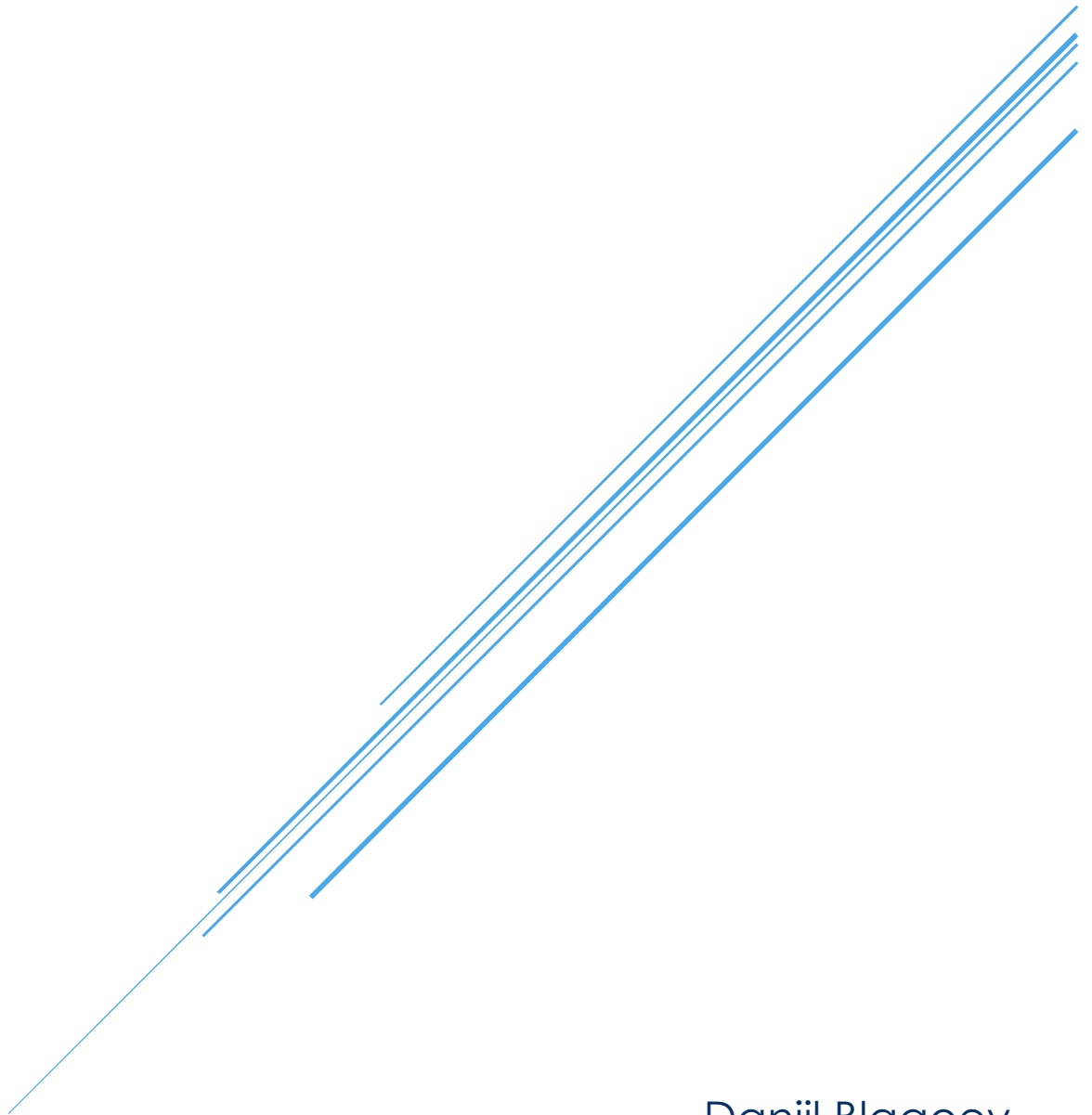


BITBY

URS document



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Software Engineering- S3

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Version table

Version	Sprint	Changes
V1	Sprint 1	First draft
V2	Sprint 4	Changes in use cases

Functional requirements

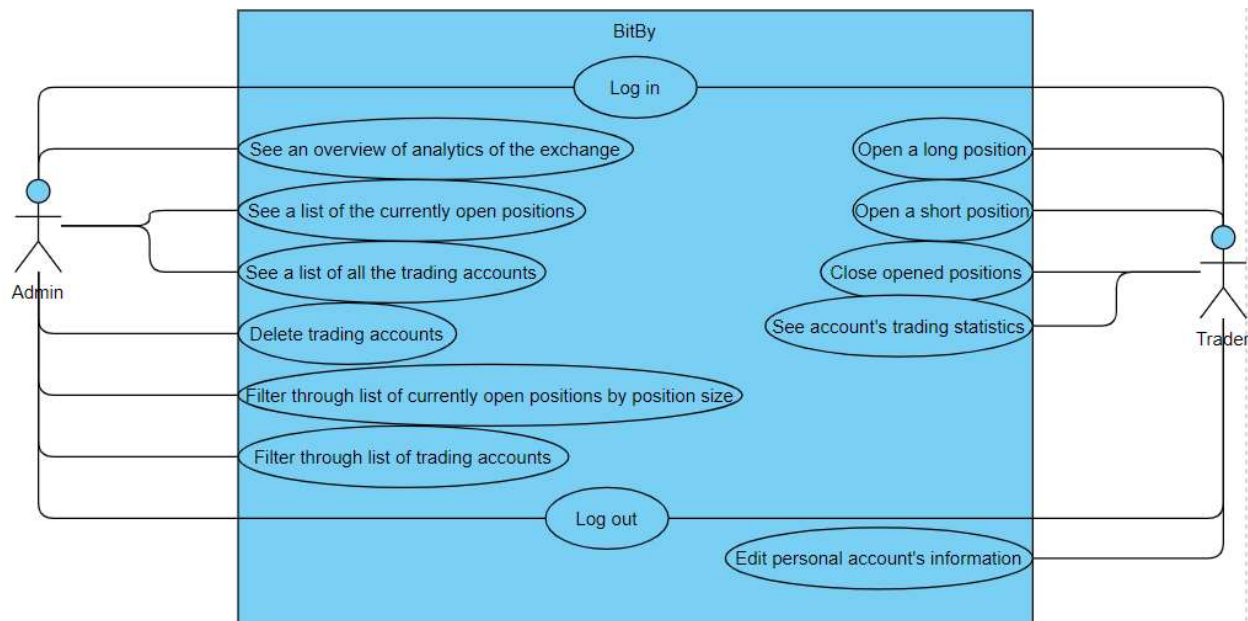
Admin

- ❖ AFR-01: Admins must be able to log in
- ❖ AFR-02: Admins should be able to see an overview of analytics concerning the exchange
 - The analytics may include Bitcoin's current price, the overall traded volume on the exchange and the current value of open long and short positions.
- ❖ AFR-03: Admins should be able to see a list of all the trading accounts
- ❖ AFR-04: Admins should be able to filter through the trading accounts list mentioned in AFR-03 by email
- ❖ AFR-05: Admins should be able to log out
- ❖ AFR-06: Admins should be able to create admin accounts

Trader

- ❖ TFR-01: Traders must be able to log in
- ❖ TFR-02: Traders must be able to open a long position
- ❖ TFR-03: Traders must be able to open a short position
- ❖ TFR-04: Traders must be able to close open positions
- ❖ TFR-05: Traders should be able to see their account's statistics
 - The statistics may include unrealized PNL, total volume traded and total realized PNL
- ❖ TFR-06: Traders will be able to edit certain pieces of personal information in their profiles
 - The editable information may include password and payment card information
- ❖ TFR-07: Traders should be able to log out
- ❖ TFR-08: Traders must be able to add funds to their account
- ❖ TFR-09: Traders will be able to send messages in a site-wide group chat
- ❖ TFR-10: Traders must be able to register to the exchange

Use cases



Use case diagram

UC-01 – AFR-01/TFR-01:

Use case: Actor must be able to log in

Actor: Admin/Trader

Main success scenario:

1. Actor launches the application
2. System shows a log in screen
3. Actor enters their credentials
4. System shows them the appropriate screen according to their credentials

Extensions:

3a: Invalid credentials

.1: System displays an error message stating the entered credentials were invalid

.2: Return to MSS step 2

3b: Empty information fields

.1: System displays an error message stating there is an empty information field

.2: Return to MSS step 2

UC-02 – AFR-02:

Use case: Admins should be able to see an overview of analytics concerning the exchange

Actor: Admin

Main success scenario:

1. Admin navigates to the analytics section of the admin view
2. System shows the exchange's analytics

UC-03 – AFR-03:

Use case: Admins should be able to see a list of all the trading accounts

Actor: Admin

Main success scenario:

1. Admin navigates to the trading accounts overview section of the admin view
2. System shows the list of trading accounts

UC-04 – AFR-04:

Use case: Admins should be able to filter through the trading accounts list mentioned in AFR-03 by email

Actor: Admin

Main success scenario:

1. Admin navigates to the trading accounts overview section of the admin view
2. System shows the list of trading accounts
3. Admin filters by email
4. System shows the filtered list of trading accounts

UC-05 – AFR-05/TFR-07

Use case: Actors should be able to log out

Actor: Admin/Trader

Main success scenario:

1. Actor goes to log out

2. System logs the actor out
3. System shows the login screen

UC-06 – AFR-06

Use case: Admin should be able to create admin accounts

Actor: Admin

Main success scenario:

1. Admin navigates to the Create admin account section of the admin view
2. System shows a registration form
3. Admin fills in the form
4. Admin submits the form
5. System registers an admin account with the filled in information

Extensions:

3a: Empty fields in the form

- .1: System displays an error message stating that there are empty fields
- .2: Return to MSS step 2

3b: An account with the submitted email already exists

- .1: System displays an error message stating that an account with the email already exists
- .2: Return to MSS step 2

UC-07 – TFR-02

Use case: Traders must be able to open a long position

Actor: Trader

Main success scenario:

1. Trader navigates to the Trade section of the trader account view
2. System shows a live Bitcoin chart and the option to open a position with the specified position size
3. Trader enters the position size they want
4. Trader opens a long position
5. System adds the position to the list of open positions on the page

Extensions:

3a: Invalid position size (more than the available account balance/a negative number)

.1: System displays an error message stating the entered position size is not valid

.2: Return to MSS step 2

UC-08 – TFR-03

Use case: Traders must be able to open a short position

Actor: Trader

Main success scenario:

1. Trader navigates to the Trade section of the trader account view
2. System shows a live Bitcoin chart, the option to open a position with the specified position size, and a list of open positions
3. Trader enters the position size they want
4. Trader opens a short position
5. System adds the position to the list of open positions on the page

Extensions:

3a: Invalid position size (more than the available account balance/a negative number)

.1: System displays an error message stating the entered position size is not valid

.2: Return to MSS step 2

UC-09 – TFR-04

Use case: Traders must be able to close open positions

Actor: Trader

Main success scenario:

1. Trader navigates to the Trade section of the trader account view
2. System shows a live Bitcoin chart, the option to open a position with the specified position size, and a list of open positions
3. Trader closes the position they want in the list of positions
4. System closes the position and reflects the changes in the available balance

UC-10 – TFR-05

Use case: Traders should be able to see their account's statistics

Actor: Trader

Main success scenario:

1. Trader navigates to the analytics section of the trader account view
2. System shows the trader's analytics

UC-11 – TFR-06

Use case: Traders will be able to edit certain pieces of personal information in their profiles

Actor: Trader

Main success scenario:

1. Trader navigates to the Account information section of the trader account view
2. System shows the trader's account information and add funds section
3. Trader edits the fields available for editing
4. Trader confirms
5. System updates trader's information

Extensions:

3a: Trader enters invalid payment card information

.1: System displays an error message stating the entered payment card is not valid

.2: Return to MSS step 2

UC-12 – TFR-08

Use case: Traders must be able to add funds to their account

Actor: Trader

Main success scenario:

1. Trader navigates to the open position section of the trader account view
2. System shows the trader's funds and add funds button
3. Trader states the wanted deposit amount
4. System adds the funds to their account balance

Extensions:

4a: The stated deposit amount is invalid

.1: System displays an error message stating the deposit amount is invalid

.2: Return to MSS step 2

UC-13 – TFR-09

Use case: Traders will be able to send messages in a site-wide group chat

Actor: Trader

Main success scenario:

1. Trader navigates to the Group chat section of the trader account view
2. System shows the chat
3. Trader types a message
4. Trader submits the message
5. System sends the message to the group chat

Extensions:

4a: Attempting to submit a blank message

.1: System displays an error message stating you cannot send blank messages

.2: Return to MSS step 2

UC-14 – TFR-10

Use case: Traders must be able to register to the exchange

Actor: Trader

Main success scenario:

1. Trader navigates to the registration page
2. System shows a registration form
3. Trader fills in the registration form
4. Trader submits the form
5. System creates their account

Extensions:

3a: Trader enters invalid information for the password field

.1: System displays an error message stating the entered password is not valid

.2: Return to MSS step 2

3b: Trader enters invalid information for the email field

.1: System displays an error message stating the entered email format is not valid

.2: Return to MSS step 2

3c: Trader enters invalid payment card information

.1: System displays an error message stating the entered payment card is not valid

.2: Return to MSS step 2

User stories

User story 1:

As a user of the application, I would like to be able to login, so that my account is protected.

Story points: 8

Priority: 90

Acceptance criteria:

- I can enter my email in the email field
- I can enter my password in the password field
- Error is displayed if incorrect information is entered

User story 2:

As an admin, I would like to be able to see analytics of the exchange, so that I can have a clear view of how things are going.

Story points: 8

Priority: 65

Acceptance criteria:

- The current price of Bitcoin is displayed
- The overall traded volume on the exchange is displayed

User story 3:

As an admin, I would like to be able to see a list of all trader accounts registered on the exchange with their traded volume, so that I can keep track of who the biggest contributors to the exchange are.

Story points: 13

Priority: 80

Acceptance criteria:

- A row from the list will contain the email with which the account is registered and the account's overall traded volume
- The list will be filterable by email

User story 4:

As an admin, I would like to be able to create admin accounts, so that if there is a new person on the admin team, I can make them an account to access the system.

Story points: 5

Priority: 55

Acceptance criteria:

- I can enter the new admin's email in a field
- I can enter the new admin's password in a field
- An error message is displayed if invalid information is inputted

User story 5:

As a user of the application, I would like to be able to log out, so that I can keep my account safe.

Story points: 5

Priority: 50

Acceptance criteria:

- The log out button will be visible in the admin and trader account's main screen
- The log out button will transfer you to the log in page

User story 6:

As a trader, I would like to be able to open long and short positions, so that I can trade.

Story points: 21

Priority: 99

Acceptance criteria:

- The positions will be opened with a stated position size
- The position size cannot be less than 0
- The position size cannot be more than the available account balance
- The position's entry price will be the current price of Bitcoin at the time of opening the position
- The currently open positions of the account will be displayed in a list
- The list will contain the following information about the account's currently open positions: value of the position, entry price, liquidation price, unrealized PNL

User story 7:

As a trader, I would like to be able to close open positions, so that I can realize my profits (or losses).

Story points: 13

Priority: 98

Acceptance criteria:

- The positions can be closed through the list of open positions in the trade screen
- Once a position is closed, it is removed from the list of open positions and the winnings/losses of the position are reflected in the available account balance

User story 8:

As a trader, I would like to be able to see my account's statistics, so that I can keep track of my performance.

Story points: 8

Priority: 55

Acceptance criteria:

- Overall traded volume will be part of the statistics
- Realized PNL will be part of the statistics

User story 9:

As a trader, I would like to be able to edit my account's personal information, so that I can keep my details up to date in case any changes occur.

Story points: 13

Priority: 61

Acceptance criteria:

- The payment card information will be editable
- The password will be editable

User story 10:

As a trader, I would like to be able to add funds to my account, so that I can have resources to trade with.

Story points: 5

Priority: 83

Acceptance criteria:

- Funds can be added in the account information section of the trader account
- Funds can only be added if there is valid payment card information present in the account
- Fund amount cannot be negative
- Fund amount cannot be 0

User story 11:

As a trader, I would like to be able to register for the exchange, so that I can start trading on it

Story points: 5

Priority: 77

Acceptance criteria:

- An email and password are required to register
- An email can only be used for the registration of 1 account
- The password has to contain an uppercase character, a symbol, a number, and it has to be at least 8 characters long

User story 12:

As a trader, I would like to be able to communicate to other traders through a site-wide group chat, so that I can exchange ideas and thoughts with them

Story points: 8

Priority: 80

Acceptance criteria:

- Messages cannot be empty
- The other people you chat with can also see the messages

Planning

Sprint 1

- ❖ Project planning
 - Ideation document
 - URS document
 - Test plan
- ❖ Start setting up restful API
- ❖ Set up git and CI/CD on it

Sprint 2

- ❖ Design document v1
- ❖ 1st prototype iteration
- ❖ Applied research document

Sprint 3

- ❖ Design document v2
- ❖ Quality assurance in git using SonarQube
- ❖ Upgrade test plan
 - Include User Acceptance Tests
 - Add a test strategy
- ❖ 2nd prototype iteration
- ❖ Research document including:
 - Problem statement
 - Main question
 - Sub questions
 - Chosen methods per sub question and reasoning
 - Results
 - Conclusion and recommendation

Sprint 4

- ❖ Design document v3
- ❖ 1st release version
- ❖ SonarQube report
- ❖ UX feedback report from 2 different users

Sprint 5

- ❖ Final design document
- ❖ Security report
- ❖ 2nd release version
- ❖ Up-to-date product and sprint backlogs and burn-down charts
- ❖ Websockets implementation

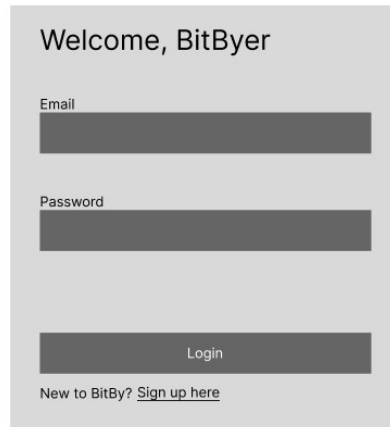
Sprint 6

- ❖ Final release with Docker integration
- ❖ Web performance review document

Wireframes

- Login

Login



Wireframe of a login form for BitByer. The form is centered on a light gray background. It features a title 'Welcome, BitByer' at the top. Below the title are two input fields: 'Email' and 'Password'. Each input field is represented by a dark gray rectangle. Below the password field is a 'Login' button, also represented by a dark gray rectangle. At the bottom of the form, there is a link for new users: 'New to BitBy? [Sign up here](#)'.

Welcome, BitByer

Email

Password

Login

New to BitBy? [Sign up here](#)

- Registration
-

Become a BitByer

Email

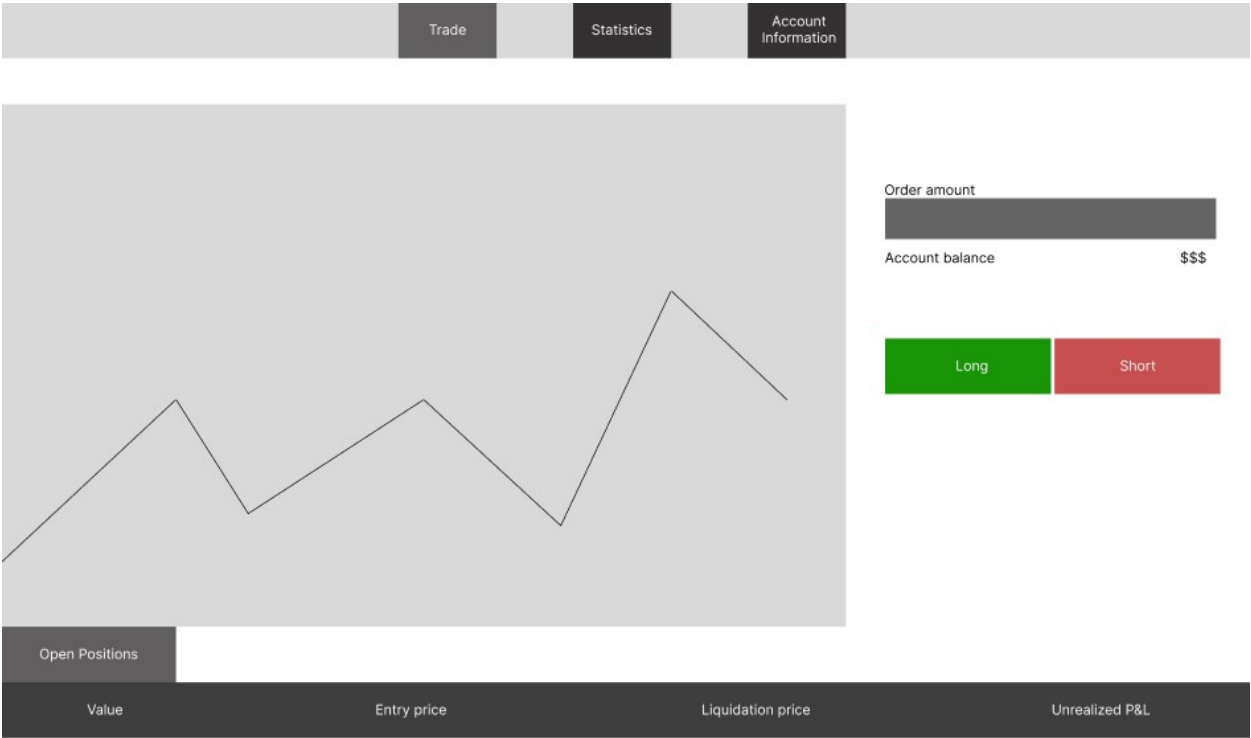
Password

☐ I agree with the terms and conditions

Sign up

Already have an account? [Login here](#)

- Trading account home screen



- Trading account statistics screen



Total Unrealized PNL

\$10,000

Total Volume Traded

\$500,000

Total Realized PNL

\$70,000

- Admin account home

BTC Price

\$21,199

Overall Traded Volume

\$5,567,345,344

Current Long vs Short Volume

\$5,000,000

\$7,000,000