Computer Science and Engineering

Creato

System Requirements Specification (SRS)

Version 1.2

Document Number: SRS-001

Project Team Number: A28

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REVIEW AND APPROVALS

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Ben Ju	Author	10/8/2020	On File
Danny Kim	Author	10/8/2020	On File
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REVISION LEVEL

Date	Revision Number	Purpose
October 8, 2020	Version 1.0	Initial Release
October 22, 2020	Version 1.1	Functional Descriptive Detailed Requirements (Section 6.1) Updated System Architecture (Section 7) and Detailed System Requirements - Use Cases (Section 8) Added
November 19, 2020	Version 1.2	Sections 9 Completed (Entire Document is Completed)

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1. DOCUMENT PURPOSE

1.1 Purpose

In this document, a detailed description and analysis will be specified for our product, Creato. It will contain specific functionalities of the service, taking in account both the clients' expectations and requirements. This document is intended to serve audience for Professor Strauss and A28 Team members.

2. INTRODUCTION

2.1 Scope

Digital media is on a steep rise each year, and viewers are spending time more on digital content than the traditional media. YouTube, a major digital media content platform, allows users to subscribe to their favorite channels to be able to receive instant notifications whenever the channel uploads new content. Such system started to create fandom among viewers.

Therefore, numerous YouTubers have started creating new business with their brand. This means that each YouTube channel can also have its own value that could potentially be measurable. If there is a digitized value of a brand, then we will be able to convert it into tradable assets. Fandom can be a strong influence for attracting buyers. Moreover, viewers can also hope to gain some profit whenever their YouTuber also receives more value.

2.2 Identification

This SRS document is for Team A28, Version 1.0.

2.3 Bounds

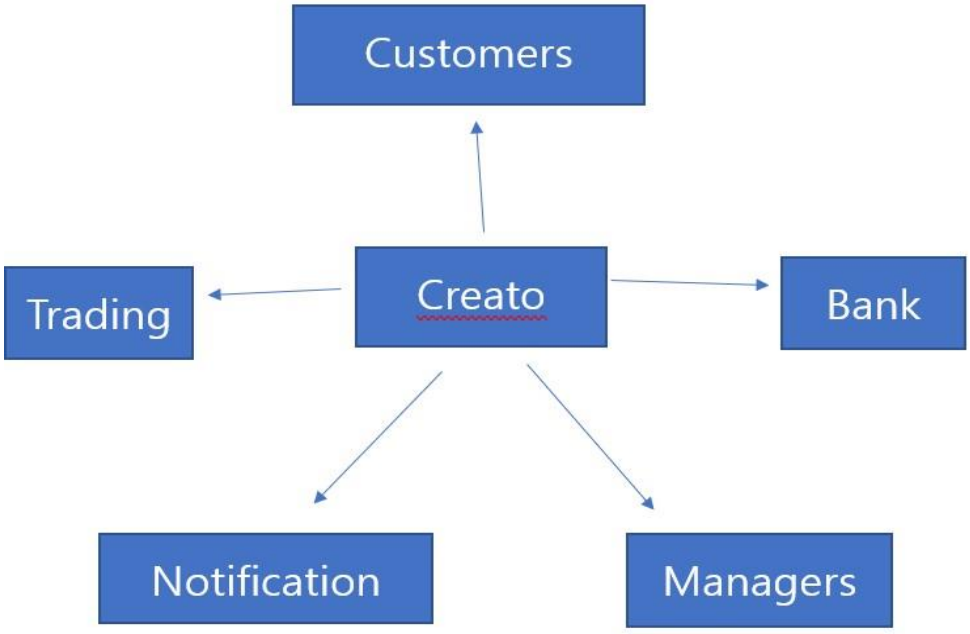
Users should have an initial withdrawal restriction after the first deposit in order to prevent money laundering. Also, users will have a withdrawal limit (daily and monthly) unless they are able to verify their identity to us due to security reasons.

2.4 Objectives

The purpose of this service is to provide users a way to purchase tokens of their favorite Creators in a way that is similar to how people purchase stocks of their

favorite companies using a WTS. The goal of this service is to constantly list new tokens of new Creators and allow customers to have a more variety of tokens to purchase. Also, customers will be able to receive dividends based on the amount of tokens they hold, which will become a good incentive to use our service.
We plan to incrementally deliver features based on the client's requirements and expectations flexibly over time.
The initial MVP is scheduled to be delivered Q1 2020.

2.5 Context Diagram



Bank shall handle the deposits & withdrawals of money and customers shall connect their Creato accounts to their bank accounts before they buy and sell tokens. Managers shall create new offerings or list tokens, trading category will show trading history and match orders, and notifications shall be sent on specific events.

2.6 Additional Descriptive Items

None at this moment.

3. GLOSSARY

The following terms will be frequently used in this proposal

Creators: Youtubers or streamers who participate in creating digital contents.

Viewers: People who view digital contents created by such creators, and users who are potential customers of our service.

4. REFERENCE DOCUMENTS

Please refer to the Team A28 Project Proposal document for additional reference.

5. BUSINESS REQUIREMENTS

5.1 Technology

Tokens must be continuously added to the server for either subscription or trading. Deposits and withdrawals need to be kept track of in case of potential problems. Ceaseless monitoring is necessary for unexpected problems with the server, money laundering, and fraud detection in case there are users who will try to exploit the service.

5.2 Economics

Transaction fees from trading and subscription fees will be the initial profit model, so there must be a high volume of daily active users (DAU) and trading activities. Investment is necessary until a high volume of both customers and creators become users of Creato.

5.3 Regulatory and Legal

The tradable assets must be recognized as a “legitimate” asset from financial institutions, and a valid valuation approach to measure each Youtuber’s value is necessary.

5.4 Market Considerations

There needs to be a way to attract creators to allocate some of their values to the platform as tokens, and creator platforms such as Youtube should continue to gain more daily active users (DAU) as the service depends on them.

5.5 Risks and Alternatives

Since this is a platform that deals with financial assets, there may be attempts for money laundering. To prevent such exploitation, we must have Anti-Money Laundering process ready in our platform.
Another risk is that there may be malicious trading efforts to somehow increase a tokens' worth to make profit. Hence, there must be some sort of Fraud Detection Monitoring for all the transactions that occur in our platform.

5.6 Human Resources and Training

Experienced customer support agents who have knowledge in basic financial terms and regulations are required.
Law and financial consultants are required to overcome regulation needs stated in 5.3.

6. USER REQUIREMENTS (DESCRIPTIVE FUNCTIONAL AND NON-FUNCTIONAL REQUIREMENTS)

6.1 Functional Descriptive Detailed Requirements

This system will be provided to the viewers as a single-page web application. Viewers will be able to create and manage their own trading account, subscribe to specific tokens issued for subscription, buy or sell tokens with another viewers, receive dividends every set amount of time, and deposit or withdraw money to their connected bank accounts.

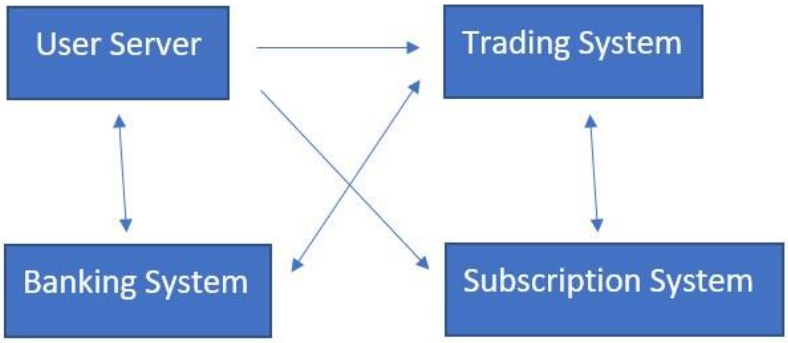
1. Viewers shall be able to create and manage their trading accounts. Viewers shall be provided with several terms of agreement related to the service and privacy regulations. Viewers should be able to connect to a bank account that the system currently allows.
2. Viewers shall be able to subscribe to specific tokens listed by the managers of the system. Creators shall be able to request subscriptions of their own tokens. At a specific date, viewers will be able to subscribe to the offerings for a certain amount of time. After the time is due, viewers will have their respective token issued.
3. Viewers shall be able to buy or sell tokens of their own choice. The tokens must be listed on the trading market to be able to trade. The buyers and sellers shall pay an additional trading fee for every transactions.
4. Viewers shall be able to receive small dividends based on how many tokens he or she currently holds. The money from the dividends distributed will be added into the viewers' balance.
5. Viewers shall be able to deposit money into their trading account. Also, viewers shall be able to send money back to their connected bank account.

6.2 Non-Functional Descriptive Detailed Requirements

This system shall be available 24/7. Moreover, the trading market will also be open 24 hours a day, similar to the cryptocurrency market. All deployments will be carried out as a High Availability deployment so that viewers will not be interrupted with the trading market. Viewers shall require no training in order to use the service, but a little to good amount of knowledge with financial trading systems should be helpful. The system will be responsive with less than 0.5s of latency, which are mainly from HTTPS requests. The orderbook in the trading market will be connected to a websocket, so little to no latency is expected. The system shall be able to handle more than 100 concurrent transactions.

1. Dependability requirement: Creato shall be available 24/7.
2. Usability requirement – Viewers shall be able to use the system without any prior education. Some knowledge in using financial trading systems will be useful.
3. Performance requirement – Viewers will be able to flawlessly and responsively access the UI as a single-page web application. The system shall have less than 0.5 seconds of latency from HTTPS requests, and little to no latency with the websocket.
4. Scalability requirement – The system shall aim to handle more than 100 concurrent transactions.

7. SYSTEM ARCHITECTURE

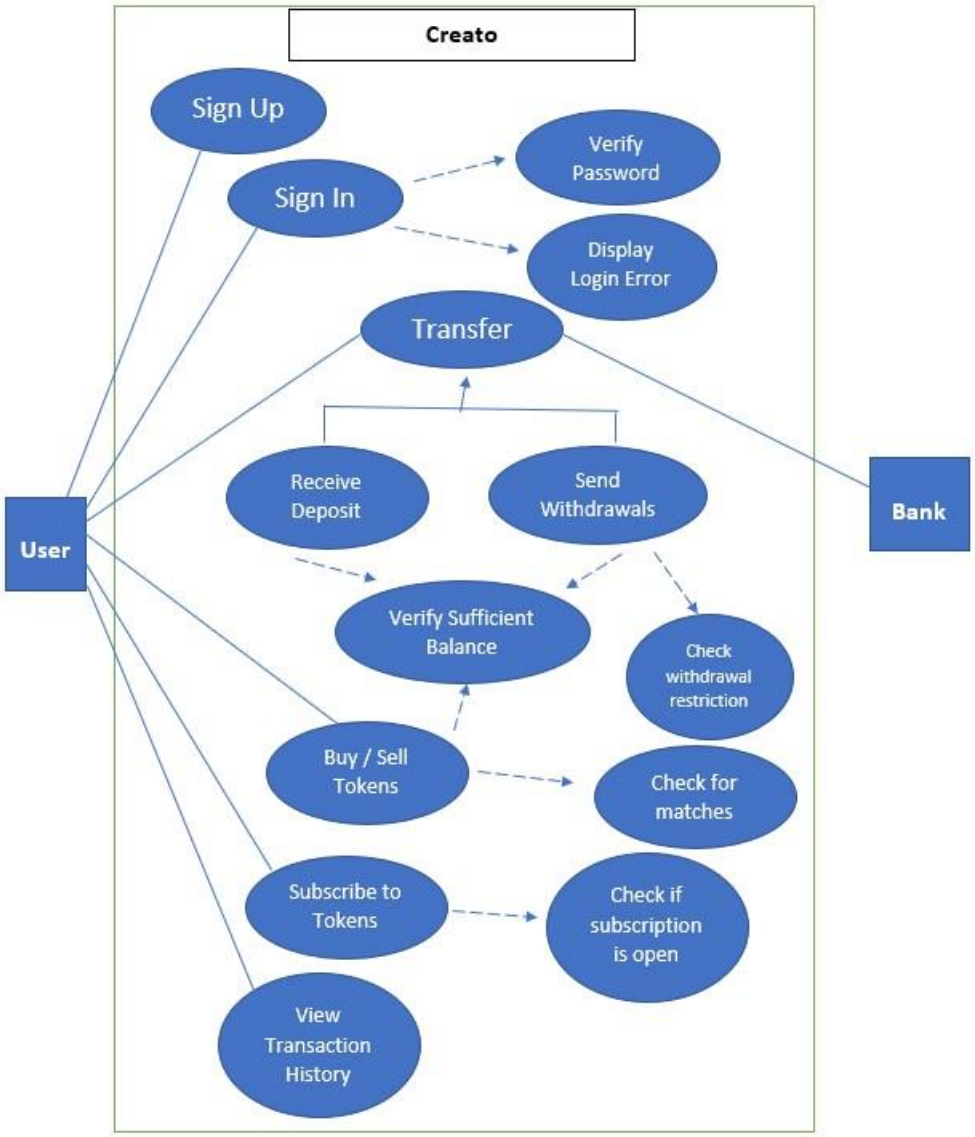


There are a total of four main components in this system. The User Server will create, store and manage the trading accounts in this system. It will contain personal information such as name, birthdate, and the connected bank account. The User Server shall provide the viewers' name and the connected bank account to the banking server for deposit and withdrawals. The User Server will also provide UUID of the accounts for trades and subscriptions. The trading system will store the viewers' balance and trading history. The subscription system will allow viewers to subscribe to tokens that are being offered. It will send token information to the trading system after the offering has ended and the tokens have been issued. The banking system will communicate with the external banks for deposit and withdrawal. It will communicate with the trading system for updating the balance of a specific viewer.

8. DETAILED SYSTEM REQUIREMENTS – USE CASES

8.1 Requirement Use Cases

8.1.1 Use Case Diagrams



*Dashed lines refer to included use cases. <<included>> labels are omitted.

8.1.2 Use Case Descriptions

Sign Up		
Description	The viewer creates an account that will allow them to access the Creato services.	
Pre-Conditions	None	
Flows	**Basic or Normal Flows**	1. Viewer accesses the signup page. 2.Viewer enters username, password, along with his or her personal information 3. Viewer enters the main page.
	Alternative Flows	1. If viewer already has an account connected to the username, he or she is shown a notice. 2. If viewer leaves the tab or page, the use case ends. 3. If viewer enters the signup page from a different page such as the trading page, the viewer is redirected to that page after signup.
Post Conditions	In subsequent visits after the signup, the viewer will be able to sign in with his or her password. The viewers' session will be valid until 24 hours.	
Special Requirements	N/A	
Extension Points	If the viewer already has an account, the user will be redirected to the Login Use Case.	

Sign In		
Description	The viewer enters a username and password that will allow them to access Creato.	
Pre-Conditions	The viewer has already signed up.	
Flows	**Basic or Normal Flows**	1. Viewer accesses the login page 2. Viewer enters username and password 3. The main page is loaded
	Alternative Flows	1. In Step 2, if the viewer inputs wrong signin information, it is prompted with a notice that the above credentials are wrong.

		2. In Step 3, if the viewer enters the login page in Step 1 from a different page such as the trading page, the viewer is redirected back to that page.
Post Conditions	The user is now able to connect his or her bank account with the Creato account.	
Special Requirements	None	
Extension Points	None	

Connect Bank Account		
Description	The viewer can connect a bank account to their Creato account.	
Pre-Conditions	The viewer is logged in.	
Flows	**Basic or Normal Flows**	1. Viewer clicks the connect bank account located on the main page. 2. Viewer authenticates its bank account. 3. The bank account is now connected and the viewer is redirected to the main page.
	Alternative Flows	1. If in step 1, the viewer does not have a bank account, they have an option to open up a new account. 2. If the viewer fails to authenticate, they are notified to retry.
Post Conditions	The viewer is now able to send deposits into their Creato account. The viewer can also send withdrawals if they have balance in their account.	
Special Requirements	None	
Extension Points	None	

Receive Deposit		
Description	The viewer can receive deposits from the connected bank account.	
Pre-Conditions	The viewer is logged in, the viewer has a bank account connected, and the viewer has enough balance in his or her bank account.	
Flows	**Basic or Normal Flows**	1. Viewer goes to the transfer tab and clicks deposit. 2. The viewer prompted how much USD he or she will deposit

		3. The viewer is redirected to the main page after the deposit request is successful.
	Alternative Flows	1. If the viewer does not have enough balance in his or her bank account, the viewer is notified that the transaction failed. 2. If there are any other problems, the deposit process will be interrupted.
Post Conditions	The viewer will now be able to see his or her balance in the main page. The viewer can now buy tokens from the trading page or subscribe to offers in the subscription page.	
Special Requirements	None	
Extension Points	None	

Send Withdrawals		
Description	The viewer can send money back to his or her connected bank account.	
Pre-Conditions	The viewer is logged in, the viewer has a bank account connected, and the viewer has enough balance in his or her trading account.	
Flows	**Basic or Normal Flows**	1. Viewer goes to the transfer tab and clicks withdrawal. 2. The viewer prompted how much USD he or she will withdraw. 3. The viewer is redirected to the main page after the withdrawal request is successful.
	Alternative Flows	1. If there is a withdrawal restriction set on the account due to malicious trading attempts, the user will be blocked from withdrawing. 2. If there are any other problems, the withdraw process will be interrupted.
Post Conditions	The viewer shall be able to see his or her updated balance in the main page.	
Special Requirements	None	
Extension Points	None	

Subscribe to tokens		
Description	The viewer can subscribe to tokens when they are listed for public offering.	
Pre-Conditions	The viewer is logged in, has enough balance for subscription, and the token is open for subscription.	
Flows	**Basic or Normal Flows**	1. Viewer goes into subscription tab and finds a token to subscribe. 2. The viewer prompted how much token he or she is willing to subscribe to. 3. The viewer receives final confirmation on how much tokens he or she will subscribe to. It will list information such as issue date, fees, and price. 4. The viewer sees the completion screen.
	Alternative Flows	1. If the subscription is closed or all of the tokens are subscribed, the viewers are not able to proceed to step 2. 2. If there are no subscriptions listed for offerings, the user will see a text that there are no subscriptions available.
Post Conditions	The viewer is ready to be issued tokens when the subscription ends and the issue begins.	
Special Requirements	None	
Extension Points	The tokens should be issued within 72 hours of when the subscription is closed. The exact issuance date shall be shown during the final confirmation. Most of the time, the viewers have their tokens allocated. However, if there were too many subscriptions, they may have partial tokens allocated and rest of the money refunded.	

View Transaction History		
Description	The viewer shall be able to view his or her transaction history.	
Pre-Conditions	The viewer is logged in.	
Flows	**Basic or Normal Flows**	1. Viewer goes into the history page. 2. The viewer sees all the history of current transactions including orders, trades, deposits, and withdrawals.
	Alternative Flows	1. If the viewer does not have any history, it will be empty.

Post Conditions	None
Special Requirements	None
Extension Points	None

Buy or Sell Tokens		
Description	The viewer can buy or sell tokens with other viewers.	
Pre-Conditions	The viewer is logged in, have enough balance, and the respective token is listed on the trading market.	
Flows	**Basic or Normal Flows**	1. Viewer goes into the trading market 2. The viewer browses a list of tokens and selects his or her token. 3. The viewer can either choose to buy or sell by selecting the respective tab. 4. The viewer can see the unmatched order history on the history tab. 5. The viewer will be notified when the order has been matched by somebody else.
	Alternative Flows	1. If the viewer decides to cancel the order, step 5 is excluded. 2. If the viewer puts up an order that is immediately matchable, Step 4 is excluded since the order will immediately be matched.
Post Conditions	The transaction will be added to the trade history. The viewer will have an adjusted balance based on the transaction.	
Special Requirements	None	
Extension Points	Whenever the viewer puts a buy or sell order, the balance will be “frozen.” This means that the respective amount will be temporarily deducted from the accounts’ remaining balance.	

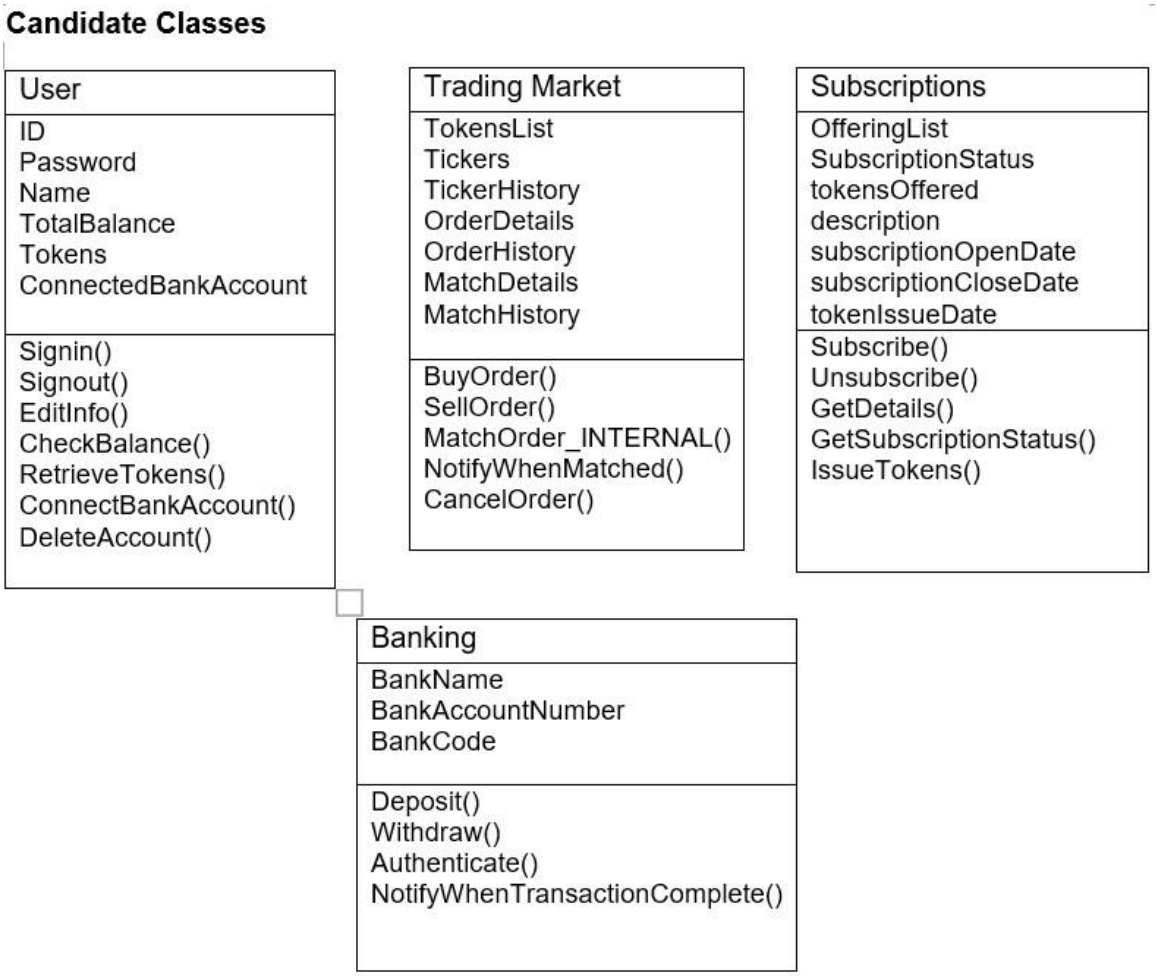
Cancel orders		
Description	The viewer can cancel unmatched orders in the trading page.	
Pre-Conditions	The viewer is logged in, the viewer has an unmatched order.	
Flows	**Basic or Normal Flows**	1. Viewer goes into the trading market 2. The viewer checks the order history section.

		3. The viewer clicks the cancel order button. 4. The viewer is re-notified if he or she wants to cancel the order. 5. The order is canceled and removed from the history.
	Alternative Flows	None
Post Conditions	The order is removed from the order history. The viewer will now have the specific amount of balance “unfrozen, ” which will be available for trading.	
Special Requirements	None	
Extension Points	None	

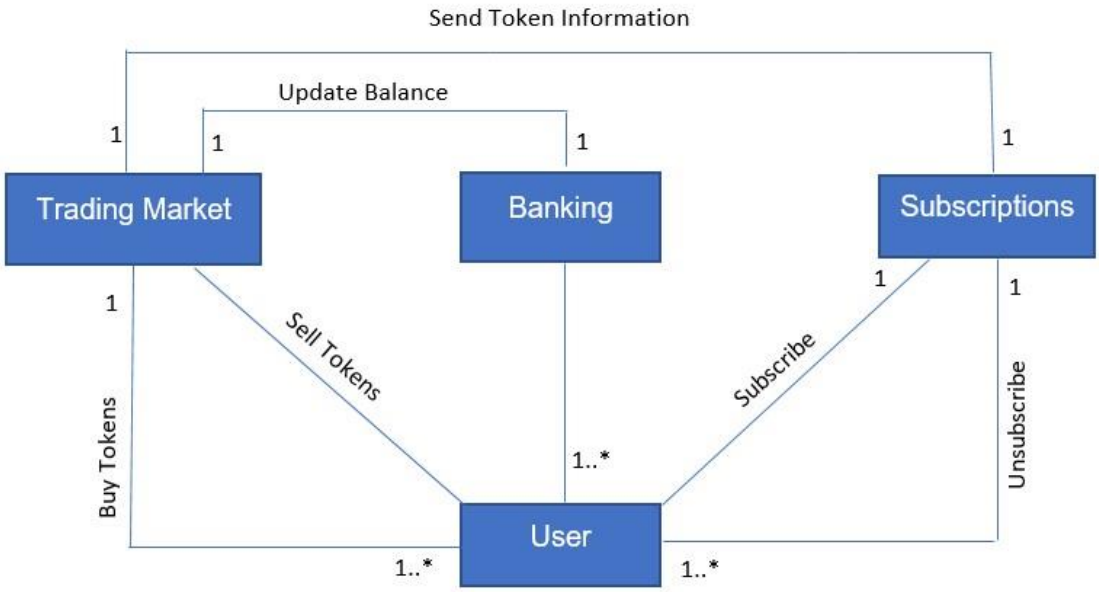
9. SYSTEM MODEL

9.1 Static - Class Diagrams

Candidate Classes

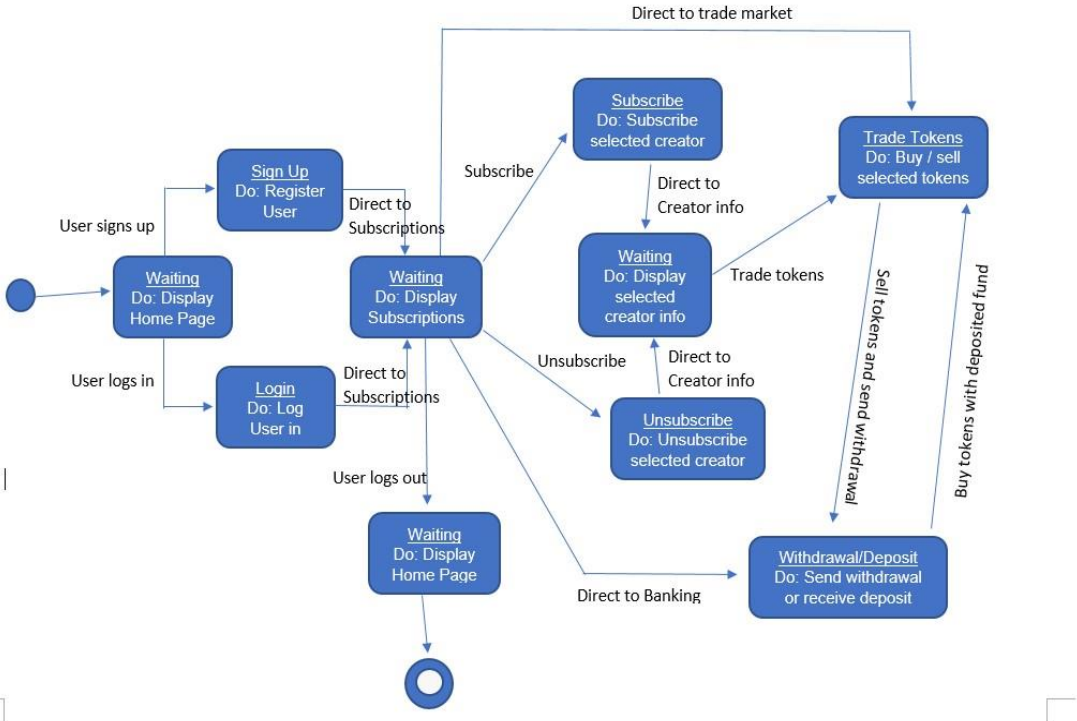


Class Interaction Diagram

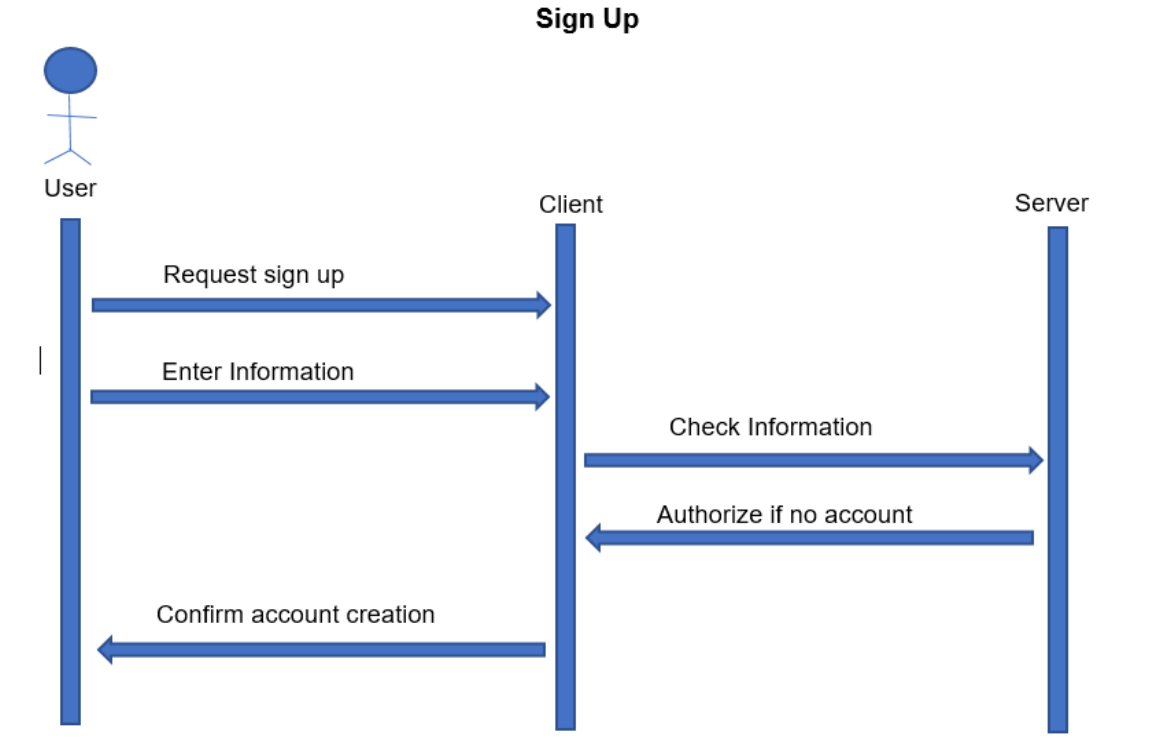


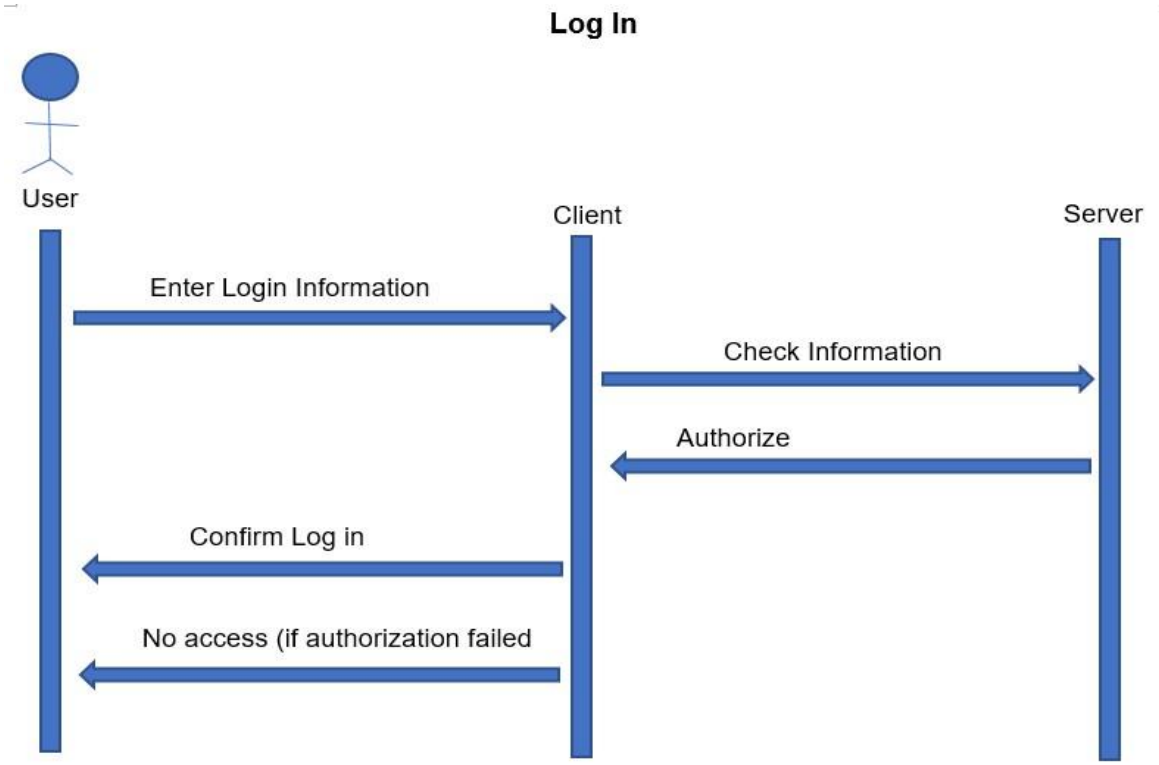
9.2 Dynamic - Behavioral Models

Event Diagram

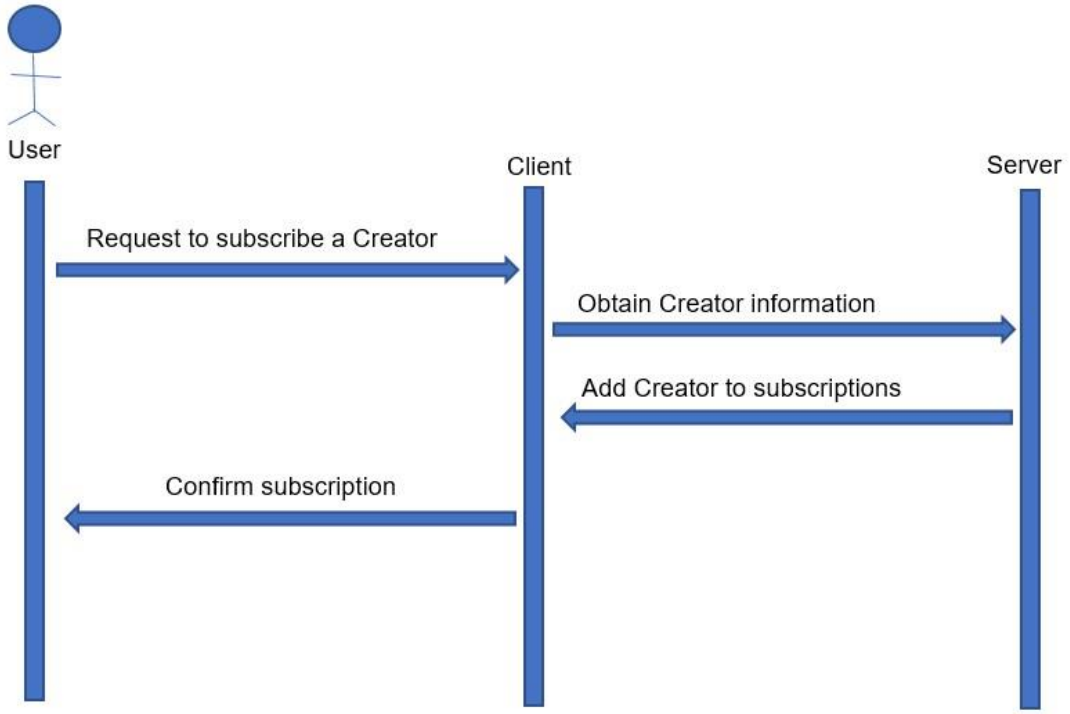


Sequence Diagrams

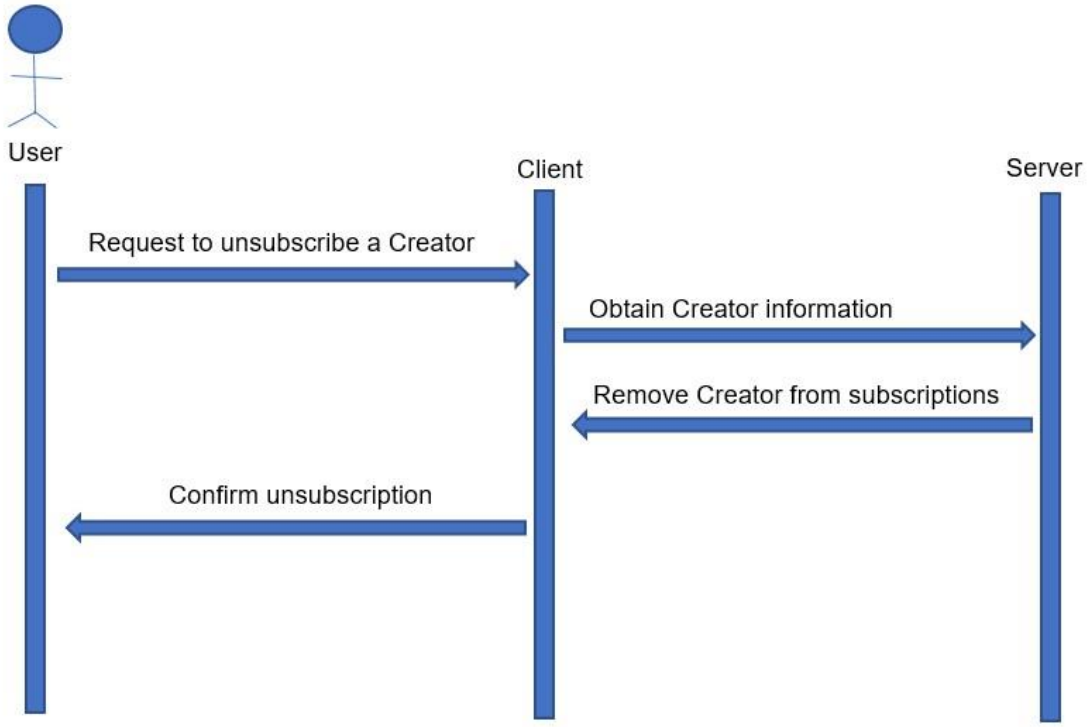




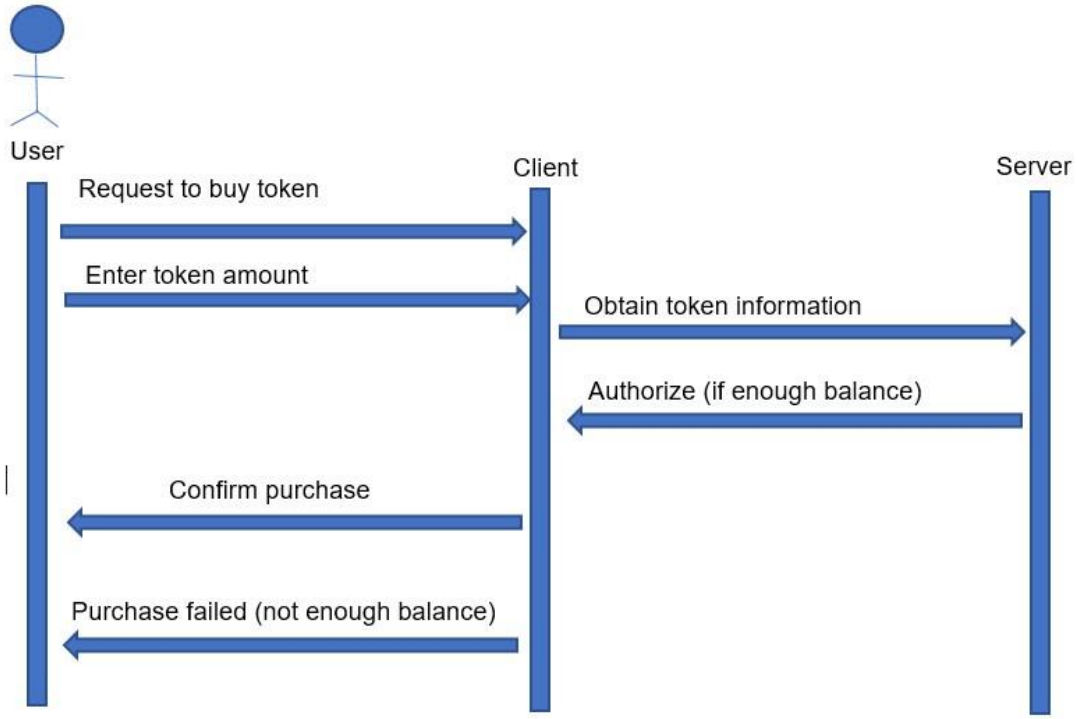
Subscribe



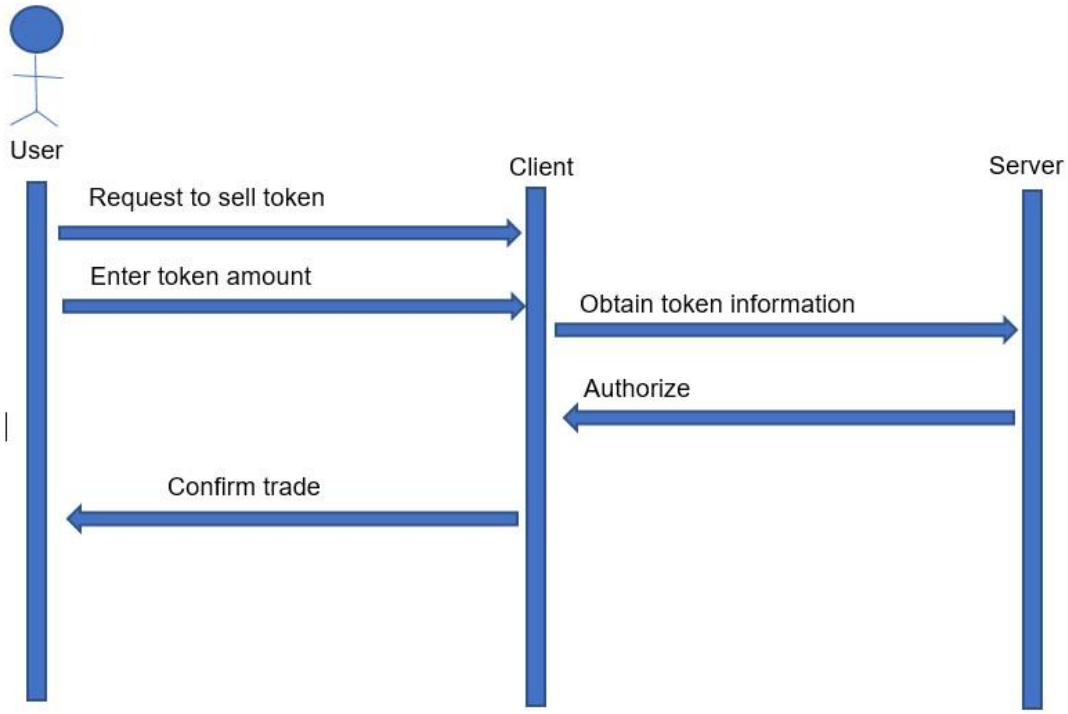
Unsubscribe



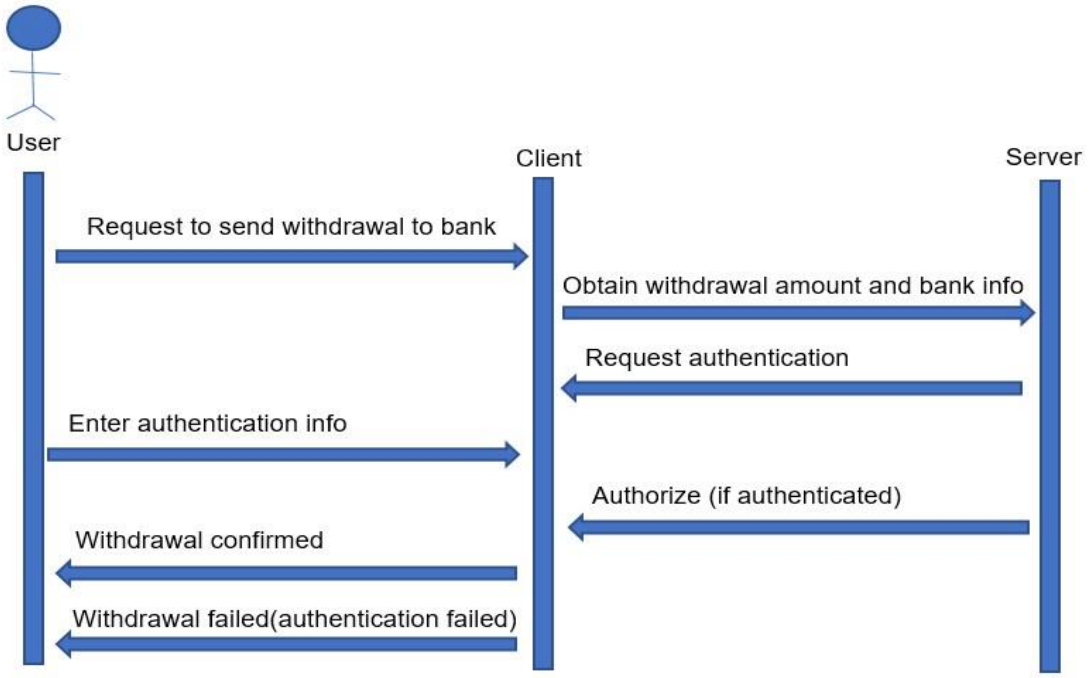
Buy Token



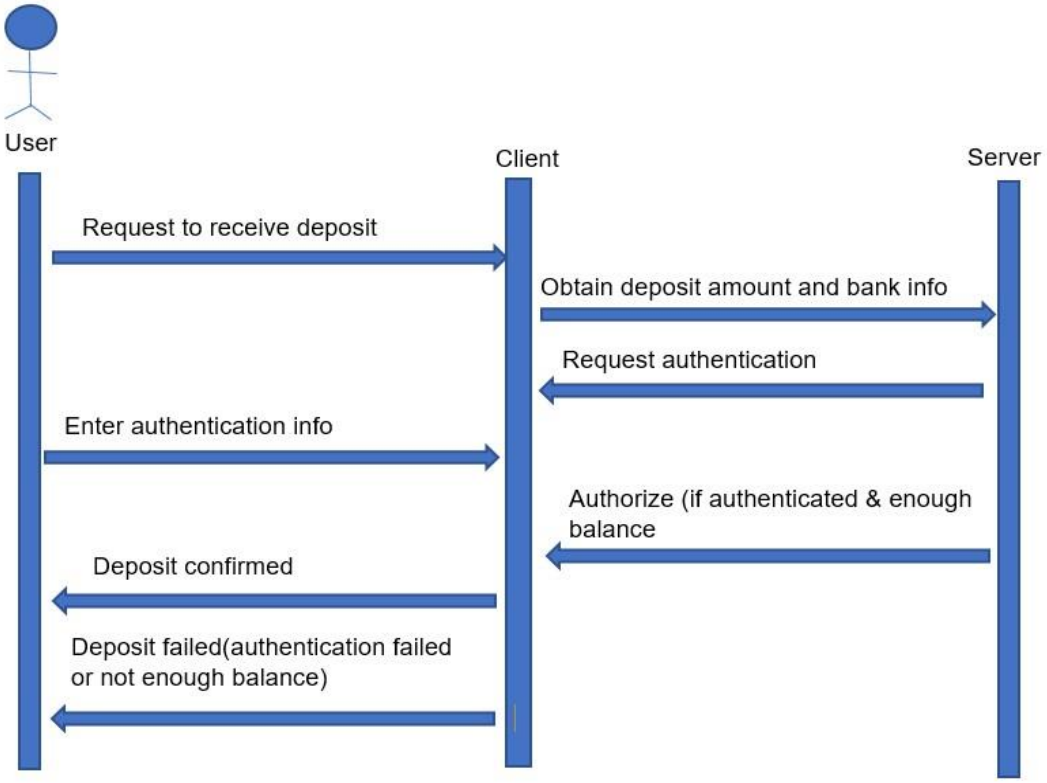
Sell Token

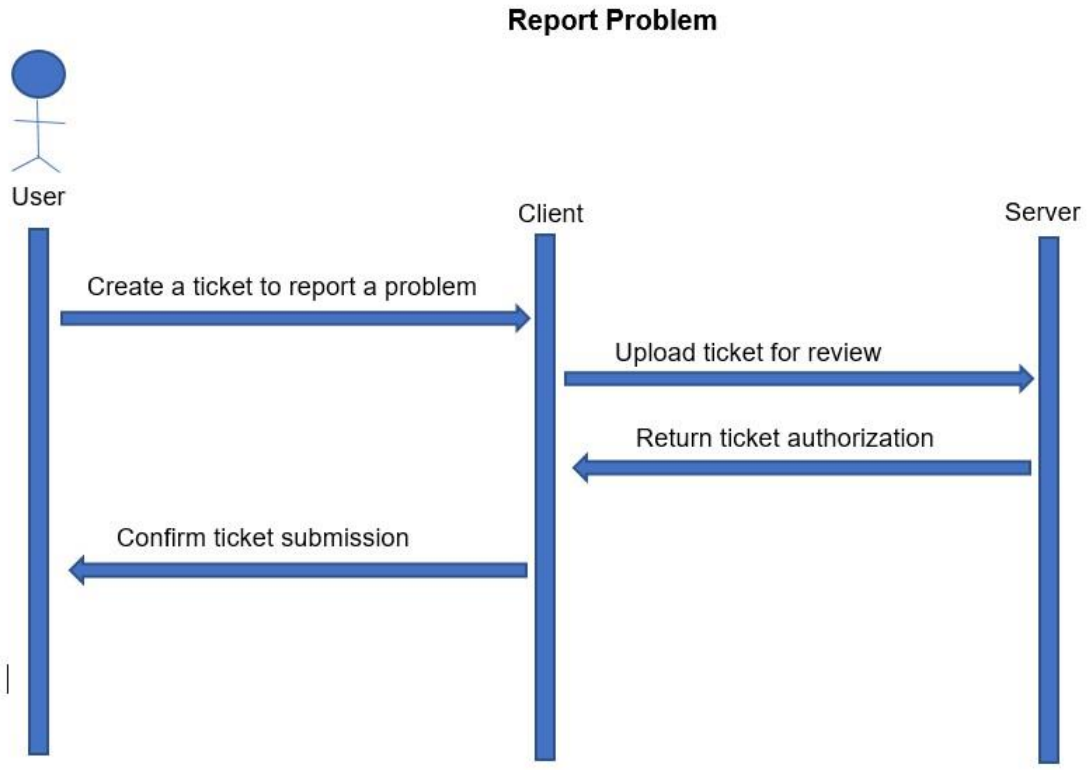


Send Withdrawal

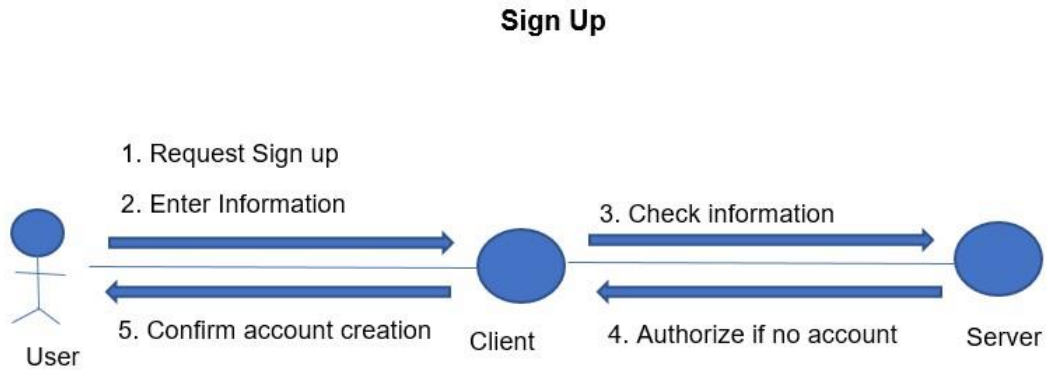


Receive Deposit

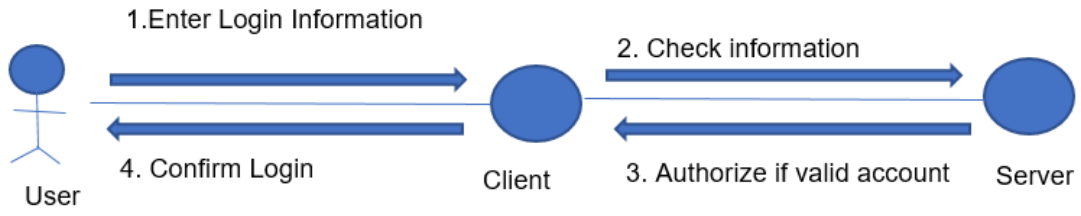




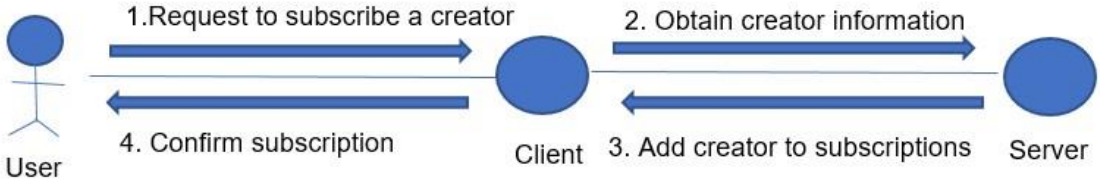
Collaboration Diagrams



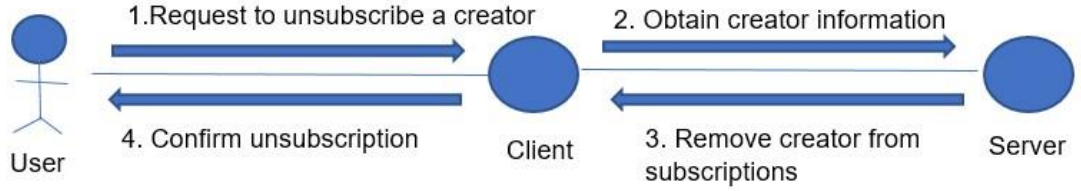
Log In



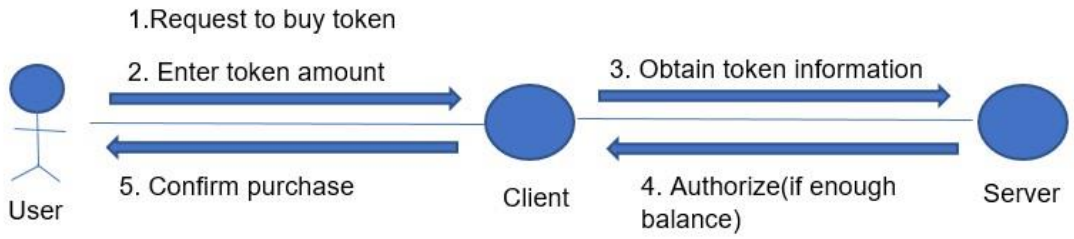
Subscribe



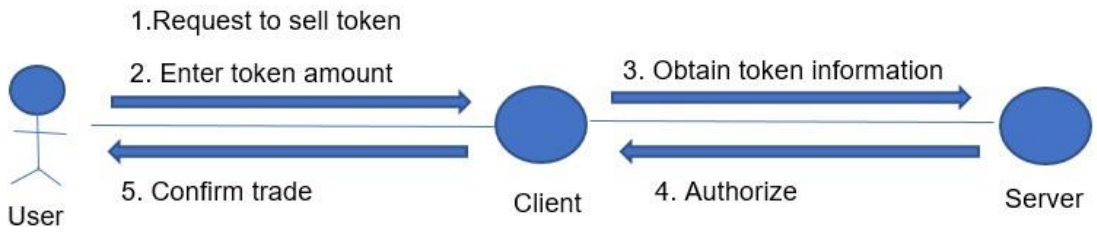
Unsubscribe



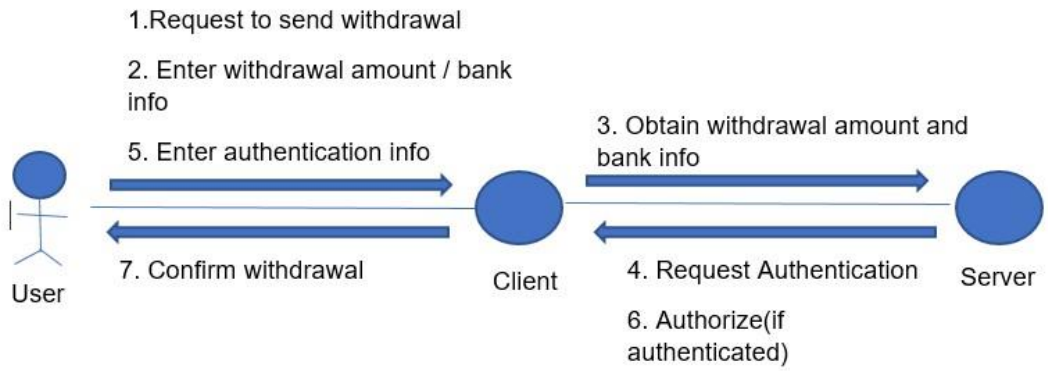
Buy Token



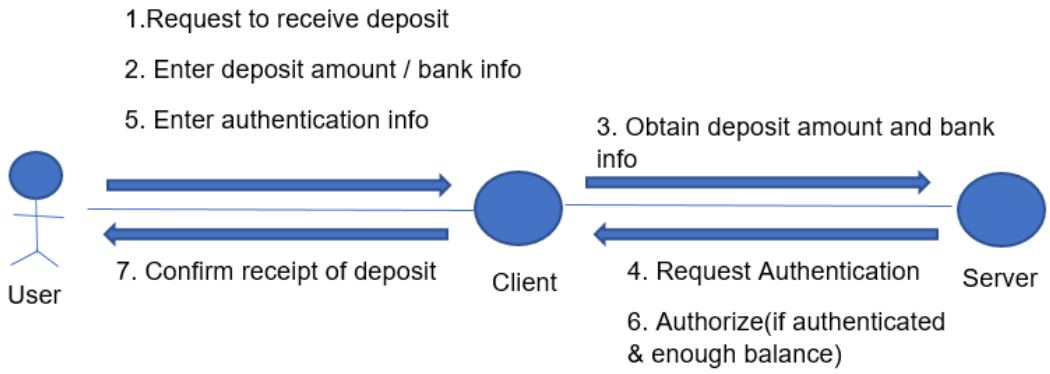
Sell Token



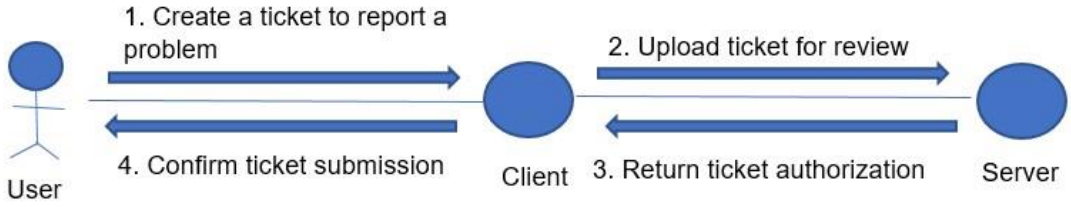
Send Withdrawal



Receive Deposit



Report Problem



10. EVOLUTION OF THE SRS

There are some aspects in this document that may be changed in the future mainly due to regulation reasons. For example, financial institutions may not be convinced that our service is a trustworthy system to handle customers' assets. Then, we might have to implement private blockchain into our system and share nodes with other banks / institutions so that all of customers' assets are transparently stored. Also, if financial institutions do not recognize the Creators' tokens as a legitimate asset, we will need to find a workaround with a new valuation approach.

11. RATIONALE

None

12. NOTES

None

13. APPENDICES

13.1 System Test Plan Requirements

The functional and nonfunctional requirements of the service will be tested and evaluated through a group of volunteers, and any functional problems, difficulties in utilizing the service, and vulnerabilities will be modified. The service will be tested by several groups of volunteers for better feedback. After a series of such tests, the service will be made available to the public.

13.2 Qualification Provisions

The quality and the content of this document will be reviewed so that the information in this document is coherent and meets user expectations.

13.3 Requirements Traceability

13.4 Schedule Tracking

Artifact or Deliverable	Who (individual or Team)	Estimated	Actual	Difference
Initial SRS	Jason Park	6 hours	6 hours	0 hours
	Ben Ju	6 hours	6 hours	0 hours
	Danny Kim	6 hours	6 hours	0 hours
	Muriel Wu	6 hours	6 hours	0 hours
	Summary for entire team	24 hours	24 hours	0 hours

Artifact or Deliverable	Who (individual or Team)	Estimated	Actual	Difference
Final SRS	Jason Park	4 hours	3 hours	1 hours
	Ben Ju	4 hours	3 hours	1 hours

	Danny Kim	4 hours	3 hours	1 hours
	Muriel Wu	4 hours	3 hours	1 hours
	Summary for entire team	16 hours	12 hours	4 hours

Cumulative

Who (individual or Team)	Estimated	Actual	Difference
Jason Park	10 hours	9 hours	1 hours
Ben Ju	10 hours	9 hours	1 hours
Danny Kim	10 hours	9 hours	1 hours
Muriel Wu	10 hours	9 hours	1 hours
Summary for entire team	40 hours	36 hours	4 hours

13.5 Defect Tracking

Artifact or Deliverable	Who (individual or Team)	Estimated	Actual	Difference
Initial SRS	Jason Park	2 per page	1 per page	1 per page
	Ben Ju	2 per page	1 per page	1 per page
	Danny Kim	2 per page	1 per page	1 per page
	Muriel Wu	2 per page	1 per page	1 per page
	Summary for entire team	8 per page	4 per page	4 per page

Artifact or Deliverable	Who (individual or Team)	Estimated	Actual	Difference
Final SRS	Jason Park	2 per page	1 per page	1 per page
	Ben Ju	2 per page	1 per page	1 per page
	Danny Kim	2 per page	1 per page	1 per page
	Muriel Wu	2 per page	1 per page	1 per page
	Summary for entire team	8 per page	4 per page	4 per page

Cumulative

Who (individual or Team)	Estimated	Actual	Difference
Jason Park	4 per page	2 per page	2 per page
Ben Ju	4 per page	2 per page	2 per page
Danny Kim	4 per page	2 per page	2 per page
Muriel Wu	4 per page	2 per page	2 per page
Summary for entire team	16 per page	8 per page	8 per page

14. INDEX