Requirements and Analysis Document for ASTRo

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This version overrides all previous versions.

1 Introduction

This section gives a brief overview of the project.

1.1 Purpose of application

We offer an alternative to private day trading, where someone buys and sells financial instruments to make their living. With ASTRo, anyone who knows basic programming and Java should be able to use ASTROs wrapping API to implement their own algorithms, rules of trading. Ideally, the person who previously spent time doing manual trades could write one or several trading algorithms, load them into the ASTRo environment and not having to do all the “dirty work” themselves. ASTRo aims to be a level of abstraction for traders.

1.2 General characteristics of application

Most of this application’s functionality will not be visible to the end user, it will make heavy use of databases and user created algorithms. It will include HTML and possibly json parsing, depending on what data sources end users want to use.

The GUI will display real-time stock quotes and price graphs. Traders will be able to track their own portfolios and algorithm performance as they run. Optionally we will add support for intervening and placing buy or sell orders that are not done by the robot.

1.3 Scope of application

Our focus is not to design algorithms. It is to have a framework for traders, where the users can design algorithms themselves. We will not focus on defending against security threats.

1.4 Objectives and success criteria of the project

1. Private traders should be able to use our framework and extend it for their own purpose.
2. The program should be able to run by itself and not by commands from the user.
3. Standalone working algorithmic stock trading framework with database, for private people to use for free.

1.5 Definitions, acronyms and abbreviations

ASTRO - Automated Stock Trading RObot
GIT - Version control system
GUI - Graphical user interface
Java - Platform independent
JDBC - Java database connection
JPA - Java persistence API
JRE - Java runtime environment
JUnit - Testing framework for java
MVC - Model View Controller

2 Requirements

In this section we specify all requirements

The framework will function on most platforms since it will be written in java.
However it will also depend upon a database, but a default local based database will be setup.

2.1 Functional requirements

The user should be able to:

1. Create new portfolios, and select algorithm to use.
2. Run simulation of algorithms from given settings.
3. View graphs on a specific stock.

2.2 Non-functional requirements

Usability is high priority, however to fully use the system a rather large computer skills is required to fully use this application. But we include a base to build from.

2.2.1 Usability

Everything, GUI wise, that we provide should be quick and responsive to users. However our GUI will also depend on algorithms the user's define themselves. We can therefore not guarantee any maximum processing time frame.

2.2.2 Reliability

We use reliable systems such as Java, JPA and well known databases. Other than that no reliability is guaranteed. *Best effort* reliability. (The user will never lose more money than they have invested.)

2.2.3 Performance

We cannot guarantee any maximum times for processing data since users will be able to define their own trading algorithms, possibly taking lots of time.

We use big tested tools in this projects.

2.2.4 Supportability

We have designed the system in a way that supports and enforces loose coupling between the data storage and the user interface parts. It should be easy to develop additional user interface applications such as Android or iPad front ends.

The robot should be easy for users to deploy to their own machines. It should include a readme file that explains how to set up the system. But no settings will be required to start the program, since we make some default decisions such as database provider.

2.2.5 Implementation

To achieve platform independence the application will use the Java environment.
The host must have the JRE installed and configured. If another database provider is needed that database must be accessible to ASTRo.

2.2.6 Packaging and installation

ASTRo will be deliverd as a .zip and a .tar.bz compressed file.
This file will include:

1. A jar file that contains the application.
2. A readme text file that explains how to use ASTRo.
3. A small guide on how to extend the system.
4. Setting files with default settings.

2.2.7 Legal

Anyone using this program “IRL” must understand that it could lose them money!

2.3 Application models

2.3.1 Use case model

See appendix for use cases.

2.3.2 Use cases priority

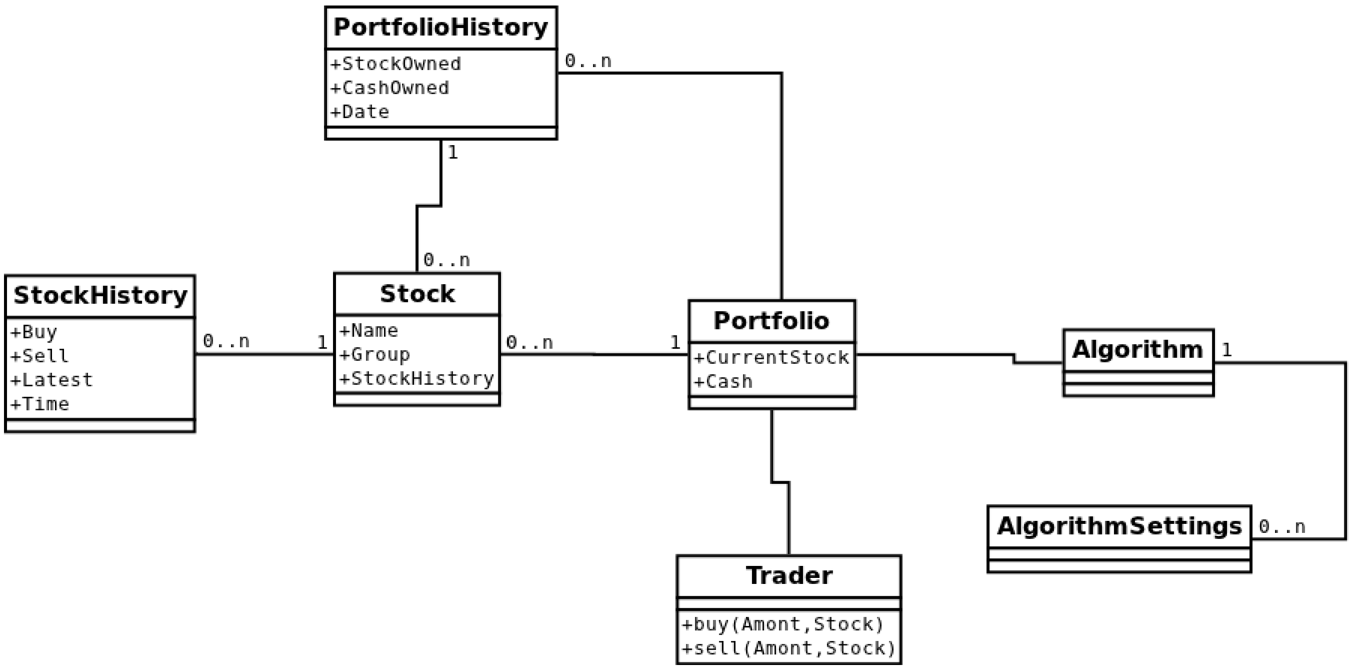
<u>High:</u>
UC_Start
UC_Astro
UC_Parser

<u>Medium:</u>
UC_GraphView

UC_Portfolio
UC_StockInfo

<u>Low:</u>
UC_AlgorithmSettings
UC_Simulation
UC_SimulationStart

2.3.3 Domain model



2.3.4 User interface

Text to motivate a picture.

2.4 References

2.4.1 Appendix

Domain Model: http://stock-robot.googlecode.com/files/domainmodel.png
Design Model: http://stock-robot.googlecode.com/files/designmodel.png

UseCases: bla.com/uc.zip