# Initial Requirements

## Day Trading System

Jonathan Kelly[V00872655]
Eric Rojo[V00855483]
Tyler Reese[V00850362]

# 1 Introduction

The Day Trading System (DTS) is composed of a manual stock trader and an automatic stock trader. The DTS is a web-based system, the goal of which is to reduce the end to end processing time of DayTradingInc's current day trading system, giving DayTradingInc a competitive advantage. The DTS will also reduce the number of transactions with the ACME StockSystem's quote server. Automating the trading combined with the improved end to end processing time will reduce the running costs for DayTradingInc and give their traders a competitive advantage.

## 1.2 Glossary of Terms

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| Current stock price | The price of the stock at the time the command is executed. |
| DTS | Day Trading System. |
| Trigger | Well send an automatic buy or sell command with a set amount. |

# 2 Overall description

In this section, the product perspective, features, user classes, operating environment, and design implementation constraints will be discussed. Additionally, any assumptions made will be recorded here.

## 2.2 Client Classes

### 2.2.1 Client Class

The client class is the main user group for DayTradingInc. This class contains DayTradingInc's clients. This user group is expected to account for the most traffic on the system. The client class will use the DTS to buy and sell stocks, set buy and sell triggers, and have access to the history of their trades on the DTS.

### 2.2.2 Admin Class

The admin class is for high-level managers at DayTradingInc and the developer team. This class will not cause a high level of traffic on the DTS. The admin class will be able to get a log report of any client class user on the DTS. They will also be able to get a log report of all activity on the DTS.

## 2.3 Operating environment

The DTS must be available through a website in the lab environment. The website must be supported on Safari, Google Chrome, Firefox, and Microsoft Edge. The DTS must also run on the Linux virtual machine for testing purposes.

## 2.4 Design and Implementation Constraints

Deployment Constraints

- The website must be accessible on Safari, Google Chrome, Firefox, and Microsoft Edge.
- The DTS must run in the lab environment.

Security considerations

- All communication with the web client must be over SSL

## 2.5 Assumptions and dependencies

Assumptions and dependencies for the DTS.

- User authentication will be handled by DayTradingInc.

# 3 System features

In this section, the system features (stock trader and automatic stock trader), will be introduced, along with their respective functional requirements and corresponding test cases.

## 3.1 Functional requirements

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| REQ-1 | Each user must be able to add money to their account. |
| Rationale | For the user to know how much money they can spend on stock. |
| REQ-2 | Each user must be able to get the quoted price of any valid stock. |
| Rationale | Users need access to search for quotes and quote prices for the purposes of buying and selling. |

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| REQ-3 | Each user must be able to buy a valid stock. |
| Rationale | So the user can buy a stock. |
| REQ-4 | Each user must commit a buy within 60 seconds of the original buy command. |
| Rationale | As funds are held until a time when the user commits to the transaction, a time limit is put in place to ensure that funds are eventually released back to the user. |
| REQ- | Each buy commit authorizes the latest buy command. |
| Rationale | This allows us to simplify the design of the system. |
| REQ- | When each buy command is executed, the balance of the command must be deducted from the user's account. |
| Rationale | To keep the user’s account up-to-date with transactions. Also preventing the user from buying multiple stocks with the same money. |
| REQ- | Each user must be able to cancel their buy command within 60 seconds. |
| Rationale | If the price changes or the user changes their mind they can cancel their last buy command. |
| REQ | If a buy command has not been committed by the user within 60 seconds of initially setting a buy command, the buy command is canceled. |
| Rationale | As a fail-safe, if the user is unsure, the stock will not be bought. |
| REQ- | Each user must be able to sell a set amount of stocks they hold. |
| Rationale | So the user can make money. |
| REQ- | Each sell commit authorizes the latest sell command. |
| Rationale | This ensures the user’s most recent sell intention is met first which may nullify a previous sell order if the parameters of the previous sell order can no longer be met. |
| REQ- | Each user must execute the sell commit command within 60 seconds for the sale to be completed. |
| Rationale | To give the user some time to decide if they want to sell the stocks. |
| REQ- | Each user must be able to cancel their sell command within 60 seconds. |
| Rationale | If the price changes or the user changes their mind they can cancel their last sell command. |
| REQ- | If the 60-second sell timer runs out then the sell command is canceled. |

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| Rationale | As a fail-safe, if the user is unsure, the stock will not be sold. |
| REQ- | Each user must be able to set the amount of a given stock to buy when a buy trigger is executed. |
| Rationale | So the user can control how much of the specified stock they buy. |
| REQ- | The user must have more money in their account then the set buys command. |
| Rationale | A user needs to have enough money to buy the stock. |
| REQ- | Each user must be able to set a price and amount where an automatic buy command is executed. |
| Rationale | For the user to control what price they want to buy a stock at. |
| REQ- | Each user must be able to see their balance, current stocks, and triggers. |
| Rationale | This keeps the user informed of their current account status and allows for informed and valid decisions based on that status. |
| REQ- | Each user must be able to delete any of their own automatic buys or sell commands. |
| Rationale | This allows the user to back out of a non-committed sale, relinquishing held funds back to the account for future transactions. |
| REQ- | Each automatic buy or sell command is only executed once. |
| Rationale | This is so the stock is not being continuously bought or selling |
| REQ- | Each user must be able to see a file containing a list of past transactions. |
| Rationale | This is so they can have a history of their trades. |
| REQ- | The user must be able to see a list of the completed transactions. |
| Rationale | For the user to see what transactions the system has completed. |
| REQ- | Each admin can generate a list of past transactions on the DTS |
| Rationale | This is for debugging and to help maintain the DTS. |
| REQ | Each admin can generate a list of past transactions for each user. |
| Rationale | For the admin to try and narrow down problems in the DTS. |
| REQ- | Each user must be notified of the success or failure of their transaction. |
| Rationale | For the user to know if their command was successful. |

## 2.1 Non-functional requirements

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| REQ-1 | The DTS must be able to support 1000 users. |
| Rationale | This is the number of users DayTradingInc specified they need to support. |
| REQ- | The DTS must be able to restore its last session after a crash. |
| Rationale | To reduce the amount of information loss. |
| REQ- | The DTS must use SSL when communicating with the web client. |
| Rationale | To have a secure connection between the web client and the webserver. |
| REQ- | The DTS minimizes the number of transactions to the quote server. |
| Rationale | Each transaction has a fee attached and DayTradingInc wants to reduce running costs. |
| REQ- | All system commands must be formed in ASCII strings. |
| Rationale | System communication is human readable and simple to assess. |
| REQ- | The DTS rounds down to the nearest whole number of shares when completing a transaction. |
| Rationale | Fractional shares are much more complicated and can lead to transaction errors |
| REQ- | All money values stored on the DTS will be stored as two separate values dollars and cents. |
| Rationale | Reduces the chance of value overflows errors. |
| REQ | The DTS must not query the quote server for a stock quote that has been previously queried within the past 60 seconds. |
| Rationale | This is to reduce the number of calls and save DayTradingInc some money. |

## 2.2 User Interface

This section outlines the user interface, hardware interface, software interface, and communication interface non-functional requirements.

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| REQ- | The web client must provide clear means of navigating to all functionality. |
| Rationale | The DTS should be easy and intuitive to use. |