Software Requirements Specification

for

STONKS - A Stock Market Trading System (BSE India)

Version 1.2 approved

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Revision History

Name	Date	Reason For Changes	Version
Team Stonks	4/2/21	Added Section 7 : Other Requirements Added Order History UI Mockup	1.1
Team Stonks	6/2/21	Added System Features:404 Page Not Found, Placeholders and Admin Panel.	1.2

1.   Introduction

1.1   Purpose

This document is meant to encapsulate the detailed description of the functionalities, features and requirements for **Stonks** : A Stock Market Trading System (version 1.2). The current focus is to develop an application that is a hybrid of the existing website BSE India and a Stock Trading System. The upcoming sections elaborate on different aforementioned aspects of the same. Each one comprises an exhaustive description of the requirements, features and fine grained details. Further sections contain a comprehensive elucidation of the non functional requirements, target users, revision history, analysis, etc.

1.2   Intended Audience

This document is meant to provide an in depth description about the different aspects of the product to the set of stakeholders including the team members behind **Stonks**, the project and overseeing managers, developers, testers, security team, marketing team and the potential users of our stock trading system.

This SRS document contains in detail, the description of the development of **Stonks** as well as business requirements and security requirements of the various functionalities implemented in the software. We have reported a comprehensive flow of our product for public use to gain deeper insight into the program specifications, if users are interested in the development process.

1.3   Product Scope

This web application is meant to be an online stock trading platform for the first-time investors, millennials and experienced investors looking to invest in Equity as well as Commodity Market.
The user interface of **Stonks** should be intuitive, responsive and simplified for the best user experience.

The users would be able to create a trading account for themselves enabling them to invest in the Market. The platform would enable the user to buy and sell stocks, view the daily condition of the market, keep track of their portfolio and view order history.

The platform aims at providing a unified interface for the following :

- Faster on boarding of users
- Integrated trading system
- Simplified view of current market condition
- Effective order history tracking
- Individual possession monitoring

1.4   References

1.4.1. Reference Websites
- ○ BSE India website
- ○ Groww

1.4.2. Reference SRS documents :
- ○ Sample SRS document
- ○ Software Requirements Reference
- ○ Share market analysis
- ○ Stock Master SRS

2.   Overall Description

2.1   Product Perspective

Market analysis shows that there is a scarcity of platforms where the user could trade and analyze the different data related to the stock market at one place. This web application would be a follow-on member of the product family of Stock Trading System. This is achieved by combining the features of BSE India website with the standard features of a Stock Trading System leading to the creation of **Stonks Trading Platform**, so that the user could access and manage all of it at one single place instead of having to make use of several platforms. The provision of having one end-to-end platform that would allow the users to perform all kinds of relevant tasks related to the Stock Market Trading, making the product a worthy competitor for the ones that are already present in the market.
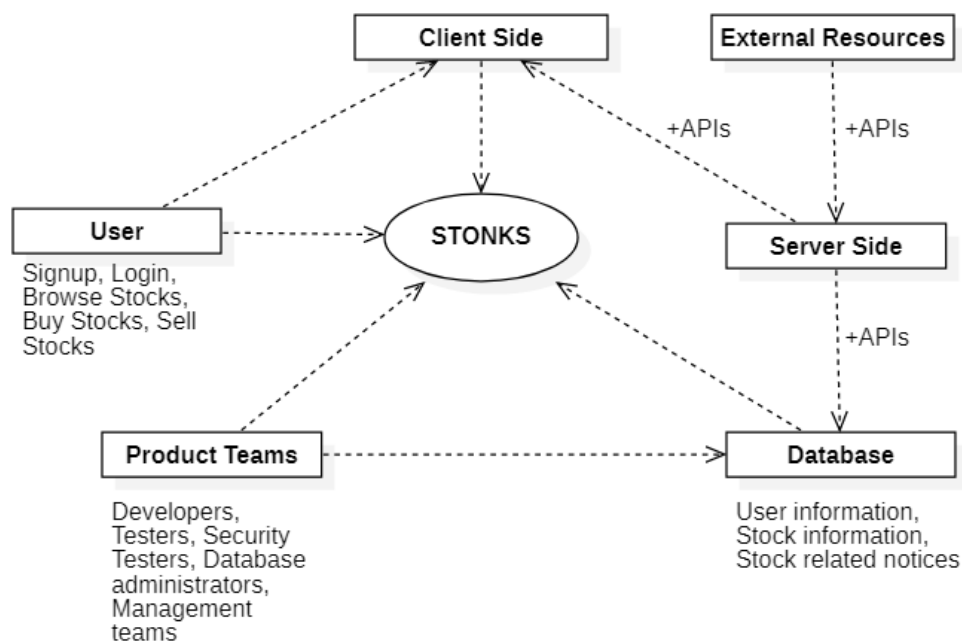
Product Description Diagram

2.2   Product Functions

The web application would allow users to carry out the following operations with ease:

- Register themselves on the platform
- View the current state of the market and the listed companies
- View the bulletin for the market updates and notices
- Trade stocks and commodity products
- Manage the portfolio containing stocks owned
- View their order history

These functionalities are further explained in Sections 4 and 5.

2.3   User Classes and Characteristics

First time investors, day traders and seasoned investors form the majority of user class. All the mentioned classes desire and use different components of the web application. A first time investor would look more for resources on how to trade and get started.

Seasoned investors would come in to place short/long term orders to build their portfolio and are more concerned with the ease of usage of the platform.

Day traders are the ones who bring in the most revenue and are strong on technical analysis of stocks and are concerned with the charts.

2.4   Operating Environment

The web application development and hosting would require the current stable versions of the following:

- **React**   **: v17.0.1**
- **Node.js**   **: v15.6.0**
- **Express.js**   **: v4.17.1**
- **MongoDB**   **: v4.4.0**
- **Operating System**   **: Ubuntu (18.04), Windows (Windows 10)**
- **Amazon Cloud (for scaling)**

2.5   Design and Implementation Constraints

2.5.1 Handling of parallel connections
Millions of users will be accessing and placing order on the platform simultaneously. Handling these many connections with minimal latency and ensuring the proper concurrency and synchronization is a standard to be met during development.

2.5.2 Regulatory changes
SEBI (Securities and Exchange board of India) brings in regulatory changes often which require changes in core implementation (how orders are handled, margin requirements) of

the platform. These changes are to be brought in within the time constraint given by SEBI. Adapting to the new regulations should not disturb the working of present functions.

2.5.3 Availability of Website
The features of the website are currently available in the English (UK) language only. Further versions will have the website available in Hindi as well.

2.5.4 Hardware Limitations
Since the application services are hosted on Amazon and use platform independent software, there are no hardware limitations. However, there is a need to maintain latency standards for the pages.

2.5.5 Design & Programming Conventions
The developers must follow a simplistic design layout for the user interface which is both responsive as well as informative. All the development must be done incrementally and iteratively with proper usage of all the software development rules and appropriate design patterns. The developers must name all the variables in camelCase wherever applicable. The code must be well documented and updated regularly on a monthly basis. The developed application must follow a modular css approach for applying styles instead of inline styling. All the developers must follow the rebase workflow with Git. The SEO for the website must be as efficient as possible.

2.5.6 Security Considerations
The product deals with financial data and requires proper authentication of users. All sensitive user data will be stored encrypted in the database and the application must be protected from No-SQL injection attacks.

2.5.7 Implementation Constraint
Stonks is an entirely **MERN** based application and scaled using Big Data technologies.

2.5.8 Communication Protocols
HTTPS protocol will be used for secure communications between client and server.

2.5.9 Testing & Benchmarking
The software developed must pass all the build tests and benchmark standards.

2.6 Assumptions and Dependencies

- The API endpoints interface must be consistent across updates. The changes can only be made to the implementation, not function interfaces.
- Since the platform will use Amazon Cloud services, we assume there are no long duration power outages, server crashes, hardware vulnerabilities and large-scale hardware failures caused due to reasons including, but not limited to, earthquakes, landslides, floods, etc.

3.   External Interface Requirements

3.1   User Interfaces

This section contains the logical design of the **Stonks** platform described with the help of user interface mockups.
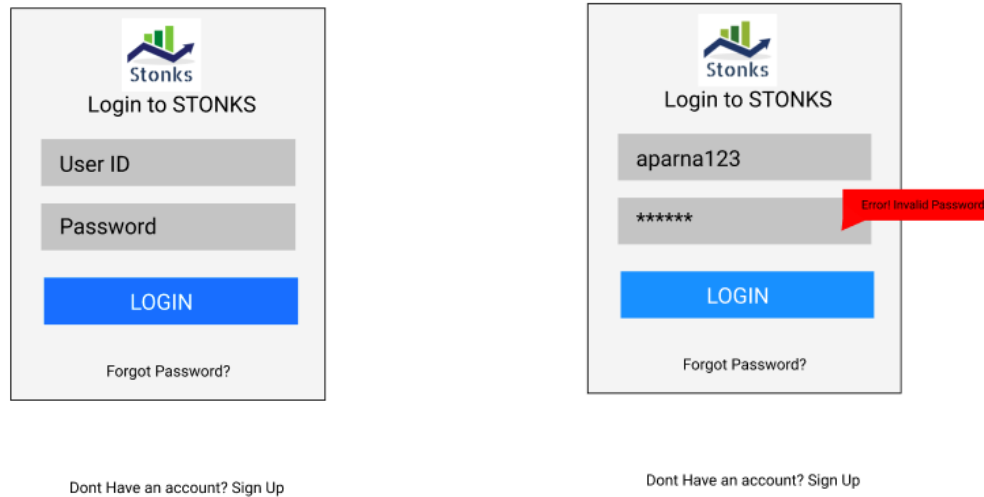
UI Mockup Fig 1 : Login/Signup page and Error Handling
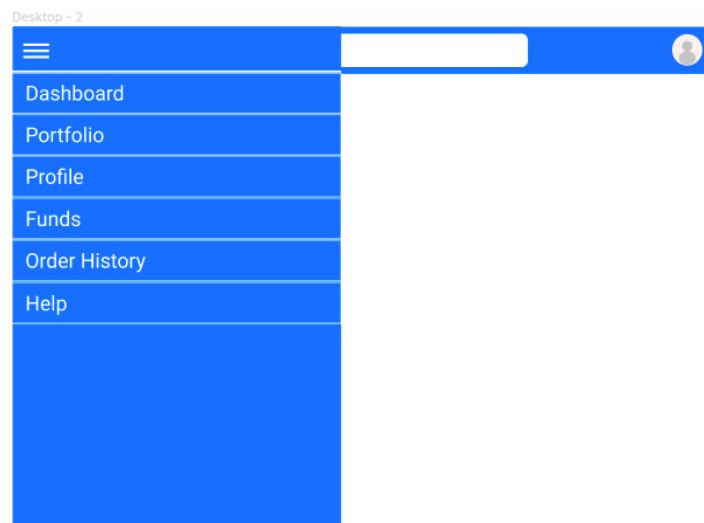
UI Mockup Fig 2 : Navigation Bar

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INDEX

NIFTY	14924.25	SENSEX	50731.63
NSE	28.60 (0.19%)	BSE	117.34 (0.23%)

WATCHLIST

Stark Industries	Oscorp
3000 $	130.45 $
80.95 (0.83%)	8.59 (0.3%)

TOP 5 GAINERS

Stark Industries	Hammer Industries	Pym Technologies	S.W.O.R.D.	Daily Bugle
3000 $	747 $	847 $	600 $	460 $
80.95 (0.83%)	73.95 (0.80%)	69.75 (0.70%)	99.75 (0.68%)	49.75 (0.58%)

TOP 5 LOSERS

Stark Industries	Hammer Industries	Pym Technologies	S.W.O.R.D.	Daily Bugle
3000 $	747 $	847 $	600 $	460 $
80.95 (0.83%)	73.95 (0.80%)	69.75 (0.70%)	99.75 (0.68%)	49.75 (0.58%)

UI Mockup Fig 3 : Access Dashboard Page

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SEARCH

Order History

Type	Name	Amount	Trade Time	Quantity	Price
BUY	RELIANCE	20389.6	2021-02-03 11:29:23	11	1853.6
SELL	IDEA	103.5	2021-02-03 11:29:23	10	10.3

UI Mockup Fig 4 : Order History

UI Mockup Fig 5 : Stock Respective page for Company stock details
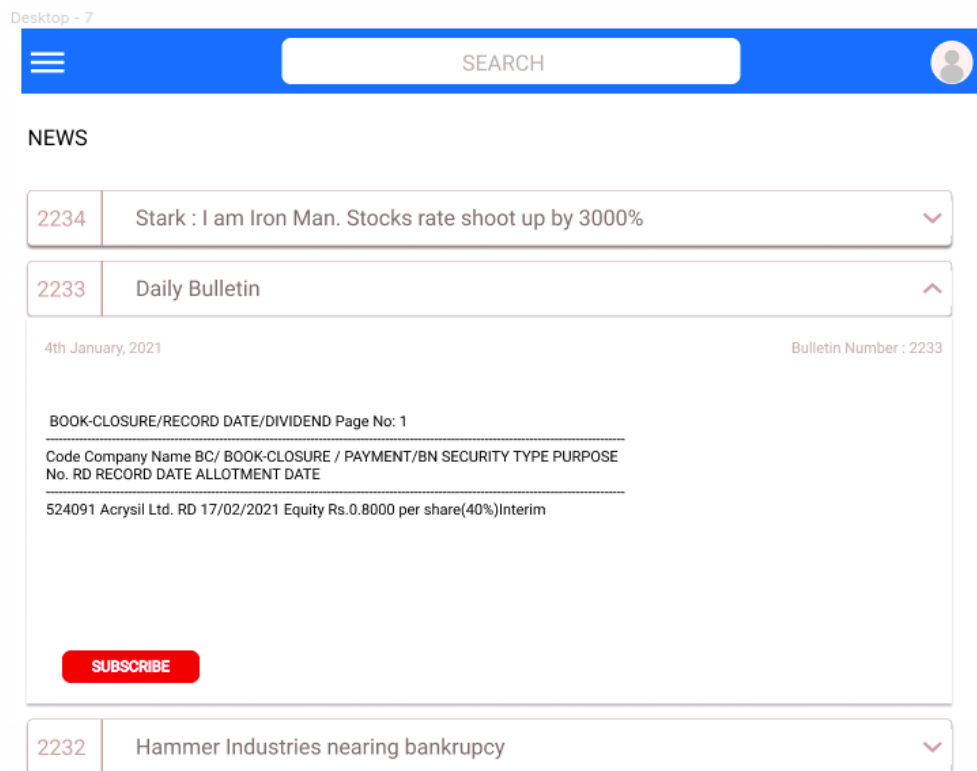
UI Mockup Fig 6 : News and Bulletins page

UI Mockup Fig 7 : User Portfolio Page

3.2   Software Interfaces

3.2.1 Client Side
The client side is hosted on Amazon Cloud Services and runs the latest stable version of **Stonks** React Application. The communication with the server side would be done using appropriate API endpoints over HTTPS. This involves fetching live market data using websocket connection and place market orders.
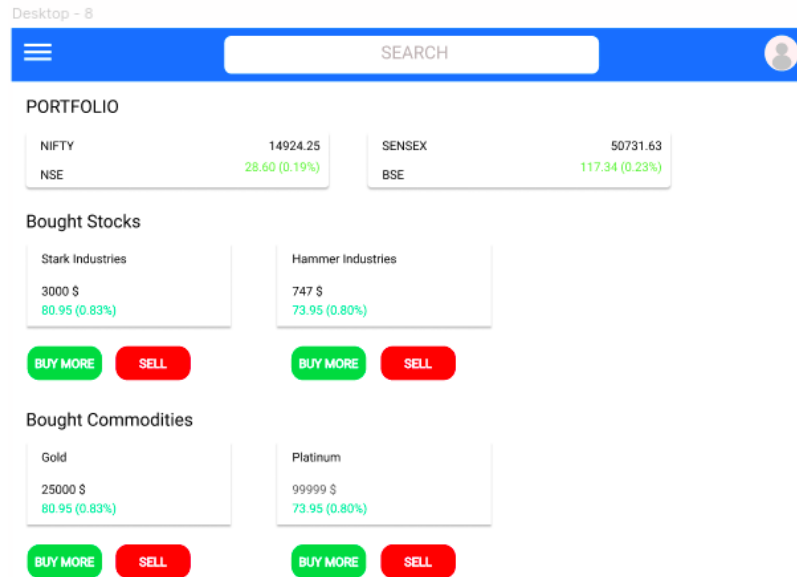
3.2.2 Server Side
The server side is hosted on Amazon Cloud Services. The communication with the client side would be done using appropriate API endpoints over https.

3.3   Communications Interfaces

The **Stonks** product requires a web browser to access the application. To avail the services of our product, the user must have a unique identification which includes Aadhaar number, Phone Number, PAN number and email. All updates regarding the user account will be sent to the user's email address or mobile number. To subscribe to notices about the stock market, the user can use his email address to stay updated.

The web application uses the HTTPS standard for secure communications between client and server as the product deals with sensitive financial information which must remain encrypted during transit. This sensitive data must be stored in an encrypted form in the databases.

Data transfer between the database containing stock information should occur in real time with the updates reflected on the website. The website should remain synchronized for all its users accessing it in parallel which may scale to millions.

4.   Analysis Models

The flow oriented analysis of the functionalities of the "**Stonks**" trading Platform is summarized with the help of the below use case diagrams. The in depth description of these use cases are mentioned in the next section.

4.1   Signup and Login
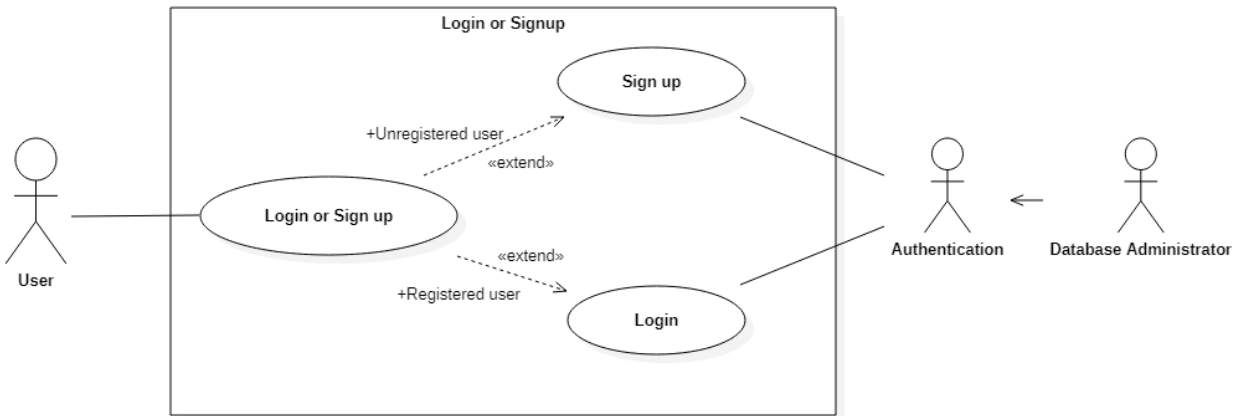
Use Case Diagram 1 : Signup and Login

4.2   Profile
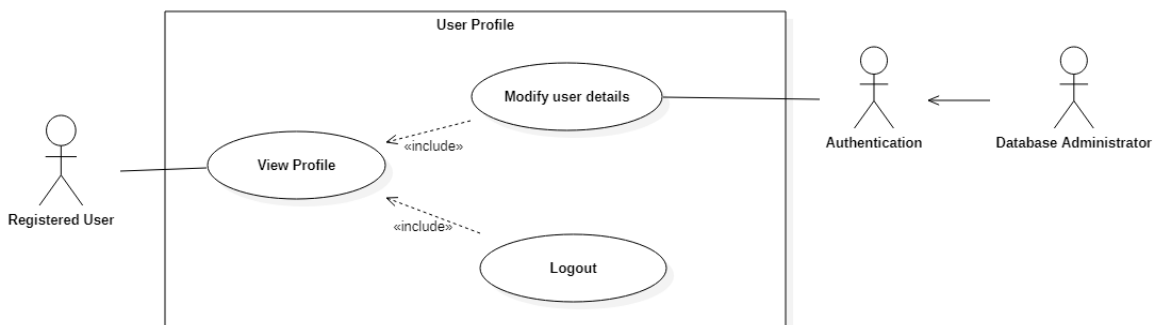
Use Case Diagram 2 : Profile

4.3   Portfolio, Order History and Stock Trading
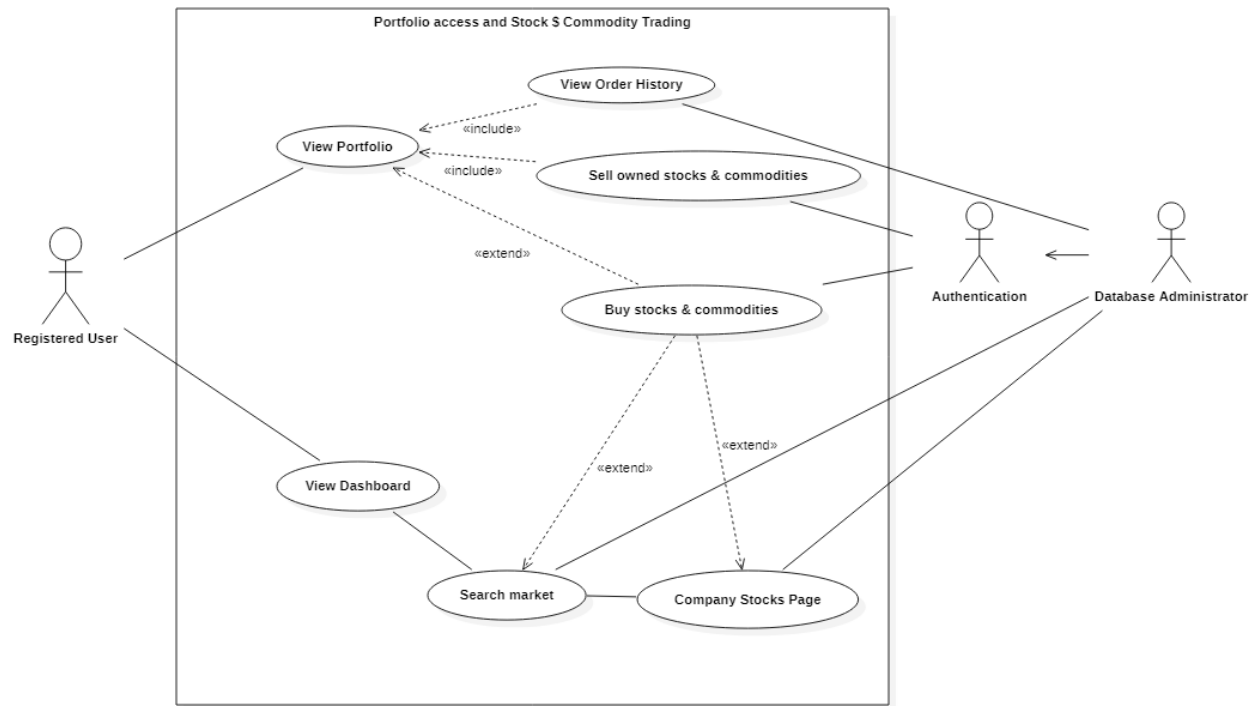
Use Case Diagram 3 : Portfolio, Order History and Stock Trading

4.4   Funds
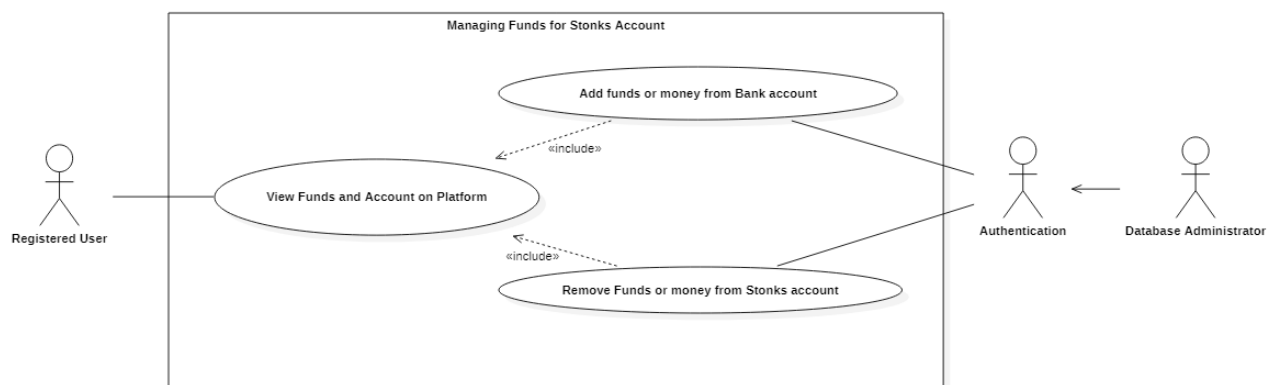
Use Case Diagram 4 : Funds

4.5 News Bulletins
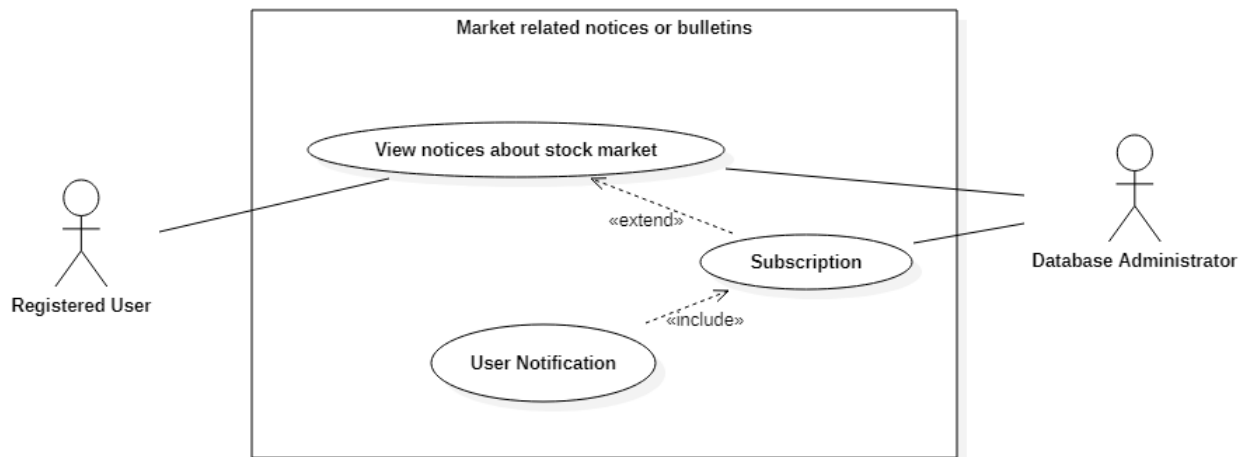
Use Case Diagram 5: News Bulletins

4.6 Admin Panel
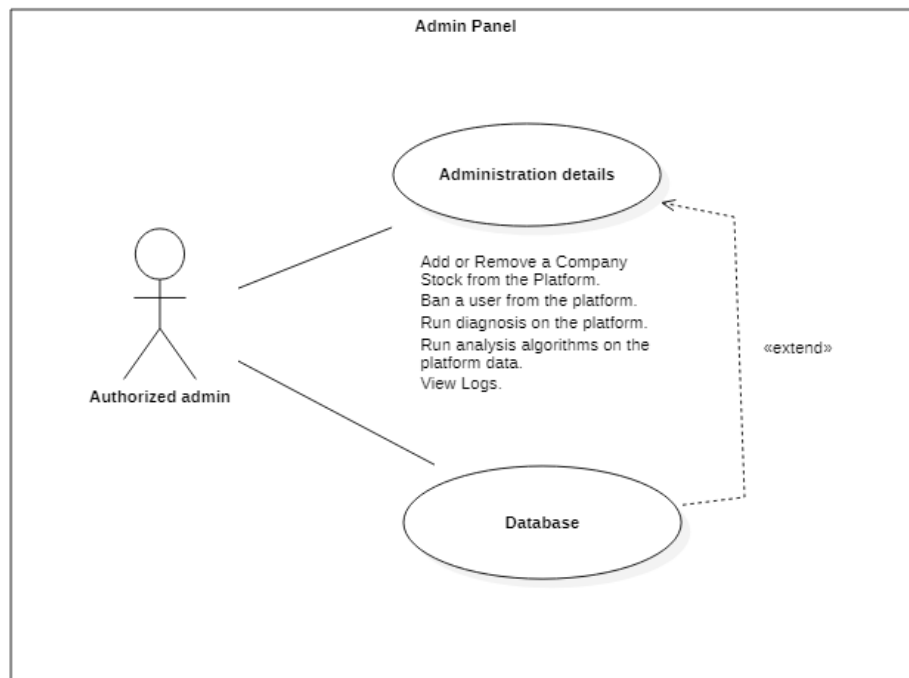
Use Case Diagram 6 : Admin Panel

4.7   Entity Relationship Diagram
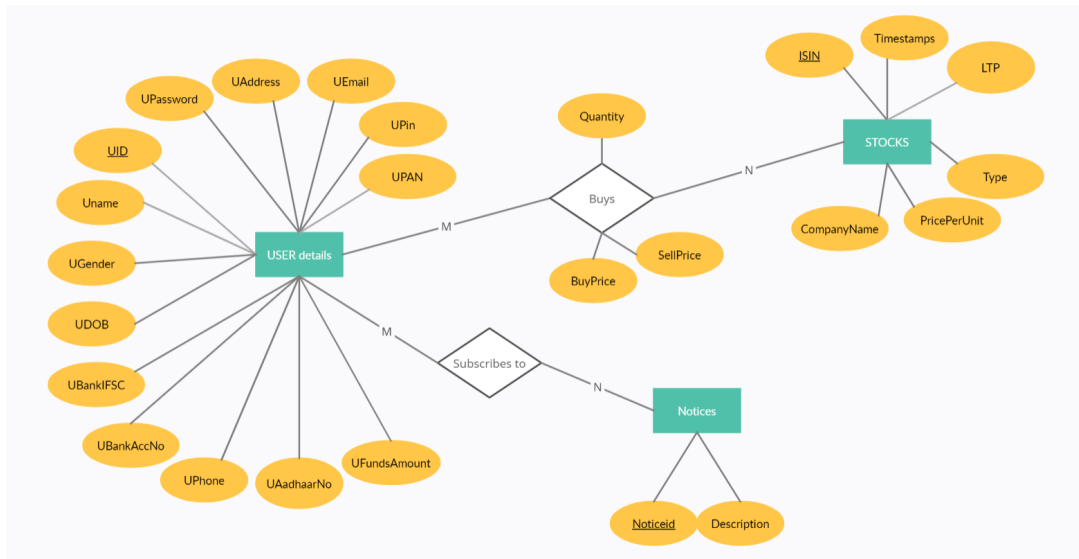
ER Diagram

5.   System Features

The **'Stonks'** stock trading platform comprises various system features as described below along with their associated priority of development :

5.1   Registration/SignUp

5.1.1   Description and Priority

The registration process would be a mandatory, one time process, for all users to uniquely identify themselves and gain further access to the full potential of the platform features. This would allow the application to differentiate between different users, keep a track of their activities on the platform and help maintain their individual portfolios.

This feature is of high priority.

5.1.2   Stimulus/Response Sequences

- As soon as the user comes onto the platform for the first time, he would be prompted with a **Registration** page.
- The user would then require to enter the information mentioned in the following **Table A.**
- Upon successful completion of the form submission by clicking on the **Submit** button, the user would be redirected to the **Login** page.
- In case the user fails to fill the forms fields correctly, an appropriate warning message would be displayed adjacent to the wrongly filled field. The user can then correct the error and try submitting the form again.

- In case the user reloads the page before submission, all the fields would reset to default. The form would be submitted only after the appropriate filling of the respective fields and a click on the **Submit** button.
- In case the user already exists, they would be redirected to the login page.

Req ID	Field Name	Description	Type & Size	Is mandatory
1	Full Name	The user's full name.	varchar(32)	YES
2	User Address	The permanent address of the user	varchar(50)	NO
3	User DOB	The user's age. Users must be above the age of 18 to be able to legally register onto the platform.	Date	YES
4	User Gender	The user's gender	varchar (10)	NO
5	User Email Address	The user's email address.	varchar (32)	YES
6	User Phone Number	The user's primary phone number.	int (10)	YES
7	User Aadhaar Number	The user's unique aadhaar number as assigned by the government.	int (12)	YES
8	User PAN Number	The user's unique PAN number as assigned by the government.	varchar (10)	YES
9	Bank Account Number	The user's unique bank account number as assigned by the respective bank.	int (16)	YES
10	Bank IFSC Code	The user's unique IFSC code for the respective bank.	varchar (16)	YES
11	Password	The user's choice of password. It must be between the length of 8-32, limits inclusive. Allowed character set being all the alphanumeric characters.	varchar (32)	YES
12	Security code	The user's choice of 4 digit security code that is used for buying and selling stocks.	int (4)	YES

Table A: Registration Details

5.1.3   Functional Requirements

Input	Requirements mentioned in Table A
Output	Unique userID generation Data stored in backend User Details Table Redirected to Login Page
Requirements	Web browser (chrome, firefox)
Preconditions	The user should be unregistered
Normal Flow	User enters his valid details and opens an account on **Stonks**.
Erroneous Flow	User enters invalid details(already existing account/ inconsistent data) and the account cannot be created. User is prompted to enter valid details.

5.2   Login/SignIn

5.2.1   Description and Priority
Once the registration process is complete, the user is redirected to the **Login/SignIn** page.
In order to use the platform the user must login by entering the following details :
- Email address/userID (any one)
- Password

The page would also have a "**forgot password?"** as well as the "**register now"**
button.
This page is of high priority.

5.2.2   Stimulus/Response Sequences
- Upon successful login, the user would be redirected to the **Dashboard** page.
- In case the user enters incorrect details, they would be asked to check the details entered and resubmit.
- In case the user clicks on the **Forgot Password** button, they would be asked to enter their **email address** and **userID**. They will receive an email containing dummy login details. They can then use those login credentials to login.
- In case the user clicks on **Register now**, it will redirect them to the **Registration/Signup** page.

5.2.3   Functional Requirements

Input	Unique userID or email address Password
Output	Redirected to Access Dashboard page
Requirements	Web browser (chrome, firefox)
Preconditions	The user should be registered
Normal Flow	User enters his valid details and is successfully authenticated and accesses his dashboard.
Erroneous Flow	User enters invalid details (user name or password). User is prompted to enter valid details.

5.3   Access Dashboard

5.3.1 Description and Priority

This page will be the primary page to which the user will be redirected once he signs in. This page contains all the relevant data related to the stock market which is properly organized for user's convenience. It contains the following information :

- **SENSEX and NIFTY Index :** This would contain the index name, index price and movement in index price (percentage movement, value)
- **Watchlisted Stocks :** User would be able to view the stock's name card here, which is hyperlinked to the stock's respective page. A watchlist holds upto 15 stocks.
- **Top Gainers :** This would contain the top 5 gainers of the day based on Gain percentage.
- **Top Losers :** This would contain the top 5 losers of the day based on Loss percentage.
- **Table of Stocks :** Table containing name of stock, price movement and percentage movement sorted (descending) based on market capitalisation.
- **Footer**

This feature is of high priority.

5.3.2   Stimulus/Response Sequences

- In order to add a stock to the watchlist the user must go to the stock respective page and watchlist it.
- Each watchlisted stock would contain a watchlisted symbol, which upon clicking, would remove the stock from the watchlist.

5.3.3   Functional Requirements

Input	-
Output	View and search stock prices of various companies
Requirements	Web browser (chrome, firefox)
Preconditions	The user should be registered and have logged in
Normal Flow	User browses the various market statistics and can add certain stocks to his/her watchlist.
Erroneous Flow	-

5.4   Stock Respective Page

5.4.1   Description and Priority

Each company stock will have its own page which would display the following information about the stock :

- Stock name, Price movement, Percentage movement
- Daily chart
- Day's Low & Day's High of the Stock price
- Open, High, Low, Close of the stock
- Company Statistics i.e, Market capitalization, PB, PE, Industry PE, Dividend Yield, Book Value, EPS, RoE
- Brief description about the company
- Buy option which prompts the user with a modal to fill in details like quantity, price of the stock
- Add to watchlist button

5.4.2   Stimulus/Response Sequences

- In order to buy the stocks, the user must click the **buy** option. This opens up a modal prompting the user to fill in the details like quantity of stocks, target and stop loss. If the available funds are sufficient to buy the stocks, the order is placed successfully after the user enters his PIN. Otherwise the warning "insufficient funds" will be displayed.
- The fields, "target" and "stop loss" will have default values, which could be changed by the user as per their preferences.
- The user clicks on the **watchlist** button in order to add the stock to their watchlist. Once pressed, the button reads "**watchlisted**" which can then be pressed again to remove the stock from the watchlist.

This is of high priority.

5.4.3   Functional Requirements

Input	Quantity of stocks to buy. User PIN for buying company stocks
Output	View total buying price. Bought stocks added to User Portfolio.
Requirements	Web browser (chrome, firefox)
Preconditions	The user should be registered and have logged in.
Normal Flow	User browses the stock prices of the company stock and clicks the Buy option in case he wishes to buy stocks, enters the number of stocks to buy and enters his secure PIN to finish the transaction.
Erroneous Flow	User enters the wrong PIN or does not have enough funds in his **Stonks** account to buy the specified number of stocks. The user is notified of the same.

5.5   Profile

5.5.1   Description and Priority
This page would display the following information about the user :

S No.	Field Name	Is Editable
1	**userName**	**YES**
2	**userID**	**NO**
3	**userMobileNumber**	**YES**
4	**userEmailAddress**	**YES**
5	**userPanNumber**	**NO**
6	**userAadhaarNumber**	**NO**
7	**userBankAccountNumber**	**YES**
8	**userBankIFSCCode**	**YES**
9	**userPassword**	**YES**
10	**userSecurityPIN**	**YES**

TABLE B

This page is of medium priority.

5.5.2 Stimulus/Response Sequences

- The user can edit the editable fields and make appropriate changes to the same. Then clicking on the "**Save Changes**" button would apply the changes effectively.

5.5.3 Functional Requirements

Input	Modify the editable fields containing user information related to his account from TABLE B
Output	User information is modified.
Requirements	Web browser (chrome, firefox)
Preconditions	The user should be registered and have logged in
Normal Flow	User wishes to modify his details and enters his new details. If new information is consistent with the uneditable data, his information is updated.
Erroneous Flow	The new user details are inconsistent or invalid so the user data reverts to its original values and the user is notified.

5.6 Portfolio

5.6.1 Description and Priority
The user would be able to view their currently owned stocks as well as their currently owned commodities on this page. This page also supports further buying or selling of the stocks. Following are the details of the information visible :

- **Owned Stocks & Commodity :** The user would be able to see the commodity/stock's name card (hyperlinked to commodity/stocks' respective page), quantity, average cost, LTP, current value, current gain/loss and change percentage. Each owned commodity/stock entry would be followed by **Buy more** and **Sell** options.

This is of high priority.

5.6.2 Stimulus/Response Sequences

- Upon clicking on any name card present on this page, the user will be redirected to the stock/commodity respective page.
- When the user clicks on **Buy more**, a modal prompt is shown to them where they need to mention the quantity they wish to add to the existing holdings. Please refer to **5.4.2**

● When the user clicks on **Sell**, a modal prompt is shown to them where they need to mention the quantity they wish to exit from the existing holdings.

5.6.3 Functional Requirements

Input	User uses secure PIN to buy or sell stocks
Output	View the stocks and commodities currently bought by the user and can exit whenever necessary.
Requirements	Web browser (chrome, firefox)
Preconditions	The user should be registered and have logged in.
Normal Flow	User browses the stocks he has bought and can either buy more of the same stock or sell (few or all of) the stocks he currently has by entering the secure PIN and confirming.
Erroneous Flow	User enters invalid PIN or does not have enough funds in his **Stonks** account to buy the specified number of stocks. The user is notified of the same.

5.7 Order History

5.7.1 Description and Priority
This page contains the information about all the transactions made while buying or selling the stocks on the platform. Each transaction is associated with a unique **orderID**. The transaction card would further contain the following information :

● **Type :** Bought or Sold
● **Name of stock**
● **Amount :** The amount paid/received in the transaction
● **Trade Time**
● **Quantity of shares traded**
● **Price per unit share**

This is of high priority.

5.7.2 Stimulus/Response Sequences
● The user can scroll through the order history, search for transactions related to a particular date, stock, amount range, quantity, etc
● The table of order history would update according to the filters applied.

5.7.3   Functional Requirements

Input	-
Output	Users can view their previous orders regarding the stocks they bought and sold.
Requirements	Web browser (chrome, firefox)
Preconditions	The user should be registered and have logged in.
Normal Flow	User browses his previous purchases and exits.
Erroneous Flow	-

5.8   Funds

5.8.1   Description and Priority
This page displays the current available funds for the user, options to add or withdraw funds and a transfer statement history for the same.

This is of high priority.

5.8.2   Stimulus/Response Sequences

- When the user clicks on add funds, he is prompted to enter the amount of funds he would like to add to his account on the platform. If the user has sufficient balance in his bank, his funds are updated accordingly. Otherwise the user is asked to enter a correct and viable amount.
- When the user clicks on withdraw funds, he is prompted to enter the amount of funds he would like to withdraw. If the entered amount is correct and viable, his funds are cashed into his bank account. Otherwise the user is asked to re-enter the amount.

5.8.3   Functional Requirements

Input	User's secure PIN
Output	Users can view the funds currently in their **Stonks** account and add/remove funds from the same.
Requirements	Web browser (chrome, firefox)
Preconditions	The user should be registered and have logged in.

Normal Flow	User uses a secure PIN to add funds from his linked bank account to **Stonks** account. Users can transfer funds from the **Stonks** account to their bank account as well.
Erroneous Flow	User enters an invalid PIN. User does not have enough funds in an account to transfer to another. In either case, the user will be notified.

5.9   News Bulletin

5.9.1   Description and Priority
This page is meant to keep the user updated with the changes in policies, news and alerts related to the stock market.

This is of low priority.

5.9.2   Stimulus/Response Sequences
- The user can scroll through the bulletin board and view each news individually by expanding the collapsible.
- The user can subscribe to a particular news topic by clicking on the **Subscribe** button in the collapsible.

5.9.3   Functional Requirements

Input	In case a user wishes to be notified of new stock market related updates, he can subscribe which requires his email id.
Output	Users can view notices and bulletins by browsing the Notices page or if subscribed, can receive updates to their email id.
Requirements	Web browser (chrome, firefox)
Preconditions	The user should be registered and have logged in.
Normal Flow	Users browse the various stock market related notices and can subscribe to any of the topics.
Erroneous Flow	-

5.10 Footer

5.10.1 Description and Priority
The footer would be present at the bottom of the **Dashboard, Help** and **Profile** pages. This would contain the following information :
- Stonks logo
- Link to about Us page
- Link to all the social media pages
- Link to the Privacy Policies
- Link to Terms & Conditions
- Link to Trading Policies
- Link to Pricing Policies
- User Agreement
- Link to the Disclosure
- Information about the customer care services
- Copyright statement

This is of low priority.

5.11 Navigation Bar

5.11.1 Description and Priority
Navbar is intended to aid users with easier access to functionalities available on the platform. It would be present at the top of each and every page on the platform.

It would contain the following:
- Link to Dashboard/Homepage
- Link to Order History
- Link to News Bulletin
- Search Bar
- Link to Funds
- Link to Portfolio
- Link to Profile
- Link to Help

This is of medium priority.

5.12 Admin Panel

5.12.1 Description and Priority
This page is strictly out of bounds for all the users on the platform. Only a select group of people such as developers, company owners and testers are allowed access to this page. This page intends to allow the following functionalities :

- Add or Remove a Company Stock from the Platform
- Ban a user from the platform

- Run diagnosis on the platform
- Run analysis algorithms on the platform data
- View Logs

This is of high priority.

5.12.2 Stimulus/Response Sequences
- The user with admin rights could select a user and click the **Ban** button to ban the user from the platform for violation of terms & conditions, security guidelines or trading policies.
- The user with admin rights can stop the trading activity on particular stock under the SEBI guidelines and the trader/investor will be notified of the same through the news bulletin.

5.13 404 Not Found Page

5.13.1 Description and Priority
This page is displayed in case the user finds themselves stumped on the platform.
This page contains links to redirect you back to the **dashboard, profile** and **portfolio** page.

This is of medium priority.

5.13.2 Stimulus/Response Sequences
- If the user lands on this page due to some unknown error, the user is shown three options as mentioned above.
- Upon clicking on these options, the user is redirected to the respective page.

5.14 Empty Placeholders

5.14.1 Description and Priority
Components like Portfolio, Transaction list, Order History, etc when initially empty, gives a dull look. Thus creation of appropriate placeholders for the same is essential. These placeholders contain the information about the functionality one can carry out on that page and appropriate buttons corresponding to different actions.

This is of low priority.

5.15 Help

5.15.1 Description and Priority
This page is meant to provide the user a basic knowledge about the platform, some general Frequently Asked Questions and instructions on how to file an issue/complaint on the customer care service.

This is of medium priority.

6.   Other Nonfunctional Requirements

6.1   Performance Requirements

The stock market website has absolutely no down time during the trading hours between 9:15 A.M. and 03:30 P.M. IST. There are good responsive pages with the changes in the LTP of stocks every second. Our initial product development milestone of 50 companies and 1000 concurrent users will be scaled up using Amazon Cloud Services. The system is reliable under heavy loads and session critical operations like buying and selling of stocks are not delayed, leading to changes in the LTP. Routine maintenance of the frontend and backend will happen after trading hours (01:00 A.M. to 04:00 A.M. IST). Few of the functionalities might not be available during the maintenance period.

6.2   Safety Requirements

All user data and all stock information is stored in a real time database. The database allows concurrent access and updation and will be kept consistent at all times. It is stored on remote cloud servers protected from internal attacks or external threats like hackers or natural disasters.

6.3   Security Requirements

The user data is the most sensitive data used by the platform. This is stored in a user database using MongoDB and is protected from external unauthorized access. Passwords will be saved encrypted in the database in order to ensure the user's privacy. Accessing the digital wallet of the user requires another 4 digit pin which is also stored in an encrypted fashion. The database will be protected against No-SQL injection attacks.

6.4   Software Quality Attributes

AVAILABILITY AND MAINTAINABILITY
The product will be available for usage of all its features at all times except during maintenance checks. The database consists of various relational tables which are easy to understand and scale.

CORRECTNESS AND RELIABILITY
The database will be maintained to store consistent and correct user information regarding updates of his profile information. The stock prices of every company shown on the website are updated every second. The details are always up to date.

ROBUSTNESS
The website can serve up to millions of people when scaled up using a cloud server with very little backup time. For the user to buy/sell stocks, he must have a password to enter his account as well as a pin number to perform the actual buying/selling process.

PORTABILITY AND USABILITY
End use is entirely portable since any user with a web browser can access our website and make an account to avail the remaining features.

6.5   Business Rules

- The admin has rights to change the pricing policy.
- Admin holds the right to restrict a user from trading, if the user is found not following the Terms & Conditions.
- The Database administrator keeps track of the backend and controls accesses to the database.
- One time amount for account creation by users will be ₹199.
- Each order placed on the platform follows a transaction charge. The user should pay 0.03% or ₹20 per executed order (whichever is lower), as a transaction fee.
- Annual maintenance charges for **Stonks** will cost ₹299, payable at the end of the year.

7.   Other Requirements

7.1   Internationalization Requirements

The development team requires a translation team to effectively translate the website to suit the linguistic, cultural and legal requirements. The team must adhere to all the local, country and world wide policies and requirements while internationalizing the platform.

7.2   Compliance Policies

The user must read and agree to all the necessary documents which includes the following :

- Terms & Conditions
- User Agreement
- Trading Policies
- Security Policies
- Privacy Policies
- Disclosure
- Copyright Policies

Violation of any of the above mentioned would result in a lifetime ban for the corresponding user from the platform and appropriate legal actions would be taken.

Appendix A: Glossary

S No.	Abbreviation	Full Form	Description
1	LTP	Last Traded Price	LTP is used to refer to the last traded price for a stock in the marketplace
2	NSE	National Stock Exchange	Stock Exchange
3	BSE	Bombay Stock Exchange	Stock Exchange
4	SEBI	Securities and Exchange Board of India	Regulator of the securities and commodity market in India owned by the Government of India
5	PB	Price to Book	Company's capitalization to its book value
6	PE	Price to Equity	Company's share price to its earnings per share
7	EPS	Earnings Per Share	Net earnings available to common shareholders by the average outstanding shares
8	RoE	Return on Equity	Measure of the profitability
9	--	Disclosure	Making facts or information known to public
10	SEO	Search Engine Optimization	Process of improving the quality and quantity of website traffic to a website or a web page from search engines
11	--	Market Capitalization	Total dollar market value of a company's outstanding shares of stock
12	--	Dividend Yield	The dividend yield or dividend-price ratio of a share is the dividend per share, divided by the price per share
13	--	Book Value	Value of an asset according to its balance sheet account balance.

The terms stocks & commodities have been interchangeably used throughout the document.

Appendix B: Field Layouts

Field	Length	Data Type	Description	Is Mandatory
Full Name	32	String	User's full name	YES
User Address	50	Alphanumeric	User's Address	NO
User DOB	8	Date	User's date of birth	YES
User Gender	10	String	User's Gender	NO
User Email Address	32	Alphanumeric	User's Email address	YES
User Phone Number	10	Numeric	User's mobile number	YES
User Aadhaar Number	12	Numeric	User's aadhaar number	YES
User PAN Number	10	Alphanumeric	User's PAN number	YES
Bank Account Number	16	Numeric	User's Bank account number	YES
Bank IFSC Code	16	Alphanumeric	User Bank's IFSC code	YES
Password	32	Alphanumeric	Login credentials	YES
Security code	4	Numeric	4 digit security PIN	YES

Report Requirements :

Registration Report	Order Report	Transaction Report
UserID	OrderID	TransactionID
User Name	StockExchange	Type
User Address	Type	Amount
User Email	Name of the Stock	Net Amount
User DOB	Amount	Segment
User Gender	Trade timestamp	Transaction Timestamp
User Phone Number	Quantity	Description
User Aadhaar Number	Price per unit share	
User PAN Number		
User Bank IFSC Code		
User Bank Account Number		
User Password		
User Security Code		

Appendix C: Requirement Traceability Matrix

Sl. No	Requirement ID	Brief Description of Requirement	Architecture Reference	Design Reference	Code File Reference	Test Case ID	System Test Case ID
1.	REQ1	Sign up and create an account on **Stonks**					
2.	REQ2	Login to **Stonks** Account using verified name and password					
3.	REQ3	Browse Dashboard for Companies - Stock prices					
4.	REQ4	View Stock Respective page for each company containing details about the prices and charts of company's current stock					
5.	REQ5	Add Companies to Watchlist					
6.	REQ6	Buy Stocks using verification pin					
7.	REQ7	Sell Stocks using verification pin					
8.	REQ8	View Portfolio containing bought stocks and details about current prices - includes buying more stocks and selling stocks					
9.	REQ9	View Order History					
10.	REQ10	Add/Remove funds to **Stonks** account and a transaction history					

11.	REQ11	View or subscribe to Notifications and Bulletins about the Stock Market					
12.	REQ12	Admin Portal for maintenance and security management					
13.	REQ13	Help page for Frequently asked questions and feedback					
14.	REQ14	Footer containing links to Stonk's various social media platforms and contacts					