

## Requirements:

The Requirements have been broken down into 3 separate categories representing the importance of feature. With the 'Necessary Requirements' representing the functions that are need for a functioning trading platform. The client's requirements are the second most important requirements representing functions that the client specifically requested, that are not critical to a trading platform, but should still be implanted, even if they are not critical to the operation of the program. The quality-of-life requirements represents functions and features that have been requested to be implanted if the time and resources permit it, with these features proving enhanced functionality for the user, while not being critical to the operation of a trading platform.

## Must Requirements

- The platform must track the quantity of credits owned by a particular organisational unit (OU).
- The platform must track the number of assets owned by a particular OU.
- The platform must allow for different levels of system access based on the type of user.
- The platform must be interacted with through a GUI on the client side.
- All general users will be assigned to a OU.
- All members of a given OU must be able to trade using the assets and credits associated with their OU.
- All members of a given OU must be able to remove offers from any other member of the same OU.
- Assets that have been put into a SELL order must be locked from being placed into any other SELL orders.
- Credits that have been put into a BUY order must be locked from being placed into any other BUY orders.
- Offers that have been removed must unlock the frozen assets or credits associated with that offer.
- Outstanding trades must be periodically reconciled, through a FIFO queue, implemented through the sever.
- A member of the IT Administration team must be able to create new OUs.
- A member of the IT Administration team must be able to create new asset types.
- A member of the IT Administration team must be able to edit the number of credits a given OU has.
- A member of the IT Administration team must be able to edit the number of an asset a given OU has.
- A member of the IT Administration team must be able to add new users to the database and assign passwords from the client.
- A member of the IT Administration team must be able to change an existing user's password.

- A member of the IT Administration team must be able to grant access up to the current level of access that member has.
- A user must be able to place BUY orders for a certain quantity of a particular asset at a particular price.
- The platform must stop users from placing BUY orders for more credits than that users OU has.
- The platform must not complete transactions where the BUY order price is less than the SELL order price.
- A user must be able to place SELL orders for a certain quantity of a particular asset at a particular price.
- The platform must stop users from placing SELL orders of more of the given asset than that OU has.
- The platform must not complete orders where the SELL order price is higher than the BUY order price.
- The platform must complete transactions where the SELL order price is lower than the BUY order price at the SELL orders' price.
- The user's SERVER must interact with a single sql server (MariaDB, PostgreSQL, or SQLite3).
- The server must store all user's information (the username, password, account type, and OU).
- The server must hash the user passwords for storage
- The server must store all OU information (OU name, credits, assets, and quantity of assets).
- The server must store all asset types (asset name, description).
- The server must store all current trades (BUY/SELL, OU, asset name, quantity, price, date).
- The server must store all trade history (BUY/SELL, OU, asset name, quantity, price, date).
- All users must have a unique username.
- All users must have a password.
- The system must serialise the passwords before sending them from the client to the server.
- The system must require all users to enter their correct username and password into the client to gain access to the platform.

### Should Requirements

- The platform should have a view displaying the current BUY and SELL offers for a given asset.
- The platform should not impose artificial limits on the number of commodities stored.
- The platform should not impose artificial limits on the number of trades that can be listed.
- The platform should not impose artificial limits on the number of users using the system.
- All users should be able to change their own passwords, regardless of system access.
- The platform should display the price history of a given asset, ordered chronologically.
- The client should read from a config file to get the server IP address and port to connect to.
- The server should read from a config file to get its port number.

### Could Requirements

- The platform could have a view displaying the price history on a graph, with the X axis notating the date and the Y axis notating the price.
- The platform could notify users, who have the client running on their computer, when a trade involving their OU has been reconciled.

