The SAPP App

Social Media Sentiment Analysis for the Retail Investor

Social Media's Power

- 2021 marked a massive shift for the retail investor
  - An online Reddit forum known as r/WallStreetBets on coordinated a massive wave of stock purchases into the video game retailer GameStop
    - The brick and mortar company had been progressively dwindling in an increasingly e-commerce driven market, standing at a value of $4 per share
    - Within one week, the value had jumped 700%
    - As it reached media attention, more and more users flocked to Reddit for information
    - The purchasing spread to other dwindling stocks: AMC, Nokia, and Blackberry

GameStop
POWER TO THE PLAYERS

amc

BlackBerry

Social Media's Power

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Rise of the Retail Investor

- These events have showcased the power of the everyday investor and how social media has served as their backbone
- In the first quarter of 2020, 1 million new retail investor accounts were created
- In January 2021, RobinHood recorded 3 million new accounts
- Retail investors now account of 30% of the market's daily volume, up from roughly 16% in 2019
- Millennials plan to put 50% of their stimulus check into equities and Gen Z plans to put 40%

Why SAPP?

- The SAPP app will leverage the growing strength of the retail investor by analyzing their means of communication to anticipate changes in the stock market
- SAPP will provide in-depth sentiment analysis of stock tickers and cryptocurrencies across major social media sites: Reddit, Twitter, Facebook, and Instagram
- By recording and processing posts across social media platforms, it will offer users relevant data regarding the positive, neutral, or negative connotations associated with a post

How it Works

- The app will consider the strength of each social media over the given ticker
  - Reddit's influence on GameStop
  - Twitter's influence on Bitcoin
- It will take into account the influence a poster has on the site
  - Elon Musk on Twitter vs. an anonymous user on Reddit
- SAPP then provides a sentiment score alongside graphical data to support a claim that a stock or crypto will rise, fall, or remain relatively steady in price
- Users will be able to create custom watchlists of their portfolios so they can instantly have access to their most relevant assets

Essential Functional Requirements

Signing Up and Logging In

- Users will be able to create an account and login so they may view their customized home page with relevant details about their favorite assets

Search

- Users will be able to search through all available tickers in the SAPP database and be redirected to Ticker Pages highlighting the sentiment score of the ticker alongside details on the factors used to calculate the score

Currency Conversion

- Users will be able to change the base currency of the site to most major world currencies (Dollar, Euro, Pound, Yen, Rupee, etc.)

Site Navigation and Customization

Pin to Watchlist

- Users will be able to pin tickers of interest to instantly add them to their customized watchlist homepage, allowing for easier access and analysis of potential investments

Pie Chart Drill Down

- All Ticker Pages will contain visualizations of data, including a pie chart depicting the distribution of a particular site's influence on the Sentiment Score (e.g. Reddit - 40%, Twitter - 20%, Facebook - 10%, Instagram - 10%)
- Users will be able to click on any of these "slices" of the pie chart to be redirected to a page showing more specific data regarding the ticker and the particular social media platform

Email/Text Alerts

- Users will be able to sign up for email or text alerts on individual tickers to receive immediate notification of notable changes in their sentiment scores

Data Analysis

Price Chart Manipulation

- On the Ticker Page, users will be able to manipulate the price history chart of each ticker by changing the time frame, visuals, and opting for viewing volume

Relevant Post Exploration

- Users will be able to scroll through the most influential posts impacting the sentiment score of any particular ticker

Ticker Background

- On the Ticker Page, users can access a ticker’s history, background, and current popularity

Non-Functional Time Requirements

Update Time

- The sentiment analysis score of every ticker will be updated every 30 seconds considering new posts across social media platform

Response Time

- In most browsers, informational pages will load within 3 seconds, depending on the individual user’s connection strength, with up to 10 thousand users per hour

Reliability

- The system will be available and accessible online to users at all times with 99% uptime. Any crashes will be resolved within 12 hours and required maintenance will be announced at least a week ahead of time

Additional Non-Functional Requirements

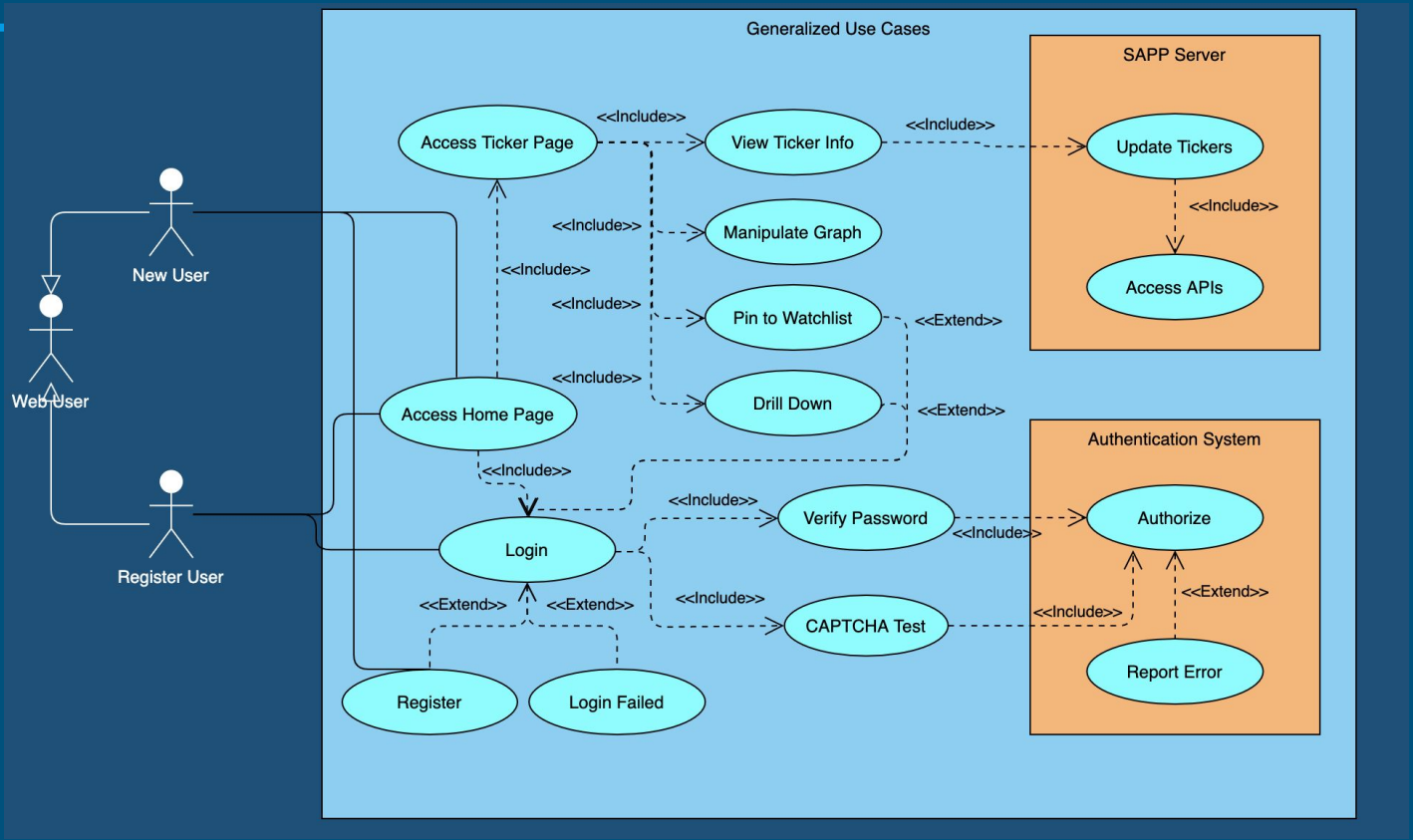
Security

- All user information and data such as pins and search history will be hashed and stored on an authentication server

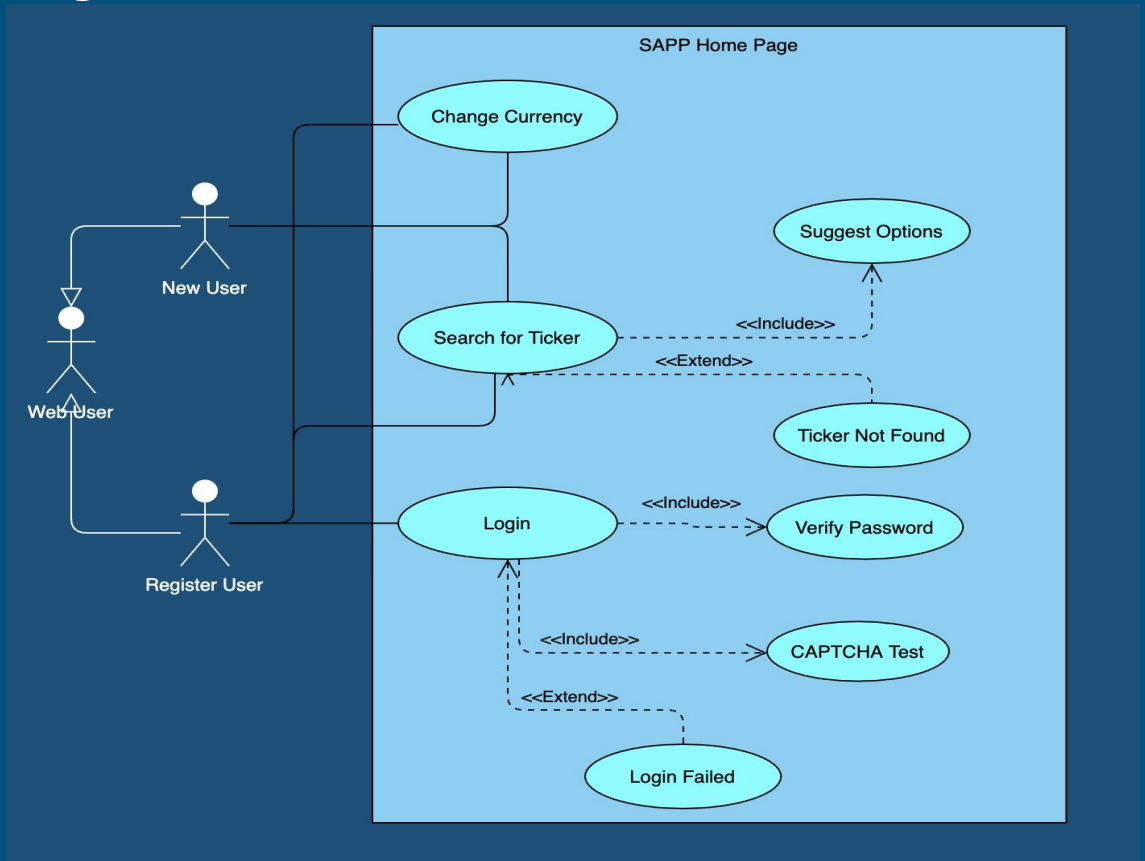
Compatibility

- The system will be accessible from all major browsers, including Google Chrome, Safari, Mozilla Firefox, Opera, and Internet Explorer. It will also be easily accessible on iOS and Android mobile devices through a standard mobile browser. On a mobile device, the website will adopt a different layout so as to improve the user’s experience.

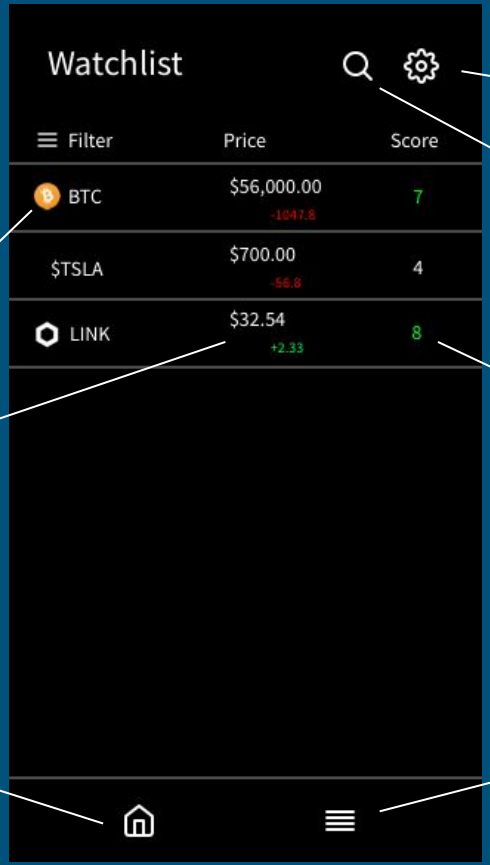
Generalized Use Case



Home Page Use Cases



Home Page Mock Up



Change Currency/
Sign In

Search Tickers

Ticker Name

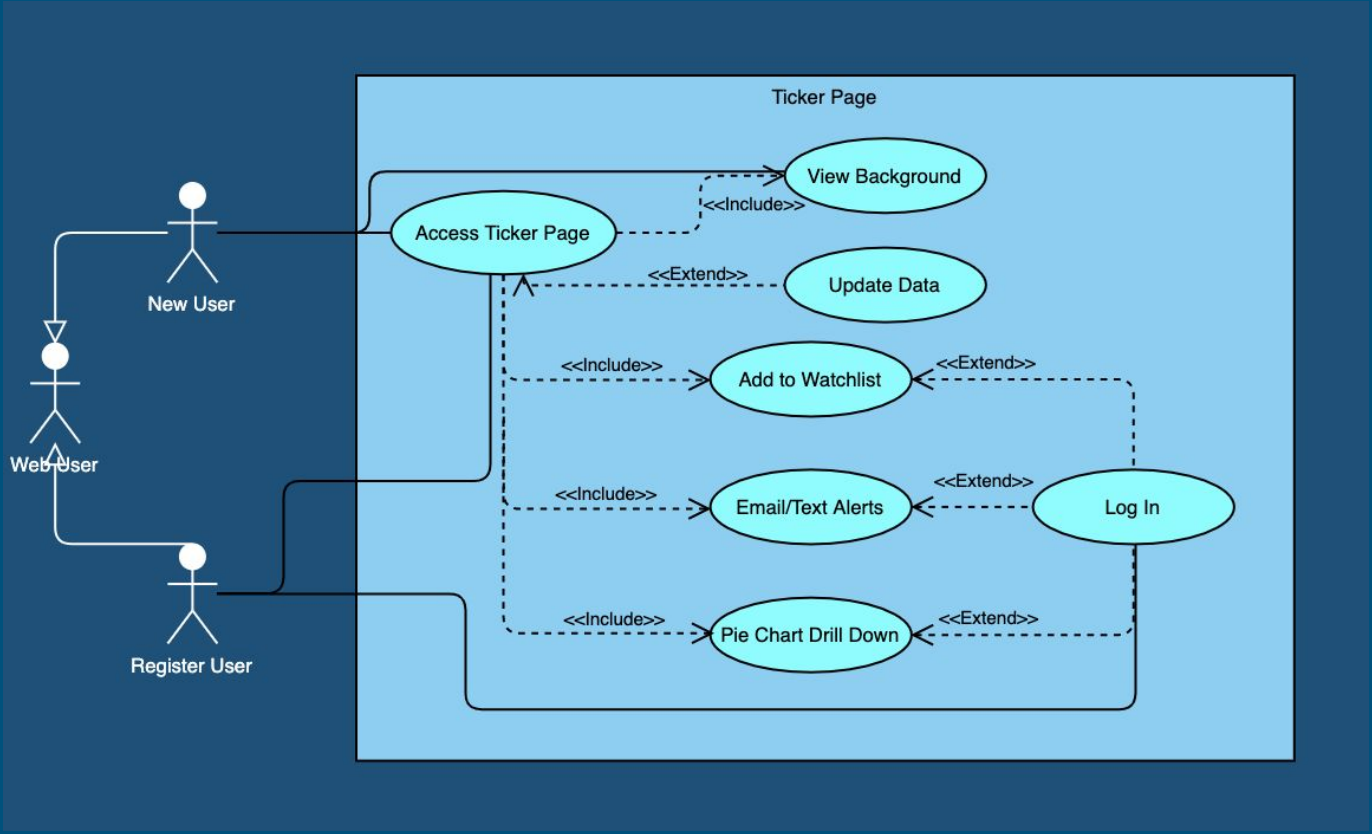
Current Ticker Value

Sentiment Score

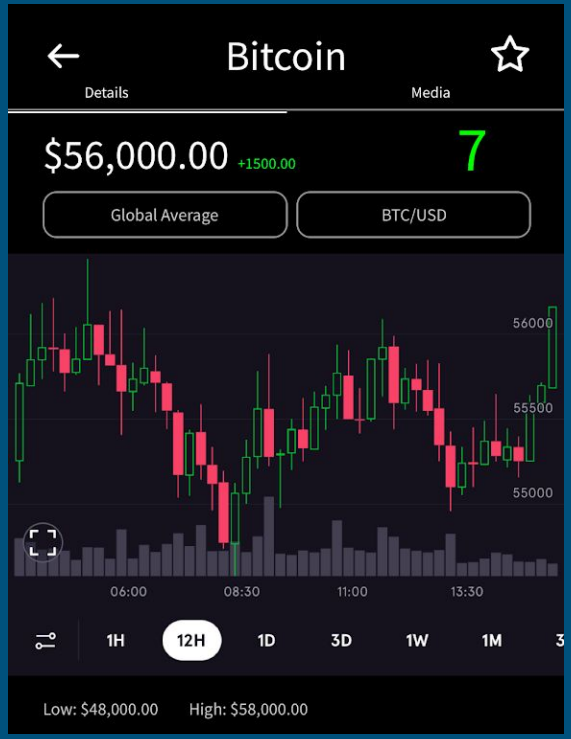
Home Page Link

Most Relevant Posts

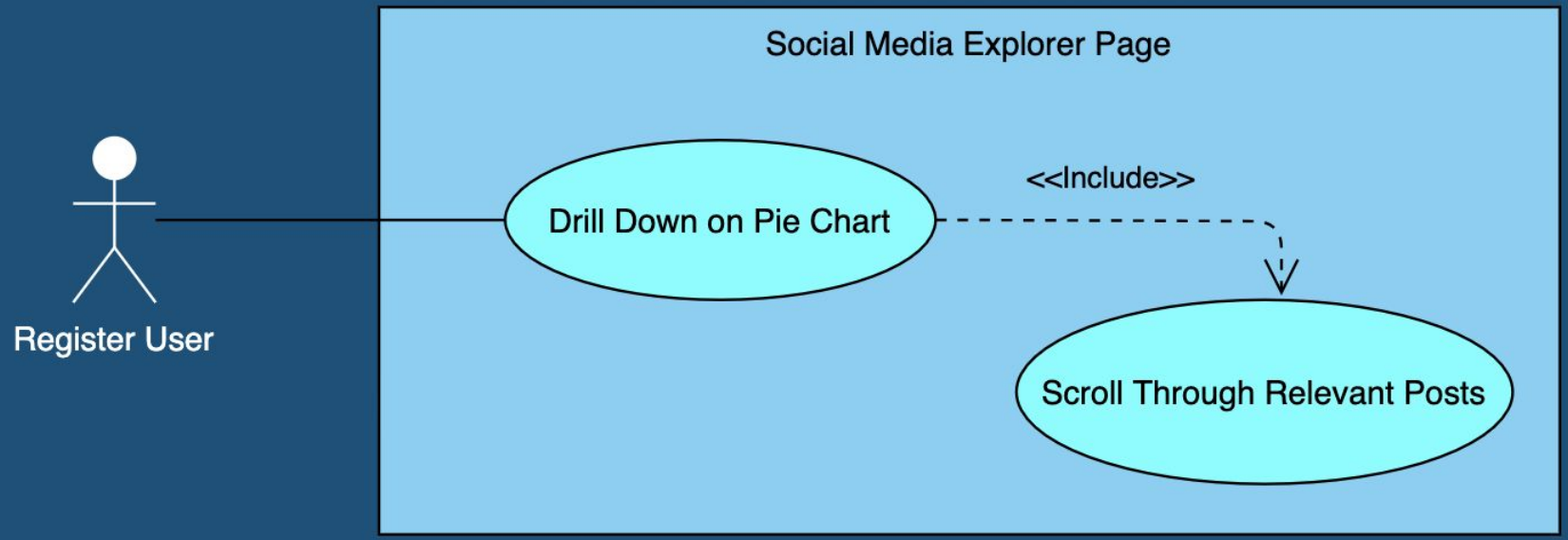
Ticker Page Use Cases



Ticker Page Mock Up



Relevant Post Explorer Use Case



Essential Constraints

Platform

Connectivity

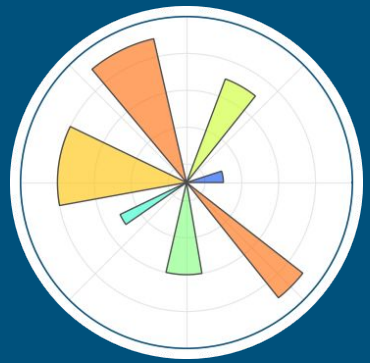
Tool Constraints

API

Web Hosting

Tool Constraints

Libraries



Language Constraints

Back End

SAPP will use Python as its backend language to leverage its strength in machine learning methods

Front End

SAPP will use the Angular Javascript Framework to implement and deploy the client-facing aspects of the software

Database

SAPP will utilize SQL for data storage, access, and manipulation

Privacy Constraints

User Privacy

User credit card and password information will never be shared with third-parties

User Activity

User must agree to have their activity on the app (followed tickers, time on app, etc.) tracked before SAPP can collect this information