

<<FUSWAP SYSTEM>>

Software Requirement Specification

– Hochiminh, June 2024 –

RECORD OF CHANGES

Date	A* M, D	In charge	Change Description
30/06/24	A	Gia Bao	Add Non-Functional Requirements section
30/06/24	A	Hai Anh	Add User Interfaces section
30/06/24	A	Nguyen Anh	Add Technical Requirements section

*A - Added M - Modified D - Deleted

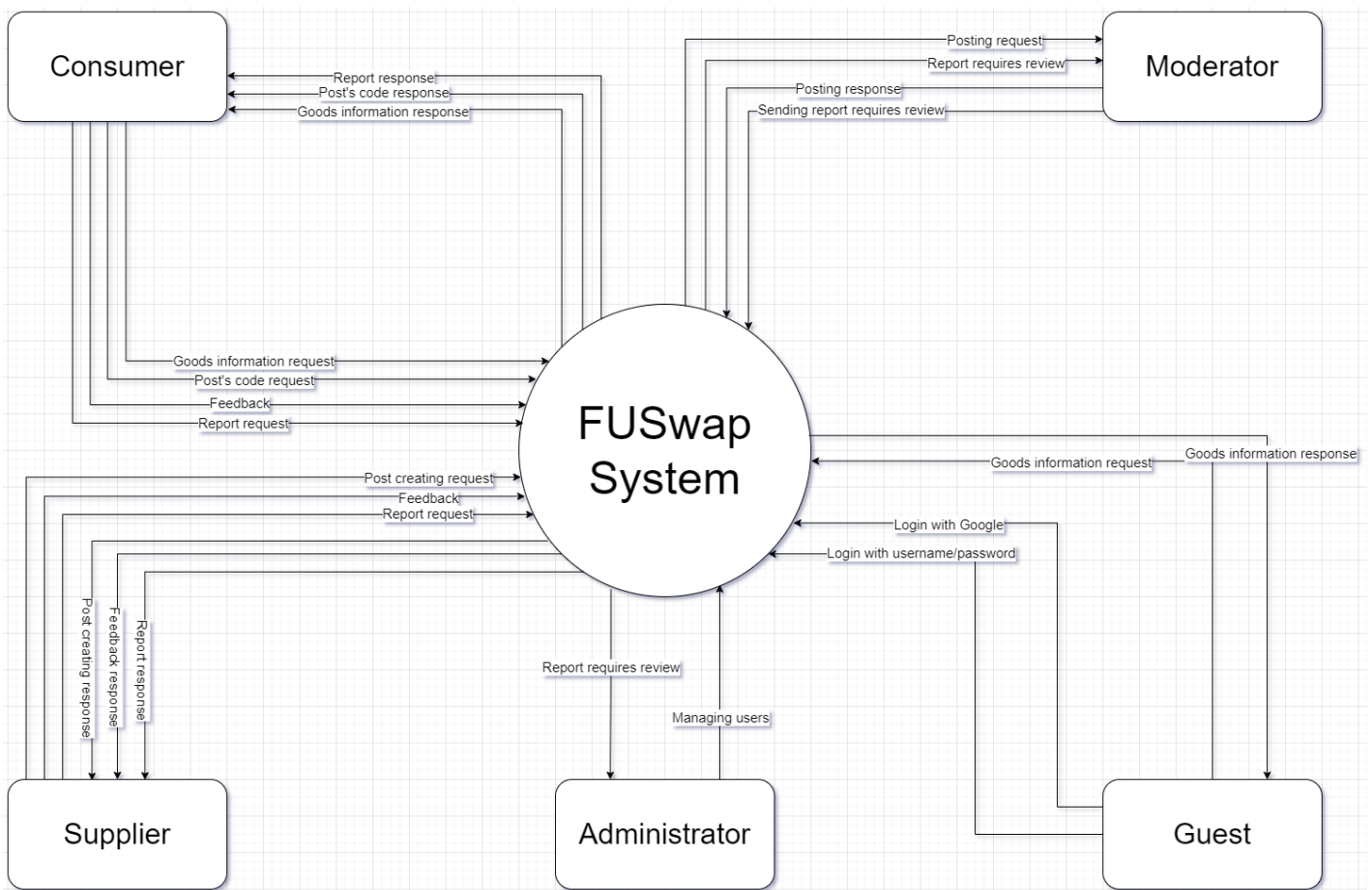
Table of Contents

I. Overview	4
1. Introduction	4
2. Use case	5
a. Use case diagram	5
b. Use case list	5
3. Swimlane	6
a. Swimlane diagram.....	6
a. User Authorization	8
c. Non-Screen Functions	9
4. Entity Relationship diagram	10
II. Functional Requirements	11
1. Feature list and authorization.....	11
2.Functional Requirement Table.....	12
III. Non-Functional Requirements	22
1. Usability.....	22
2. Security	22
3. Performance.....	22
IV. User Interfaces.....	14
V. Technical Requirements	14

I. Overview

1. Introduction

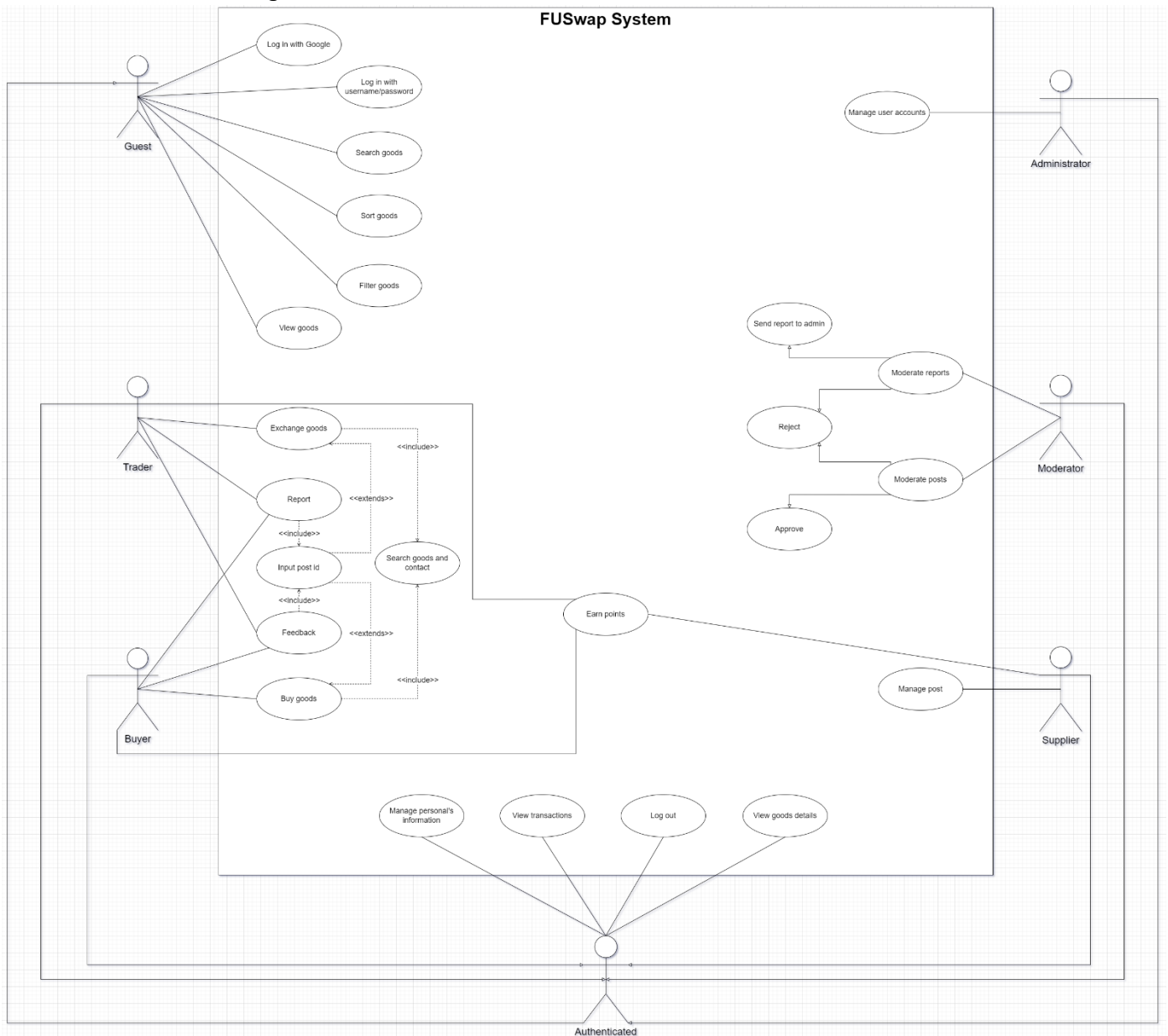
Currently, students have to purchase many new study materials each year. This creates a significant financial burden for students, especially those with limited economic means. However, many of these materials remain in good condition after just one semester but are not reused. This situation not only increases the cost of education but also leads to unnecessary waste of resources. Students often lack convenient methods to exchange or resell these materials to other students, resulting in the need to buy completely new items at the start of each semester. Moreover, the continuous production and consumption of new materials contribute to the depletion of natural resources. Therefore, there is a need for a solution that maximizes the use of used study materials, reduces costs for students, and contributes to environmental protection.



2. Use case

Our system offers a wide range of features that help users interact easily and effectively. Below is a use case of the system

a. Use case diagram



b. Use case list

UC01	Log in with Google
UC02	Log in with username/password
UC03	Log out
UC04	Search goods
UC05	View goods
UC06	View contact information
UC07	Manage posts
UC08	Make transactions
UC09	View transactios
UC10	Feedback
UC11	Report

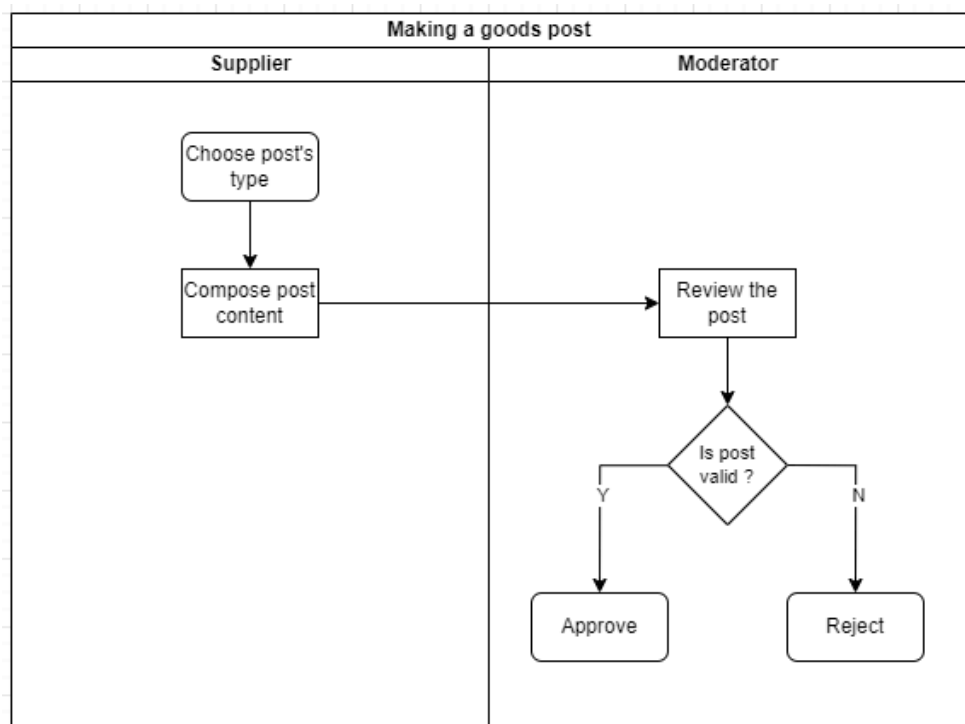
UC12	Sort goods
UC13	Filter goods
UC14	Authorization
UC15	Manage personal's information
UC16	Moderate posts
UC17	Moderate reports
UC18	Manage user accounts

3. Swimlane

a. Swimlane diagram

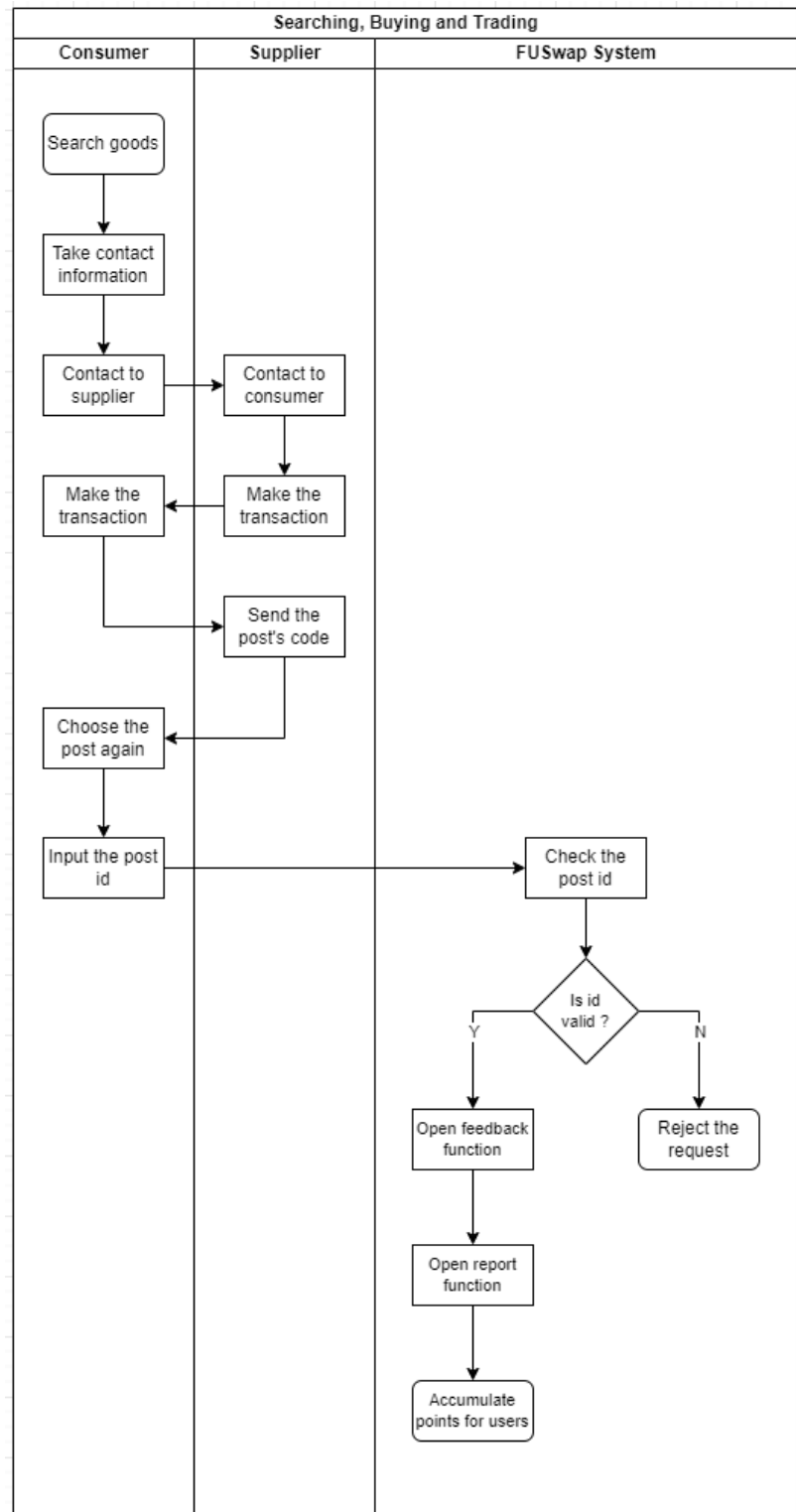
i. Making a goods post

Users create posts about goods they want to sell or exchange. They enter product details, upload image and set a price if it's for sale. Once completed, the post will be moderated, then appear on the platform for other users to view, buy or exchange goods.



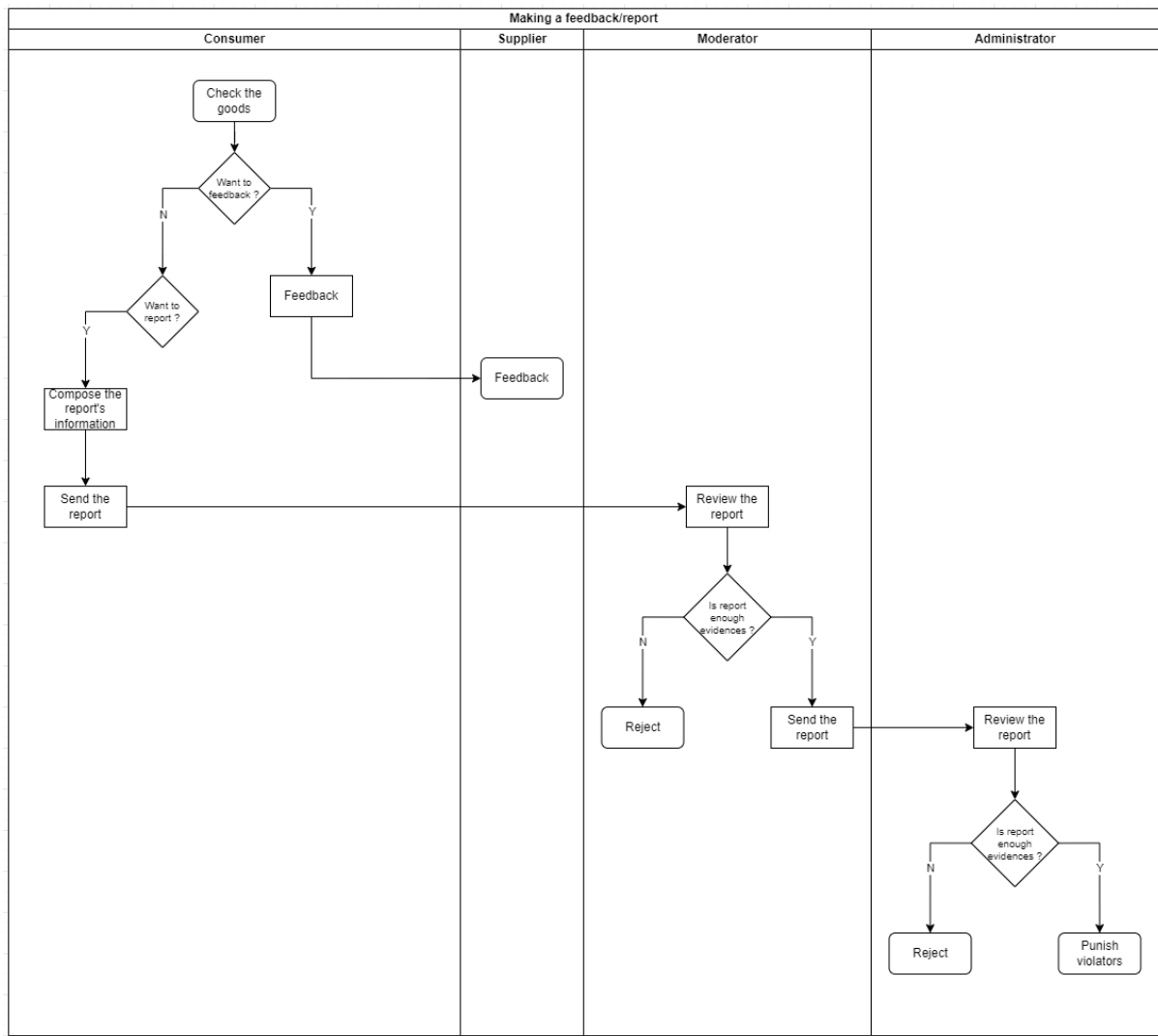
ii. Searching, Buying and Trading

Users search for goods. After finding the desired product, they contact the goods supplier and conduct the transaction without going through the system. After the transaction is completed, the supplier will provide the consumer with the post id to open feedback, reporting functions and receive accumulated points.



iii. Maing a feedback or report

Users provide feedback or report issues related to products or services. They fill out a feedback form, including detailed information about their experience or the issues encountered, and submit this report to the customer support system.



b. User Authorization

Screen	Guest	Admin	Mod	Consumer	Supplier
Log in page	X	X	X	X	X
Home page	X	X	X	X	X
Create an account		X			
Create a post					X
Feedback				X	
Report				X	X
Goods details page				X	X
Profile page		X	X	X	X
Goods management page					X

In which:

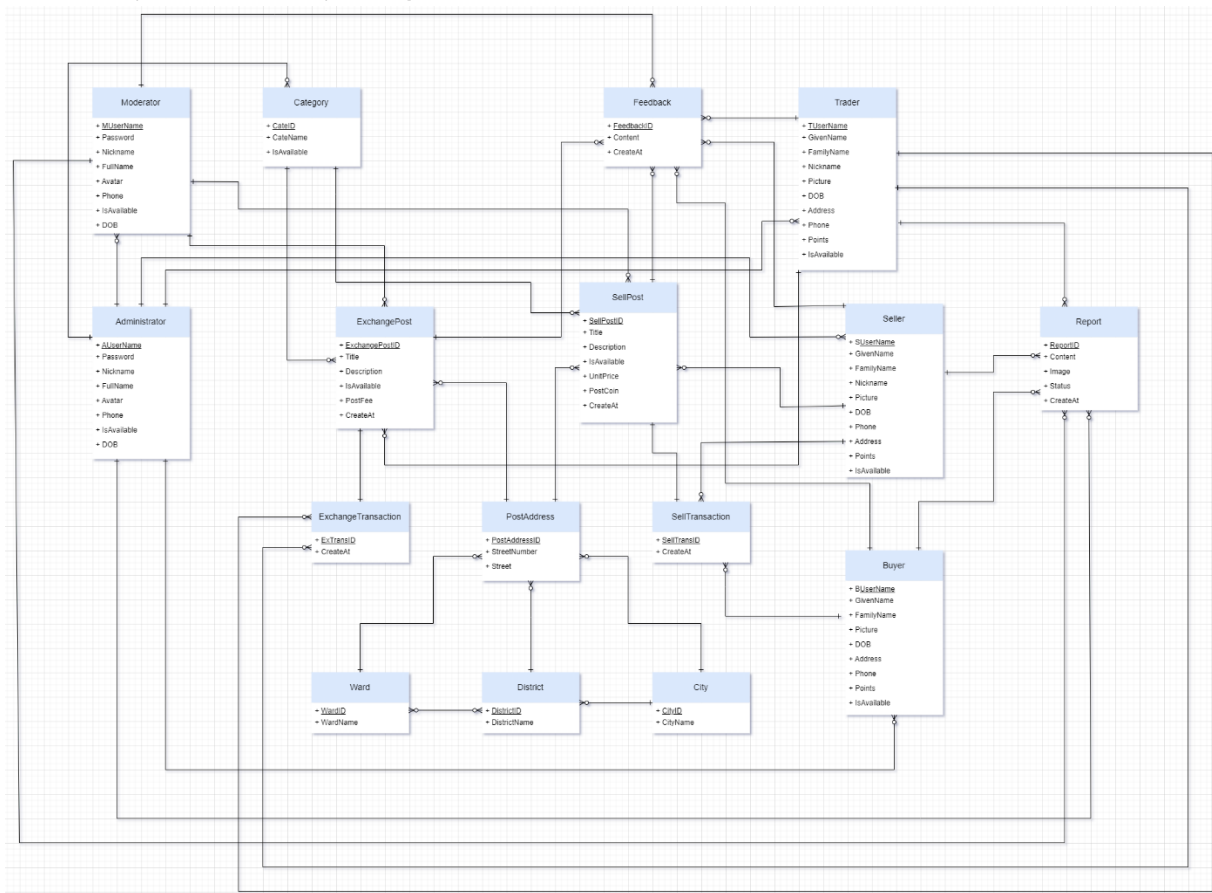
- **Guest:** a user who is browsing the platform without being logged in. They can view content and search for goods but have limited access to features such as purchasing or posting items.
- **Admin:** a user with the highest level of access, responsible for managing the entire platform. They can oversee user activities, manage content, handle complaints.

- **Mod:** a user with special privileges to monitor and manage community interactions. Moderators can review and moderate content, handle user reports, enforce platform rules, and support the admin in maintaining a safe and orderly environment.
- **Consumer:** a registered user who buys goods or services on the platform. They can search for products, make transactions, leave feedback or report.
- **Supplier:** a registered user who sells goods or services on the platform. They can create posts for their products, manage their listings.

c. Non-Screen Functions

#	Feature	System Function	Description
1	Login with Google	The application allows users to log in with their Google account instead of creating a new account or logging in with a separate email and password	This function helps users save time and remember passwords by allowing them to use login information stored on their Google account. This also increases security by using protections and verification from Google
2	Earning points	The application automatically accumulates points for users every time they make a transaction	This function motivates users to continue using the application. Accumulated points can be used to upgrade account types

4. Entity Relationship Diagram



Entities Description

#	Entity	Description
1	Administrator	An individual with full access to the platform's backend, responsible for managing users, content
2	Moderator	A user with permissions to oversee and regulate platform interactions. Moderators review content, address user reports, enforce rules, and maintain a respectful community environment
3	Category	A classification used to organize goods and services on the platform. Categories help users easily navigate and find specific types of products or services
4	Feedback	Comments or reviews provided by users regarding their experience with products, services, or the platform. Feedback helps improve quality and customer satisfaction
5	Report	A formal notification submitted by users to highlight issues or violations on the platform. Reports are reviewed by moderators or administrators for appropriate action
6	Trader	A user who engages in both trading and posting a trading post
7	Seller	A user who lists and sells goods on the platform. Sellers create posts, manage goods posts
8	Buyer	A user who purchases goods on the platform. Buyers search for products, make transactions, and can leave feedback on their purchases
9	City	A major geographic division within the platform's address system. Cities contain multiple districts and wards

10	District	A subdivision of a city, containing multiple wards. Districts help further pinpoint locations within the broader city area
11	Ward	The smallest administrative unit within a district, representing specific neighborhoods or communities. Wards provide detailed address information
12	SellTransaction	The process and record of a buyer purchasing goods or services from a seller. This includes information of transaction makers and transaction status
13	ExchangeTransaction	The process and record of trading goods or services between users. This includes information of transaction makers and transaction status
14	PostAddress	The location details provided in a user's post, including city, district, and ward, to specify where the goods or services are available
15	ExchangePost	A user-generated post listing items available for trade. Exchange posts specify what items are being offered and what the user is seeking in return
16	SellPost	A user-generated post listing goods or services for sale. Sell posts include product details, pricing, and availability for buyers to consider

II. Functional Requirements

1. Feature list and authorization

#	Guest	Admin	Mod	Consumer	Supplier	System
Log in with Google	X					
Log in with username/password	X					
Log out		X	X	X	X	
Search goods	X	X	X	X	X	
View goods	X	X	X	X	X	
View contact information		X	X	X	X	
Manage posts					X	
Make transactions				X	X	
View transactions				X	X	
Input post id				X		
Feedback				X		
Report				X	X	
Sort goods	X	X	X	X	X	
Filter goods	X	X	X	X	X	
Authorization						X
Manage personal's information		X	X	X	X	
Moderate posts			X			
Moderate reports		X	X			
Manage user account		X				

2. Functional Requirement Table

a. Log in with Google

ID and Name:	UC01 - Log in with Google		
Created By:	Gia Bao	Date Created:	30/06/2024
Primary Actor:	Guest	Secondary Actors:	FUSwap System
Description:	This use case describes the process of logging in to the FUSwap platform using a Google account		
Trigger:	A user selects the "Log in with Google" option		
Preconditions:	The user must have a Google account		
Postconditions:	The user is logged in and redirected to their dashboard		
Normal Flow:	<ol style="list-style-type: none">1. The user clicks on the "Log in with Google" button2. The system redirects the user to the Google login page3. The user enters their Google credentials and consents to data sharing4. Google authenticates the user and redirects them back to the FUSwap platform5. The system logs the user in and displays their dashboard		
Priority:	High		
Business Rules:	The user's Google account must be FPT Student email (@fpt.edu.vn)		

b. Log in with username/password

ID and Name:	UC02 - Log in with username/password		
Created By:	Gia Bao	Date Created:	30/06/2024
Primary Actor:	Guest	Secondary Actors:	FUSwap System
Description:	This use case describes the process of logging in to the FUSwap platform using a username and password		
Trigger:	A user attempts to log in with their username and password		
Preconditions:	The user must have an existing account on the platform		
Postconditions:	The user is successfully logged in and redirected to their dashboard		
Normal Flow:	<ol style="list-style-type: none">1. The user navigates to the login page2. The user enters their username and password3. The system verifies the credentials4. If the credentials are valid, the user is logged in and redirected to the dashboard5. If the credentials are invalid, the system displays an error message		

Priority:	High
Business Rules:	Username/password must meet requirements (e.g., minimum length, complexity)

c. Log out

ID and Name:	UC03 – Log out		
Created By:	Gia Bao	Date Created:	30/06/2024
Primary Actor:	Users (Admin, Mod, Consumer, Supplier)	Secondary Actors:	FUSwap System
Description:	This use case describes the process of logging out of the FUSwap platform		
Trigger:	A user selects the log out option		
Preconditions:	The user must be logged in		
Postconditions:	The user is logged out and redirected to the homepage		
Normal Flow:	1. The user clicks the "Log out" button 2. The system terminates the user's session 3. The system redirects the user to the homepage		
Priority:	High		
Business Rules:	User sessions must be securely terminated to prevent unauthorized access		

d. Search goods

ID and Name:	UC04 – Search goods		
Created By:	Gia Bao	Date Created:	30/06/2024
Primary Actor:	All users	Secondary Actors:	FUSwap System
Description:	This use case describes the process of searching for goods on the FUSwap platform		
Trigger:	A user initiates a search for goods		
Preconditions:	The user must be on the FUSwap platform		
Postconditions:	The user is presented with a list of goods that match the search criteria		
Normal Flow:	1. The user navigates to the search bar 2. The user enters search criteria (keywords, categories, etc.) 3. The user submits the search query 4. The system retrieves and displays a list of goods matching the search criteria		
Priority:	Medium		

Business Rules:	Search results should be relevant and sorted by relevance Users can filter and sort search results
-----------------	---

e. View goods

ID and Name:	UC05 – View goods		
Created By:	Gia Bao	Date Created:	30/06/2024
Primary Actor:	All users	Secondary Actors:	FUSwap System
Description:	This use case describes the process of viewing goods on the FUSwap platform		
Trigger:	A user go to the homepage or search a goods list		
Preconditions:	The user must be on the FUSwap platform		
Postconditions:	The user views general information about each goods		
Normal Flow:	1. The user search and view a goods list 2. The system displays general information about goods (title, price, images, etc.) 3. The user submits the search query 4. The system retrieves and displays a list of goods matching the search criteria		
Priority:	Medium		
Business Rules:	General information must be accurate and up-to-date		

f. View contact information

ID and Name:	UC06 – View contact information		
Created By:	Hai Anh	Date Created:	30/06/2024
Primary Actor:	Users (Admin, Mod, Consumer, Supplier)	Secondary Actors:	FUSwap System
Description:	This use case describes the process of viewing contact information on the FUSwap platform		
Trigger:	A user selects to view the contact information of another users		
Preconditions:	The user must have permission to view contact information		
Postconditions:	The user views the contact information of the selected user		
Normal Flow:	1. The user selects to view contact information 2. The system retrieves and displays the contact information		
Priority:	Medium		
Business Rules:	Contact information must be kept secure and only displayed to authorized users		

g. Manage posts

ID and Name:	UC07 – Manage posts		
Created By:	Hai Anh	Date Created:	30/06/2024
Primary Actor:	Supplier	Secondary Actors:	FUSwap System and Moderator
Description:	This use case describes the process of managing posts for goods on the FUSwap platform		
Trigger:	A supplier creates, updates, or deletes a post for a good		
Preconditions:	The user must be logged in as a supplier		
Postconditions:	The post is successfully created, updated, or deleted		
Normal Flow:	<ol style="list-style-type: none"> 1. The supplier navigates to the manage posts section 2. The supplier chooses to create, update, or delete a post <p><i>For creating a post:</i></p> <ol style="list-style-type: none"> 3. The supplier enters details about the good (title, description, price, images, etc.) 4. The supplier submits the post and waiting for moderate 5. The system saves the post and displays it in the listings <p><i>For updating a post:</i></p> <ol style="list-style-type: none"> 6. The supplier selects an existing post to update 7. The supplier modifies the details of the post 8. The supplier submits the changes 9. The system updates the post and displays the changes <p><i>For deleting a post:</i></p> <ol style="list-style-type: none"> 10. The supplier selects an existing post to delete 11. The supplier confirms the deletion 12. The system deletes the post from the listings 		
Priority:	High		
Business Rules:	Posts must meet content guidelines and not contain prohibited goods		

h. Make transactions

ID and Name:	UC08 – Make transaction		
Created By:	Hai Anh	Created By:	Hai Anh
Primary Actor:	Consumer	Primary Actor:	Consumer

Description:	This use case describes the process of inputting a post ID for opening feedback, report function and earn points
Trigger:	A user needs to input a post ID
Preconditions:	The user must have the necessary permissions
Postconditions:	The specified action is completed based on the input post ID
Normal Flow:	1. The user navigates to the post ID input section 2. The user enters the post ID 3. The system retrieves the post associated with the ID
Priority:	High
Business Rules:	The post id must be 5 characters long

i. View transactions

ID and Name:	UC09 – View transactions		
Created By:	Hai Anh	Date Created:	30/06/2024
Primary Actor:	Users (Consumer, Supplier)	Secondary Actors:	FUSwap System
Description:	This use case describes the process of viewing transaction history on the FUSwap platform		
Trigger:	A user chooses to view their past transactions		
Preconditions:	The user must be logged in		
Postconditions:	The user views a list of past transactions with details		
Normal Flow:	1. The user navigates to the transaction history section 2. The system retrieves and displays a list of past transactions		
Priority:	Medium		
Business Rules:	Transaction data must be kept secure and accessible only to authorized users		

j. Feedback

ID and Name:	UC10 – Feedback		
Created By:	Hai Anh	Date Created:	30/06/2024
Primary Actor:	Consumer	Secondary Actors:	FUSwap System
Description:	This use case describes the process of providing feedback on the FUSwap platform		
Trigger:	A user decides to provide feedback		

Preconditions:	The user must be logged in
Postconditions:	The feedback is successfully submitted and recorded
Normal Flow:	<ol style="list-style-type: none"> 1. The user navigates to the feedback section 2. The user enters their feedback in the provided form 3. The user submits the feedback 4. The system records the feedback and notifies the relevant parties
Priority:	High
Business Rules:	Feedback must be constructive and adhere to community guidelines

k. Report

ID and Name:	UC11 – Report		
Created By:	Nguyen Anh	Date Created:	30/06/2024
Primary Actor:	Consumer, Supplier	Secondary Actors:	FUSwap System, Admin and Mod
Description:	This use case describes the process of reporting an issue on the FUSwap platform or issue about an user, post		
Trigger:	A user encounters an issue or violation and decides to report it		
Preconditions:	The user must be logged in		
Postconditions:	The report is successfully submitted and investigated		
Normal Flow:	<ol style="list-style-type: none"> 1. The user navigates to the report section 2. The user fills out the report form with details of the issue 3. The user submits the report 4. The system records the report and notifies the moderators for investigation 		
Priority:	High		
Business Rules:	Reports must be genuine and include sufficient details for investigation		

l. Sort goods

ID and Name:	UC12 – Sort goods		
Created By:	Nguyen Anh	Date Created:	30/06/2024
Primary Actor:	All users	Secondary Actors:	FUSwap System
Description:	This use case describes the process of sorting goods on the FUSwap platform		
Trigger:	A user wants to organize the search results or listings by specific criteria		
Preconditions:	The user must be on the FUSwap platform		

Postconditions:	The goods are sorted according to the selected criteria
Normal Flow:	1. The user selects the sort option from the search results or listings 2. The user chooses the criteria for sorting (e.g., price, date) 3. The system sorts the goods based on the selected criteria and displays the updated list
Priority:	Medium
Business Rules:	Sorting options must be relevant and useful to the user

m. Filter goods

ID and Name:	UC13 – Filter goods		
Created By:	Nguyen Anh	Date Created:	30/06/2024
Primary Actor:	All users	Secondary Actors:	FUSwap System
Description:	This use case describes the process of filtering goods on the FUSwap platform		
Trigger:	A user wants to narrow down the search results or listings based on specific criteria		
Preconditions:	The user must be on the FUSwap platform		
Postconditions:	The goods are filtered according to the selected criteria		
Normal Flow:	1. The user selects the filter option from the search results or listings 2. The user chooses the criteria for filtering (e.g., category, price range, location) 3. The system filters the goods based on the selected criteria and displays the updated list		
Priority:	Medium		
Business Rules:	Filtering options must be relevant and useful to the user		

n. Authorization

ID and Name:	UC14 – Authorization		
Created By:	Nguyen Anh	Date Created:	30/06/2024
Primary Actor:		Secondary Actors:	FUSwap System
Description:	This use case describes the process of managing user permissions and roles on the FUSwap platform		
Trigger:	System decides to update user permissions or roles		
Preconditions:	The user must be logged in		

Postconditions:	The user permissions or roles are successfully updated
Normal Flow:	1. The user logged in 2. The system updates the user's permissions or roles
Priority:	High
Business Rules:	No one can modify user permissions or roles

o. Manage personal's information

ID and Name:	UC15 – Manage personal's information		
Created By:	Nhat Phi	Date Created:	30/06/2024
Primary Actor:	Users (Admin, Mod, Consumer, Supplier)	Secondary Actors:	FUSwap System
Description:	This use case describes the process of managing personal information on the FUSwap platform		
Trigger:	A user decides to update their personal information		
Preconditions:	The user must be logged in		
Postconditions:	The personal information is successfully updated		
Normal Flow:	1. The user navigates to the personal information section 2. The user updates their personal information (e.g., name, address) 3. The user saves the changes 4. The system updates the personal information		
Priority:	Medium		
Business Rules:	Personal information must be kept secure and accurate		

p. Moderate posts

ID and Name:	UC16 – Moderate posts		
Created By:	Nhat Phi	Date Created:	30/06/2024
Primary Actor:	Mod	Secondary Actors:	FUSwap System
Description:	This use case describes the process of moderating posts on the FUSwap platform		
Trigger:	A moderator reviews posts for compliance with platform guidelines		
Preconditions:	The user must be logged in as a moderator		
Postconditions:	The post is either approved or rejected		
Normal Flow:	1. The moderator navigates to the post moderation section		

	2. The moderator reviews the post content 3. The moderator approves or rejects the post 4. The system updates the post status
Priority:	High
Business Rules:	Posts must comply with platform guidelines

q. Moderatore reports

ID and Name:	UC17 – Moderate reports		
Created By:	Nhat Phi	Date Created:	30/06/2024
Primary Actor:	Mod	Secondary Actors:	FUSwap System
Description:	This use case describes the process of moderating reports on the FUSwap platform		
Trigger:	A moderator reviews user reports for compliance with platform guidelines		
Preconditions:	The user must be logged in as a moderator		
Postconditions:	The report is either resolved or escalated for further action		
Normal Flow:	1. The moderator navigates to the report moderation section 2. The moderator reviews the report details 3. The moderator resolves the report or escalates it for further action 4. The system updates the report status		
Priority:	High		
Business Rules:	Reports must be handled promptly and fairly		

r. Manage user accounts

ID and Name:	UC18 – Manage user accounts		
Created By:	Nhat Phi	Date Created:	30/06/2024
Primary Actor:	Admin	Secondary Actors:	FUSwap System
Description:	This use case describes the process of managing user accounts on the FUSwap platform		
Trigger:	An admin decides to create an account or update user account details		
Preconditions:	The user must be logged in as an admin		
Postconditions:	The user account details are successfully updated or created		
Normal Flow:	1. The admin navigates to the user account management section <i>For update an account:</i>		

	2. The admin selects a user to update 3. The admin modifies the user account details 4. The admin saves the changes 5. The system updates the user account details <i>For create an account:</i> 6. The admin input information of the mod account 7. The admin click submit 8. The system save the account
Priority:	High
Business Rules:	Only admins can modify user account details and create accounts

III. Non-Functional Requirements

1. Usability

a. Intuitive Interface

The platform should have a clean and straightforward layout that allows users to easily find and use features such as searching for goods, posting items, and managing personal information.

b. User Assistance

Include help sections, tooltips, and FAQs to assist users in navigating the platform and resolving common issues.

2. Security

a. Data Protection

Ensure that all personal and transactional data is encrypted both in transit and at rest.

b. Authentication & Authorization

Implement strong authentication mechanisms and ensure proper authorization controls to restrict access to sensitive features.

3. Performance

a. Scalability

The platform should be designed to scale seamlessly to accommodate increasing numbers of users and transactions.

b. Response Time

Ensure that the system responds quickly to user interactions, with minimal latency for actions such as searching for goods, loading pages, and processing transactions.

IV. User Interfaces

V. Technical Requirements

Usecase	Title	Prefix	No.	Description
---------	-------	--------	-----	-------------

UC01	Log in with Google	GG	01	Verify email suffix that must have @fpt.edu.vn
			02	Redirect to localhost:8080 when clicking “Login with Google”
UC02	Log in with username/password	UP	03	Username is required
			04	Password is required
UC03	Log out	LO	05	User cannot access pages that require authentication after logging out
UC04	Search goods	SEG	06	Search keywords must match the title or content of the post
			07	Empty search query displays default results
			08	Search results pagination works correctly
			09	Special characters in search query must limit the data returned
UC05	View goods	VG	10	Users can view all goods posts
			11	Users can view post details
UC06	View contact information	CI	12	Users can view the post’s contact information
UC07	Manage posts	MP	13	Post type is required
			14	Title must not be blank
			15	Title must be 5 – 50 alphanumeric characters long
			16	Content must not be blank
			17	Content must be 10 – 200 alphanumeric characters long
			18	Unit price (for sell post only) must be a positive number
			19	Image must not be blank
			20	System must display a QR code to pay for the post
			21	Users cannot update post type
UC08	Make transactions	MT	22	Users can enter post id
			23	Users can feedback/report if the post id is valid
			24	Users can earn points if the post id is valid
			25	Post id must have 5 characters
UC09	View transactions	VT	26	Users can view their transactions
UC10	Feedback	FB	27	Feedback content must be 10 – 50 characters long
			28	Users cannot submit blank feedback content
			29	Submitting feedback displays a confirmation message

			30	Feedback cannot be edited once submitted
UC11	Report	RP	31	Report content must be 10 – 200 characters long
			32	Report image must not be blank
			33	Submitting report displays a confirmation message
UC12	Sort goods	SOG	34	Returns a sorted list from lowest price to highest price
			35	Returns a sorted list from highest price to lowest price
			36	Returns a sorted list from newest date to oldest date
			37	Returns a sorted list from oldest date to newest date
UC13	Filter goods	FG	38	Returns goods by price range
			39	Returns goods by post type
			40	Returns goods by city
			41	Returns goods by district
			42	Returns goods by ward
UC14	Authorization	AZ	43	Guests cannot access the customer, administrator and moderator pages
			44	Customers cannot access the admin and moderator pages
			45	Moderators cannot access the administrator pages
			46	Admins can access the customer, administrator and moderator pages
			47	Guests cannot access the customer, administrator and moderator pages
UC15	Manage personal's information	PI	48	Users can view their profiles
			49	Users can update their profile
			50	Customers cannot update email address
			51	Manager cannot update username
UC16	Moderate posts	MP	52	Moderators can view posts that have been approved and need approval
			53	Moderators can reject a post
			54	Moderators can approve a post
UC17	Moderate reports	MR	55	Moderators can view reports have been approved and need approval
			56	Moderators can reject a report
			57	Moderators can approve (send to admin) a post

UC18	Manage user accounts	UA	58	Administrator can create moderator accounts
			59	Check that the username of the moderator account already exists
			60	Administrator can ban accounts