<Cryptocurrency treasure hunt squad>

Design Document

Version:	2.0
Print Date:	December.5 2021
Release Date:	September.22 2021
Release State:	Final
Approval State:	Approved
Approved by:	
Prepared by:	Shouyu Huang, Wenqing Qiu, Gongxu Shan, Jingpeng Lin
Reviewed by:	
Path Name:	
File Name:	Cryptocurrency treasure hunt squad
Document NO:	002

Document Change Control

Version	Date	Authors	Summary of Changes
1.0	2021-11-09	Shouyu Huang	
2.0	2021-12-05	Shouyu Huang	

Document Sign-Off

Name (Position)	Signature	Date
Shouyu Huang	Shouyu Huang	2021-12-05
Wenqing Qiu	Wenqing Qiu	2021-12-05
Gongxu Shan	Gongxu Shan	2021-12-05
Jingpeng Lin	Jingpeng Lin	2021-12-05

Contents

1 Introduction

1.1 Purpose

The programming tasks of this project are summarized as follows:

1. Associate the main interface and the list so that the list in the main interface can be selected and the drop-down box can be displayed smoothly.

2. Associate the main interface with other functions, so that there is a selection time in the main interface, and the analysis method can be selected.

3. Modify the main interface to display the selected functions reasonably.

1.2 Overview

The SDD document contains the following information:

1. Component Diagram of the system (Architecture). The level of detail and granularity will be at the Java Package level of detail

2. Deployment Diagram of the system assuming current run-time configuration.

3. Detailed class diagram for all classes created or modified in the system with only one level of associations. The detailed class diagram contains the classes in UML notation and a table for each class with its data members and methods with the appropriate signatures.

1.3 Resources - References

References for different technologies used in the project are listed below:

Eclipse: http://www.eclipse.org/downloads/index.php

UMLet: https://www.umlet.com/changes.htm

2 Major Design Decisions

The login process is handled by the Proxy design. In order to limit direct access to the main UI. The login () in class proxy will first check if the combination of username and password exist. If it does, proceed to call function login() in class UI. The selecting cryptocurrency process is handled by a proxy design pattern. In order to limit the user's access to selective cryptocurrency. An array list will create in class Proxycryptocurrency that contains a list of restricted cryptocurrency's names. The Proxycryptocurrency class iterates the array to check if the cryptocurrency is in the array. If not, use the Realcryptocurrency object to call the function add(). The reading and storing data using API is handled by the Façade design pattern. The user would approach through a Façade interface. There are objects of Price, MarketCap and volume created in class readFacade in order to perform operations. The calculations of Metrics are handled by Strategy design pattern. Because the operations that calculate CoinsInCirculation etc involve using division. None-processing calculation just read from a website using API.

3 Architecture

Below is a component diagram of the system[Figure 1] and the methods that each interface contains is illustrated in Table 1, 2,and 3.

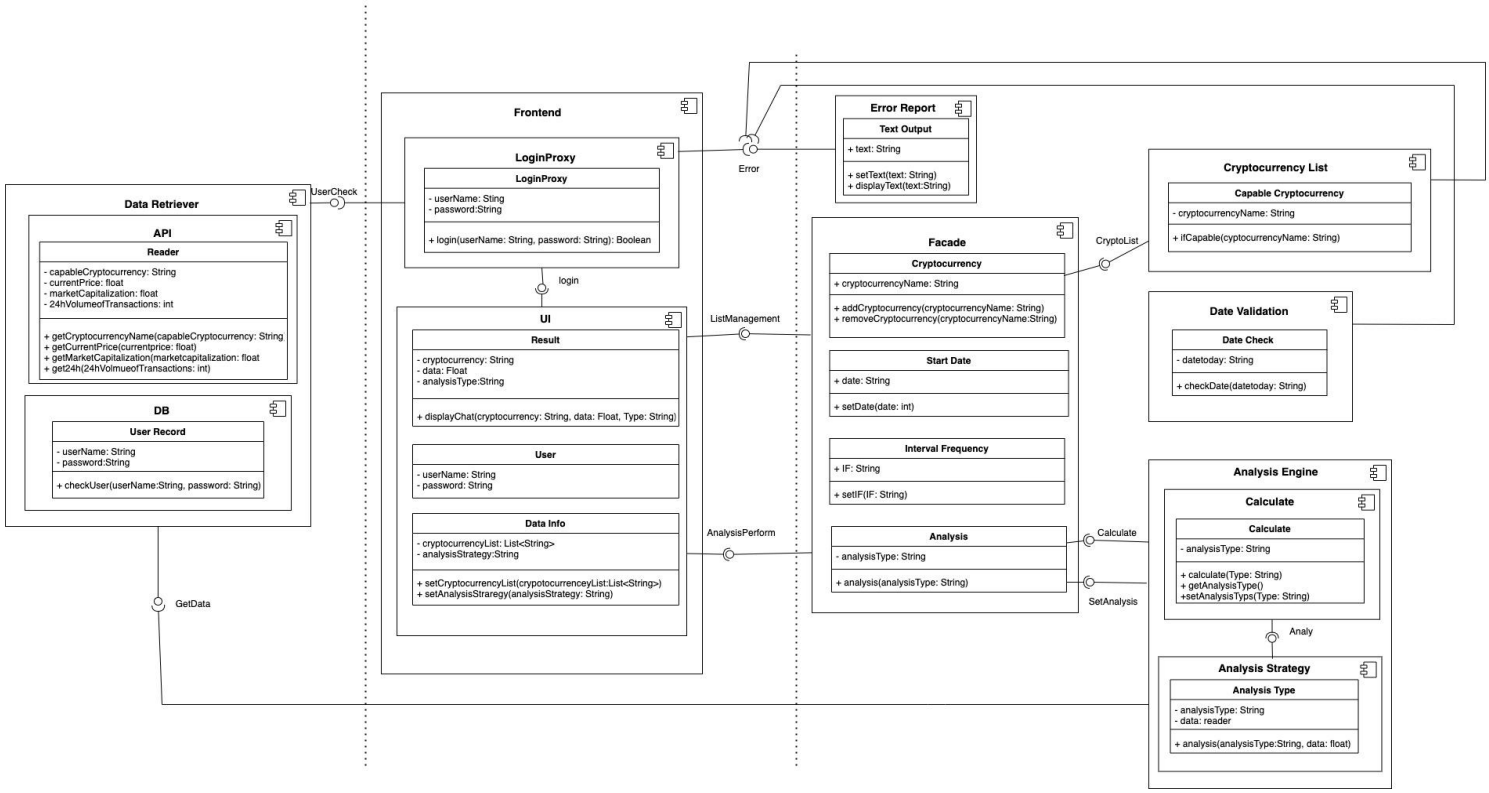


Figure 1: Component Diagram

Table 1: Interface Methods for LoginProxy and Analysis Engine

DB	UserCheck	checkUser(userName:String, password: String)
API	GetData	getCryptocurrencyName(capableCryptocurrency: String)
		getCurrentPrice(currentprice: float)
		getMarketCapitalization(marketcapitalization: float
		get24h(24hVolmueofTransactions: int)

Table 2: Interface Methods for LoginProxy, Cryptocurrency List, Date Validation, and UI

UI	login	login(userName: String, password: String): Boolean
Error Report	Error	displayText(text:String)
Cryptocurrency	ListManagement	addCryptocurrency(cryptocurrencyName: String)
		removeCryptocurrency(cryptocurrencyName:String)
Analysis	AnalysisPerform	analysis(analysisType: String)

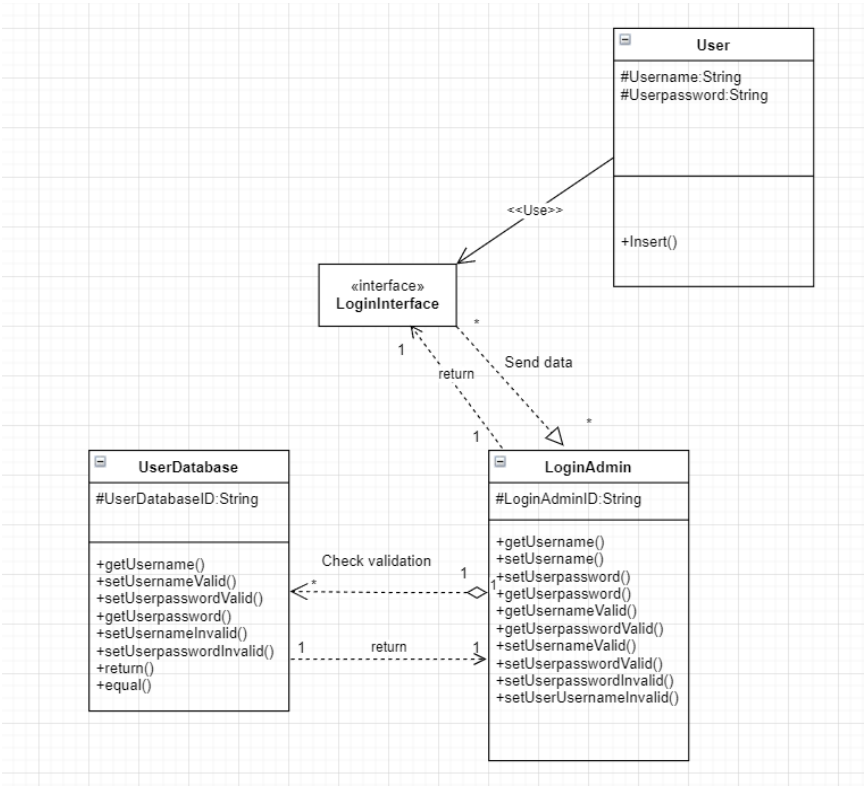
Table 3: Interface Methods for Cryptocurrency List and Analysis Engine

Cryptocurrency	CryptoList	ifCapable(cyptocurrencyName: String)
Analysis Engine	Calculate	calculate(Type: String)
	SetAnalysis	getAnalysisType()
		setAnalysisTyps(Type: String)
	Analy	analysis(analysisType:String, data: float)

4 Detailed Class Diagrams

4.1 UML Class Diagrams

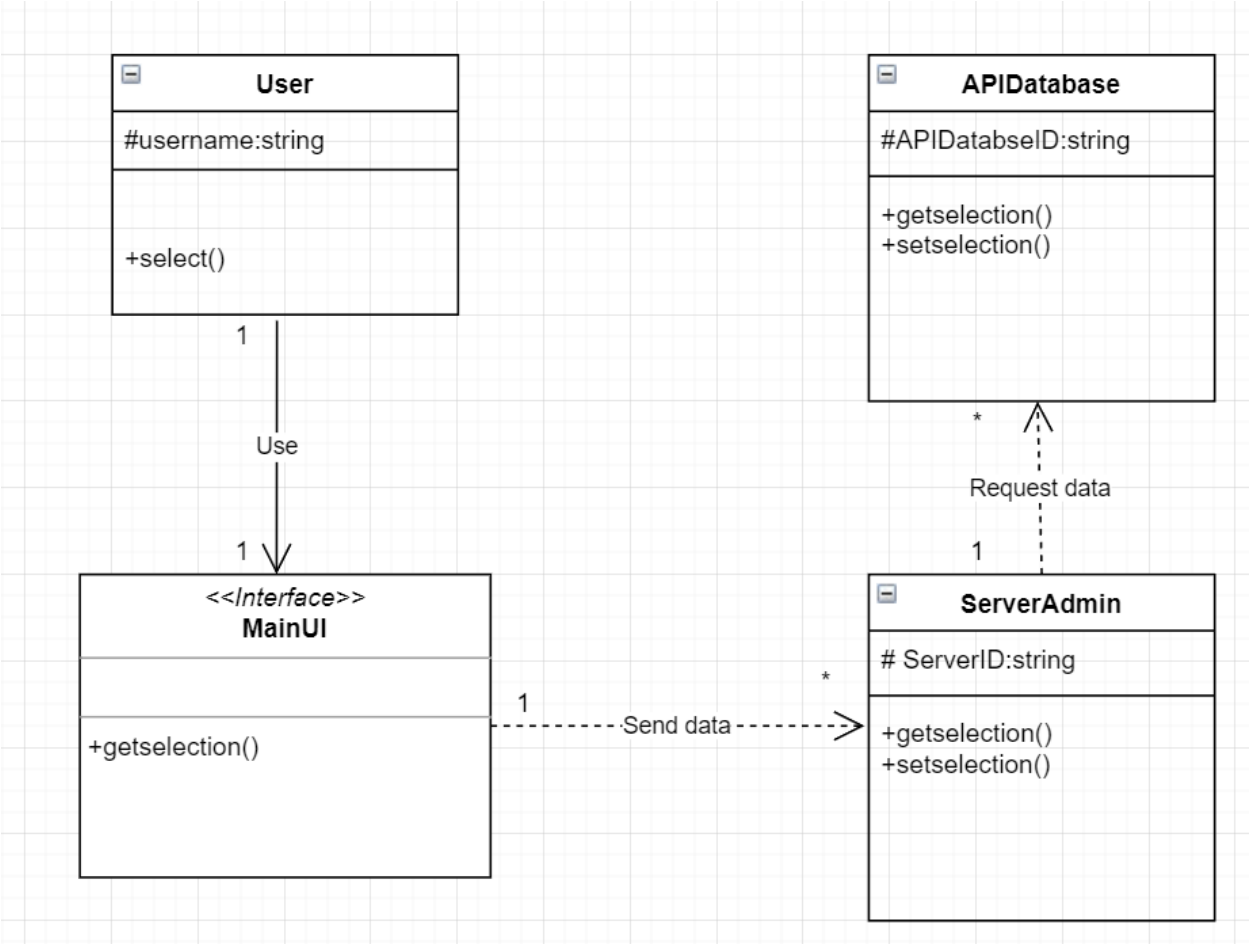
Below is the UML class diagram of login, which is related to the user, userdatabase, login administrator classes.



Below is a table showing the attributes and methods of login UML

Login UML
#Username:String #Userpassword:String # LoginAdminID:String #UserDatabaseID:String
+getUsername() +Insert() +setUsername() +setUserpassword() +getUserpassword() +getUsernameValid() +getUserpasswordValid() +setUsernameValid() +setUserpasswordValid() +setUserpasswordInvalid() +setUserNameInvalid() +return() +equal()

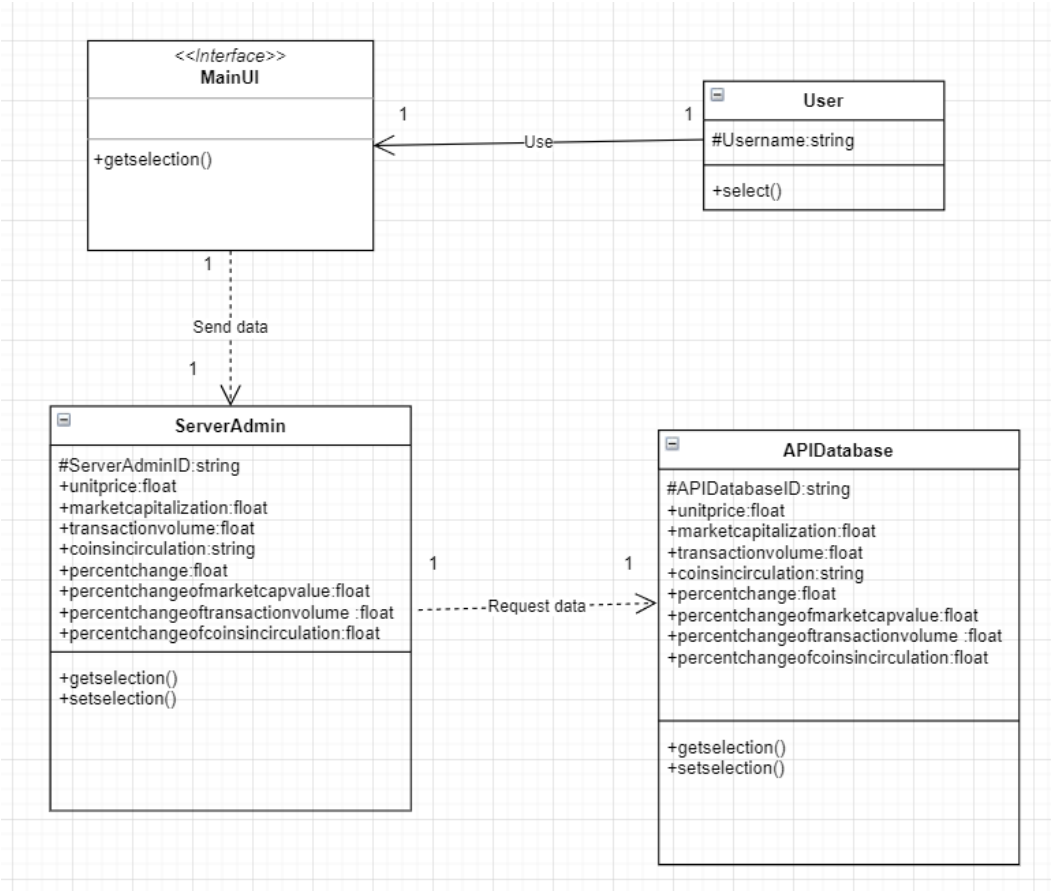
Below is the UML class diagram of select cryptocurrency, which is related to the user, APIdatabase, Server administrator classes



Below is a table showing the attributes and methods of select cryptocurrency UML.

select cryptocurrency
#username:string #APIDatabseID:string # ServerID:string
+select() +getselection() +setselection()

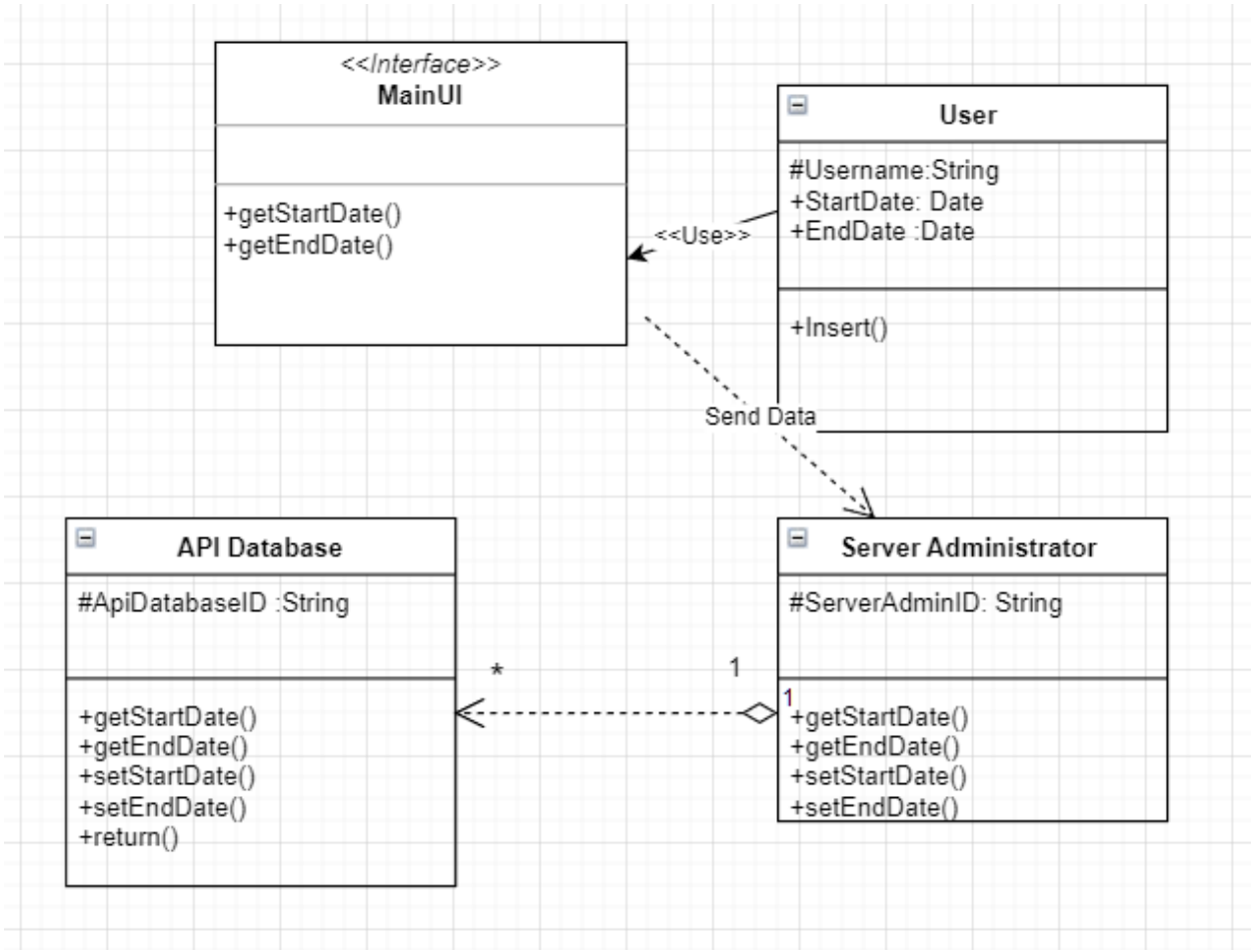
Below is the UML class diagram of select analysis type, which is related to the user, APIdatabase, Server administrator classes



Below is a table showing the attributes and methods of selecting analysis type UML.

analysis type UML
#Username:string #ServerAdminID:string +unitPrice:float +marketCapitalization:float +transactionVolume:float +coinsInCirculation:string +percentChange:float +percentChangeofmarketcapvalue:float +percentChangeoftransactionvolume :float +percentChangeofcoinsincirculation:float #APIDatabaseID:string
+getselection() +setselection() +select()

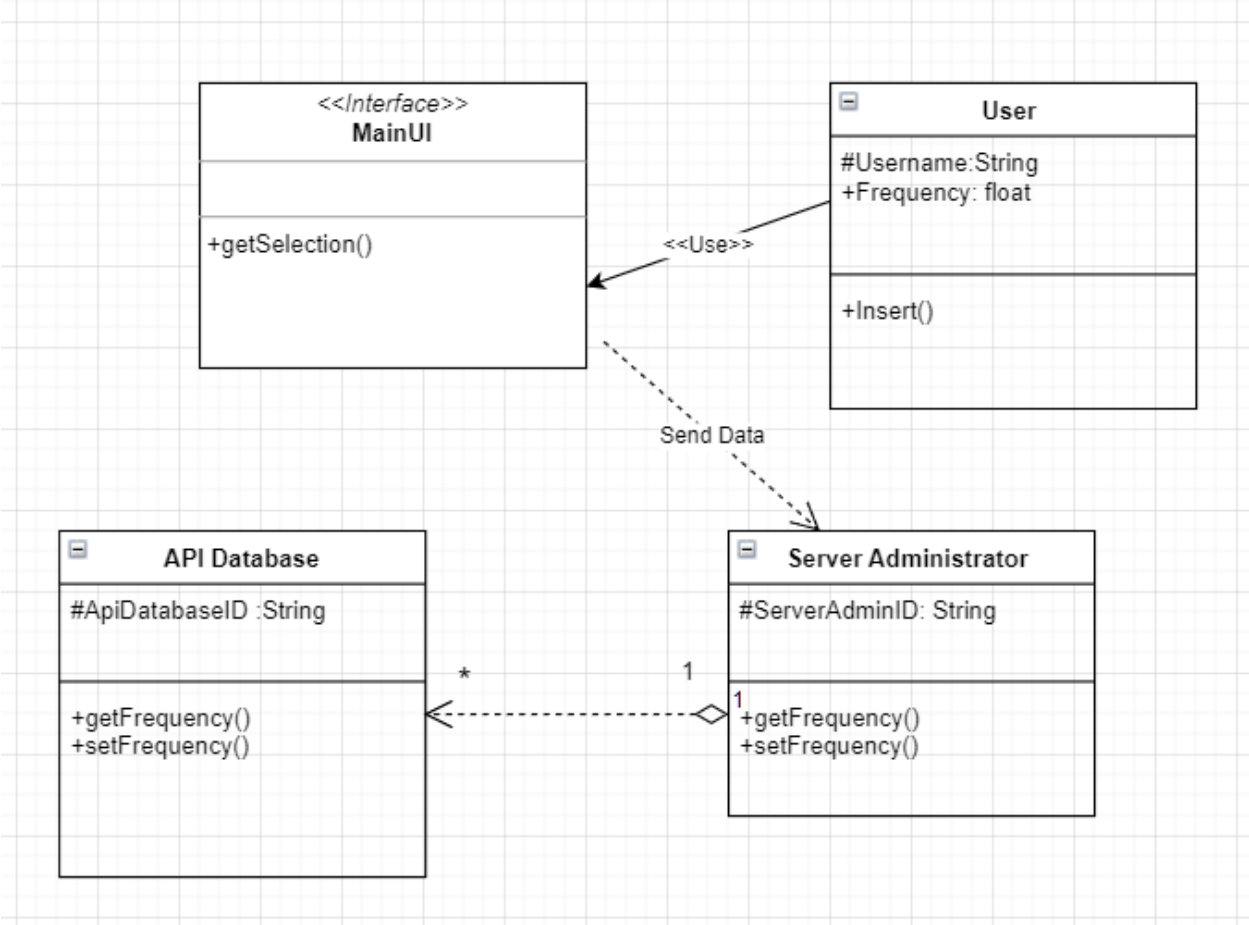
Below is the UML class diagram of select date, which is related to the user, APIdatabase, Server administrator classes



Below is a table showing the attributes and methods used to when a user selects a time period for analysis

Time Selection
#username:String +startDate;Date +endDate:Date
+getStartDate() +getEndDate() +setStartDate() +setEndDate()

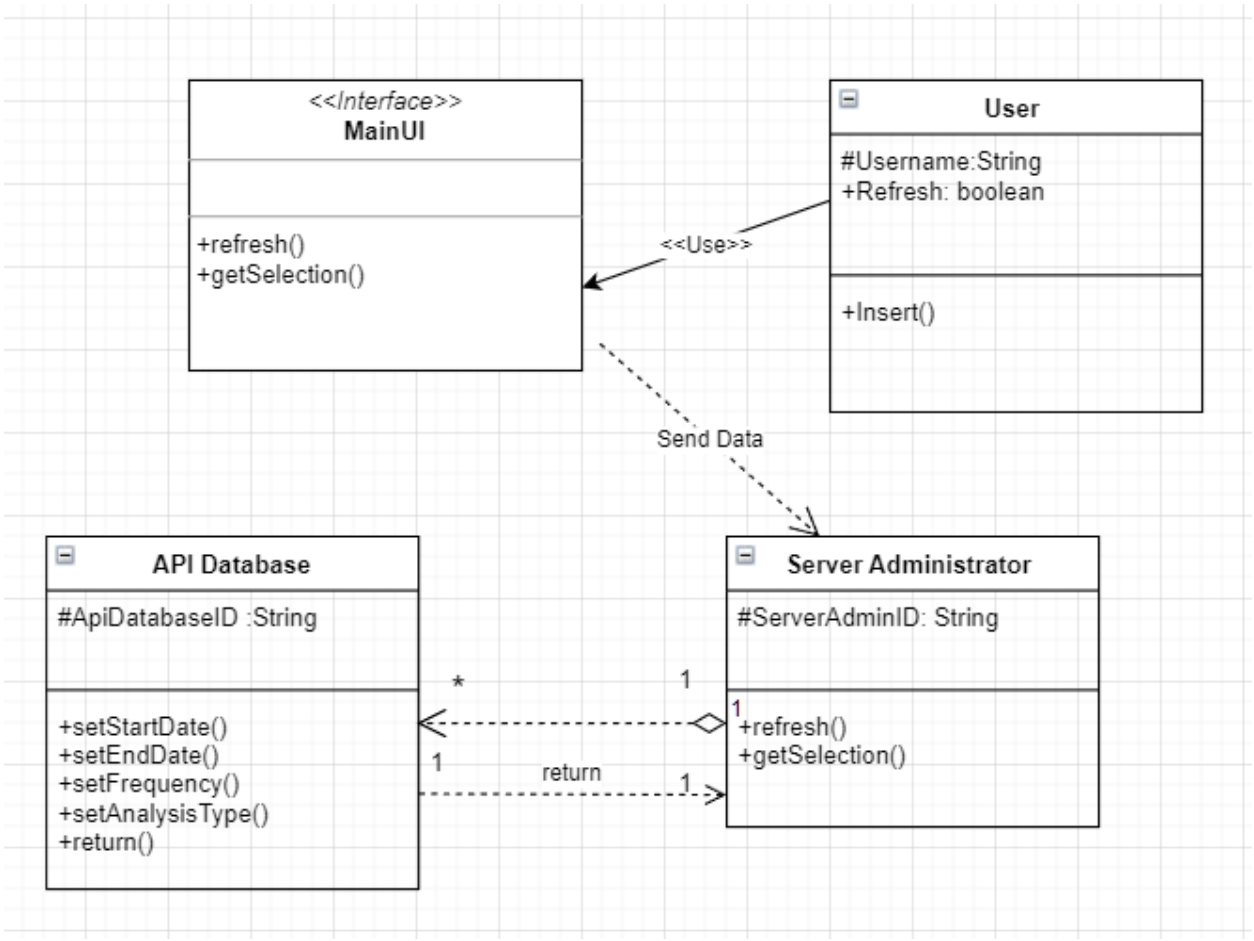
Below is the UML class diagram of select frequency, which is related to the user, APIdatabase, Server administrator classes



Below is a table showing the attributes and methods used when a user sets the Frequency for analysis .

Frequency Selection
#username:string #Frequency:float #ApiDatabaseID:string #ServerAdminID:string
+getFrequency() +setFrequency() +insert()

Below is the UML class diagram of Refresh Button , which is used by the the user, APIdatabase, Server administrator classes

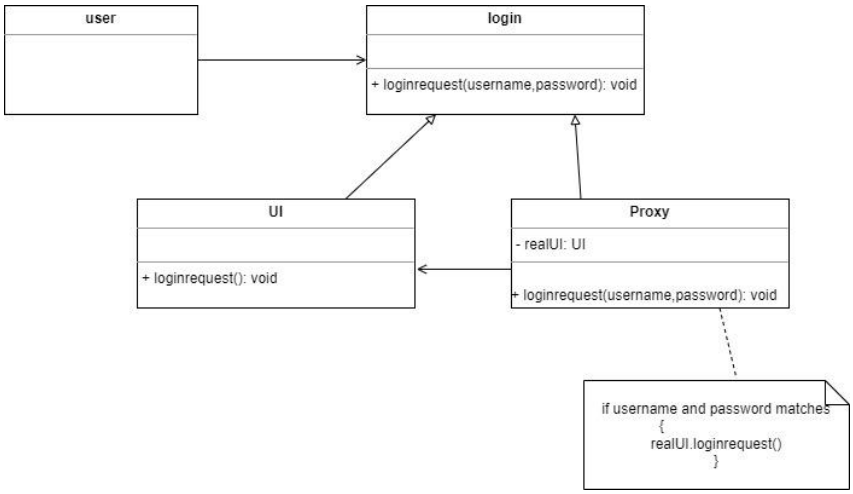


Below is a table showing the the attributes and methods used when a user clicks refresh, it sets the parameters in the API database and returns to the MainUI

Refresh UI
#username:string +refresh: boolean #ApiDatabaseID:string #ServerAdminID:string
+setStartDate() +setEndDate() +setFrequency() +setAnalysisType() +return() +refresh() +getSelection() +insert()

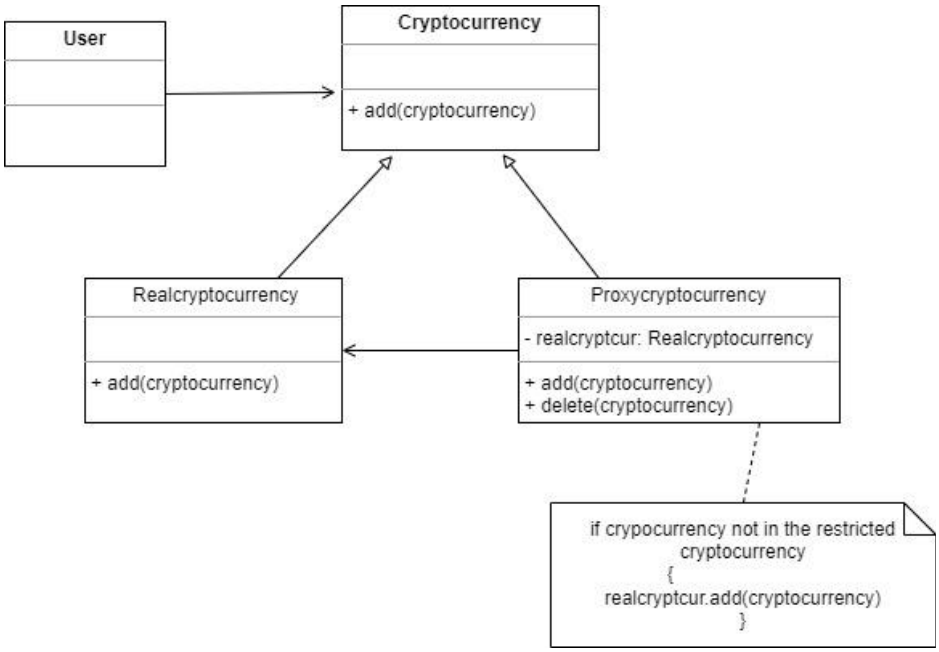
5 Use of Design Patterns

1. The login process is handled by the Proxy design. In order to limit direct access to the main UI

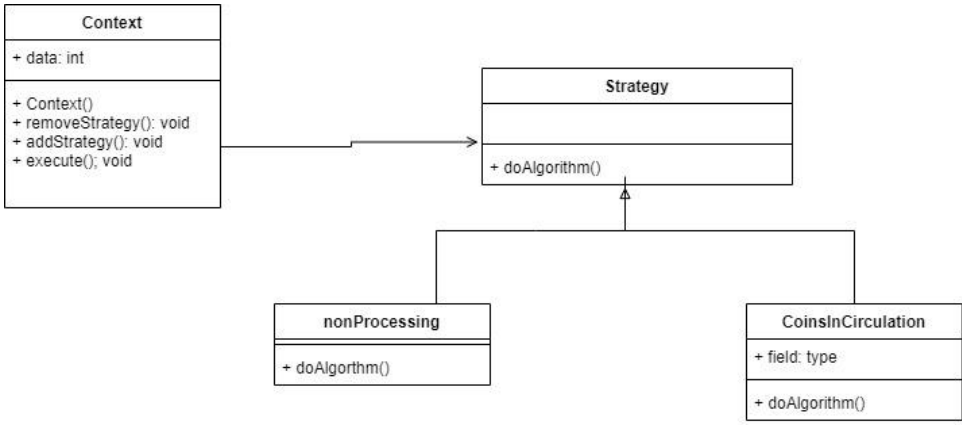


Login process design pattern

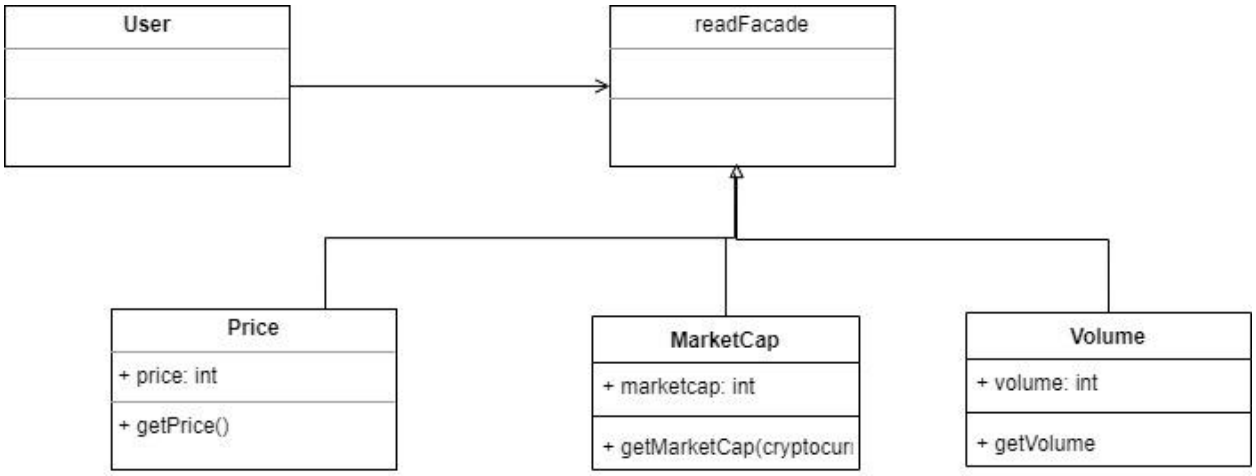
2. The selecting cryptocurrency process is handled by Proxy design pattern. In order to limit the user's access to selective cryptocurrency. An array list will create in class Proxycryptocurrency that contains a list of restricted cryptocurrency's names. The Proxycryptocurrency class iterates the array to check if the cryptocurrency is in the array. If not, use the Realcryptocurrency object to call the function add().



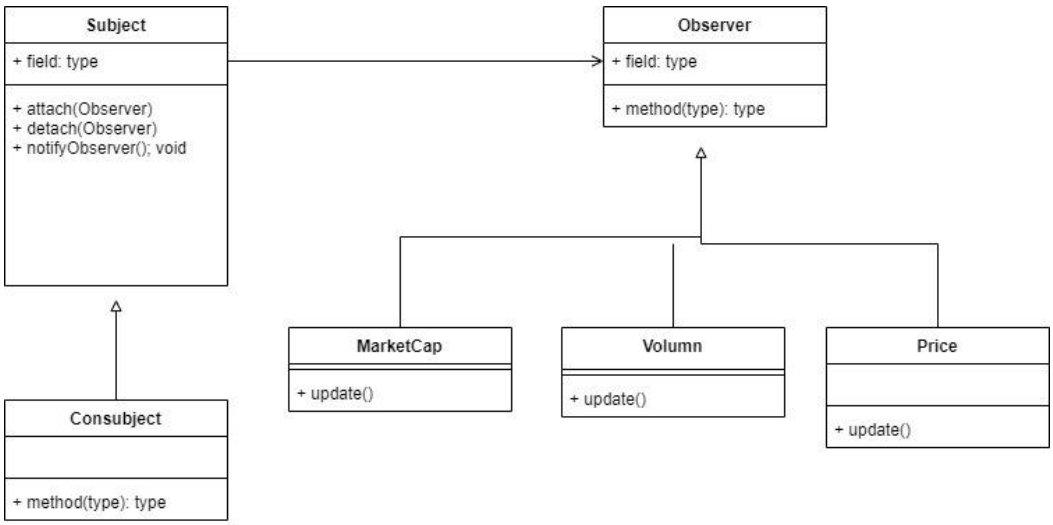
3. The calculations of Metrics is handled by Strategy design pattern. Because of the operations that calculate CoinsInCirculation etc involve using division. None-processing calculation just read from website using API.



4.The reading and storing data using API is handled by Façade design pattern. The user would approach through a Façade interface.MarketCap and volume create in class readFacade in order to perform operations.

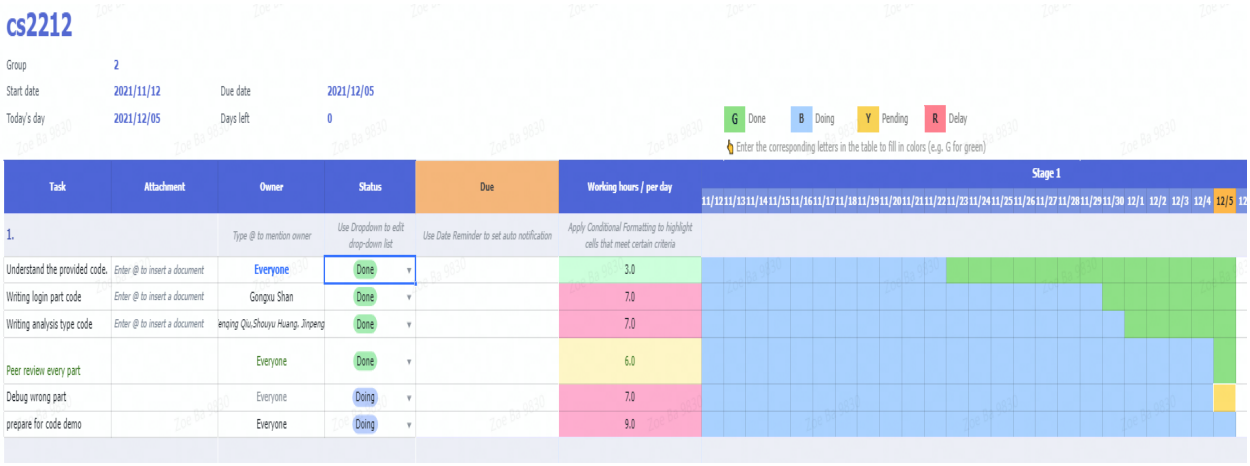


5. The updating cryptocurrency price etc is handled by observer design pattern. Consubject is determined by Factory design pattern.



6 Activities Plan

6.1 Project Backlog and Sprint Backlog



cs2212

Group 2

Start date 2021/11/12 Due date 2021/12/05

Today's day 2021/12/05 Days left 0

G Done B Doing Y Pending R Delay

Enter the corresponding letters in the table to fill in colors (e.g. G for green)

Task	Attachment	Owner	Status	Due	Working hours / per day	Stage 1
1.		Type @ to mention owner	Use Dropdown to edit drop-down list	Use Date Reminder to set auto notification	Apply Conditional Formatting to highlight cells that meet certain criteria	11/12 11/13 11/14 11/15 11/16 11/17 11/18 11/19 11/20 11/21 11/22 11/23 11/24 11/25 11/26 11/27 11/28 11/29 11/30 12/1 12/2 12/3 12/4 12/5
Understand the provided code.	Enter @ to insert a document	Everyone	Done		3.0	
Writing login part code	Enter @ to insert a document	Gongxu Shan	Done		7.0	
Writing analysis type code	Enter @ to insert a document	enqing Qiu,Shouyu Huang, Jinpeng	Done		7.0	
Peer review every part		Everyone	Done		6.0	
Debug wrong part		Everyone	Doing		7.0	
prepare for code demo		Everyone	Doing		9.0	

Tasks		Planning	In progress	Finished
Understand the provided code.				✔
Writing login part code				✔
Writing analysis type code				✔
Debug wrong part				✔
Peer review every part	→			✔

6.2 Group Meeting Logs

In this Section you write minutes of each meeting, listing the attendance, what the topics of discussion in the meeting were, any decisions that were made, and which team members were assigned which tasks. These minutes must be submitted with the project report in each deliverable and will provide input to be used for the overall assessment of the project.

Present Group Members	**Meeting Date**	**Issues Discussed / Resolved**
Shouyu Huang Wenqing Qiu Gongxu Shan Jingpeng Lin	2021-11-19	● Assign tasks for everyone ● Shouyu Huang is assigned to finish writing uc3 volume calculator and complete test driven ● Wenqing Qiu is assigned to write coinsinCirculation calculator. ● Gongxu Shan is assigned to write login interface and login proxy. ● JinPeng Lin is assigned to write price and market cap calculator
Shouyu Huang Wenqing Qiu Gongxu Shan Jingpeng Lin	2021-12-03	● Shouyu Huang is assigned to finish tasks assigned before. ● Wenqing Qiu is assigned to finish tasks assigned before. ● Gongxu Shan is assigned to finish tasks assigned before.

		● Jingpeng Lin is assigned to finish tasks assigned before. ● All of the group members prepared for the code demo

7 Test Driven Development

Initial test cases will be provided in the form of a table as follows:

Test ID	00007
Category	Evaluation of user login to the interface.
Requirements Coverage	2000-UC1-Successful-User-Login.
Initial Condition	The system is able to run and display.
Procedure	1. The user put login username 2. The user put login password 3. The user login successfully and display the main UI page.
Expected Outcome	After clicking the submit button, the login interface closes and the main UI interface presents to the user.
Notes	The user must put a matched username and password to login, otherwise, the login interface will still open and display message with “Wrong Username or password”

Table 19: Test1

Test ID	00008
Category	Evaluation of select currency in the main interface.
Requirements Coverage	2001-UC2-Successful-User-currency.
Initial Condition	The system is able to drop down the currency list.
Procedure	1. The user click the drop down button. 2. The user select one currency 3. The user click”+” button to add the currency in the list
Expected Outcome	After clicking the drop down button, the main interface shows all the currencies.
Notes	The user must choose an existing currency in the database.

Table 20: Test 2

Test ID	00009
Category	Evaluation of select the analysis type in the main interface.
Requirements Coverage	2002-UC3-Successful-User-analysis type.
Initial Condition	The system is able to display analysis type
Procedure	1. The user click drop down button 2. The user select an analysis type
Expected Outcome	After clicking the drop down button, the main interface shows the analysis type.
Notes	

Table 21: Test 3

Test ID	00010
Category	Evaluation of user select start date.
Requirements Coverage	2003-UC4-Successful-User-StartDate.
Initial Condition	The system is able to display.
Procedure	1. The user click drop down button 2. The user select a start date
Expected Outcome	After select the start date, the drop down list close.
Notes	

Table 22: Test 4

Test ID	00011
Category	Evaluation of user select interval frequency.
Requirements Coverage	2004-UC5-Successful-User-frequency.
Initial Condition	The system is able to display.
Procedure	1. The user clicks the drop down button.

	2. The user selects frequency.
Expected Outcome	After select frequency, drop down close
Notes	.

Table 23: Test 5

Test ID	00012
Category	Evaluation of display selected option.
Requirements Coverage	2005-UC6-Successful-Interface-display.
Initial Condition	The system is able to display selected option
Procedure	1. The user click the refresh button 2. The mainUI displays all the selections.
Expected Outcome	All the selected option display on the main interface
Notes	

Table 24: Test 6