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                Purpose of Program:                 To create a program
that automatically creates

trading tickets for a security, for example, buy

and sell orders for shares of an exchange traded fund.

                    Date Due:
11:59 PM on March 4th, 2024
*/

Project Proposal:           To create a program that
automatically creates
                                                    trading tickets for
a security, for example, buy
                                                    and sell orders for
shares of an exchange traded fund.

                                                    A user would only
manually enter the first order, either to
                                                    buy or sell a
security, the program would populate and submit
                                                    a new ticket based
on the fulfillment of the previous ticket,
                                                    the chain of tickets
would continue until the user decided to
                                                    cancel the chain.

                                                    Another application
of this program would be to serve as a
                                                    treasury management
solution.

A) Background and the needs:

                                                    This program is
needed because there are many securities
                                                    that are difficult
to trade because they are illiquid as
                                                    a result of large
bid and ask spreads, or because they lack
                                                    volume.

                                                    The goal is to
reduce spreads while increasing volume.

                                                    Another need is due
```

to the fact that manually performing this task is laborious and prone to error.

B) Function list:

getSecurityPrice
setSecurityPrice

setPurchasePrice
getPurchasePrice

setLiquidationPrice
getLiquidationPrice

setAvarageTrueRange
getAverageTrueRange

setBollingerBandWidth

getBollingerBandWidth

setAverageDirectionalIndex

getAverageDirectionalIndex

C) User interface (UI) design:

Step 1

Trade Ticket
==========

Security:

Buy or Sell:

Limit:

Quantity:

ATR:

BBW:

ADX:

[User Input Element]

[User Input Element]

[User Input Element]

[User Input Element]

[User Input Element]

[User Input Element]

[User Input Element]

Step 2

Your initial [Buy/Sell] Trade ticket for [Security] has been submitted at the following price [Limit Price] and quantity [Quantity].

Subsequent orders will be automatically generated and submitted contingent upon the fulfillment of the previous order, with buy limits and sell limits based on the Average True Range, Bollinger Band Width, and Average Directional Index entered on the initializing ticket.

Sell orders will be generated with a limit of [Calculated Amount] above the previously filled ticket
Buy orders will be generated with a limit of [Calculated Amount] below the previously filled ticket

[User Input Element [Accept and Submit] [Override and Submit] [Start Over]]

Step 3

[Ticker Symbol] [Buy/Sell] [Order Quantity] [Limit Price] [Ticket Status]

[HFH.P Buy 1 86.86 Open]

Step 4

[Ticker Symbol] [Buy/Sell] [Order Quantity] [Limit Price] [Ticket Status]

[HFH.P Buy 1 86.86 Filled]

Step 5

[Ticker Symbol] [Buy/Sell]
[Order Quantity] [Limit Price]
[Ticket Status]

[HFH.P
Sell 1
86.89 Open]

Step 6

[Ticker Symbol] [Buy/Sell]
[Order Quantity] [Limit Price]
[Ticket Status]

[HFH.P
Sell 1
86.89 Filled]

Step 7

[Ticker Symbol] [Buy/Sell]
[Order Quantity] [Limit Price]
[Ticket Status]

[HFH.P
Buy 1
86.87 Open]

Step 8

[Ticker Symbol] [Buy/Sell]
[Order Quantity] [Limit Price]
[Ticket Status]

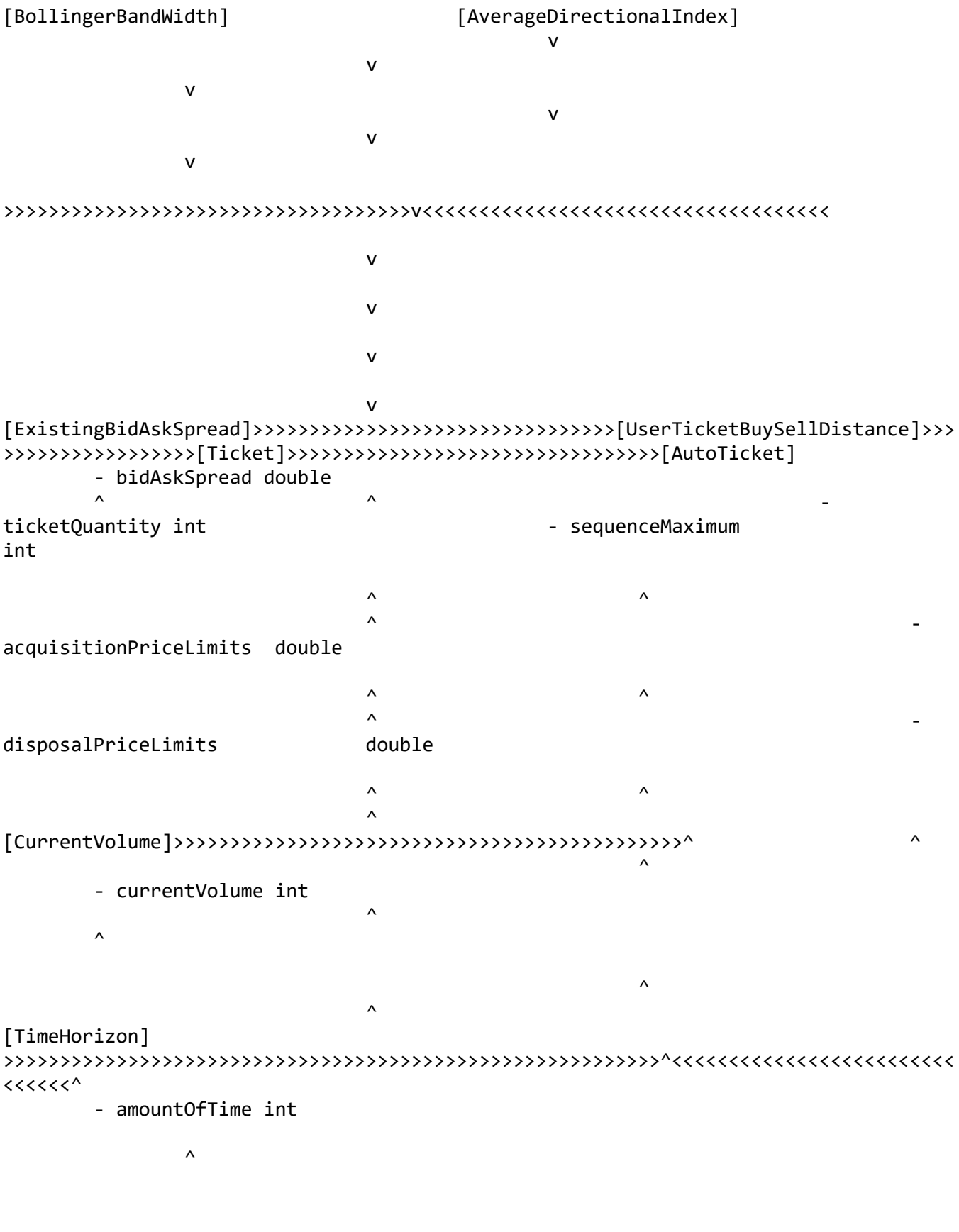
[HFH.P
Buy 1
86.87 Filled]

Notes: this sequence is based on + 00.03 to Sell orders and - 00.02 to

Buy orders for first issue preferred shares for the security HFH

D) Class diagram

[AverageTrueRange]


[BollingerBandWidth]
[AverageDirectionalIndex]
[ExistingBidAskSpread]
[UserTicketBuySellDistance]
[Ticket]
[AutoTicket]
- bidAskSpread double
ticketQuantity int
- sequenceMaximum
int
acquisitionPriceLimits double
disposalPriceLimits double
[CurrentVolume]
- currentVolume int
[TimeHorizon]
- amountOfTime int

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                                ^


                                ^
[IntradayNetAssetValue]>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
>>>>>>>>>>>>>>>>>>>>^
        - isExchangeTradedfund  boolean
```

E) File and database design:

[Data Dictionary for Database Tables and Non-Database Files]

[File and Database Design]

data will be instantiated as an Arraylist and printed initially and stored as .txt files, a program will be created to convert these .txt files into .xml and .csv files where and when appropriate.

[Data Dictionary]

the data dictionary will define the columns ticker symbol, buy/sell, order quantity, limit price, and ticket status.
the data dictionary will also contain the methods and classes that modify or control this data.

[Database Tables]

will be organized by column headers such as date, ticker symbol, order quantity, limit price, ticket status

[Non-Database Files]

will contain the initial trade authorization, and the user inputs, authorization for the subsequent auto trades
based on the other inputs, or, authorization for the automated trades based on user overridden inputs.

[Relational Database]

each row in the data file represents on ticket, all the data on that ticket is related to that particular ticket, each
ticket is related to the previous ticket

[Plain Text Files]

all data will initially be created as ArrayLists and converted into plain text files.

F) Expectations of project fulfillment:

a. [Ticket] instantiates based on user input.

[AutoTicket] instantiates based on fulfillment of previous ticket.

b. [Controller Classes] The Ticket.java class is the view class

UserTicketBuySellDistance.java is the controller class, it sets

the limits for automatically generated tickets

these automatically generated distances are only suggestions,

and can ultimately be overridden by the user in the Ticket.java

class.

AverageTrueRange.java BollingerBandWidth.java AverageDirectionalIndex.java

ExistingBidAskSpread.java CurrentVolume.java TimeHorizon.java

are model classes that feed into the UserTicketBuySellDistance.java

controller class. these will be calculated, but the user will have the

ability to override these values.

c. [GUI applications]

d. [Arraylist] Arraylist will be used to log the sequence of trades

e. [Exception handling] a user may enter alphabetical values in a field that requires an int or

double, and vice versa, an invalid data message will prompt the user.

f. [Database]

g. [Documentation] very detailed and elaborate notes will be included in every program, class, method, and attribute regarding the purpose, design, development, and miscellaneous other notes as well. JavaDoc will see extensive use.

G) Project Report

a.
b.
c.
d.
e.
f.
g.
h.