Eric Mercer & David Liu
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Professor Yang
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StockSim
Milestone 1

Description

The StockSim application will allow a user to create virtual portfolios of stocks. After the user has created an account, he or she will be given some fixed amount of virtual money to invest. Using the application's research interface, the user will be able to query information about the stock market, either on specific stocks or about any stock that meets some specified criteria, in order to decide on which stocks to invest in.

As stocks are purchased, they are added to the user's portfolio and a second interface will allow the user to track and model statistics such as market value and changes in stock performance from the time of purchase. Based on these trends and further research, stocks can continue to be bought and sold as the user seeks to grow his or her market value. Ultimately some users may choose to create multiple virtual portfolios and compare their performance against the portfolios of other users through various leaderboards.
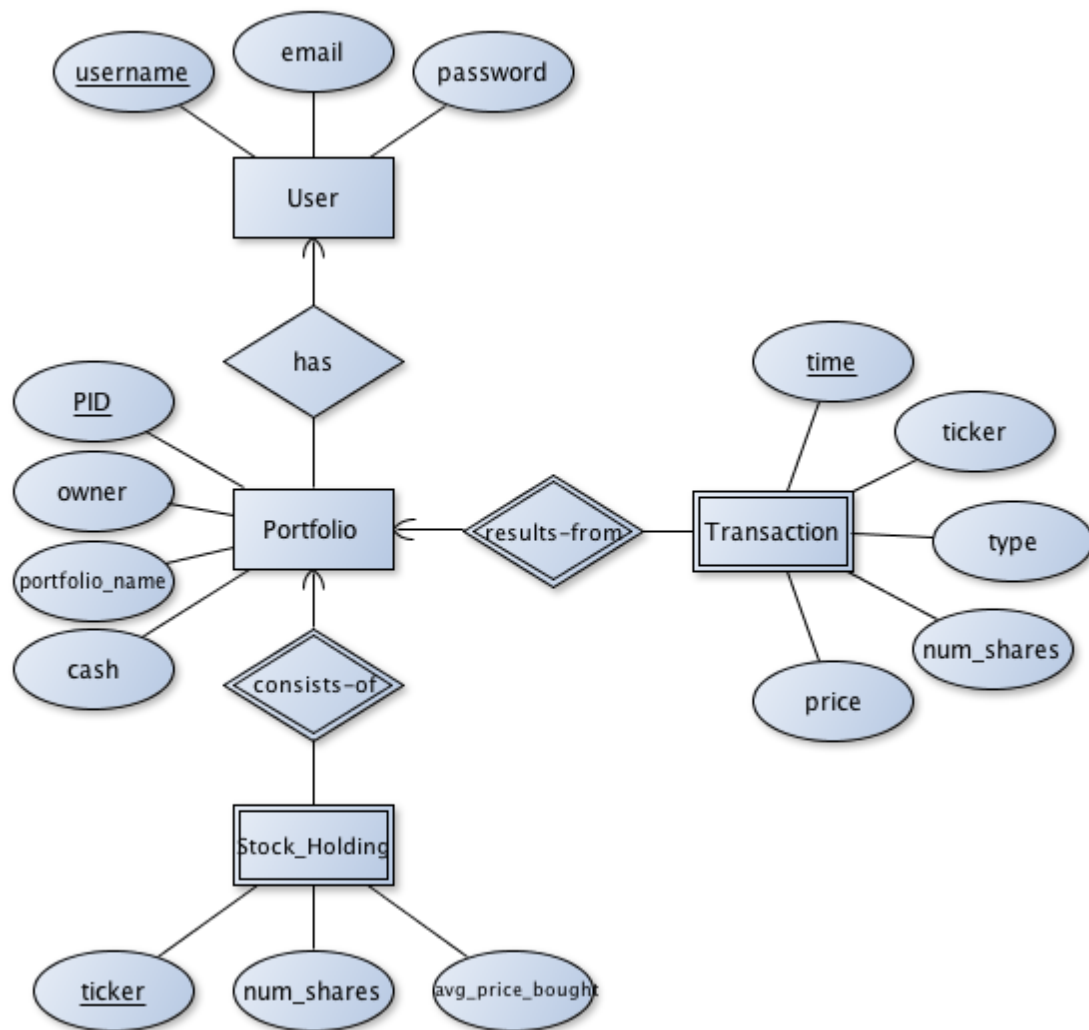
Collecting Data

Account data will be collected from the user upon his or her first visit to the application's website so that a user's portfolio data can be maintained across multiple visits. Portfolio data is collected as the user buys and sells stocks and creates additional portfolios. Current and historical stock data will be retrieved through the Yahoo! Finance API.

Data Assumptions

Usage of Yahoo! Finance for stock data requires the assumption that the data is both accurate and up-to-date. The database also assumes that each user has a unique username and email address and can only perform one transaction at a time. A user cannot have multiple portfolios with the same portfolio name, although the same portfolio name can be used by different users.

E/R Diagram

Database Tables

```
User(username, email, password)
Portfolio(PID, owner, portfolio_name, cash)
Transaction(PID, time, ticker, num_shares, price, type)
Stock_Holding(PID, ticker, num_shares, avg_price_bought)
```

Web Interface

The landing page includes fields for logging in by inputting a username and password. There is also a link to an account creation page, which asks for an email address, username, and password.

After login, the user is taken to his/her personal home page, which consists of a listing of the user's portfolios, each with an up-to-date market value, along with a button for creating a new portfolio. This button, when clicked, redirects the user to a short form where the new portfolio's name can be assigned. Clicking on a particular portfolio name will redirect the user to another page with a more detailed breakdown of information on that portfolio, including stock holdings and several options for how to sort the portfolio, such as alphabetically by ticker symbol or number of shares. From here, a user can click on links to buy/sell stocks, view transaction history, or analyze portfolio performance.

The buy/sell page allows the user to select the type of transaction and input the number of shares and the symbol for the stock of interest before submitting the transaction. The transaction history page shows recent portfolio transactions (including date, type, stock, number of shares, and price) based on some user-selected criterion: some number of most recent transactions (e.g. 25 most recent transactions) or all transactions within some time period (e.g. all transactions within the last month). The portfolio performance page allows the user to view statistics such as the portfolio's market value % change over some time period.

In addition to these portfolio-specific pages, the entire site has a navigation bar with links back to the home landing page described previously, a stock research page, and a leaderboards page. The stock research page allows the user to search for data on specific stocks by ticker symbol or search for all stocks that meet some user-specified criteria, such as stocks that have a current price of at most $20.00. The leaderboards page allows the user to compare their portfolios against those of other users and can be filtered to only include the best portfolio of each user in the rankings if desired.