Crypto Currency Trading Tool
Implementation Document

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Document Change Control

Version	Date	Authors	Summary of Changes
0.1	Mar 18, 2022	Erica	Set up the document
0.2	Mar 19, 2022	Erica	Add in meeting log
0.3	March 23,2022	Erica	Add in meeting log
0.4	March 26, 2022	Chun Yang	Created Use Case 1 Code
0.5	March 26, 2022	Erica	Add in meeting log
0.6	March 27, 2022	Erica	Created Use Case 3 Code
0.7	March 29, 2022	Michael	Created Use Case 4 Code
0.8	March 29, 2022	Erica	Add in meeting log
0.9	March 31,2022	Erica	Add in meeting log and modified test cases 1.1 to 1.5.
1.0	April 2rd, 2022	Erica	Added in meeting log.
1.1	April 2nd, 2022	Chun Yang	Update UI codes Revise backend Logic codes
1.2	April 3rd, 2022	Erica	Added in meeting log. Added in Test case for Case 2.1 to 3.3 and 4.4
1.3	April 3rd, 2022	Michael	Completed Test Cases
1.4	April 3rd,2022	Chun Yang	Editing and revise Codes Finish the Code

Document Sign-Off

Name (Position)	Signature	Date
Chun Yang	Chun Yang (CY)	April 4, 2022
Michael Song	Michael Song (MS)	April 4, 2022
Erica Daiying Zhu	Erica Daiying Zhu (EZ)	April 4, 2022
Hanren Guo	Hanren Guo (HG)	April 4, 2022

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Contents

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1 Activities Plan

1.1 Project Backlog and Sprint Backlog

2.1.1 Project Backlog

Category	Backlog Item	Status	Estimate Time
Implementation Document	Component Diagram	Hanren Guo,Chun Yang, Michael Wisdom Song, Erica Zhu	2 weeks
	Introduction	Michael Wisdom Song	1 week
	Major Design Decision	Chun Yang	1 week
	Test Case	Hanren Guo,Chun Yang, Michael Wisdom Song, Erica Zhu	1 week
	Meeting Log	Erica Zhu	every meetings
Implementation	Code Implementation	Not Assigned	3 weeks
	Testing Code	Not Assigned	3 weeks
	Optimizing Performance	Not Assigned	3 weeks
	Finalizing Project	Not Assigned	1 week

2.1.2 Sprint Backlog

Category	Backlog Item	Assigned	Estimate Time
Code Implementation	Use Case 1	Chun Yang	1 week
	Use Case 2	Hanren Guo	1 week
	Use Case 3	Erica Daiying Zhu	1 week

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	Use Case 4	Michael Wisdom Song	1 week
	Combine Code and Run Test and Debug	Chun Yang	1 week
Description and Logs	Introduction	Michael Wisdom Song	1 week
	Project Backlog and Sprint Backlog	Chun Yang	12 weeks (Gradually create Sprint backlog)
	Group Meeting Logs	Erica Daiying Zhu	12 weeks (Gradually create meeting logs for every meeting)
	Test Driven Development	Hanren Guo,Chun Yang, Michael Wisdom Song, Erica Zhu	

4.1.2 Group Meeting Logs

Present Group Members	**Meeting Date**	**Issues Discussed / Resolved**
Chun Yang, Erica Zhu, Michael Wisdom Song, Hanren Guo	March 19th, 2022	Meet via Zoom to discuss Design patterns and divide up coding work. Chun will be incharge of Use case 1 code(implement login server). Hanren will be in charge of Use case 2 code (add and remove broker). Erica will be in charge of Use case 3 code (analysis server). Michael will be incharge of use case 4 (display result).We also discussed what design pattern should be used and where.
Chun Yang, Erica Zhu, Michael Wisdom Song, Hanren Guo	March 23th, 2022	Met to have a work session and set up github and Chun showed us how to set up and use git. How to pull and push etc.

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Chun Yang, Erica Daiying Zhu	March 26th, 2022	Work session, met to discuss how to implement use case 3 confirm the design pattern to be used.
Chun Yang, Erica Zhu, Michael	March 29th, 2022	Work session, meet to discuss how to implement use case 4 and the design pattern to be used. The record will be saved in a singleton object and observers(viewers) will be attached to it to be updated.
Chun Yang, Erica Zhu, Michael, Hanren	April 2nd, 2022	Code of the software is done. Meet to discuss how to proceed with testing and what to do next. We will put in the comments for the code and format it to meet Javadoc requirements. Erica and Michael will also do the test cases and input data required for the testing.
Chun Yang, Erica Zhu, Michael Song,	April 3rd, 2022	Meet to discuss test cases and make corrections where the code needed to be modified.

5. Test Driven Development

Test ID	UC1.1
Category	System Authentication
Data	username:test password:123
Requirements Coverage	Use Case 1 - Successful Login
Initial Condition	1. System is on and operating 2. Database is on and operating 3. Login Window properly prompt
Procedure	1. The user provides a username 2. The user provides a password 3. The login server successfully validates user account with user database 4. User logs in and redirect to main UI
Expected Outcome	The login window closes and redirect user to main UI
Notes	The username and password should be alphanumeric and not include any special character.

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Test ID	UC1.2
Category	System Authentication
Data	username:test12 password:test12
Requirements Coverage	Use Case 1 - Invalid account
Initial Condition	1. System is on and operating 2. Database is on and operating 3. Login Window properly prompt
Procedure	1. The user provides an invalid username 2. The user provides a password 3. The login server fails to find user account with user database 4. User get notified there is an error with provided credentials by a pop-up window 5. Program terminates
Expected Outcome	User get notified there is an error with provided credentials by a pop-up window and program terminates
Notes	None

Test ID	UC1.3
Category	System Authentication
Data	username: test password: 12345
Requirements Coverage	Use Case 1 - Invalid password
Initial Condition	1. System is on and operating 2. Database is on and operating 3. Login Window properly prompt
Procedure	1. The user provides a valid username 2. The user provides an invalid password 3. The login server fails to validate user with user database 4. User get notified there is an error with provided credentials by a pop-up window 5. User logs in and redirect to main UI
Expected Outcome	User get notified there is an error with provided credentials by a pop-up window and program terminates
Notes	None

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Test ID	UC1.4
Category	System Authentication
Data	username: test password:123 (space)
Requirements Coverage	Use Case 1 - White (Blank) Space After Password
Initial Condition	1. System is on and operating 2. Database is on and operating 3. Login Window properly prompt
Procedure	1. The user provides a valid username 2. The user provides an valid password with blank white space following 3. The login server disregards the white space following the password 4. The login server successfully validates user account with user database 5. User logs in and redirect to main UI
Expected Outcome	The login window closes and redirect user to main UI
Notes	None

Test ID	UC1.5
Category	System Authentication
Data	username: test(space) password:123
Requirements Coverage	Use Case 1 - White (Blank) Space After Account Name
Initial Condition	4. System is on and operating 5. Database is on and operating 6. Login Window properly prompt
Procedure	6. The user provides a valid username with blank white space following 7. The user provides an valid password 8. The login server disregards the white space following the username 9. The login server successfully validates user account with user database 10. User logs in and redirect to main UI
Expected Outcome	The login window closes and redirect user to main UI

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Notes	None

Test ID	UC2.1
Category	Adding and Deleting Broker
Data	(Trading Client): client1 (Coin List): bitcoin, cardano (Strategy Name): Strategy-A
Requirements Coverage	Use Case 2 - Broker Doesn't Exist (Add Broker)
Initial Condition	1. UI is properly displayed
Procedure	1. The user inputs name of broker that doesn't exist yet 2. The user inputs list of cryptocoins 3. The user inputs the trading strategy
Expected Outcome	The row is added.
Notes	None

Test ID	UC2.2
Category	Adding and Deleting Broker
Data	(Trading Client): client1
Requirements Coverage	Use Case 2 - Broker Already Exists (Add Broker)
Initial Condition	1. UI is properly displayed 2. A broker named client1 already exist in the table
Procedure	1. Click add row 2. Input client1 on the new row
Expected Outcome	An error message popped out saying brokers already exist. The row is not added as the broker already exists as it would otherwise create a redundancy.
Notes	None

Test ID	UC2.3
Category	Adding and Deleting Broker

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Data	(Trading Client): client1 (Coin List): bitcoin, cardano (Strategy Name): Strategy-A
Requirements Coverage	Use Case 2 - Trading Broker is Deleted(Deleting Broker)
Initial Condition	1. UI is properly displayed
Procedure	1. The user clicks on a row containing the information of an existing trading broker 2. The user presses the Remove row button
Expected Outcome	The row is deleted.
Notes	None

Test ID	UC3.1
Category	Strategy Execution
Data	(Trading Client): client1 (Coin List): bitcoin, cardano (Strategy Name): Strategy-A
Requirements Coverage	Use Case 3 - Successful Strategy Execution
Initial Condition	1. The user has logged in successfully.
Procedure	1. The user input a broker name. 2. The user input a strategy type which requirement can be fulfilled with current cryptocoin prices. 3. The user input a list of coins with all coins requested by the strategy. 4. The user presses the “Perform Trade” button.
Expected Outcome	No error message pop up. A row is added to the table of UI displaying the result of the trade with the correct broker name, strategy type, action, quantity, price and date. The histogram should update correctly as well.
Notes	None

Test ID	UC3.2
Category	Strategy Execution
Data	(Trading Client): client2 (Coin List): bitcoin (Strategy Name): Strategy-A

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Requirements Coverage	Use Case 3-Missing Coin Information
Initial Condition	1.The user has logged in successfully.
Procedure	1. The user input a broker name. 2. The user input strategy type. 3. The user input a list of coins with one coin requested by strategy missing. 4. The user presses the “Perform Trade” button.
Expected Outcome	An error message should pop up notifying the user that a strategy failed to execute. Then a row should be added to the table of UI displaying the result of the trade with correct broker name, strategy type,date, the action is “Fail”, and quantity and unit price indicated as “Null”.There should be no change to the histogram.
Notes	None

Test ID	UC3.3
Category	Strategy Execution
Data	(Trading Client): client3 (Coin List): (Strategy Name): Strategy-A
Requirements Coverage	Use Case 3-Strategy Requirement Unmet
Initial Condition	1.The user has logged in successfully.
Procedure	1. The user input a broker name. 2. The user input a strategy type 3. The user presses the “Perform Trade” button.
Expected Outcome	An error message should pop up notifying the user that a coin information is missing in a row and the user must input the coin name for the broker.
Notes	None

Test ID	UC4.1
Category	Displaying Trading Authentication
Data	(Trading Client): client4

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	(Coin List): bitcoin, cardano (Strategy Name): Strategy-A
Requirements Coverage	Use Case 4 - No cap on vertical axis (make sure histogram doesn't have out of bounds bars)
Initial Condition	1. System is asked to display chart and histogram 2. Information for such a task is forwarded 3. Chart is displayed 4. Histogram is displayed
Procedure	1. The user clicks on the Perform Trade button 2. The program displays the Chart 3. The program displays the Histogram 4. The Histogram doesn't have information that is offscreen due to lack of space as the y-axis is proportional to the max value.
Expected Outcome	Program adjusts the y-axis of the Histogram to be proportional to the max value as opposed to just having a set fixed amount of numbers that can easily be surpassed if enough transactions are performed.
Notes	None

Test ID	UC4.2
Category	Displaying Trading Authentication
Data	(Trading Client): client5 (Coin List): bitcoin, cardano (Strategy Name): Strategy-A
Requirements Coverage	Use Case 4 - All transactions are displayed (make sure chart doesn't end up being cut off if too many transactions)
Initial Condition	1. System is asked to display chart and histogram 2. Information for such a task is forwarded 3. Chart is displayed 4. Histogram is displayed 5. broker information is inputted
Procedure	1. The user clicks on the Perform Trade button 2. The program displays the Chart 3. The program displays the Histogram 4. The Chart doesn't have information that is offscreen due to the amount of transactions making the Chart too long.
Expected Outcome	Program makes the entries for the Chart smaller depending on how much space is left so that the Chart doesn't get cut off.
Notes	None

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Test ID	UC4.3
Category	Displaying Trading Authentication
Data	(Trading Client): client6 (Coin List): bitcoin, cardano (Strategy Name):
Requirements Coverage	Use Case 4 - Missing information pertaining to key elements (e.g. no strategy is selected)
Initial Condition	1. System is asked to display chart and histogram 2. Information for such a task is forwarded 3. Chart is displayed 4. Histogram is displayed
Procedure	1. The user clicks on the Perform Trade button 2. The program displays the Chart 3. The program displays the Histogram 4. The Chart doesn't have information pertaining to the transaction that did not have a strategy and the Histogram does not add a strategy for the transaction without one.
Expected Outcome	The transaction without the strategy is disregarded by both the chart and histogram. An error message will pop out asking to chose a strategy and the histogram and chart would not be updated.
Notes	None

Test ID	UC4.4
Category	Strategy Execution
Data	(Trading Client): client3 (Coin List): cardano, bitcoin (Strategy Name): Strategy-A (Trading Client): client2 (Coin List): cardano, ethereum (Strategy Name): Strategy-B
Requirements Coverage	Use Case 3-Strategy Requirement Unmet
Initial Condition	1.The user has logged in successfully. 2. Both brokers are added to row
Procedure	The user presses the "Perform Trade" button.

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Expected Outcome	Both histogram and chart should display correctly.
Notes	None

Test ID	UC4.5
Category	Strategy Execution
Data	(Trading Client): client3 (Coin List): cardano, bitcoin (Strategy Name): Strategy-A (Trading Client): client2 (Coin List): cardano, ethereum (Strategy Name): Strategy-B
Requirements Coverage	Use Case 3-Strategy Requirement Unmet
Initial Condition	1.The user has logged in successfully. 2. Both brokers are added to row 3. A perform trade has been performed before and info are showing on chart and histogram.
Procedure	1. The user presses the “Perform Trade” button.
Expected Outcome	The chart should now display new trade result ontop of the past ones.Histogram is updated accordingly.
Notes	None

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