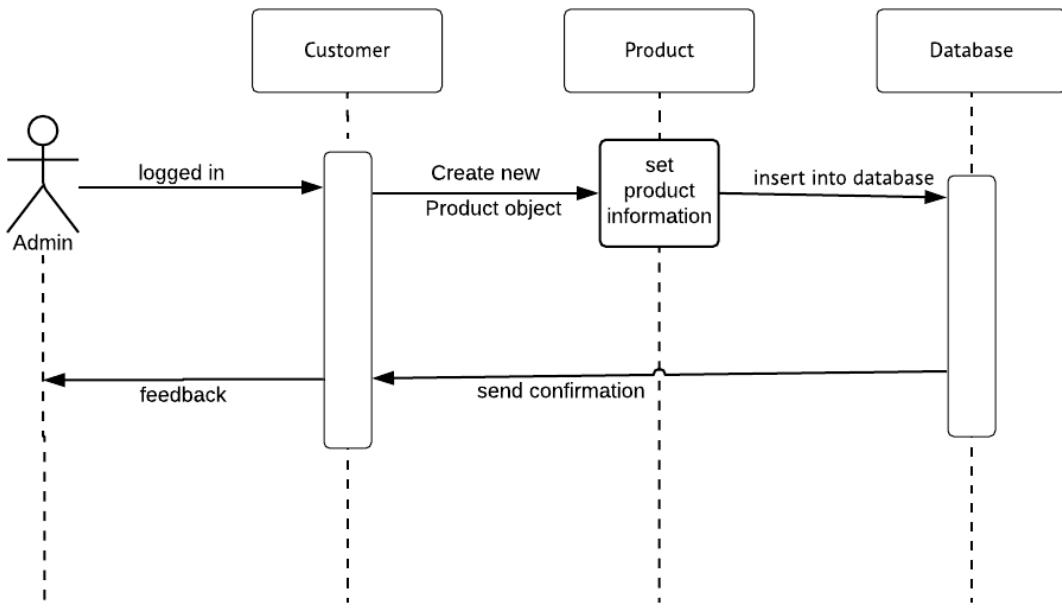


Figure 81: Sequence diagram (Add Product)

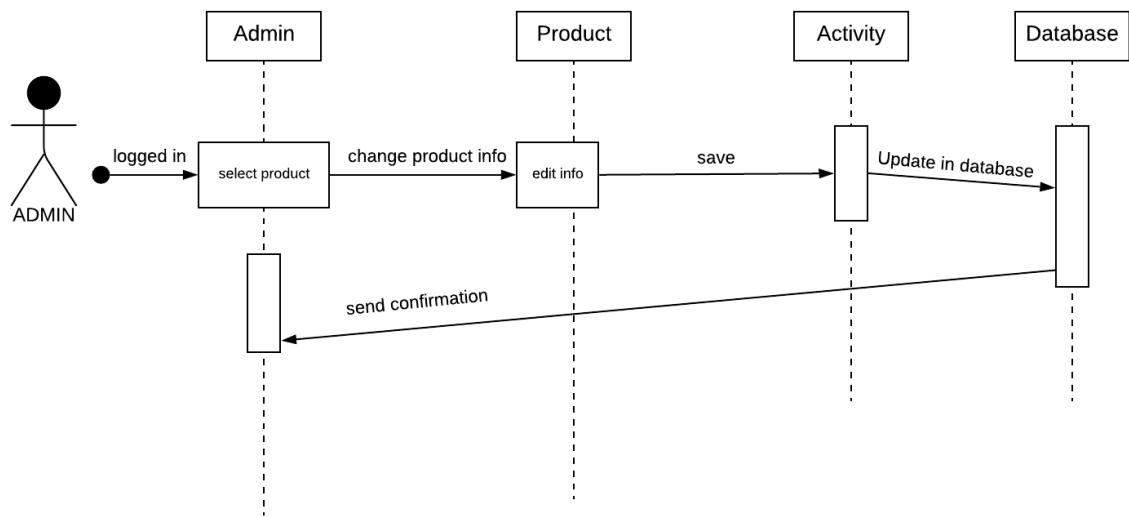


Figure 82: Sequence diagram (Edit Product)

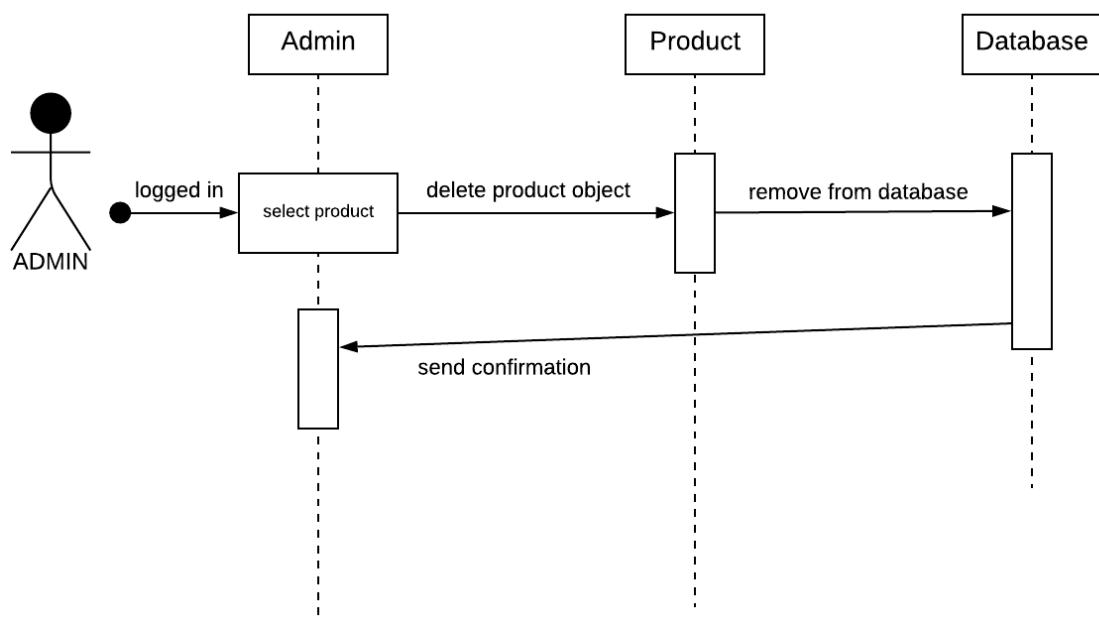


Figure 83: Sequence diagram (Remove Product)

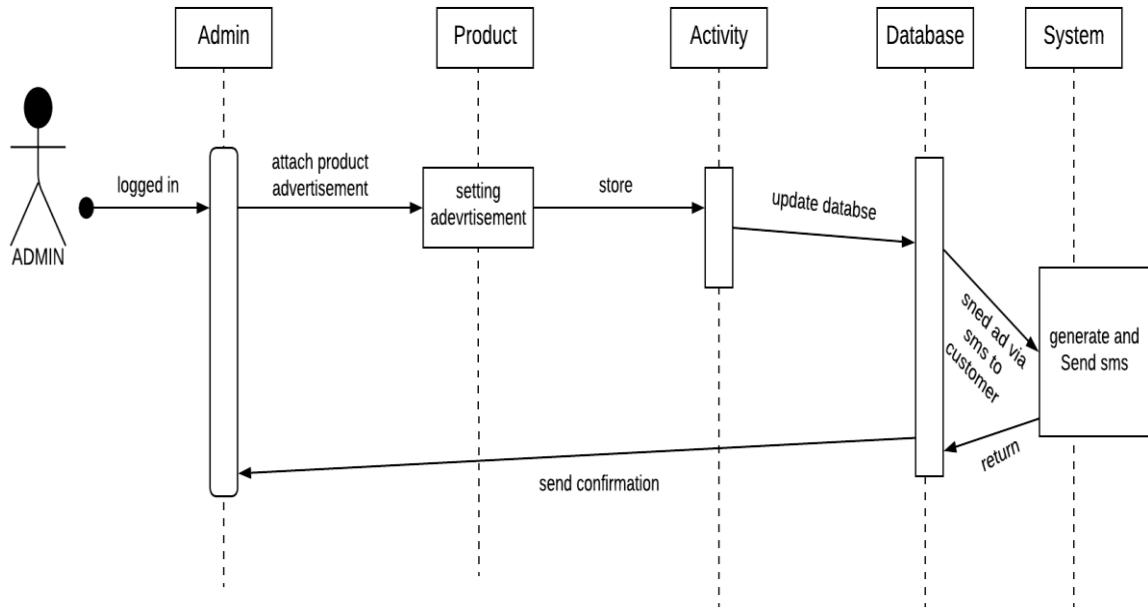


Figure 84: Sequence diagram (Manage Product Advertisement)

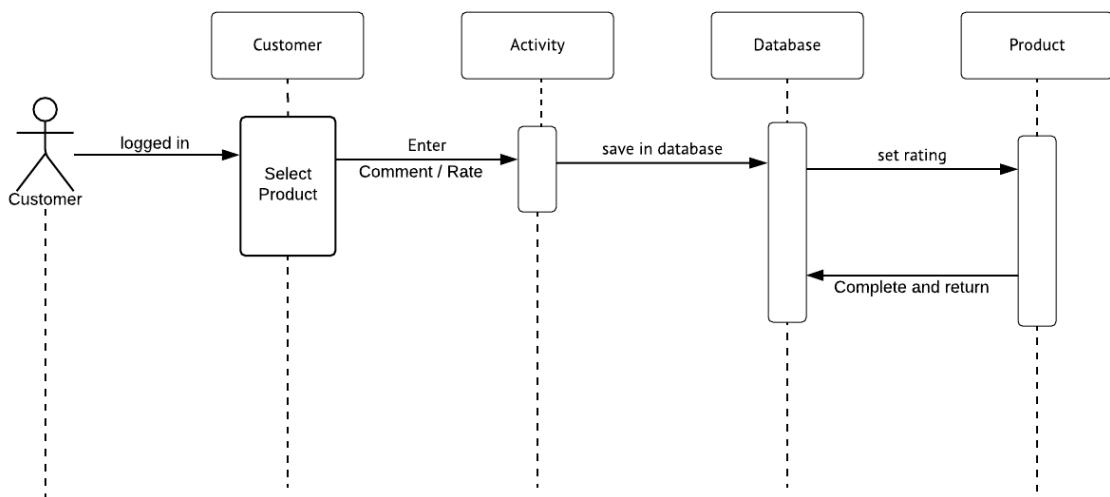


Figure 85: Sequence diagram (Review and Comment Product)

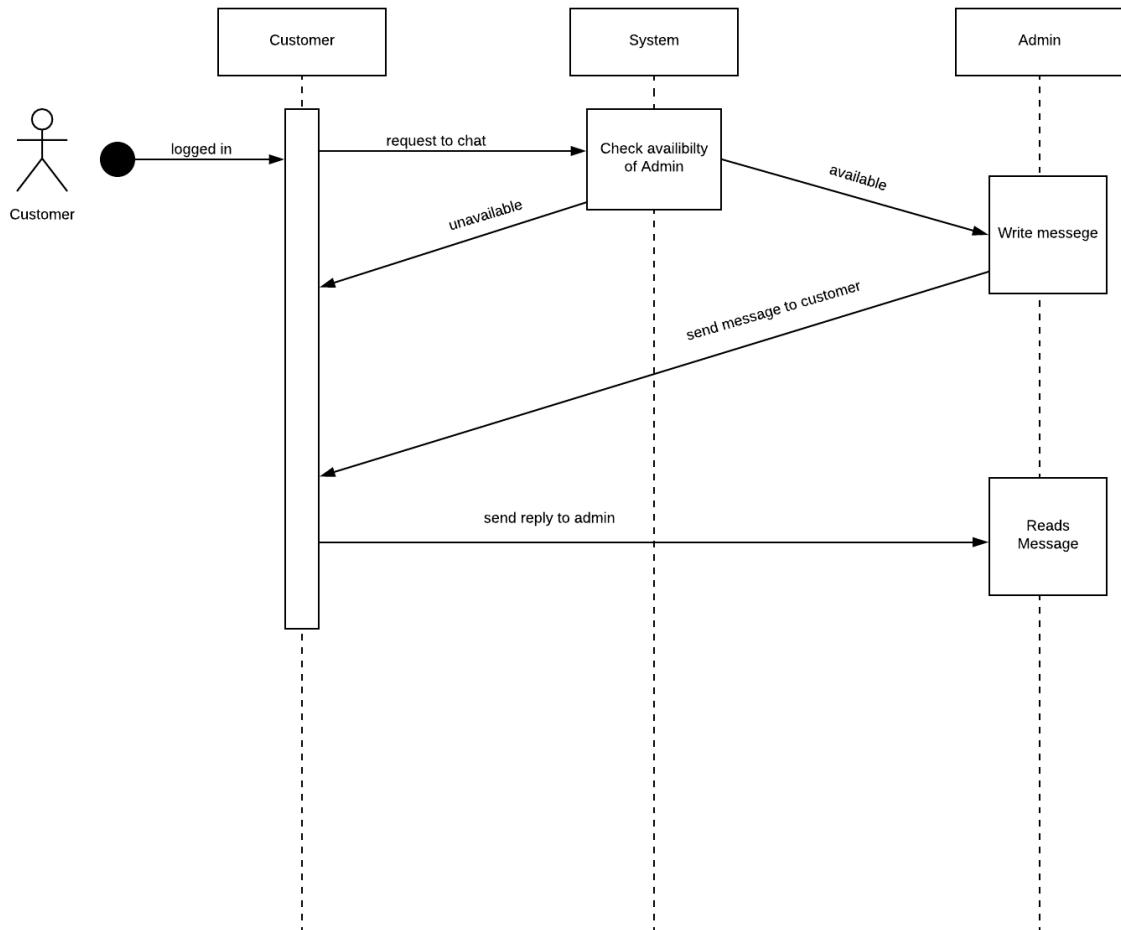


Figure 86: Sequence diagram (Chat)

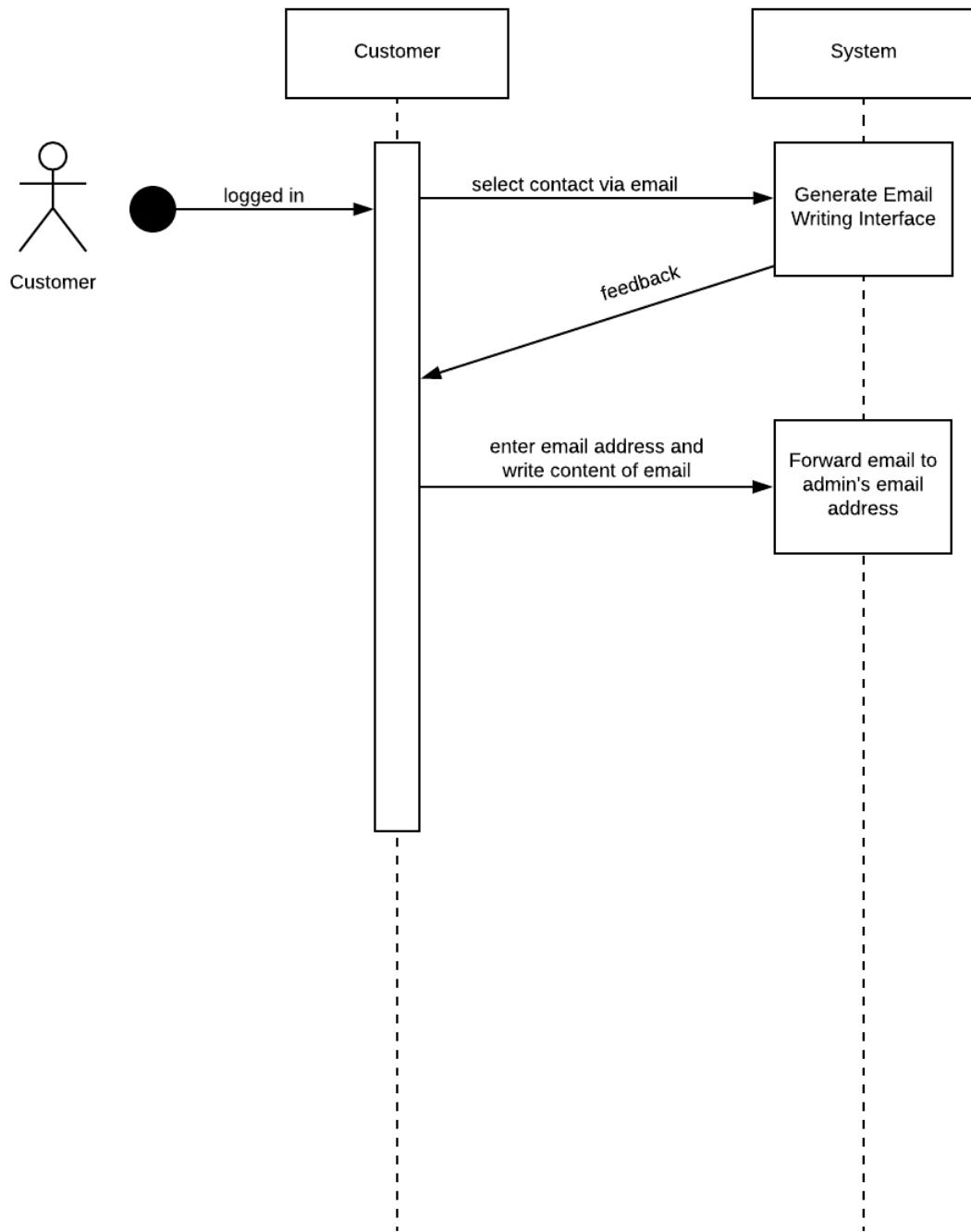


Figure 87: Sequence diagram (Email)

Chapter 9: Conclusion

From this SRS report on F-commerce Based Client Management System, the readers will get a clear and easy view of the overall system of management system of a Facebook based online shop. This SRS document can be used effectively to maintain the software development cycle. It will be very easy to conduct the whole project using SRS. Hopefully, this document can also help the junior BSSE students. We tried best to remove all dependencies and make an effective and fully designed SRS

References

[1] Pressman, Roger S. Software Engineering: A practitioner's Approach (7th Edition)

Appendix

Meeting Schedule

1.

Date: 22.07.2018

Location: IIT, DU

Discussion: Preparing the steps for stakeholder identification

Members:

S.M. Shahriyar BSSE0902

Saif Kamal Chowdhury BSSE0924

Anika Tabassum BSSSE0925

A.T.M. Fazlay Rabbi BSSE0926

Niraj Chaudhary BSSE0942

2.

Date: 25.07.2018

Location: IIT, DU

Discussion: Discussing first visit with the owner of the facebook page

Members:

S.M. Shahriyar BSSE0902

Saif Kamal Chowdhury BSSE0924

Anika Tabassum BSSSE0925

A.T.M. Fazlay Rabbi BSSE0926

Niraj Chaudhary BSSE0942

3.

Date: 29.07.2018

Location: IIT, DU

Discussion: Discussing visits with the owner of the facebook page

Members:

S.M. Shahriyar BSSE0902

Saif Kamal Chowdhury BSSE0924

Anika Tabassum BSSSE0925

A.T.M. Fazlay Rabbi BSSE0926

Niraj Chaudhary BSSE0942

4.

Date: 01.08.2018

Location: IIT, DU

Discussion: Identifying Viewpoints of Stakeholders

Members:

S.M. Shahriyar BSSE0902

Saif Kamal Chowdhury BSSE0924

Anika Tabassum BSSSE0925

A.T.M. Fazlay Rabbi BSSE0926

Niraj Chaudhary BSSE0942

5.

Date: 04.08.2018

Location: IIT, DU

Discussion: Defining QFD

Members:

S.M. Shahriyar	BSSE0902
Saif Kamal Chowdhury	BSSE0924
Anika Tabassum	BSSSE0925
A.T.M. Fazlay Rabbi	BSSE0926
Niraj Chaudhary	BSSE0942

6.

Date: 05.08.2018

Location: IIT, DU

Discussion: Defining QFD

Members:

S.M. Shahriyar	BSSE0902
Saif Kamal Chowdhury	BSSE0924
Anika Tabassum	BSSSE0925
A.T.M. Fazlay Rabbi	BSSE0926
Niraj Chaudhary	BSSE0942

7.

Date: 08.08.2018

Location: IIT, DU

Discussion: Preparing the usage scenario

Members:

S.M. Shahriyar	BSSE0902
Saif Kamal Chowdhury	BSSE0924
Anika Tabassum	BSSSE0925

A.T.M. Fazlay Rabbi BSSE0926

Niraj Chaudhary BSSE0942

8.

Date: 12.08.2018

Location: IIT, DU

Discussion: Correcting the usage scenario

Members:

S.M. Shahriyar BSSE0902

Saif Kamal Chowdhury BSSE0924

Anika Tabassum BSSSE0925

A.T.M. Fazlay Rabbi BSSE0926

Niraj Chaudhary BSSE0942

9.

Date: 18.08.2018

Location: IIT, DU

Discussion: Correcting the usage scenario

Members:

S.M. Shahriyar BSSE0902

Saif Kamal Chowdhury BSSE0924

Anika Tabassum BSSSE0925

A.T.M. Fazlay Rabbi BSSE0926

Niraj Chaudhary BSSE0942

10.

Date: 19.08.2018

Location: IIT, DU

Discussion: Preparing activity diagram

Members:

S.M. Shahriyar	BSSE0902
Saif Kamal Chowdhury	BSSE0924
Anika Tabassum	BSSSE0925
A.T.M. Fazlay Rabbi	BSSE0926
Niraj Chaudhary	BSSE0942

11.

Date: 01.09.2018

Location: IIT, DU

Discussion: Correcting Activity Diagram

Members:

S.M. Shahriyar	BSSE0902
Saif Kamal Chowdhury	BSSE0924
Anika Tabassum	BSSSE0925
A.T.M. Fazlay Rabbi	BSSE0926
Niraj Chaudhary	BSSE0942

12.

Date: 05.09.2018

Location: IIT, DU

Discussion: Preparing swimlane diagram

Members:

S.M. Shahriyar	BSSE0902
Saif Kamal Chowdhury	BSSE0924
Anika Tabassum	BSSSE0925
A.T.M. Fazlay Rabbi	BSSE0926
Niraj Chaudhary	BSSE0942

13.

Date: 19.09.2018

Location: IIT, DU

Discussion: Discussing about data modeling

Members:

S.M. Shahriyar	BSSE0902
Saif Kamal Chowdhury	BSSE0924
Anika Tabassum	BSSSE0925
A.T.M. Fazlay Rabbi	BSSE0926
Niraj Chaudhary	BSSE0942

14.

Date: 23.09.2018

Location: IIT, DU

Discussion: Preparing data modeling

Members:

S.M. Shahriyar	BSSE0902
Saif Kamal Chowdhury	BSSE0924
Anika Tabassum	BSSSE0925

A.T.M. Fazlay Rabbi	BSSE0926
Niraj Chaudhary	BSSE0942

15.

Date: 26.09.2018

Location: IIT, DU

Discussion: Preparing the ER diagram

Members:

S.M. Shahriyar	BSSE0902
Saif Kamal Chowdhury	BSSE0924
Anika Tabassum	BSSSE0925
A.T.M. Fazlay Rabbi	BSSE0926
Niraj Chaudhary	BSSE0942

16.

Date:

Location:

Discussion:

Members:

S.M. Shahriyar	BSSE0902
Saif Kamal Chowdhury	BSSE0924
Anika Tabassum	BSSSE0925
A.T.M. Fazlay Rabbi	BSSE0926
Niraj Chaudhary	BSSE0942

17.

Date: 30.09.2018

Location: IIT, DU

Discussion: Discussing about class based modeling

Members:

S.M. Shahriyar BSSE0902

Saif Kamal Chowdhury BSSE0924

Anika Tabassum BSSSE0925

A.T.M. Fazlay Rabbi BSSE0926

Niraj Chaudhary BSSE0942

18.

Date: 03.10.2018

Location: IIT, DU

Discussion: Defining the data object relation

Members:

S.M. Shahriyar BSSE0902

Saif Kamal Chowdhury BSSE0924

Anika Tabassum BSSSE0925

A.T.M. Fazlay Rabbi BSSE0926

Niraj Chaudhary BSSE0942

19.

Date: 06.10.2018

Location: IIT, DU

Discussion: Preparing the data schema

Members:

S.M. Shahriyar	BSSE0902
Saif Kamal Chowdhury	BSSE0924
Anika Tabassum	BSSSE0925
A.T.M. Fazlay Rabbi	BSSE0926
Niraj Chaudhary	BSSE0942

20.

Date: 07.10.2018

Location: IIT,DU

Discussion: Discussing about class based modeling

Members:

S.M. Shahriyar	BSSE0902
Saif Kamal Chowdhury	BSSE0924
Anika Tabassum	BSSSE0925
A.T.M. Fazlay Rabbi	BSSE0926
Niraj Chaudhary	BSSE0942

21.

Date: 10.10.2018

Location: IIT, DU

Discussion: Preparing class based modeling

Members:

S.M. Shahriyar	BSSE0902
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Saif Kamal Chowdhury	BSSE0924
Anika Tabassum	BSSSE0925
A.T.M. Fazlay Rabbi	BSSE0926
Niraj Chaudhary	BSSE0942

22.

Date: 28.10.2018

Location: IIT,DU

Discussion: Preparing class card

Members:

S.M. Shahriyar	BSSE0902
Saif Kamal Chowdhury	BSSE0924
Anika Tabassum	BSSSE0925
A.T.M. Fazlay Rabbi	BSSE0926
Niraj Chaudhary	BSSE0942

23.

Date: 31.10.2018

Location: IIT, DU

Discussion: Preparing class card

Members:

S.M. Shahriyar	BSSE0902
Saif Kamal Chowdhury	BSSE0924
Anika Tabassum	BSSSE0925
A.T.M. Fazlay Rabbi	BSSE0926

Niraj Chaudhary BSSE0942

24.

Date: 03.11.2018

Location: IIT, DU

Discussion: Correcting Class Card

Members:

S.M. Shahriyar BSSE0902

Saif Kamal Chowdhury BSSE0924

Anika Tabassum BSSSE0925

A.T.M. Fazlay Rabbi BSSE0926

Niraj Chaudhary BSSE0942

25.

Date: 04.11.2018

Location: IIT, DU

Discussion: Preparing data flow modeling

Members:

S.M. Shahriyar BSSE0902

Saif Kamal Chowdhury BSSE0924

Anika Tabassum BSSSE0925

A.T.M. Fazlay Rabbi BSSE0926

Niraj Chaudhary BSSE0942

26.

Date: 07.11.2018

Location: IIT, DU

Discussion: Preparing state transition diagram

Members:

S.M. Shahriyar	BSSE0902
Saif Kamal Chowdhury	BSSE0924
Anika Tabassum	BSSSE0925
A.T.M. Fazlay Rabbi	BSSE0926
Niraj Chaudhary	BSSE0942

27.

Date: 10.11.2018

Location: IIT,DU

Discussion: Preparing state transition diagram

Members:

S.M. Shahriyar	BSSE0902
Saif Kamal Chowdhury	BSSE0924
Anika Tabassum	BSSSE0925
A.T.M. Fazlay Rabbi	BSSE0926
Niraj Chaudhary	BSSE0942

28.

Date: 11.11.2018

Location: IIT, DU

Discussion: Preparing Sequence diagram

Members:

S.M. Shahriyar	BSSE0902
Saif Kamal Chowdhury	BSSE0924
Anika Tabassum	BSSSE0925
A.T.M. Fazlay Rabbi	BSSE0926
Niraj Chaudhary	BSSE0942

29.

Date: 14. 11. 2018

Location: IIT, DU

Discussion: Discussing about the report

Members:

S.M. Shahriyar	BSSE0902
Saif Kamal Chowdhury	BSSE0924
Anika Tabassum	BSSSE0925
A.T.M. Fazlay Rabbi	BSSE0926
Niraj Chaudhary	BSSE0942

30.

Date: 17.11.2018

Location: IIT, DU

Discussion: Finalizing the report

Members:

S.M. Shahriyar	BSSE0902
Saif Kamal Chowdhury	BSSE0924

Anika Tabassum	BSSSE0925
A.T.M. Fazlay Rabbi	BSSE0926
Niraj Chaudhary	BSSE0942