Kitae Kim

Stock Market Game

Abstract

In this program, the us

Background

There are lots of stock market softwares which show the trend of the stocks based on many factors. However, I wanted to create a program which predicts stock market purely based on the mathematic and change of the price with time. With my background on calculus, I am able to analyze the graph and functions which will help me analyze the movement of the price of the stocks. Also I have used Python to make a simple game and gosu to implement GUI. However I have never put them together in one project. However, when I researched into this project, I found lots of Python libraries which already have built in features to get stock market data and manipulate them. Also there are libraries which will help me with graphing the collected data.

Significance

I believe this project will benefit those that have an interest in the stock market. There are many individuals out there who want to make money by investing in stocks but that is a very difficult task; for that reason, it is imperative that I create this program. This will give people a rough idea of the movement of the stocks over the time that they are interested. Also it will demonstrate the highest and the lowest points of the stock so that people will be well informed and make the decision to either buy or sell. This requires coding skills and mathematic skills; with this software, I will pull stock market data, possibly from the library or the Internet and manipulate the data. I will also have to know how to calculate the concavity of those stock graphs in order to make the maximum cumulative profit. This will project will help me become a better programmer and a mathematician.

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Deliverables

Skeleton:

-Demonstrate that I can manually pull data from the stock market library for a chosen length of time

***Data includes:**

-current price, and a corresponding time

-change of the price from the beginning to the end

-Be able to demonstrate the usage of the GUI. I can show:

-Graph that is hard coded

-Buttons, text input and labels

Basic:

-I will build a text based commend line game. In this game user can:

-Start the game with $5000

-Buy sell stock

-Check the list of stocks that user owns

-Check the amount of money that the user owns

-Check the name and symbol of existing stocks in the NASDAQ

-Save the game

Solid:

-Game will display everything that is on Basic and Solid using GUI to make a game.

-In this game user can do everything that is done in Basic. Also:

-User can select a stock at a time and check the change of the price graph of it.

Awesome:

-I will add more features to make the game more fun to play. Features include:

-User can choose the difficultly of the game; easy or hard:

-In easy mode:

game will be the same as what it is been like.

-In hard mode:

-user will start the game with $2500

-user will pay fees and taxes for every transitions

Tools

I will be using python as my primary language. Also I found libraries in python which will help me in this project. Yahoo-Finance library will help me with collecting the stock data: price, existing stock list and the movement of the stock in a set period of time. Matplotlib will help me draw line graphs that will demonstrate the fluctuation of the stocks. Also gosu will be used to demonstrate GUI; this will provide a better visual presentation of the program. In addition, if necessary, I will use the database to collect and save data gathered on the stocks.

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Problems

There are a few problems that could be encountered in this project. First one is the difficulty of implementating GUI. I have used gosu, however I have never drew graphs or got user's input using gosu. To solve this problem, I am going to read more codes online since there are many example codes in github. Second problem is creating my own algorithm. Even with the calculus skills, creating a algorithm to find the function of the random points can be a challenge. To resolve this, I will read already existing algorithms and functions in order to grasp the general idea of those algorithms so that I may be able to create my own. Finally, making a prediction with a function can be an another difficult task; even if I have a function, finding concavity and predicting what will happen will prove to be a difficult because regardless of my calculus skills, knowing how to manipulate the function to determine first and second derivatives will still be a challenge. In order to correct this situation, I will further my knowledge into this topic by researching how other programmers were able to utilize calculus in their programs.

References

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