Stock Price Comparison Web-App

by Group 17

Devesh Talreja, Mohsin Panjwani, Anurag Singh

Youtube Link: https://youtu.be/P1B6K_NCo-I

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Feasibility Analysis

Prior to starting out the project we conducted a feasibility analysis to determine the feasibility of the project. We conducted a feasibility analysis over five aspects, technical, economic, legal, operational, and scheduling.

Technical Feasibility

Hardware

Ideally, we would have wanted to set up our own servers which would have allowed us greater security, performance, quality, and control. However, due to the confines of the project we will be using APIs and hence there will be hardware requirements on our end.

The user will require a basic smartphone and a moderately good internet connection. They could also use a laptop or PC.

Software Requirements

We could use multiple APIs such as Yahoo Finance, Alpha Vantage that will allow us to get real time stock data. We will also use other APIs that will enable us to graph and tabulate the relevant data for the user.

Furthermore, we will be using an API that will gather the recent and relevant news online and conduct analysis of whether the news is positive or negative for the stock. Moreover, we will be using another API which will enable us to analyse the news and make accurate predictions. Furthermore,

We will write our program in python due to the simplicity, ease of use, and extensive availability of APIs.

Data

Ideally, we would need a lot of data to train the AI model to accurate predictions. However, due to the confines of the project it is not possible. Instead, we will be using historical data along with news updates to make relatively accurate predictions.

We will use APIs to collect data from public servers which we will then represent in the form of graphs and tables. Moreover, we will let the user choose the stocks they would like to compare, the historical period they want the data for, and how far along they want the app to predict stock prices in the future. By letting the user choose we make the app less data intensive which in turn allows us better performance.

Economic Feasibility

Market Size

The proliferation of smartphones around the world along with an increasing number of investors makes it an attractive product. Most investing apps are overly complex and have a steep learning curve. Our app is simple and extremely easy to use. There is certainly a market for new investors who don't want to be bogged down by all the technical stuff that new apps offer.

Estimates suggest there are over 500 million stock investors around the world. Hence, there certainly is a demand for people wanting an application that is easy and simple to use.

Revenue Model

We will be relying on a subscription model since we are targeting new but serious investors. We are aiming for a great user experience and will not be showing any ads. Our target market will be serious and young investors who want a simple and user friendly application.

At launch we will not be focussing on any other source of revenue but later down the road we will consider adding affiliate marketing partnerships and exploring brokerage firms.

Development Costs

We aim to keep our development costs to a bare minimum so that we can offer our subscription model at the cheapest possible rate. Our goal is to get a working product out to the market as soon as possible. Therefore we will not be adding many features in the first iteration. As our user base grows and we have more money coming in we will be able to hire more developers and expand our team.

Initially, we will be having a small team that will be laser focussed on the fundamentals. We will be using APIs to keep the costs down. We will be using user feedback on how to improve our app since we want to keep it user focussed.

Legal Feasibility.

Securities Law

Although our application does provide financial data and provide predictions they are not investment advice or recommendations. Our terms of conditions will strictly state that the user is responsible for doing their due diligence and cannot hold us accountable for their

financial decisions. Moreover, we will only use reputable APIs and have strict checks for data integrity.

Data Privacy Regulations

Our plan is to collect the least possible data and to encourage users to sign on using email sign on services such as Gmail and Outlook. We will have secure mechanisms to ensure maximum data security. Furthermore, our app will comply with data privacy locations such as GDPR and CCPA.

Intellectual Property Rights

We will be using APIs. However, we will ensure that we provide them credits and ask for their written permission before use for commercial purposes. We will also ensure that we will check to avoid any potential copyright infringement.

Operational Feasibility.

User Experience

Our intended audience is everyone interested in stock investing and trading. However, we will focus on new investors and those looking for simplicity. We will also place a lot of emphasis on user interfaces to make using the application a seamless experience.

Technical Support

Since our app is largely intuitive we will need little to no technical support. Despite that we could consider getting a chat bot which will enable us to reduce costs. Moreover, issues that are not solved with the chatbot could be transferred to human employees who would deal with the issues accordingly.

Scalability

Our app will aim to fetch and display the minimum amount of data required. However, it will still be able to handle multiple requests from different users at the same time. This is to ensure scalability without compromising on performance.

Scheduling Feasibility

Development Timeline

We plan to design our app using the Agile method. This will allow us immense flexibility and speed in development. Moreover, we will be able to come up with the first iteration and get

customer feedback for updates. This will allow us to learn from each iteration and waste little to no time creating features that customers do not like.

We will have a small team so that we can quickly get in sync and remain focussed at the task at hand. This will allow us to work on a limited budget and minimal resources.

Resource Availability.

We will be extremely flexible and efficient in managing our resources. We will be using APIs during the initial stages so that we incur few expenses and can focus on our unique selling point. Moreover, we need to ensure we can successfully integrate the APIs in the given timeframe.

The development of our app will require a moderate amount of time and minimal resources despite having several important features.

Conclusion

After our feasibility analysis we have concluded that we have the software requirements, economic viability, legal aspect covered, and have the operational feasibility, and scheduling requirements to carry on to the next steps.

Requirements Specification Model

Introduction

Purpose

Our purpose is to create a stock application that can compare stocks, analyse relevant news, and predict stock trends.

Intended Audience

Our intended audience is people interested in stock investing and trading, especially new investors and those looking for simple and easy to use interfaces.

Intended Use

The intended use is to provide a meaningful application to users where they can gain meaningful information regarding stocks

Overall Description

User Needs

An application that is simple to use, allows comparison of stocks, and predicts stock prices. Moreover, it should be safe and secure.

Core Features

- Real time stock Comparison
- Stock Predictions
- News Analysis

Additional Features

These are some features we could consider implementing in future versions:

- Social media sharing
- Portfolio Analysis
- Alerts and Notifications

Functional Requirements

Real Time Stock Comparison

- Users should be able to compare two stocks with real time data
- They should be able to select the time frame of when to do so

Stock Price Prediction

- The application should use algorithms to predict the future stock prices based on news and other data inputs.

News Analysis

- The application should use natural language processing algorithms to analyse news articles
- The algorithms should analyse both the heading and content of news articles

News Weighting

- The application should assign the weight of any particular news based on relevance and help in determining future trends.

Non Functional Requirements

Performance

- The application should provide real time updates and analysis. It should do this at a relatively fast pace.
- The application should be able to handle multiple requests from different users at the same time
- The application should only fetch and display the minimal possible data to ensure fast refreshing rate with little additional costs.

Security

- The user data should be safe and secure.
- The user should be provided with safe authentication and authorization.

Usability

- There should be a clean and easy to use interface.
- Ideally the customer should not require technical knowledge although it should be provided.
- The application should be intuitive.

Software Process Model Selection

Agile Software Process Model

The Agile software process model is an incremental and iterative method of developing software that strongly emphasises adaptability, teamwork, and quick responsiveness to change. The Agile Manifesto, which stresses people and interactions, working software, customer collaboration, and adapting to change, is the foundation of the Agile approach.

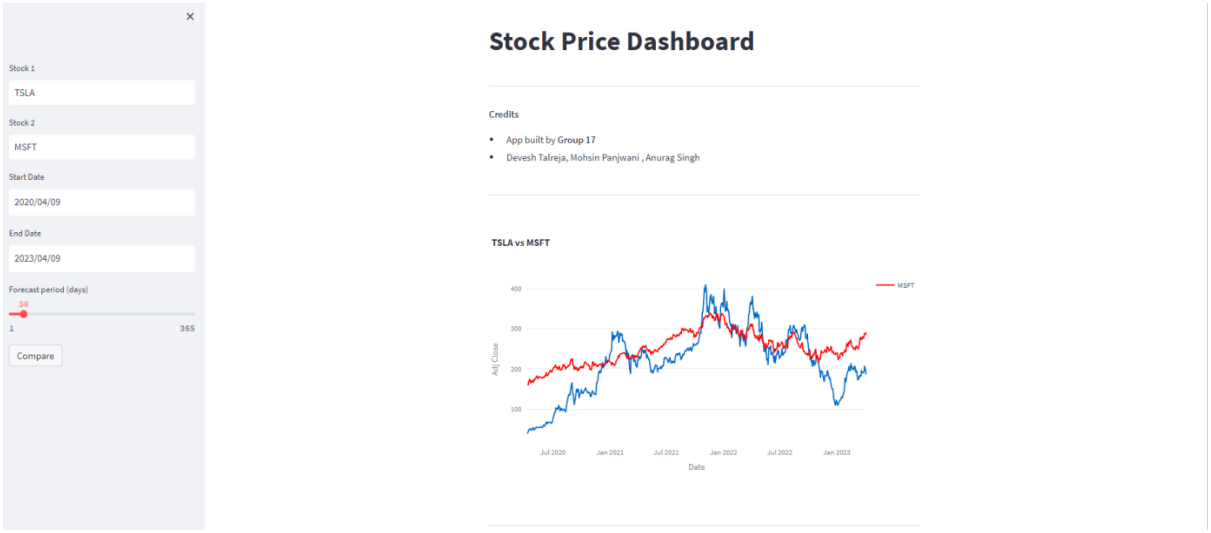
Iterative and incremental development: The Web App follows an iterative and incremental development approach, with various components of the application being developed and tested separately, such as the stock price graph, pricing data, news comparison, and future comparison.

Flexibility: It is created to be adaptive and flexible in order to evolve as the data and user needs do. Users may tell the program, for instance, which stocks they want, when they want them, and how long they want the prediction to last. The application will then provide the necessary graphs and statistics.

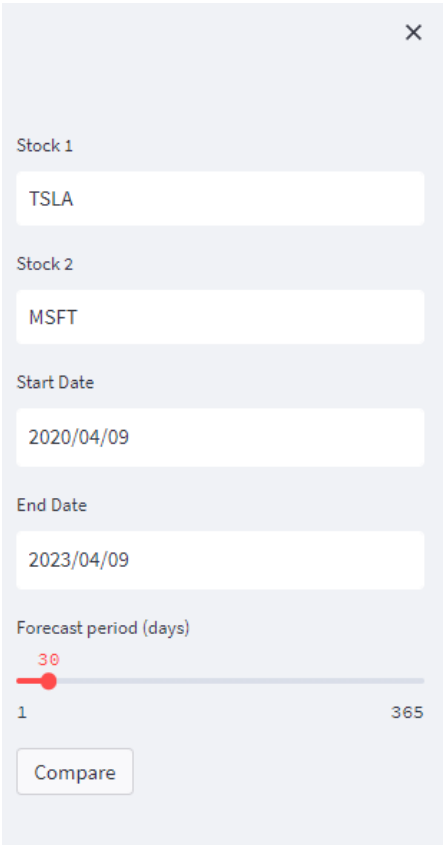
Quick change response: The program is built to react fast to modifications in user input and data. The user's input for the stock ticker and date range, for instance, will cause the stock price graph to update dynamically.

Collaboration: The design and code were collaborative efforts of all group members with each member assigned a different part of the App.

As seen from the home dashboard itself:



- It serves as a prime illustration of agile development. Streamlit was used to develop the dashboard, allowing for rapid and simple interface modifications.



- The graph function generates a line chart comparing the performance of two equities using information from the Yahoo Finance API. Agile development is demonstrated through the iterative process of receiving and updating data from an external source.
- The user may change the analysis's settings using the sidebar choices, such as the stock input and date range. Agile development is characterised by this adaptability.

The Process:

Gathering needs: At this stage, the project's requirements, including its features and functionalities, are determined. The specifications for the stock price tracker app may include getting real-time stock prices, showing data as graphs and charts.

Design: During this stage, the user interface and system architecture of the app are designed. The criteria outlined in the first step should serve as the foundation for the design. While creating the user interface, using a web framework like Flask, Streamlit, or Django might be useful.

Implementation: The real code for the app is completed during this stage. The stock price information may be fetched in real-time using APIs from services like Google Finance, Alpha Vantage, or Yahoo Finance. Scraping, manipulating, and displaying the data may be done with the help of libraries like Beautiful Soup, Pandas, and Matplotlib.

Testing: During this stage, the app is tested to ensure it complies with the specifications and runs well. The user experience, problems, and errors are all tested throughout this process.

Maintenance: During this stage, the app is updated, enhanced, and maintained in response to user input or fresh specifications

The Code:

```
import streamlit as st
import pandas as pd
import numpy as np
import yfinance as yf
import plotly.express as px
from stocknews import StockNews
from sklearn.linear_model import LinearRegression
import matplotlib.pyplot as plt
from sklearn.model_selection import train_test_split
import plotly.graph_objects as go


hide_st_style = ''' <style> #MainMenu {visibility: hidden;} footer{visibility: hidden;} </style>'''
st.markdown(hide_st_style, unsafe_allow_html=True)

st.title('Stock Price Dashboard')
st.write('---')
st.write('''
**Credits**
- App built by __Group 17__
- Devesh Talreja, Mohsin Panjwani , Anurag Singh
''')
st.write('---')

# Sidebar options
stck1 = st.sidebar.text_input('Stock 1')
stck2 = st.sidebar.text_input('Stock 2')
start_date = st.sidebar.date_input('Start Date')
end_date = st.sidebar.date_input('End Date')
forecast_period = st.sidebar.slider('Forecast period (days)', min_value=1, max_value=365,
value=30)

def graph():
    # Download data for stock 1 and stock 2
    data1 = yf.download(stck1, start=start_date, end=end_date)
    data2 = yf.download(stck2, start=start_date, end=end_date)

    # Plot line chart for stock 1 and stock 2
    fig = px.line(data1, x=data1.index, y=data1['Adj Close'], title=f"{stck1} vs {stck2}")
    fig.add_scatter(x=data2.index, y=data2['Adj Close'], mode='lines',
name=stck2,line=dict(color='red'))
```

```
st.plotly_chart(fig)

st.write('---')
st.markdown('## Pricing data')
data_temp1 = data1
data_temp2 = data2
data_temp1['% Change'] = data1['Adj Close'] / data1['Adj Close'].shift(1) - 1
data_temp2['% Change'] = data2['Adj Close'] / data2['Adj Close'].shift(1) - 1
data_temp1.dropna(inplace=True)
data_temp2.dropna(inplace=True)

st.write('### ' + stck1)
st.write(data_temp1)

annual_return1 = data_temp1['% Change'].mean() * 252 * 100  # excluding weekends
st.write('According to the trend your annual return is', annual_return1, '%')
stdev1 = np.std(data_temp1['% Change']) * np.sqrt(252)
st.write('The Standard Deviation is', stdev1 * 100, '%')
st.write('Risk Adjusted Return = ', annual_return1 / (stdev1 * 100))

st.write('---')
st.write('### ' + stck2)
st.write(data_temp2)

annual_return2 = data_temp2['% Change'].mean() * 252 * 100  # excluding weekends
st.write('According to the trend your annual return is', annual_return2, '%')
stdev2 = np.std(data_temp2['% Change']) * np.sqrt(252)
st.write('The Standard Deviation is', stdev2 * 100, '%')
st.write('Risk Adjusted Return = ', annual_return2 / (stdev2 * 100))

st.write('---')
st.markdown('## News Comparison')
sn1 = StockNews(stck1, save_news=False)
df_news1 = sn1.read_rss()
sn2 = StockNews(stck2, save_news=False)
df_news2 = sn2.read_rss()

for i in range(10):
    col1, col2 = st.columns(2)

    with col1:
```

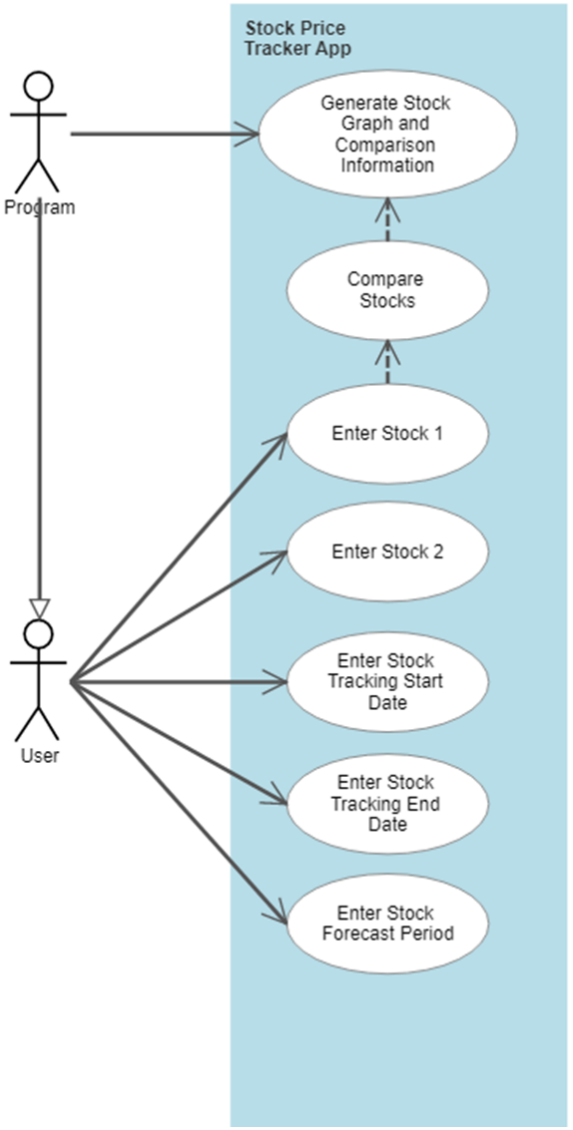
```
            st.subheader(f'{stck1} News {i + 1}')
            st.write(df_news1['published'][i])
            st.write(df_news1['title'][i])
            st.write(df_news1['summary'][i])
            sentiment = df_news1['sentiment_title'][i]
            st.write(f'Title Sentiment {sentiment}')
            news_senti = df_news1['sentiment_summary'][i]
            st.write(f'News Sentiment {news_senti}')

        with col2:
            st.subheader(f'{stck2} News {i + 1}')
            st.write(df_news2['published'][i])
            st.write(df_news2['title'][i])
            st.write(df_news2['summary'][i])
            sentiment = df_news2['sentiment_title'][i]
            st.write(f'Title Sentiment {sentiment}')
            news_senti = df_news2['sentiment_summary'][i]
            st.write(f'News Sentiment {news_senti}')

    st.write('---')
    st.markdown('## Future Comparison')
    data = pd.concat([data1['Adj Close'], data2['Adj Close']], axis=1)
    data.columns = [stck1, stck2]

    # Split data into training and testing sets
    X_train, X_test, y_train, y_test = train_test_split(data.dropna(), data.dropna(), test_size=0.2,
shuffle=False)

    # Train a linear regression model
    model = LinearRegression()
    model.fit(X_train, y_train)

    # Make predictions for the forecast period
    last_date = data.index[-1]
    forecast_dates = pd.date_range(start=last_date, periods=forecast_period+1, freq='D')[1:]
    forecast = pd.DataFrame(index=forecast_dates, columns=data.columns)
    forecast.loc[forecast.index[0], :] = data.iloc[-1, :].values
    for i in range(1, len(forecast)):
        forecast.iloc[i, :] = model.predict(forecast.iloc[i-1, :].values.reshape(1, -1))
    # Plot the actual and forecasted values on a line chart
    fig = go.Figure()
    fig.add_trace(go.Scatter(x=data.index, y=data[stck1], mode='lines', name=stck1))
```

```
    fig.add_trace(go.Scatter(x=data.index, y=data[stck2], mode='lines', name=stck2))
    fig.add_trace(go.Scatter(x=forecast.index, y=forecast[stck1], mode='lines', name=f'{stck1}
forecast'))
    fig.add_trace(go.Scatter(x=forecast.index, y=forecast[stck2], mode='lines', name=f'{stck2}
forecast'))
    fig.update_layout(title=f'{stck1} vs {stck2} Stock Prices', xaxis_title='Date', yaxis_title='Price')
    st.plotly_chart(fig)




if st.sidebar.button("Compare"):
    if stck1 and stck2:
        graph()
```

UML Diagrams

Use Case Diagram

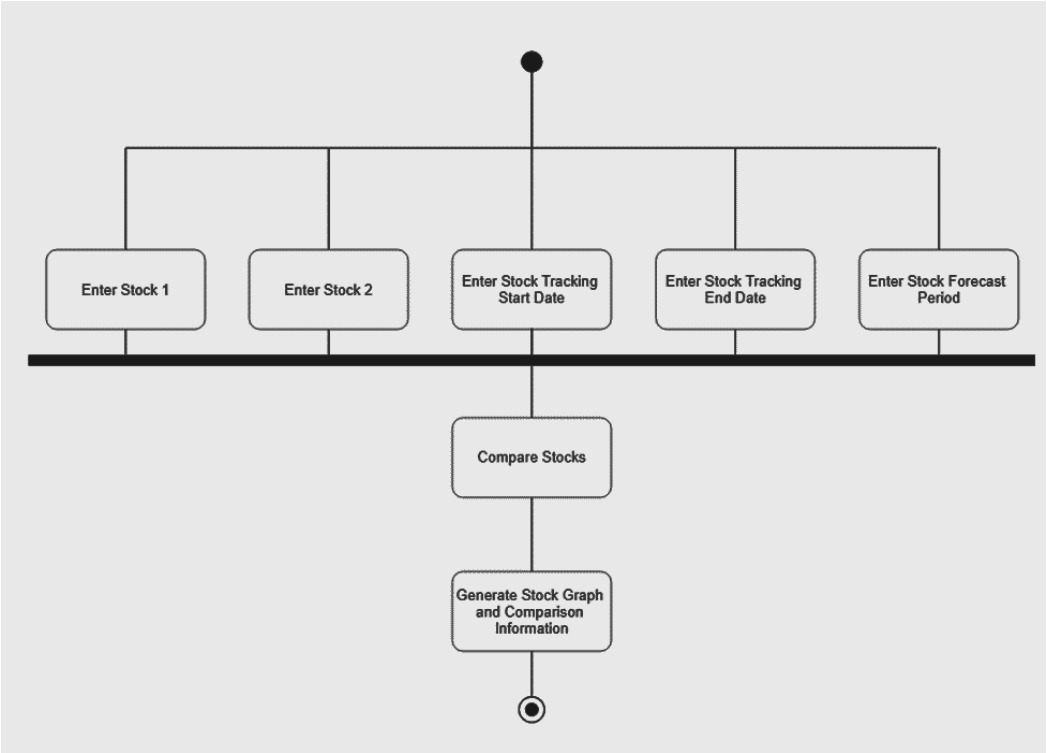
The Use Case Diagram below describes how the Stock Price Comparison Web-App can be used by the user. It shows how the program responds to the user entering information into the app and what is displayed back to the user. In the Stock Price Comparison Web-App, the user can input the 2 types of stocks he wants to compare, the tracking start date, the tracking end date, and the stock forecast period. The program will respond by comparing the stocks inputted by the user and generating comparison stock graphs and price information.



Activity Diagram

The Activity Diagram below describes how the interaction between the user and system happens from start to finish. It starts off with the initial stage, which is represented by the filled circle, at which the user can input the 2 types of stocks he wants to compare, the tracking start date, the tracking end date, and the stock

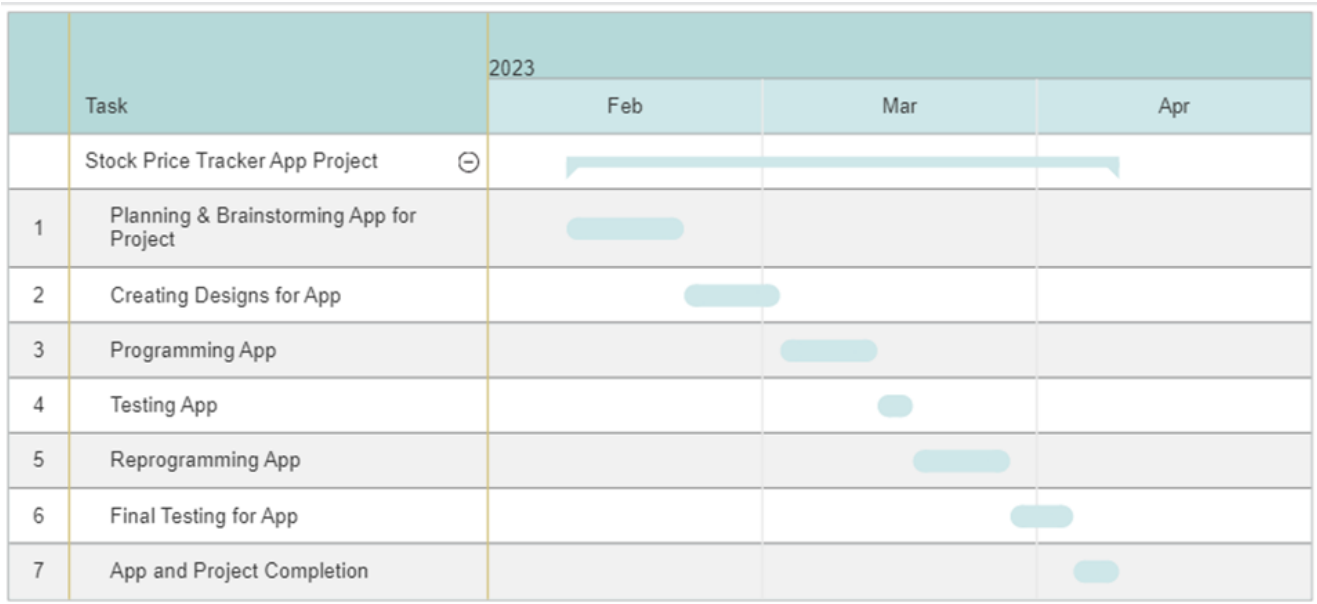
forecast period. These activities are all linked together. Then it transitions to comparing the 2 stocks inputted by the user. Finally, it generates the comparison stock graphs and price information. This is the final state, which is represented by the filled circle inside a larger circle.



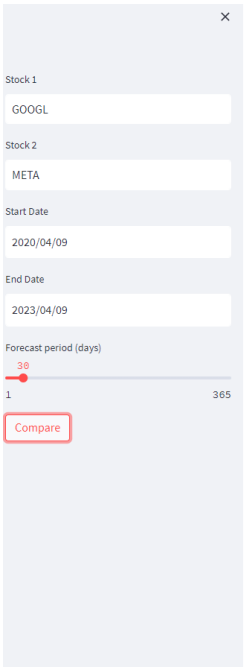
Project Planning Chart

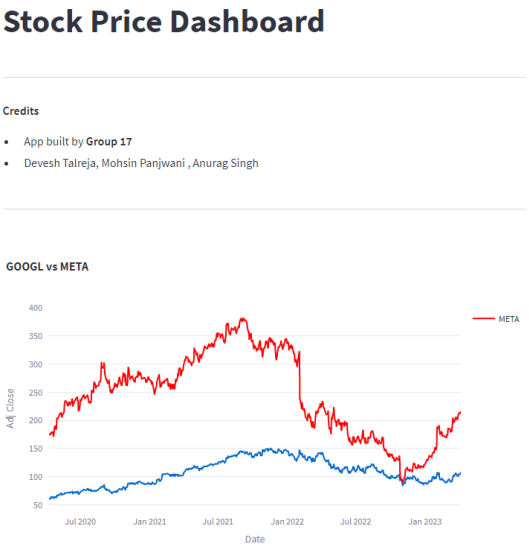
Gantt Chart

The Gantt Chart below describes the schedule of the Stock Price Comparison Web-App project. The bar chart shows the duration of the project, which lasted 3 months from February to April. It also lists all the tasks that took place in that time duration and how long they took, which is depicted using the bars in the bar chart.



Test Suites & Output





News Comparison

GOOGL News 1

Sun, 09 Apr 2023 14:55:56 +0000

Investing in Genpact (NYSE
) three years ago would have delivered you a 54% gain

Vanguard founder Jack Bogle helped spearhead the low-cost index fund, putting average returns within reach of every...

Title Sentiment 0.5267

News Sentiment 0.0258

META News 1

Thu, 06 Apr 2023 12:25:13 +0000

Macy's (NYSE
) Shareholders Will Want The ROCE Trajectory To Continue

To find a multi-bagger stock, what are the underlying trends we should look for in a business? Ideally, a business will...

Title Sentiment 0.0772

News Sentiment 0.4215

GOOGL News 2

Fri, 07 Apr 2023 12:05:00 +0000

Genpact Honored with the 2023 Stevie Awards for Sales and Customer Service

Genpact (NYSE: G), a global professional services firm focused on delivering outcomes that transform businesses, today announced that it has been recognized with three Gold awards at the recently concluded 17th annual Stevie Awards® for Sales & Customer Service in Las Vegas, Nevada USA.

Title Sentiment 0.7783

News Sentiment 0.6808

META News 2

Wed, 05 Apr 2023 03:15:52 +0000

7 Stocks to Buy for the Massive Rally Ahead

Well-known investment advisor Ed Yardeni believes that U.S. stocks are poised to rally this year. Speaking to CNBC last week, Yardeni said that the banking mini-crisis will be "very well-contained" by the Federal Reserve and Federal Deposit Insurance Corporation (FDIC). He noted that the banks' issues should prevent the Fed from raising interest rates further and that he thinks the S&P 500 could surge to 4,600 by the end of this year — a 12% rise from here. If you share Yardeni's bullish outlook

ADBE vs AMZN

Pricing data

ADBE

Date	Open	High	Low	Close
2020-04-13 00:00:00	315.94	320.9	313.75	320.65
2020-04-14 00:00:00	328.77	342.1	328.47	340.77
2020-04-15 00:00:00	335.34	339.22	329.65	332.55
2020-04-16 00:00:00	339.71	345.52	336.04	342.7
2020-04-17 00:00:00	350.09	350.38	340.5	344.11
2020-04-20 00:00:00	340.79	348.5	338.75	344.88
2020-04-21 00:00:00	340.9	342.76	325.21	328.99
2020-04-22 00:00:00	337.41	339.38	332.8	336.77
2020-04-23 00:00:00	338.9	341.75	334.8	335.37
2020-04-24 00:00:00	338	344.7	333.5	344.1

According to the trend your annual return is `12.95431633700274` %

The Standard Deviation is `37.21905218788403` %

Risk Adjusted Return = `0.348056051282783`

AMZN

Date	Open	High	Low
2020-04-13 00:00:00	102	109	101.9
2020-04-14 00:00:00	110.0235	114.6	109.3105
2020-04-15 00:00:00	112.884	116.6685	112.25
2020-04-16 00:00:00	117.3	123.05	116.75
2020-04-17 00:00:00	118.6165	120	115.801
2020-04-20 00:00:00	119.4975	122.249	119.3025
2020-04-21 00:00:00	120.8305	121.4155	113.983
2020-04-22 00:00:00	118.45	119.7	117.55
2020-04-23 00:00:00	119.999	121.211	119.104
2020-04-24 00:00:00	120.85	121.0215	119.1

According to the trend your annual return is `7.3840173907980855` %

The Standard Deviation is `38.48969672970024` %

Risk Adjusted Return = `0.19184400029580573`

News Comparison

ADBE News 1

Sat, 08 Apr 2023 14:49:36 +0000

A Look At The Intrinsic Value Of Agilent Technologies, Inc. (NYSE
)

Key Insights Agilent Technologies' estimated fair value is US$120 based on 2 Stage Free Cash Flow to Equity Current...

Title Sentiment 0.34

News Sentiment 0.7906

AMZN News 1

Sat, 08 Apr 2023 14:49:36 +0000

A Look At The Intrinsic Value Of Agilent Technologies, Inc. (NYSE
)

Key Insights Agilent Technologies' estimated fair value is US$120 based on 2 Stage Free Cash Flow to Equity Current...

Title Sentiment 0.34

News Sentiment 0.7906

ADBE News 2

Wed, 05 Apr 2023 14:01:02 +0000

Agilent (A) Boosts Spectrophotometer Reach With Cary System

Agilent (A) strengthens its Life Sciences and Applied Markets Group segment with the launch of new Cary 3500 Flexible UV-Vis system.

Title Sentiment 0.34

News Sentiment 0.5994

AMZN News 2

Wed, 05 Apr 2023 14:01:02 +0000

Agilent (A) Boosts Spectrophotometer Reach With Cary System

Agilent (A) strengthens its Life Sciences and Applied Markets Group segment with the launch of new Cary 3500 Flexible UV-Vis system.

Title Sentiment 0.34

News Sentiment 0.5994

NFLX vs ZM

Pricing data

NFLX

Date	Open	High	Low	Close
2020-04-13 00:00:00	371.31	400.51	367.7	396.72
2020-04-14 00:00:00	397.5	417.82	394.85	413.55
2020-04-15 00:00:00	413	434.98	412.25	426.75
2020-04-16 00:00:00	437	449.52	431.61	439.17
2020-04-17 00:00:00	431	432	414.7	422.96
2020-04-20 00:00:00	435.17	444.49	430.56	437.49
2020-04-21 00:00:00	444.77	447	425.6	433.83
2020-04-22 00:00:00	429.73	433	413	421.42
2020-04-23 00:00:00	419.26	438.41	419.26	426.7
2020-04-24 00:00:00	425	427.17	415.88	424.99

According to the trend your annual return is `10.438664800415902` %

The Standard Deviation is `50.44278503330118` %

Risk Adjusted Return = `0.20694069119150604`

ZM

Date	Open	High	Low	Clo
2020-04-13 00:00:00	127	136.86	125.604	135.
2020-04-14 00:00:00	141.07	145.2	139.01	141.
2020-04-15 00:00:00	141.71	152.57	140	151.
2020-04-16 00:00:00	149.92	154.25	146.8	150.
2020-04-17 00:00:00	147.91	153.789	144.03	150.
2020-04-20 00:00:00	153.3	155	148.254	148.
2020-04-21 00:00:00	151.42	154.75	138.36	143.
2020-04-22 00:00:00	147.1	152.28	145.1	150.
2020-04-23 00:00:00	154.01	169.75	153.49	169.
2020-04-24 00:00:00	177.15	181.5	158.3	15

According to the trend your annual return is `2.3187976672648993` %

The Standard Deviation is `65.06617942086669` %

Risk Adjusted Return = `0.03563752609887007`

NFLX News 2

Sun, 09 Apr 2023 11:39:00 +0000

General Motors Trounces Ford In EV Sales: Is the Stock a Buy?

After Ford was the No. 2 seller of EVs in the U.S. last year, GM quickly outpaced its rival in the first quarter -- will that gap hold?

Title Sentiment 0.0

News Sentiment -0.296

ZM News 2

Sun, 09 Apr 2023 12:00:00 +0000

'Tragic total loss': This classic mansion was gutted by a fire and then listed on Zillow for $1.5 million — it sold within a week. 3 other signs real estate remains healthy

The ultimate, lucrative fire sale.

Title Sentiment -0.4019

News Sentiment -0.34

Pricing data

TSLA

Date	Open	High	Low	Close	Adj Close	Volume	% Change
2020-04-13 00:00:00	39.344	43.4667	38.702	43.3967	43.3967	337,131,000	0.136
2020-04-14 00:00:00	46.598	49.4587	46.162	47.326	47.326	458,647,500	0.0905
2020-04-15 00:00:00	49.4667	50.2087	47.3333	48.6553	48.6553	353,655,000	0.0281
2020-04-16 00:00:00	47.796	50.63	47.1147	49.6807	49.6807	309,868,500	0.0211
2020-04-17 00:00:00	51.4853	51.6633	49.844	50.2593	50.2593	196,923,000	0.0116
2020-04-20 00:00:00	48.8467	51.038	47.4807	49.7573	49.7573	221,199,000	-0.01
2020-04-21 00:00:00	48.6747	50.222	44.9193	45.7813	45.7813	303,136,500	-0.0799
2020-04-22 00:00:00	46.932	48.9333	45.914	48.8073	48.8073	212,482,500	0.0661
2020-04-23 00:00:00	48.5067	48.9333	46.8753	47.042	47.042	198,550,500	-0.0362
2020-04-24 00:00:00	47.3873	48.7153	46.5453	48.3433	48.3433	198,180,000	0.0277

According to the trend your annual return is `74.83248175327874` %

The Standard Deviation is `66.36943237870676` %

Risk Adjusted Return = `1.1275142647940917`

MSFT

Date	Open	High	Low	Close	Adj Close	Volume	% Change
2020-04-13 00:00:00	164.35	165.57	162.3	165.51	160.9423	41,905,300	0.0022
2020-04-14 00:00:00	169	173.75	168	173.7	168.9063	52,874,300	0.0495
2020-04-15 00:00:00	171.2	173.57	169.24	171.88	167.1365	40,940,800	-0.0105
2020-04-16 00:00:00	174.3	177.28	172.9	177.04	172.1541	50,479,600	0.03
2020-04-17 00:00:00	179.5	180	175.87	178.6	173.6711	52,765,600	0.0088
2020-04-20 00:00:00	176.63	178.75	174.99	175.06	170.2287	36,669,600	-0.0198
2020-04-21 00:00:00	173.5	173.67	166.11	167.82	163.1886	56,203,700	-0.0414
2020-04-22 00:00:00	171.39	174	170.82	173.52	168.7313	34,620,200	0.034
2020-04-23 00:00:00	174.11	175.06	170.91	171.42	166.6892	32,790,800	-0.0121
2020-04-24 00:00:00	172.06	174.56	170.71	174.55	169.7328	34,277,600	0.0183

News Comparison

TSLA News 1

Sun, 09 Apr 2023 04:00:28 +0000

Can Warner Bros Discovery win back Hollywood?

After a painful first year, CEO David Zaslav is backing classic franchises and investing in new films to revive the legendary studio

Title Sentiment 0.5859

News Sentiment -0.1027

MSFT News 1

Thu, 06 Apr 2023 12:25:13 +0000

Macy's (NYSE
) Shareholders Will Want The ROCE Trajectory To Continue

To find a multi-bagger stock, what are the underlying trends we should look for in a business? Ideally, a business will...

Title Sentiment 0.0772

News Sentiment 0.4215

TSLA News 2

Fri, 07 Apr 2023 14:15:13 +0000

Is T-Mobile A Buy Ahead Of First-Quarter Earnings?

T-Mobile holds an edge in 5G wireless spectrum but will its market share gains vs. rivals continue? A big stock buyback is underway.

Title Sentiment 0.0

News Sentiment 0.7096

MSFT News 2

Wed, 05 Apr 2023 03:15:52 +0000

7 Stocks to Buy for the Massive Rally Ahead

Well-known investment advisor Ed Yardeni believes that U.S. stocks are poised to rally this year. Speaking to CNBC last week, Yardeni said that the banking mini-crisis will be "very well-contained" by the Federal Reserve and Federal Deposit Insurance Corporation (FDIC). He noted that the banks' issues should prevent the Fed from raising interest rates further and that he thinks the S&P 500 could surge to 4,600 by the end of this year — a 12% rise from here. If you share Yardeni's bullish outlook

Title Sentiment 0.0

News Sentiment 0.743

Future Comparison

TSLA vs MSFT Stock Prices