



Group No: 30
Project Name: Stock Prediction
Software Requirements Specification (SRS)

Name	ID
Natvar Prajapati	202101402
Naman Modi	202101421
Bhavya Shah	202101426
Dhairya Bhanavadia	202101436
Aayush Patel	202101452
Priya tank	202101463
Shubham Patel	202101464
Darshana Chauhan	202101467
Varun Vyas	202101468
Om Gor	202101484
Nisha Savaliya	202101486
Vaus Golakiya	202101487

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1. Introduction:

The Stock Prediction Platform is a user-centric web-based solution designed to streamline stock market analysis. By consolidating data from various sources, our platform provides intuitive tools for users to swiftly analyze and predict stock prices, access historical data, and conduct company-specific assessments. Empowering informed decision-making, this platform simplifies the complexities of stock market dynamics, enabling users to confidently navigate and make informed investment choices.

1.1. Description

Our Stock Prediction Platform is crafted to cater to all, ensuring that even if you're stepping into the stock market for the first time, you'll find guidance here. We've designed demo videos and a comprehensive user guide, offering step-by-step assistance to navigate the platform seamlessly. Our aim is to empower every user, regardless of their familiarity with stocks, to comfortably use our platform, gain insights, and make well-informed investment decisions.

Beyond numbers and charts, we bring you the latest in stock-related news. This added feature enhances your understanding of market trends and augments the accuracy of our predictions. We strongly believe that an informed investor is a successful investor. By providing relevant news alongside predictive data, we offer a comprehensive understanding of the stock market landscape, aiding in sound decision-making and strategy formation.

Your interaction with our platform isn't confined to your browsing session. We value your journey with us, keeping track of your preferences. Your bookmarked stocks and past searches are neatly organized in your user profile. This personalized touch ensures that you can easily revisit your favorite stocks and track their performances over time. It's like having your own personalized stock library, tailored just for you.

At our core, we are an inclusive platform, welcoming individuals, companies seeking insights, and data analysts searching for comprehensive stock data. Whether you're an individual investor or a professional in the financial field, our platform is open to all. We strive to democratize stock market analysis, offering accessible tools and rich information to empower users on their investment endeavors. Our mission is to equip you with the resources needed to navigate the stock market landscape confidently, irrespective of your background or expertise.

1.2. Purpose

The purpose of our Stock Prediction Platform is to design and deploy robust algorithms and systems capable of sourcing and analyzing real-time stock market data from diverse sources. By leveraging this data, our aim is to furnish users with precise and current insights into stock prices across various companies. Ultimately, our platform strives to empower users in making well-informed investment decisions by offering accurate and up-to-date stock price comparisons and predictions.

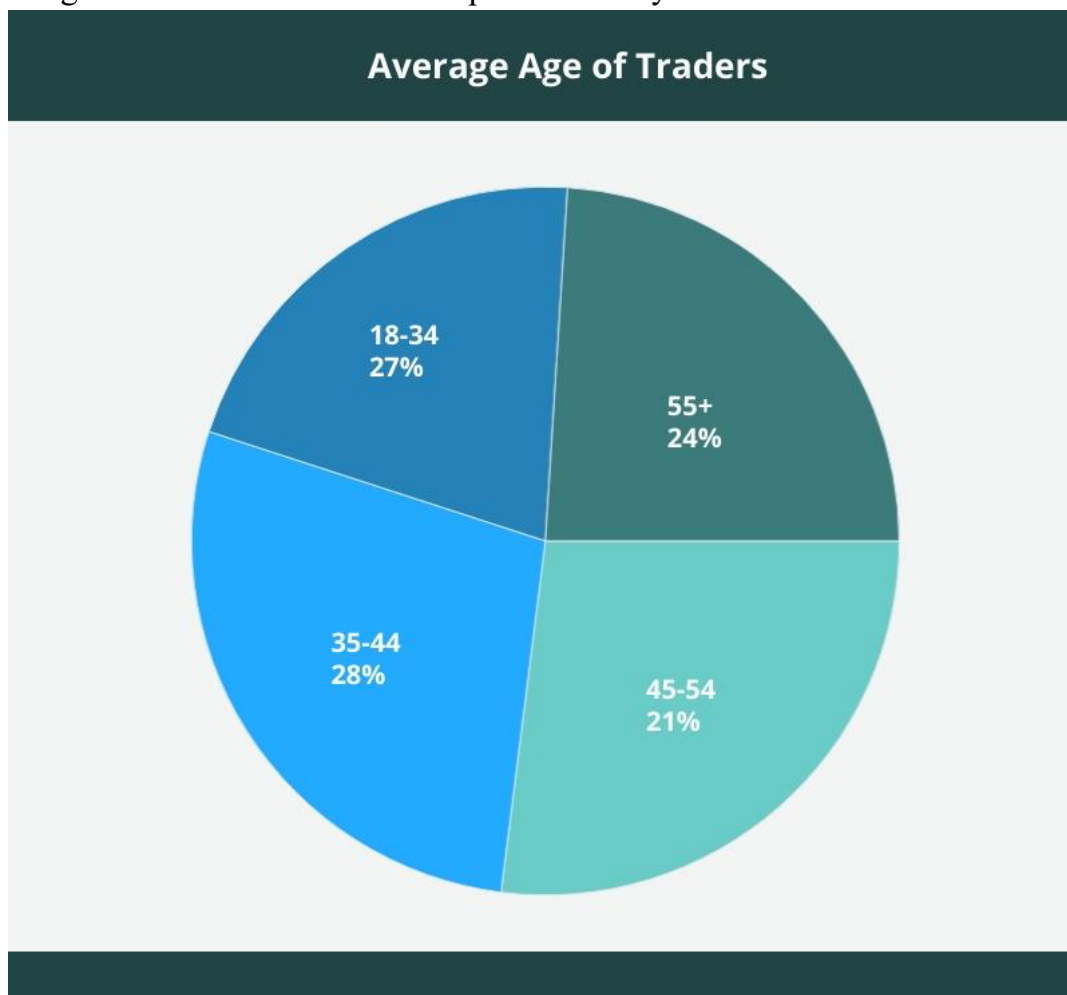
1.3. Need

In today's dynamic investment landscape, navigating the stock market can be overwhelming for both seasoned investors and newcomers. With a myriad of companies and fluctuating stock prices, individuals often find it challenging to pinpoint the most opportune investment opportunities, leading to uncertainty and potential financial losses.

Our Stock Prediction Platform addresses this pressing challenge by consolidating real-time data from various financial sources into a user-friendly interface. In an environment where stock market complexities can deter informed decision-making, our platform simplifies the process by offering comprehensive stock price analyses and predictions from multiple sources.

By enabling users to compare stock prices across different companies and access historical data, our platform empowers investors to make informed and strategic investment choices. It serves as a guiding beacon in the intricate world of stock markets, ensuring users have the necessary information to make confident and astute investment decisions.

Our platform isn't just about predicting stock prices; it's about leveling the playing field, offering users an opportunity to stay ahead of market trends, avoid potential losses, and ultimately make more sound investment decisions. It's a tool that aims to empower individuals, irrespective of their financial expertise, to navigate the stock market landscape with clarity and confidence.



1.4. Intended User:

The intended audience for our Stock Prediction Platform encompasses a diverse spectrum of individuals and entities within the realm of stock market participation. Primarily, individual investors seeking to make informed investment choices and comprehend stock market trends constitute a significant segment of our audience.

Additionally, professionals and organizations engaged in financial analysis, including data analysts, market researchers, and corporations seeking comprehensive stock data insights, form an integral part of our audience base.

Our platform is designed to cater to the needs of both novices seeking to understand stock market dynamics and seasoned investors aiming to refine their investment strategies. Regardless of one's familiarity with stock trading, our platform aims to democratize access to crucial stock market information, empowering users with the tools and insights necessary for successful investment endeavors.

1.5. Product Scope:

At present, our platform's focus is exclusively directed towards the stock market domain, aiming to provide comprehensive insights and predictive analyses within this realm. The scope encompasses a vast array of stocks across various industries and sectors, enabling users to analyze and predict stock prices for companies listed on major stock exchanges.

The diversity of products within the stock market sphere is extensive, covering companies from industries such as technology, finance, healthcare, consumer goods, and more. Users can explore and analyze stocks spanning diverse sectors, including but not limited to:

- Technology: encompassing software, hardware, and IT services.
- Finance and Banking: comprising banks, financial institutions, and investment firms.
- Healthcare and Pharmaceuticals: including pharmaceutical companies, medical equipment providers, and healthcare service entities.
- Consumer Goods: covering retail, food and beverage, apparel, and other consumer-centric industries.
- Energy and Utilities: encompassing oil and gas, renewable energy, and utility services.
- Automotive and Transportation: including automobile manufacturers, suppliers, and transportation services.

The platform's primary objective is to offer insights and predictions for a wide spectrum of companies and industries listed in the stock market, ensuring users have access to a diverse range of stocks for analysis and decision-making.

2. Product Description

2.1. Product Function

The website serves as a platform for stock market enthusiasts and investors, providing the following functions:

2.1.1. User Authentication:

- **Sign Up:** Users can create accounts using their email id where he/she will be receiving One-time Password for the security purpose. Then he/she can choose the username and set up the password which then can be used to login into the account.
- **Login:** Registered users can log in securely to access personalized features. The user can login using the registered email id and the password.
- **Forgot Password:** Users can recover their accounts through a secure Reset Password process where the user will enter the registered email id and then on entering the received OTP, the user can change the password successfully.
- **Change Password:** The OTP is sent to the registered email address just the same as in Forgot Password.

2.1.2. User Dashboard:

- **Latest News:** Users can access real-time stock market news on the home page to stay informed. Filtering can also be done to view the news of a particular company.
- **Price & Analysis:** Users can read in-depth stock market analyses to make informed decisions. The website uses the ML model to display the recent trends of the stocks and predicts the prices of the stocks on the basis of the provided information.
- **Wishlist:** A personalized wishlist feature is added where users can track their preferred stocks and review them when needed.

2.1.3. Homepage Features:

- **Latest News Feed:** Displays the most recent stock market news on the homepage.

2.1.4. Profile Management:

- **User details:** Name, Username, Password and mobile number

2.1.5. Stock Analysis:

- **Price & Analysis:** Users can view prices of the stocks and website also provides analysis of the selected stocks to the registered user.
- **Graphs:** The graphs are generated using the data of ML model which display stock data for different time frames (1 month, 3 months, 6 months, 1 year & 2 years).

2.1.6. Community Interaction:

- Users can engage in discussions by posting comments on news page of a company. The user can edit his/her own comment.

2.2. Constraints

- **Internet Connectivity:** The website requires a stable internet connection for real-time updates.
- **Device Compatibility:** Users should access the website from devices with modern web browsers for optimal performance.
- **Security and privacy:** The security of user accounts is also contingent on users maintaining the confidentiality of their login credentials and securing access to their registered email accounts. Users are encouraged to follow best practices in creating and managing secure passwords to mitigate the risk of unauthorized access. Ensuring the website is secure and compliant with relevant regulations can be a challenging task.

2.3. Assumptions

- **User Familiarity:** Users are assumed to have a basic understanding of stock market concepts before exploring the website. This will help user to get better knowledge of the contents on the website.
- **Email Accessibility:** Users are expected to have access to the email account used for OTP verification.

2.4. Dependency

- The website relies on external APIs for real-time stock market data and news updates.
- The system depends on the proper functioning of the software used to access it, such as the user's device and web browser.

2.5. User Classes and Characteristics

- **Users:**
Characteristics: Users who are engaged in websites are typically price sensitive and they want to get the accurate prediction of the stocks they are going to invest in and they do research before making a purchase of it.
Need: Customers want to get access to get a prediction result of all the desired stocks at one place so that they can save their time, money and they can do informative purchases.
- **Admin:**
Characteristics: Admin is responsible for managing the websites and helping users.

Need: Admin should reply to user feedback so that users can solve their query.

3. Requirements

3.1 Functional Requirements

User Authentication:

- Users can register with their email, receiving a verification OTP.
- Secure login using registered email and password.
- Account recovery through a secure "Forgot Password" process with OTP.
- Change password functionality with OTP sent to the registered email.

User Dashboard:

- Latest News
 - Real-time stock market news displayed on the homepage.
 - Option to filter news by a specific company.
- Price & Analysis
 - In-depth stock market analyses using machine learning models.
 - View recent trends and predictions based on provided information.
- Wishlist
 - Personalized wishlist feature for tracking and reviewing preferred stocks.

Profile Management:

- User Details
 - Manage and display user details, including name, username, password, and mobile number.

Commenting:

- Users can post, edit, and like comments on company news pages.

Admin Functions:

- Admin manages and monitors user activities.
- Responds to user feedback and queries.

3.2 Non-Functional Requirements

Usability: The system ought to be simple for all users to use and comprehend.

- **Justification:** The system is for a vast variety of user base and so the design should be such that it is easily understandable and easy to use for everyone irrespective of their technological literacy. Thus, making it usable for everyone.

Performance: To offer a seamless user experience, the system must deliver quick and dependable performance.

- **Justification:** As mentioned, the system is for everyone and by so, it can be used in any device which has internet connectivity and so the performance should be optimized for every device.

Scalability: System scalability is necessary to meet growing traffic and data storage demands.

- **Justification:** As the website grows, the number of users interacting with the system increases and so the servers should have capabilities to handle the traffic so that it gets close to 24 hours of uptime. This can be achieved by using the optimized code with less bugs and less cluttered server architecture.

Availability: To ensure that users may access the system at any time, it must be accessible around-the-clock.

- **Justification:** As discussed earlier, the system should be available 24x7 for the user as the location of the user accessing the system is not fixed. The user can access the system as per his/her convenience.

Compatibility: The system needs to work with a variety of browsers and hardware.

- **Justification:** Various users have different devices, architectures and different operating systems and so the system should be compatible with all the kinds of device possible. The coding language should be chosen in such a way that there should not be any kind of exclusivity among any group of users.

Responsiveness: The system must be responsive in order to provide a smooth user experience across a variety of devices and screen sizes.

- **Justification:** It is not certain that users would access the system on a particular device and so the system should be responsive as much as possible so that many users can access and in as many ways as possible.

4. Use Cases:

Use Case Name: Login/Signup for the user

Actors:

- User
- Administrator

Preconditions:

- The system is accessible.

Postconditions:

- A successful login or Signup.

Flow of Events:

Use Case: Login

- Actor selects the "Login" option.
 - System prompts for username and password.
- Actor enters valid login credentials.
 - System authenticates the user.
 - User gains access to the system.

Alternative Flow: Login Fail

- If the actor enters invalid login credentials in Step 2:
 - System displays an error message.
 - Actor can retry login or choose the "Forgot Password" option.

Alternative Flow: Forgot Password

- If the actor chooses the "Forgot Password" option in Step 2 of "Login":
 - System prompts for email address.
 - Actor enters a valid email address.
 - System sends a password reset link to the provided email.

Use Case: Signup

- Actor selects the "Signup" option.
 - System prompts for registration details (e.g., name, email, password).
- Actor enters valid registration details.
 - System creates a new user account.
 - Users gain access to the system.

Alternative Flow: Signup Failed

- If the actor encounters an issue during registration in Step 2 of "Signup" (e.g., email already exists):
 - System displays an error message.
 - Actors can retry registration.

Exit Condition:

- User successfully logs in, recovers the password, or registers an account, or they may exit the process at any point by choosing the appropriate option.

Use Case Name: Stock Prediction

Actors:

- User (Registered User & New User)
- Stock API
- System

Preconditions:

- User is logged into the system (for registered users).

Postconditions:

- The user receives stock predictions for selected company.
- The user can view trending stocks, filter companies, read/write comments, access their profile, and log out.
- For new users, they can register to become registered users.

Flow of Events:

Use Case: Log in (Managed by System)

- User selects the "Log in" option.
 - System prompts for username and password.
- User enters valid login credentials.
 - System authenticates the user.
 - User gains access to the system.

Use Case: Register (Managed by System)

- New User selects the "Register" option.
 - System prompts for registration details (e.g., name, email, password).
- New User enters valid registration details.
 - System creates a new user account.

- New User becomes a Registered User.

Use Case: Price and Analysis

- User selects the "Price and Analysis" option.
 - System prompts for selecting a company to predict.
- User selects a company to predict.
- User selects "Future Prediction" for that company
 - System fetches stock data from the Stock API for the selected company.
 - System applies prediction algorithms.
 - System displays the stock predictions to the user.

Use Case: Filter Companies

- User selects the "Filter Companies" option.
 - System allows the user to apply filters (e.g., industry, market cap) to the list of companies.
 - System updates the list of companies based on the selected filters.

Use Case: Read/Write Comment

- User selects a specific company or prediction.
 - System displays comments related to that company or prediction.
- User can:
 - Read existing comments.
 - Write a new comment related to the selected company or prediction.

Use Case: Profile (Including Company Details)

- User selects the "Profile" option.
 - System displays user profile details and related company information.

Use Case: Log Out (Managed by System)

- User selects the "Log Out" option.
 - System logs the user out of the system.

Alternative Flow: Select Company (Stock API)

- The Stock API receives a request to select a specific company for prediction.
- The Stock API retrieves historical stock data for the selected company.

Alternative Flow: Filter Companies (Stock API)

- The Stock API receives a request to filter companies based on user-defined criteria.
- The Stock API provides the filtered list of companies to the system.

Exit Condition:

- User successfully interacts with the system to receive stock predictions, view trending stocks, filter companies, read/write comments, access their profile, and log out. New users can also register to become registered users.