Stock Market Simulation

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Overview

- Using realistic simulated data, we constructed a stock market simulator
- The program works with the Dow Jones index of companies
- We used Normal Distributions to simulate the random walk of stock prices
- The user invests their cash in stock holdings to (hopefully) increase their net worth

Division of Labor

- Josh worked mostly on backend
- Adam worked mostly on frontend

Goals of the Project

- Very Realistic data
- User-friendly interface
- Smooth price changes
- Simple controls

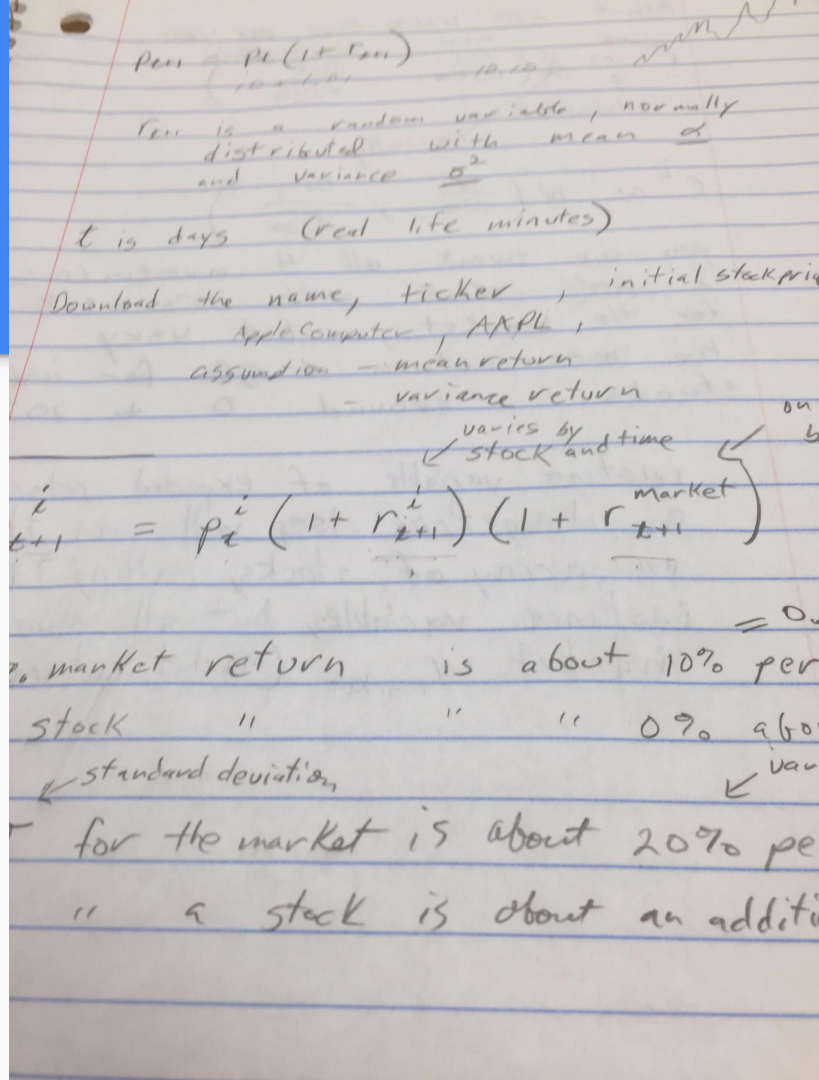
Known Limitations

- Update speed
- Game must be full screen to view everything
- Required resolution

The Math

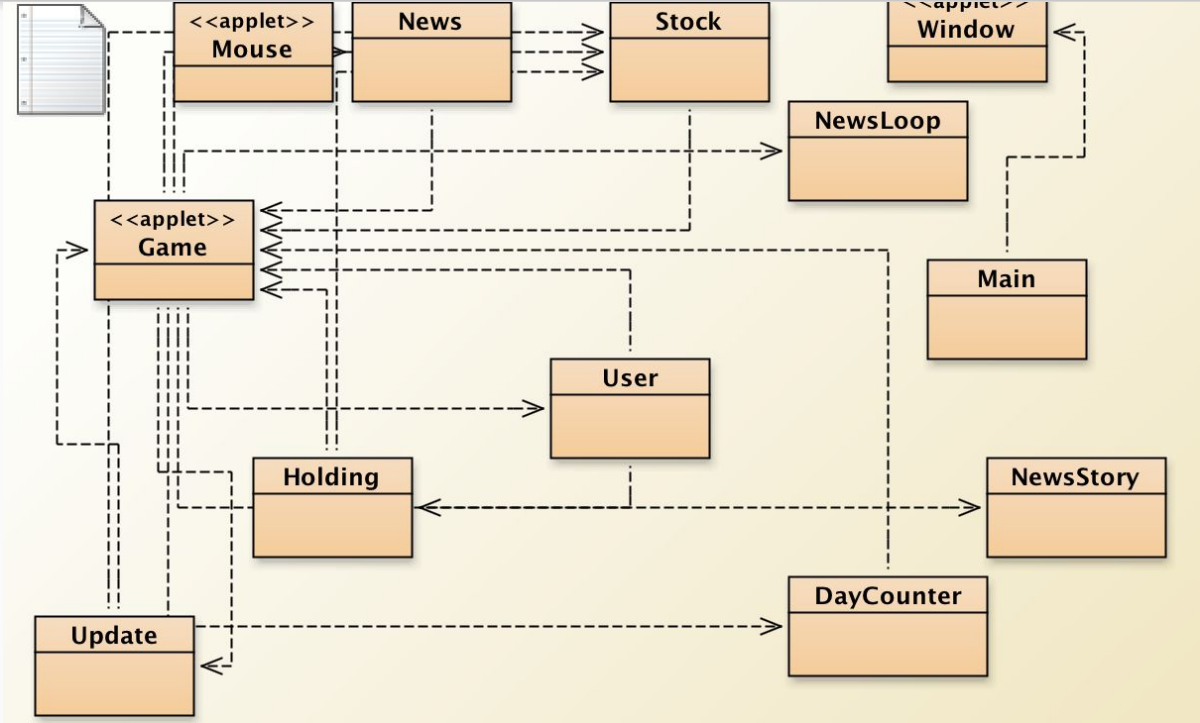
Using samples from a Gaussian distribution, we generate random changes to each stock price. Each new price is based on the current price, a market trend, and an individual trend.

$$p_{t+1}=p_t(1+r_{stock})(1+r_{market})$$



Code Architecture

We organized our game with a game object which communicated with stock and holding objects held in an ArrayList. Other threads such as the News were controlled separately.



Major Challenges

- Working with the NormDist class
- Casting different variable types
- Class interactions
- NaN errors
- Truncating variables to money format
- Using several interacting threads
- Changing colors and other graphics problems

Future Opportunities

- Adding more companies
- Dynamically resizing graphics
- Industry trends
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Game Demo!

Remember to ask us to show you Easy Visuals at the end of the demo!

Thanks!