Contents

1. INTRODUCTION

1.1 INTRODUCTION

The internet's arrival and its sub sequent popularity in have made online trading, which is about the online purchase and sales of shares, one of the extremely popular means of trading. Both beginner and experienced traders and investors are milking this opportunity by trading online in futures and options, stocks and currencies worldwide. Such opportunities are in the form of reduced brokerage and commissions, better broking services etc.

For carrying out online trading, you have to open an online demat and trading account, followed with online trading software. For this purpose, you would require a Depository Participant (DP), selection of which should be preceded by extensive research on various determinants.

This is time consuming and inefficient. This imposed limits on trading volumes and efficiency. In order to provide flexibility and mobility to trade from anywhere and because of the rise of the Internet-ready smartphones, It became a necessity to leave

Comfort of personal computers and to trade on mobile.

The investor has to register with an online trading portal and get into an agreement with the firm to trade in different securities following the terms and conditions listed down on the agreement. The order processing is done in correct timings as the servers of the online trading portal are connected to the stock exchanges and designated banks all around the clock. They can also get updates on the trading and check the current status of their orders either through e-mail or through the interface. Brokerages also provide research content on their websites, such that the clients can take their own decisions on stocks before investing.

Thanks to the ever-rising number of people owning computers and smartphones along with a readily available internet access, online stock trading is simplified manifolds. This is because investments can now be easily controlled by traders themselves as a result of extensive availability of all types of information on the web

1.2 SCOPE

Based on a variety of technical indicators, we've developed a self-evolving predictive algorithm. By noting previous success in identifying patterns and trends for an individual stock, our algorithm continually adapts to each stock to make more accurate predictions. Individuality is key, each user can customize their own watch list and each stock will have a slightly modified algorithm.

Users will be notified when the algorithm detects a change in the trend of any stock in their personalized watch list, allowing users to maximize their profits.

1.3 PROJECT SUMMARY

Online purchase and sales of shares is one of the extremely popular means of trading. Both beginner and experienced traders and investors are milking this opportunity by trading online in futures and options, stocks and currencies worldwide. Such opportunities are in the form of reduced brokerage and commissions, better broking services etc.

Constructive uses of new technologies have always contributed positively towards improving human life standards and the economy of a country. Such as online trading, in equity markets it increased trade volumes and number of investors trading in stock markets. Online trading allows the investor to trade through an internet site where the major financial products and services are directly available for the customer.

There is also stock option trading now. An option is a financial agreement, with a predetermined maturity period and price, for the purchase or sales of the underlying products. Stock options enable the protection of dealers and control of their stocks, in addition to generation of higher earnings.

The investor has to register with an online trading portal and get into an agreement with the firm to trade in different securities following the terms and conditions listed down on the agreement. The order processing is done in correct timings as the servers of the online trading portal are connected to the stock exchanges and designated banks all around the clock. They can also get updates on the trading and check the current status of their orders either through e-mail or through the interface. Brokerages also provide research content on their websites, such that the

clients can take their own decisions on stocks before investing.

1.4 OVERVIEW

The Web Application is to build a cross platform application which allows users to execute orders quickly and efficiently. It aims to change the scenario of traditional system which wastes ridiculous amount of time. It reduces the amount of efforts needed to place an order and constantly monitor the status of the order.

Also it allows real time index tracking and commodities tracking.

1.5 PROBLEM DEFINITION

Current scenario for trading is like this. When a customer wants to execute a particular transaction or trade few of his/her stocks, he contacts his broker and tells him his account number and authorizes the transaction by supplying an order slip. This process is ridiculously slow compared to online trading. Our Web application aims to provide easy steps to perform an transaction safely and monitor the order status on the go.

2 TECHNOLOGY AND LITERATURE REVIEW

2.1 ABOUT TOOLS AND TECHNOLOGY

HTML

- HTML5 is the latest evolution of the standard that defines HTML. The term represents two different concepts:
- It is a new version of the language HTML, with new elements, attributes, and behaviors and a larger set of technologies that allows more diverse and powerful Web sites and applications. This set is sometimes called HTML5 & friends and often shortened to just HTML5.

- Designed to be usable by all Open Web developers, this reference page links to numerous resources about HTML5 technologies, classified into several groups based on their function.

    - Semantics: Allowing you to describe more precisely what your content is.
    - Connectivity: Allowing you to communicate with the server in new and innovative ways.
    - Offline & Storage: Allowing webpages to store data on the client-side locally and operate offline more efficiently.
    - Multimedia: Making video and audio first-class citizens in the Open Web.
    - 2D/3D Graphics & Effects: Allowing a much more diverse range of presentation options.
    - Performance & Integration: Providing greater speed optimization and better usage of computer hardware.
    - Device Access: Allowing for the usage of various input and output devices.
    - Styling: Letting authors write more sophisticated themes.

CSS

- CSS3 has been split into "modules". It contains the "old CSS specification" (which has been split into smaller pieces). In addition, new modules are added.
- Some of the most important CSS3 modules are:
    - Selectors
    - Box Model
    - Backgrounds and Borders
    - Image Values and Replaced Content
    - Text Effects
    - 2D/3D Transformations
    - Animations
    - Multiple Column Layout

PHONEGAP

- PhoneGap is a mobile development framework produced by Nitobi. Adobe Systems purchased Nitobi in 2011. It enables software programmers to build applications for mobile devices using JavaScript, HTML5, and CSS3, instead of relying on platform-specific APIs like those in iOS, Windows Phone, or Android. It enables wrapping up of HTML, CSS and Javascript code depending upon the platform of the device. It extends the features of HTML and Javascript to work with the device. The resulting applications are hybrid, meaning that they are neither truly native mobile application (because all layout rendering is done via web views instead of the platform's native UI framework) nor purely web-based (because they are not just web apps, but are packaged as apps for distribution and have access to native device APIs). Mixing native and hybrid code snippets has been possible since version 1.9

BOOTSTRAP

- Bootstrap is a free and open-source collection of tools for creating websites and web applications. It contains HTML and CSS-based design templates for typography, forms, buttons, navigation and other interface

components, as well as optional JavaScript extensions. Bootstrap is a free front-end framework for faster and easier web development

- Bootstrap includes HTML and CSS based design templates for typography, forms, buttons, tables, navigation, modals, image carousels and many other, as well as optional JavaScript plugins.

JAVASCRIPT LIBS

- HighCharts.js: - For graphs.
- Handlerbar.js: - For html templating.
- Select2.js: - Ajax Suggestion on textbox(AutoComplete)
- Hammer.js: - For Touch devices detect touch event.
- Font awesome: - For icons & fonts.

DJANGO (PYTHON WEB FRAMEWORK)

- Django is a free and open source web application framework, written in Python, which follows the model–view–controller (MVC) architectural pattern. It is maintained by the Django Software Foundation (DSF), an independent organization established as a 501(c) (3) non-profit.
- Django's primary goal is to ease the creation of complex, database-driven websites. Django emphasizes reusability and "pluggability" of components, rapid development, and the principle of don't repeat yourself. Python is used throughout, even for settings, files, and data models. Django also provides an optional administrative create, read, update and delete interface that is generated dynamically through introspection and configured via admin models.
- Some well-known sites that use Django include Pinterest, Instagram, Mozilla, The Washington Times, Disqus, The Public Broadcasting Service and BitBucket.

JQUERY –Write less , Do more

- jQuery is a cross-platform JavaScript library designed to simplify the client-side scripting of HTML. Used by over 60% of the 10,000 most visited websites, jQuery is the most popular JavaScript library in use today. jQuery is software licensed under the MIT License.[1]
- jQuery's syntax is designed to make it easier to navigate a document, select DOM elements, create animations, handle events, and develop Ajax applications. jQuery also provides capabilities for developers to create plug-ins on top of the JavaScript library. This enables developers to create abstractions for low-level interaction and animation, advanced effects and high-level, theme-able widgets.

2.2 BRIEF HISTORY OF WORK DONE

The Implementation had three phases.

- **Analysis Phase :**
    - First the analysis was performed using the current system which meant knowing what a component does in the system. Then client requirements were generated and they were validated against the possible technology stack which was supposed to use for implementation.
- **Implementation Phase:**
    - Implementation phase started when the analysis phase completed and development started to implement most basic functionality such as designing of Login module and integrating Web Services to provide data for the charts.

- **Testing Phase :**
    - Testing involved verifying that the charts generated by the library were accurate or not. Also the Web application had a client module which connected the web application with trading modules of the application. So the orders placed were checked to verify the web services were running as they were supposed to.

3 SYSTEM REQUIREMENTS STUDY

3.1 USER CHARACTERISTICS

Free User:

- Free User will have ability to access the platform and view the live price of stocks and the general news feed.
- Free User can add up to 10 stocks in watch list to keep track of their movement and update them whenever necessary.
- Free User can access live chart of stocks movement ranging from a day to 5 years.

Pro User:

- Pro User will have access to exclusive recommendation system which generates alerts based on secret algorithm.
- Pro User will have access to various popular indicators such as Simple Moving Average, Exponential Moving Average which allows trader and investors to do their own analysis.
- Pro User will have access to StockTwits which is a social media platform which allows collaboration from different traders and investors.
- Pro User can place order directly from the page they are currently on if they have associated their broker house with their profile and this allows them to trade from anywhere from mobile app and desktop version.

Admin User:

- Admin user is administrative account for Stock Alerts and Recommendation System which is used to generate recommendation signals for users.
- Admin user can look at the order history of the users and view the profile of users.

3.2 HARDWARE REQUIREMENTS

The selection of hardware is very important in the existence and proper working of any software. When selecting hardware, the size and requirements are also important.

Client Side:

Android Device:

20 MB of storage space
512 MB of RAM
1 GHz of processor

Browser:

HTML5 supported web browser.
256MB of RAM

Server Side:

Web Server:

1 GB RAM,
4 GB Disk Space

Development Side:

Hardware Requirements:

- Processor: Intel Core i3 3220 CPU @ 3.30GHz
- RAM: 4GB
- Hard Disk Drive: 500GB
- Key Board: Logitech K200
- Monitor: Display Panel (1024 X 764)
- Display Adapter: Trident Super VGA
- Network Adapter: SMC Ethernet Card Elite 16 Ultra

3.3 SOFTWARE REQUIREMENTS

Client Side

- Android Device

  Android version 2.3 or above

  Google Play Services 5 or above

- Web Version

  HTML5 Enabled Browser

Development Side

PyCharm Community Edition (Windows, Linux),

MySQL Server (Linux, Windows),

Putty,

Web Browser

3.4 CONSTRAINTS

1. **Hardware Limitations**

   - The system is hosted on different platforms like Amazon AWS and Google App Engine so the hardware configuration at the host system can be bottleneck for the system performance.

2. **Interfaces to Other Applications**

   - The System uses Django REST Framework for creating web service to perform basic authentication.

- The System uses Yahoo Finance YQL Queries to acquire data for particular stock of NYSE and get its historical prices and events.

3. **Parallel Operations**

- Being a cross platform application allows the users to access the services on different platforms however the system have one login at a time constraint because of the security of the user accounts.

4. **Higher Order Language Requirements**

- The system uses JQuery 1.1 so its required that Browser atleast support the JQuery version and same goes for android version 2.3.

5. **Safety Requirements**

- The system can be great asset to the traders who use technical analysis for day to day trading and also want to be aware of fundamentals of the script. However the signals generated by the algorithms have high accuracy, but the expected movement in given timeframe cannot be guaranteed as one cannot predict how market will behave at the time. So trades made with the knowledge are high profit probability but does not give guarantee to protect the investment.

6. **SECURITY CONSIDERATION**

- The system uses basic authentication system with email as username and password to grant user access to the system. However the only protection is this password and username combination so if user cannot protect the credentials then the trades taken by him have exposure risk. So use of strong password with length 8 or more characters and use of alphanumeric and special characters is encouraged for protection against malicious attacks.

4 SYSTEM ANALYSIS

4.1 STUDY OF CURRENT SYSTEM

- Existing system has limited functionality like creating watchlist and static chart.
- And user can get only suggestion of stock, they can't buy or sell from app.

4.2 PROBLEM AND WEAKNESS OF THE CURRENT SYSTEM

- Current system is a basic looking HTML Web Application which does not have much functionality except it displays price of the stocks and indexes.
- The Web Application is only accessible through a Web Browser and it does not offer any trading facilities as it is an informational site.

4.3 REQUIREMENTS OF NEW SYSTEM

- Based on a variety of technical indicators, we've developed a self-evolving predictive algorithm. By noting previous success in identifying patterns and trends for an individual stock, our algorithm continually adapts to each stock to make more accurate predictions. Individuality is key, each user can customize their own watch list and each stock will have a slightly modified algorithm. Users will be notified when the algorithm detects a change in the trend of any stock in their personalized watch list, allowing users to maximize their profits.

4.4 FEASIBILITYSTUDY

A Feasibility study is undertaken to determine the probability or possibility of either improving the existing system or developing a completely new system.

The Feasibility Studies are the major objectives of the current system. The estimate roughly the cost of each possible solution to the user problems and identify the solutions that might satisfy the user's needs within its budget and schedule.

The development through estimates of the benefit and drawback of each solution to obtain users and management views on all above procedures and to obtain a decision from user and from management whether to commit an aliening part of the project.

This phase of the system is for testing system that it is feasible system that is feasible for Operational, Technical or Economical.

If the feasibility system is not successful then further processing for the developing system should be stopped.

- Operational Feasibility
- Technical Feasibility
- Economic Feasibility

1. Operational Feasibility

This phase of the system operations performed by proposed system. Here is the important point is that user will be operate the system.

The important documents will be secure. The system will worked under any condition. The system will allow entering and retrieving of the data only to authorized user to operate the system. It will work any full efficiency and accuracy as used to work any particular computer.

The system will be configurable and as generic as possible.

2. Technical Feasibility

The Technical Feasibility is worked for the project is done with the present equipment, manual procedures, existing software technology and available technology hardware.

In Technical Feasibility requirement is to run system better.

Android 4.0/IOS 5.0 OS

Internet Connectivity

System would be expandable and reconfigurable. Also system would guarantee accuracy, reliability and data security.

3. Economic Feasibility

Economic Feasibility is the systems where the users have economic to this system the agency have to provide the required software.

In any software, the licensed copy has to provide them and if the system is installed in network then network must be there in organization otherwise it was also large amount of money. So our system is economic feasibility only.

This is very important phase of our system so must be given proper time and more importance. The cost of the manual system will be reduced. The clerical staff can also be reduced because of the efficient working of the computerized system. The material wastage by the manual system will also be eliminated. The cost of the computerized Admin Management System would not be that much, because of having most of the required hardware and software.

4.5 FEATURES OF NEW SYSTEM

- User can add stock to their watchlist & get dynamically suggestion of stock name & stock id based on user input
- Watchlist screen gives information to user about current stock trends.
- User can view different 9 type graphs based on that user take decision whether user should buy/hold/sell stock.
- User able to view graph from 1 day to past 5 years.
- User can get price from 1 day to past 5 year
- User can post on twitter about stock direct from app
- User can view Top 10 Gainer & Loser and also user can add to their watchlist from list screen.
- View overall performance of stock exchange.
- User can read News about stock exchange and stock.
- User can buy or sell stock from app as in this app brokerage account integrated.
- User can get push notification/ Email-notification.
- Above all functionality available to WEB user, Android Phone & iOS user.

4.6 SCOPE OF THE PROPOSED SYSTEM

- Based on a variety of technical indicators, we've developed a self-evolving predictive algorithm. By noting previous success in identifying patterns and trends for an individual stock, our algorithm continually adapts to each stock to make more accurate predictions. Individuality is key, each user can customize their own watch list and each stock will have a slightly modified algorithm. Users will be notified when the algorithm detects a change in the trend of any stock in their personalized watch list, allowing users to maximize their profits.

5 SYSTEM DESIGN

5.1 SYSTEM MODULE DESIGN

1. Log In

   This module consists of custom authentication & social authentication

2. WatchList

   - Intuitive and modern, the watchlist Page allows you to view your custom made watch list.
   - You can hand pick up to 20 stocks to continually monitor.
   - On the Home Page, you have access to the price, daily change, and the algorithm generated recommendation.

3. Charts

   - The Individual Chart Page allows you to examine stocks more closely.
   - In addition to being able to identify trends and patterns visually via the graph, the components of our algorithm are displayed here.
   - All nine indicators and their recommendations are shown in the individual chart page.
   - Beyond the algorithmic recommendation displayed in the Home Page, here you can see whether is stock is overbought, oversold, its recent performance, or even the strength of the current trend.
   - Common Utilities
   - This module consists of custom common function which useful throughout the system like calling Ajax, Global Variable, common UI elements.

5.2 DATABASE DESIGN

DATA DICTIONARY

Auth_User

Fieldname	Size	Datatype	Constraint	Ref.Table	Remarks
id	11	INT	PK,AI		user_id
password	20	VARCHAR	NN		
is_superuser	1	TINYINT	AN		if user is admin
username	20	VARCHAR	NN		
first_name	20	VARCHAR	NN		
last_name	20	VARCHAR	NN		
email	30	VARCHAR	NN		
date_joined	8	DATETIME	AN		
is_staff	1	TINYINT	NN		

Stocklist

Fieldname	Size	Datatype	Constraint	Ref.Table	Remarks
id	11	INT	PK,AI		primary_key for stocklist
stock_id	10	VARCHAR	NN		stock id from NYSE,NASDAQ
stock_name	40	VARCHAR	NN		stock company name
is_active	1	TINYINT	NN		is company listed right now?

order_history

Fieldname	Size	Datatype	Constraint	Ref.Table	Remarks
id	11	INT	PK,AI		order_id
action	10	VARCHAR	NN		Buy/Sale/Short/Cover order
user	11	INT	FK	auth_user	
stock	11	INT	FK	stocklist	
quantity	11	INT	NN		number of shares In a order
order_expiration	20	DATETIME	NN		for Short Orders
order_price	20	DOUBLE	NN		stock price
order_value	20	DOUBLE	NN		
order_commission	20	DOUBLE	NN		
total_value	20	DOUBLE	NN		total value of order
buying power	20	DOUBLE	NN		
order_number	20	LONGTEXT	NN		
token	20	LONGTEXT	NN		
broker_name	30	LONGTEXT	NN		
timestamp	20	DATETIME	NN		order_time

Message

Fieldname	Size	Datatype	Constraint	Ref.Table	Remarks
id	11	INT	AI,PK		message_id for notification
message_data	254	VARCHAR	NN		message content
when_added	10	DATETIME	NN		message_post_time
priority	1	VARCHAR	NN		1 for HIGH , 2 for MEDIUM , 3 for LOW
account	1	VARCHAR	NN		to use different email account

Historical_Data

Fieldname	Size	Datatype	Constraint	Ref.Table	Remarks
id	11	INT	PK,AI		historical_data for each stock
stock	11	INT	FK	stocklist	stock_id
open	15	DOUBLE	NN		
close	15	DOUBLE	NN		
low	15	DOUBLE	NN		
high	15	DOUBLE	NN		

Main_Algorithm_Data

Fieldname	Size	Datatype	Constraint	Ref.Table	Remarks
id	11	INT	PK,AI		
stock	11	INT	NN	stocklist	
score	11	INT	NN		
date	10	DATE	NN		

Sentimeter_Data

Fieldname	Size	Datatype	Constraint	Ref.Table	Remarks
id	11		PK,AI		
stock	11	INT	FK	stocklist	
date	10	DATE	NN		
buy	10	INT	AN		
sale	10	INT	AN		
hold	10	INT	AN		

UserActivation

Fieldname	Size	Datatype	Constraint	Ref.Table	Remarks
id	11	INT	PK,AI		
user	11	INT	FK	Auth_User	
activation_key	120	VARCHAR	NN		to set is_active flag

WatchList

Fieldname	Size	Datatype	Constraint	Ref.Table	Remarks
id	11		PK,AI		
user	11		FK	Auth_User	
stock	11		FK	stocklist	
sentimeter_date	10	DATE	AN		
sentiment	5	VARCHAR	AN		

5.3 UML DIAGRAMS

1. Activity Diagram

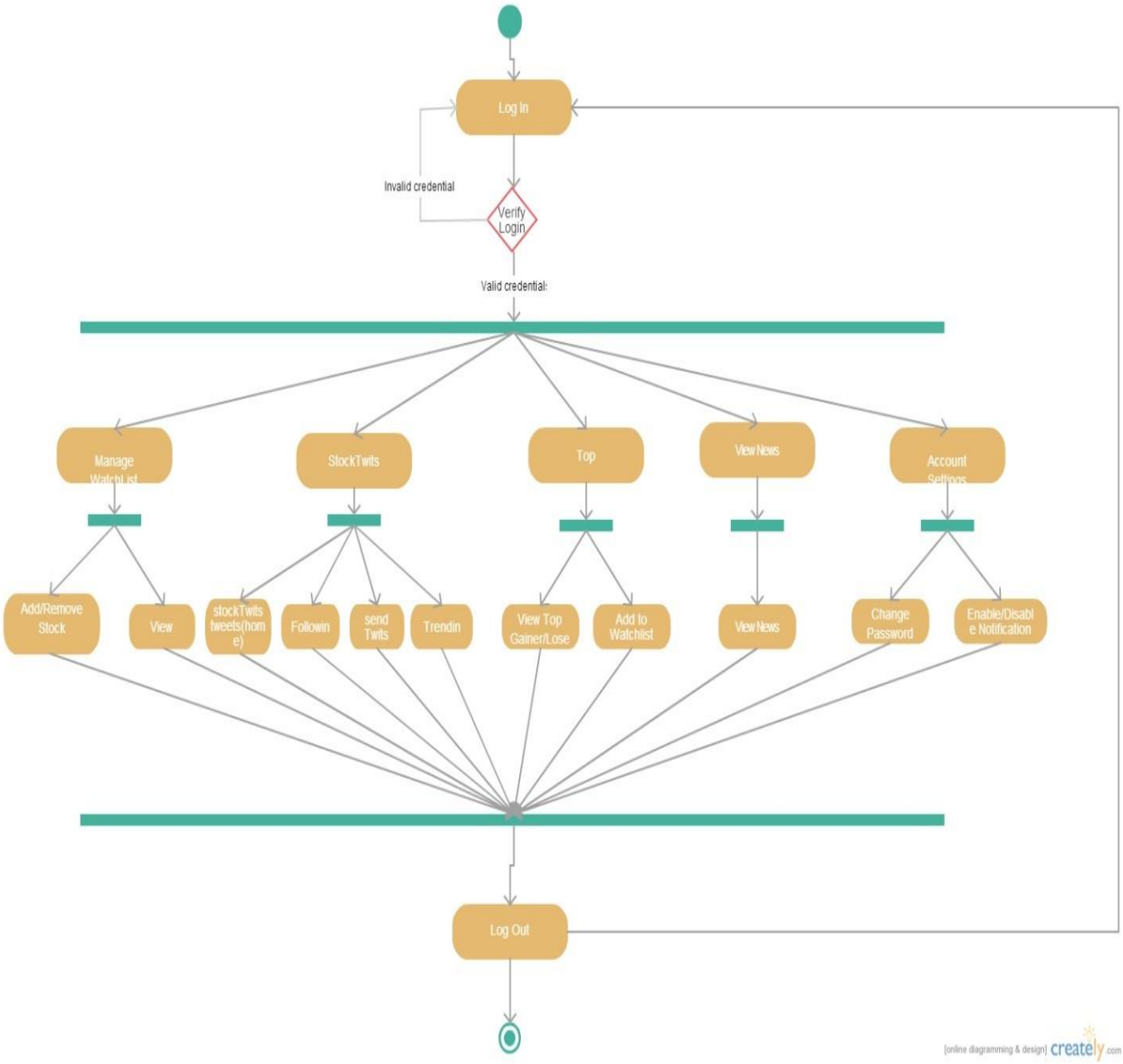


Figure 5.3.1 Activity Diagram for Stock Market Recommendation System

- **Use Case Diagram**

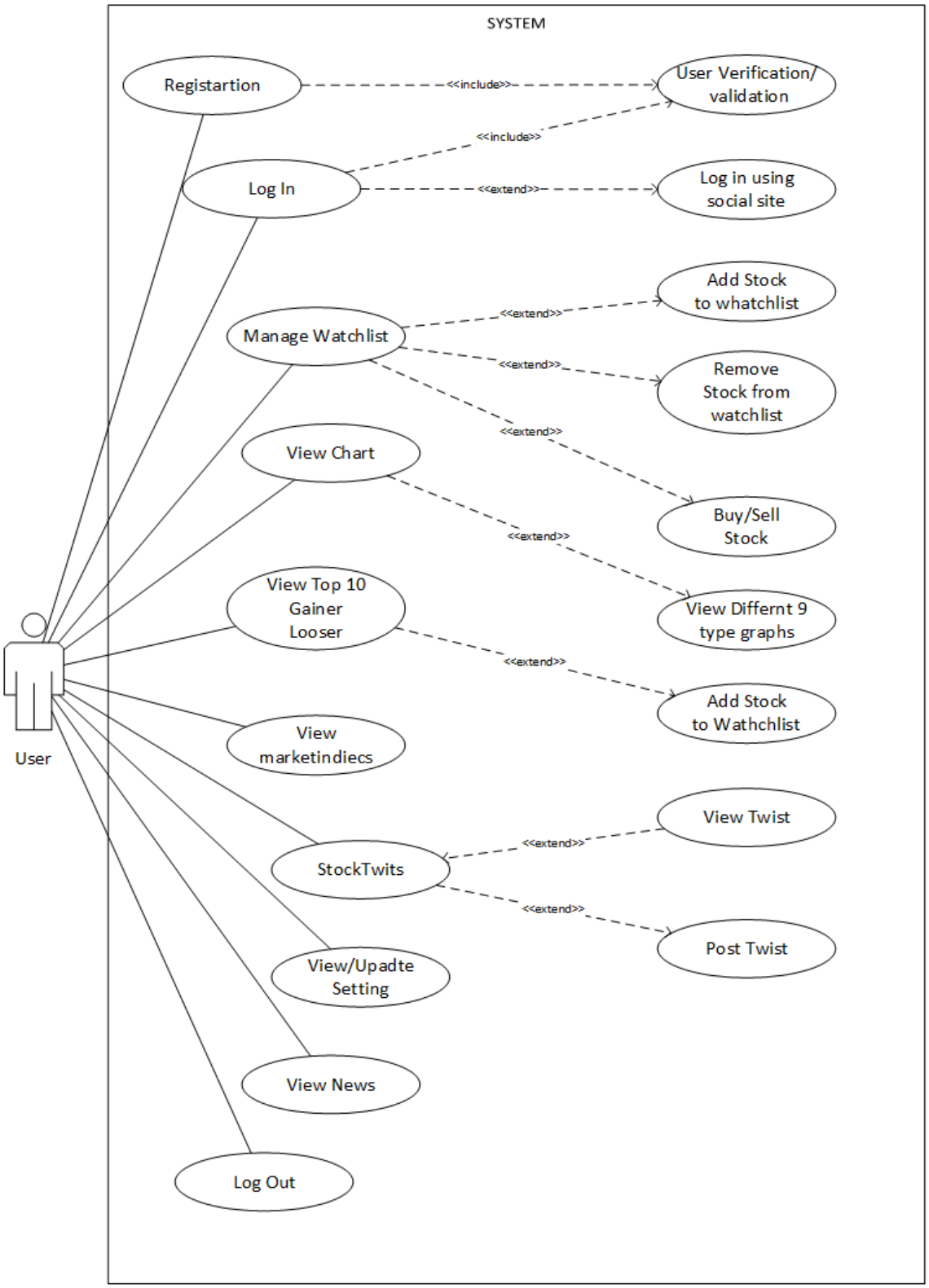


Figure 5.3.2 Use Case Diagram for Stock Market Recommendation System

- **Class Diagram**

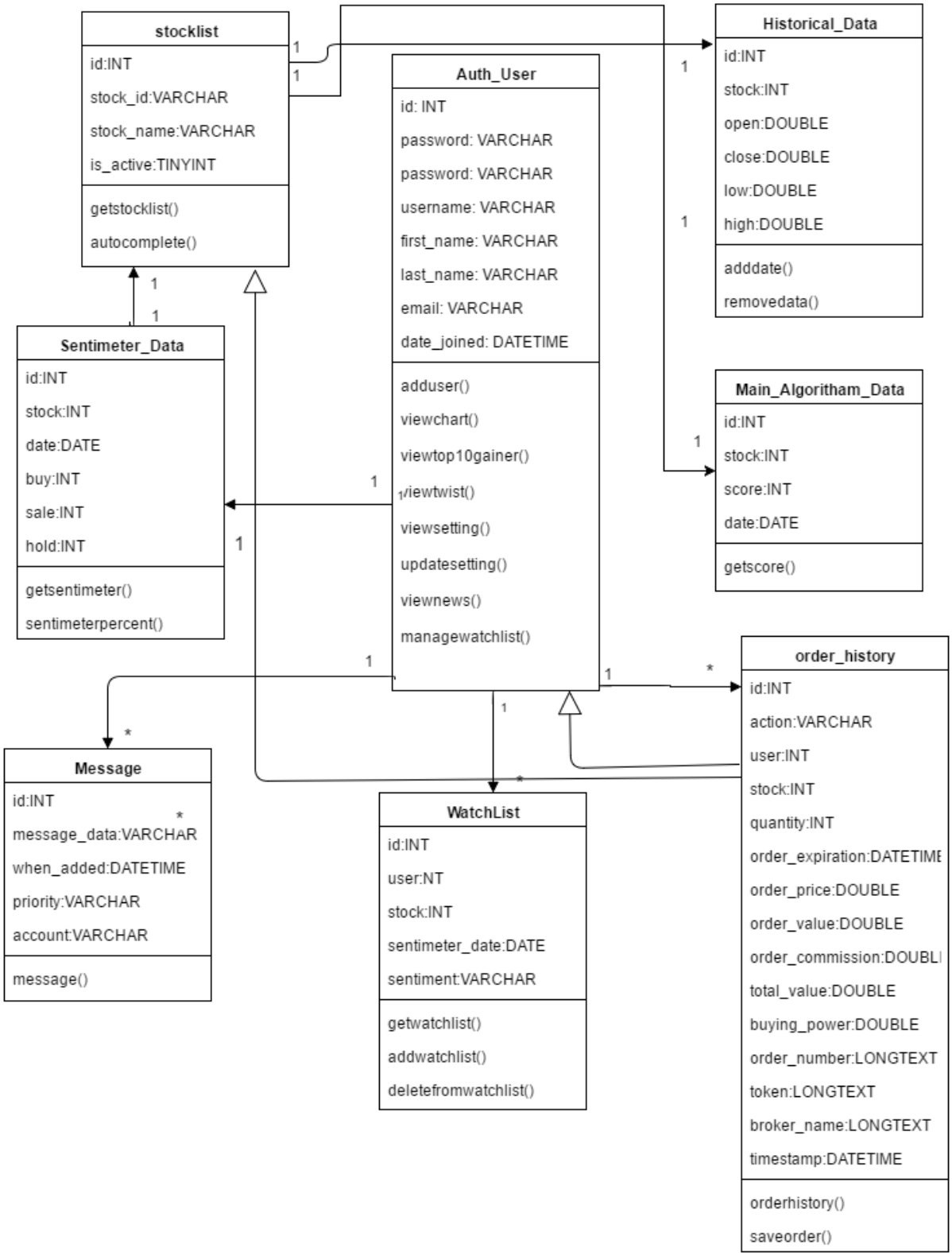


Figure 5.3.3 Class Diagram for Stock Market Recommendation System

6 SYSTEM TESTING

6.1 SYSTEM LAYOUTS

1. Log In Screen

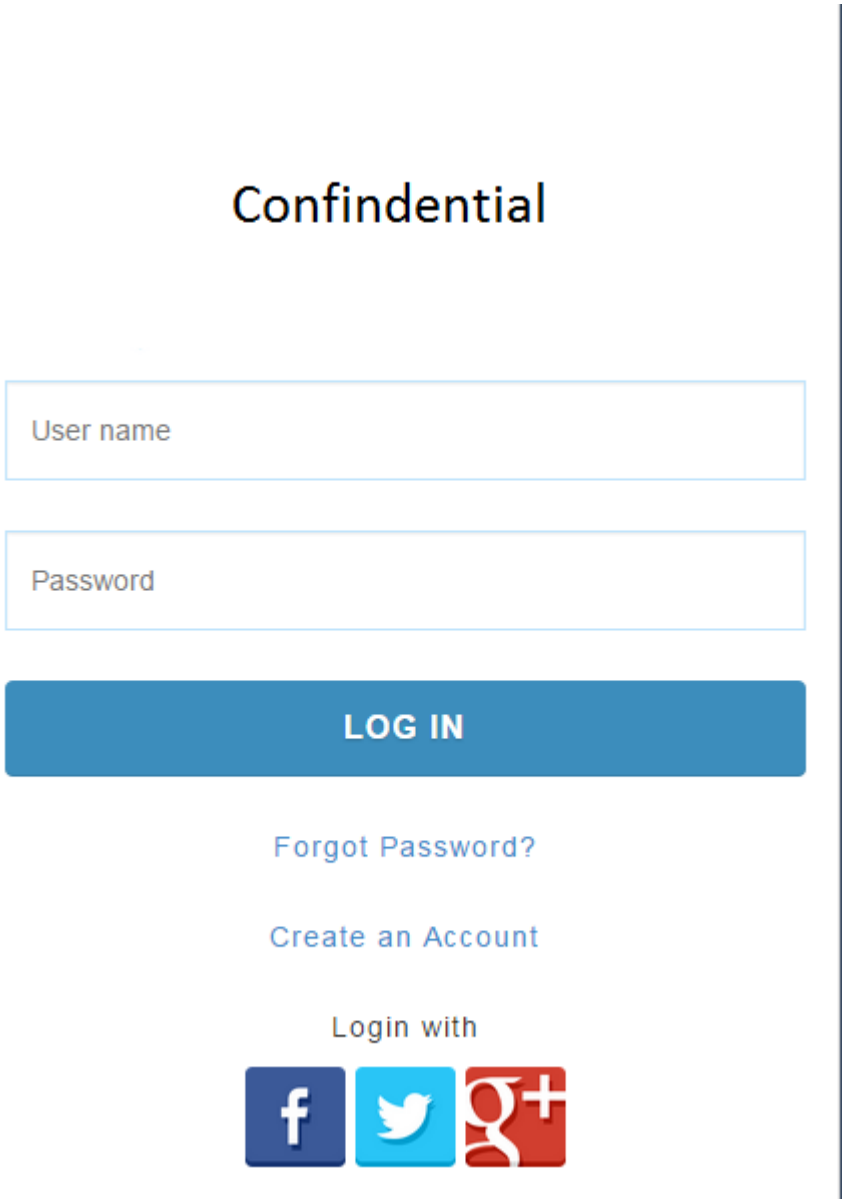


Figure 6.1 Login Screen

2. Watchlist Screen

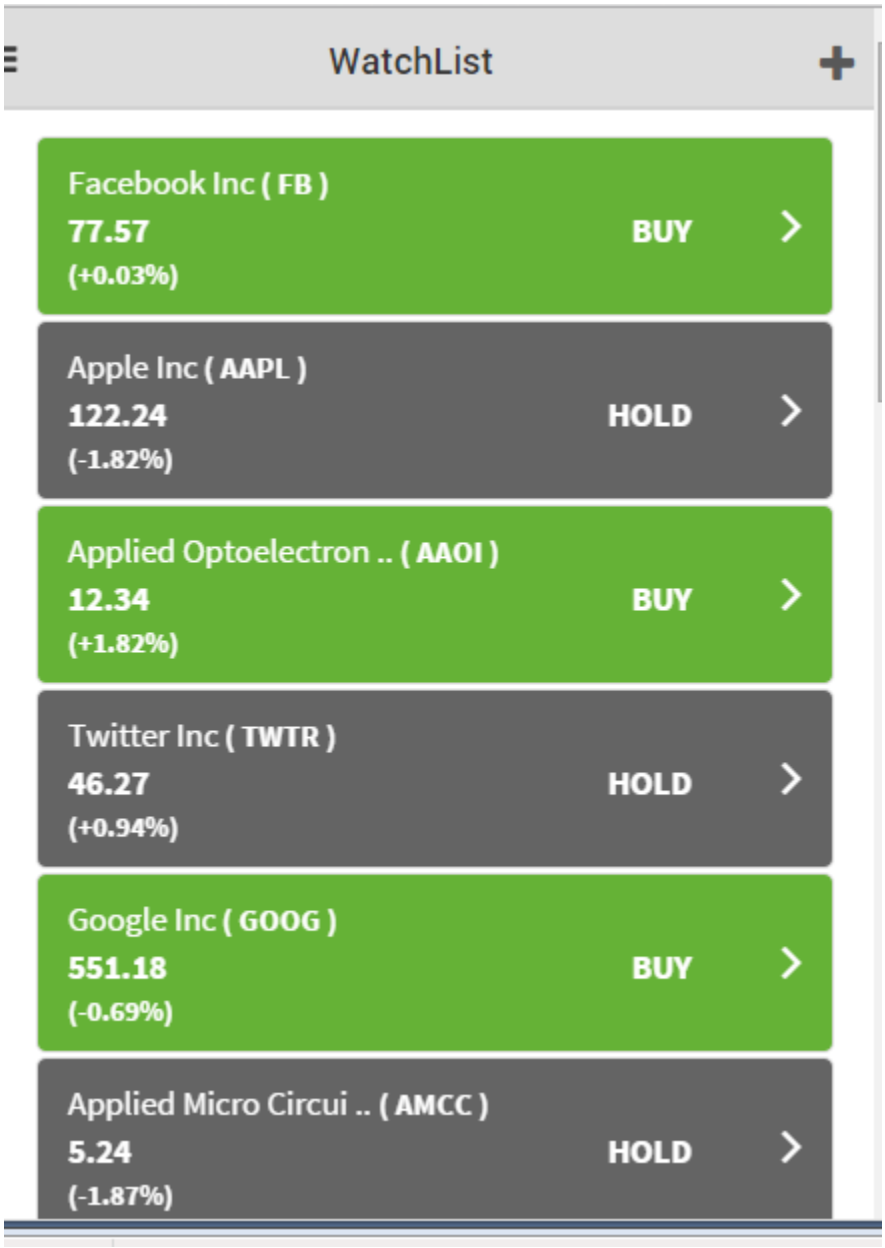


Figure 6.2 Watchlist screen consist of stock updates & stock recommendations

Add To Watchlist

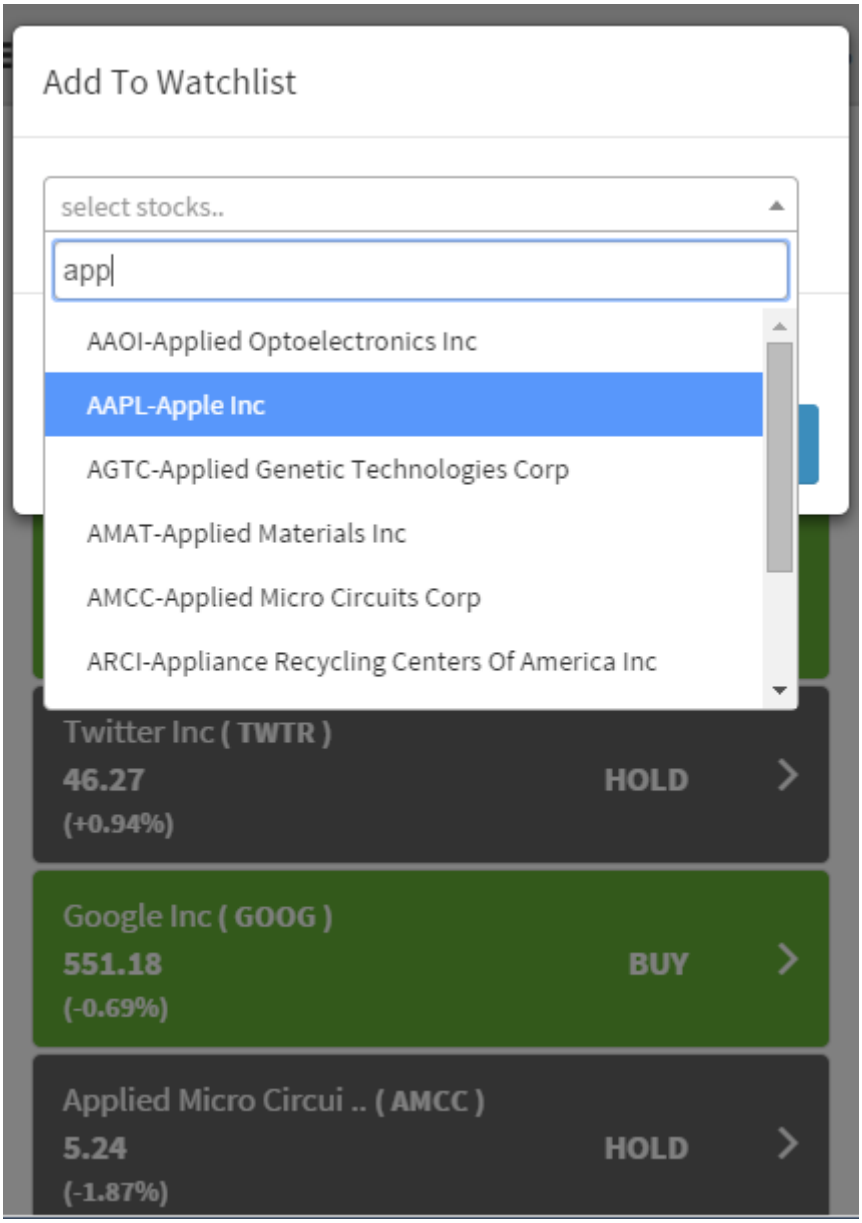


Figure 6.2 Add to WatchList

Above screenshot of watchlist with pop up add to watchlist dialog & auto complete of textbox

3. Chart Page

Figure 6.3 Stock Chart

4. Chart Screen –Algorithms Names

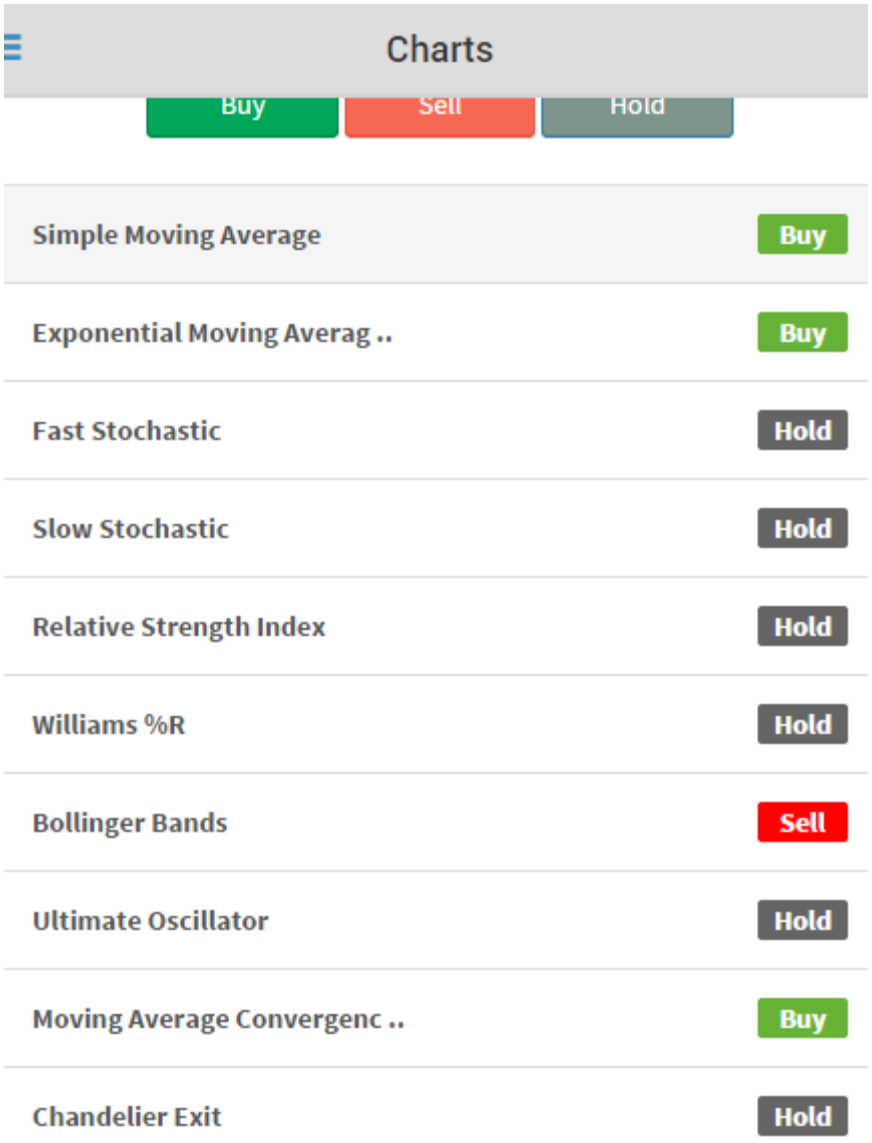
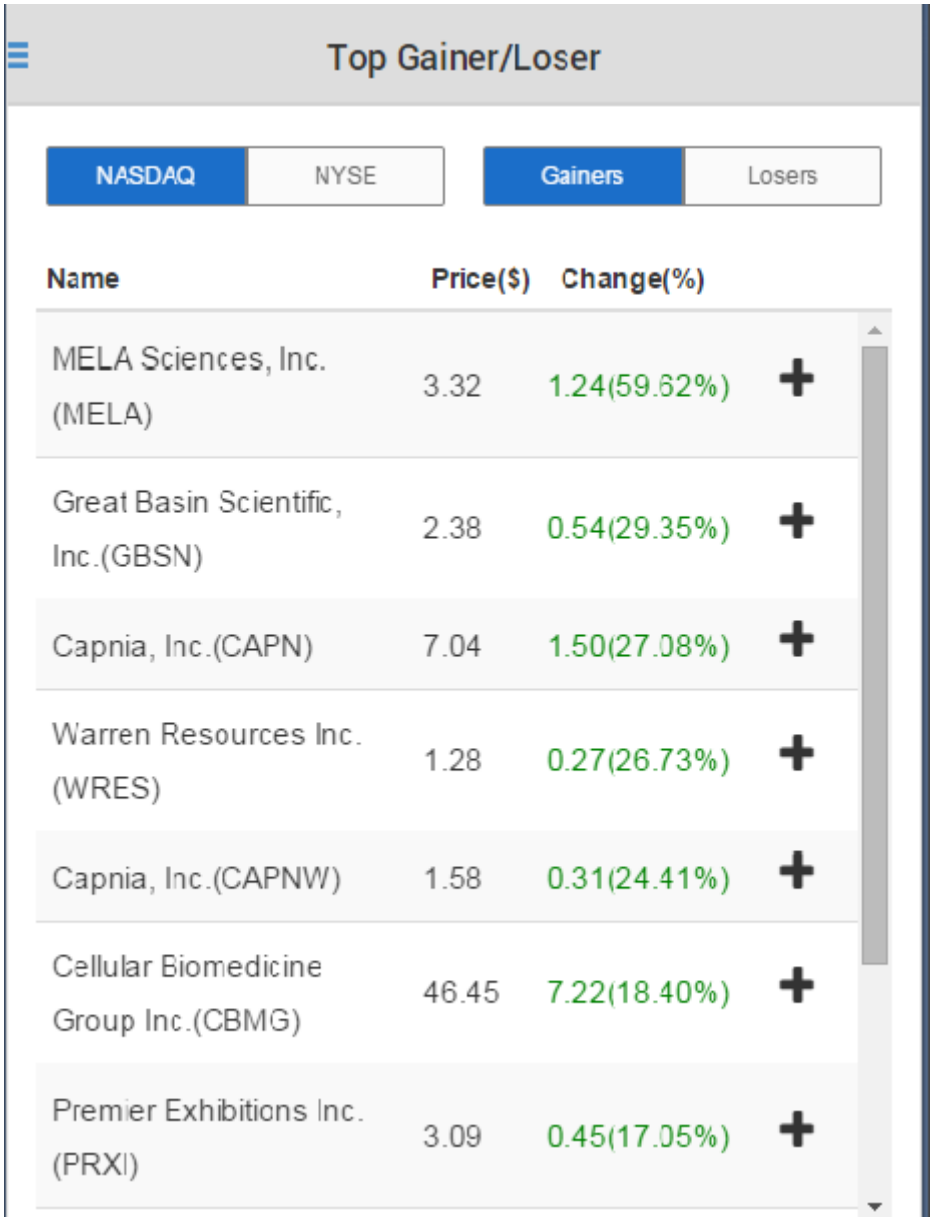


Figure 6.3 Indicators List

5. Top 10 Gainer/Loser



6. Top 10 gainer/Loser

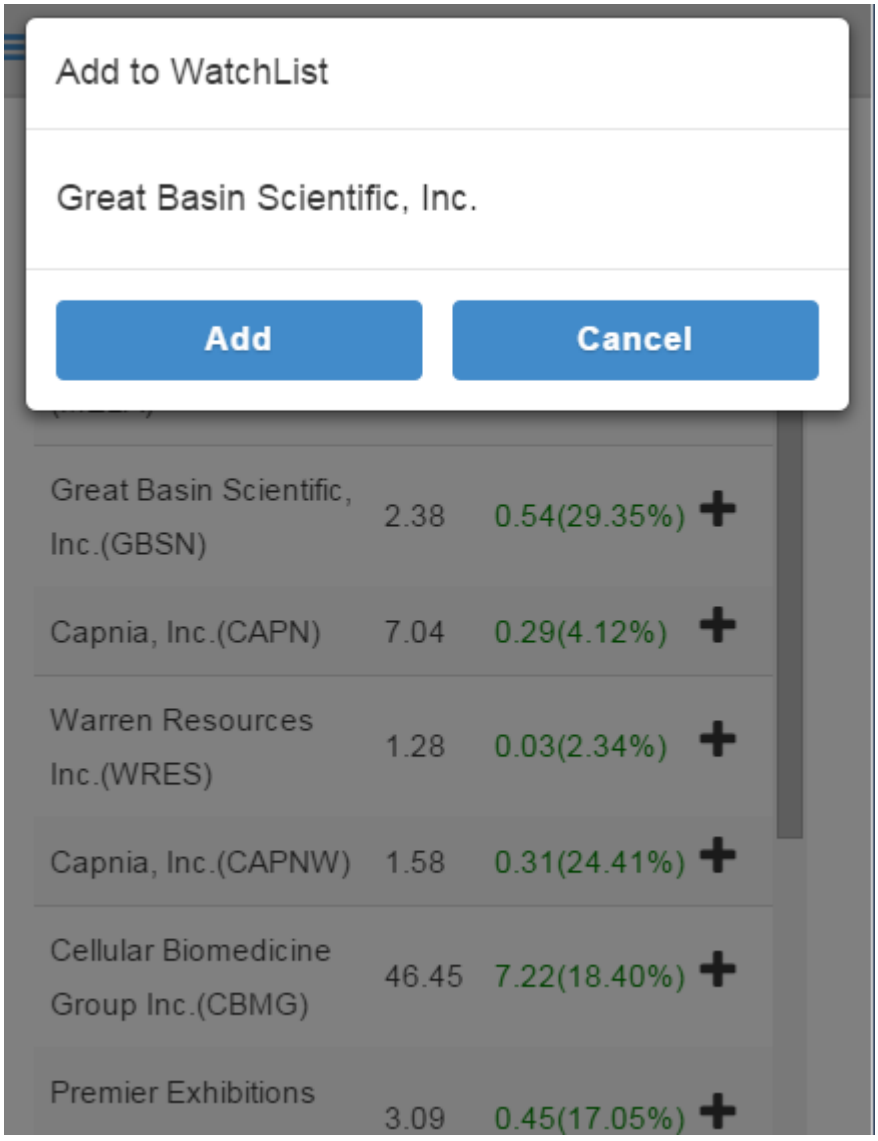


Figure 6.4 Top Gainers

7. News

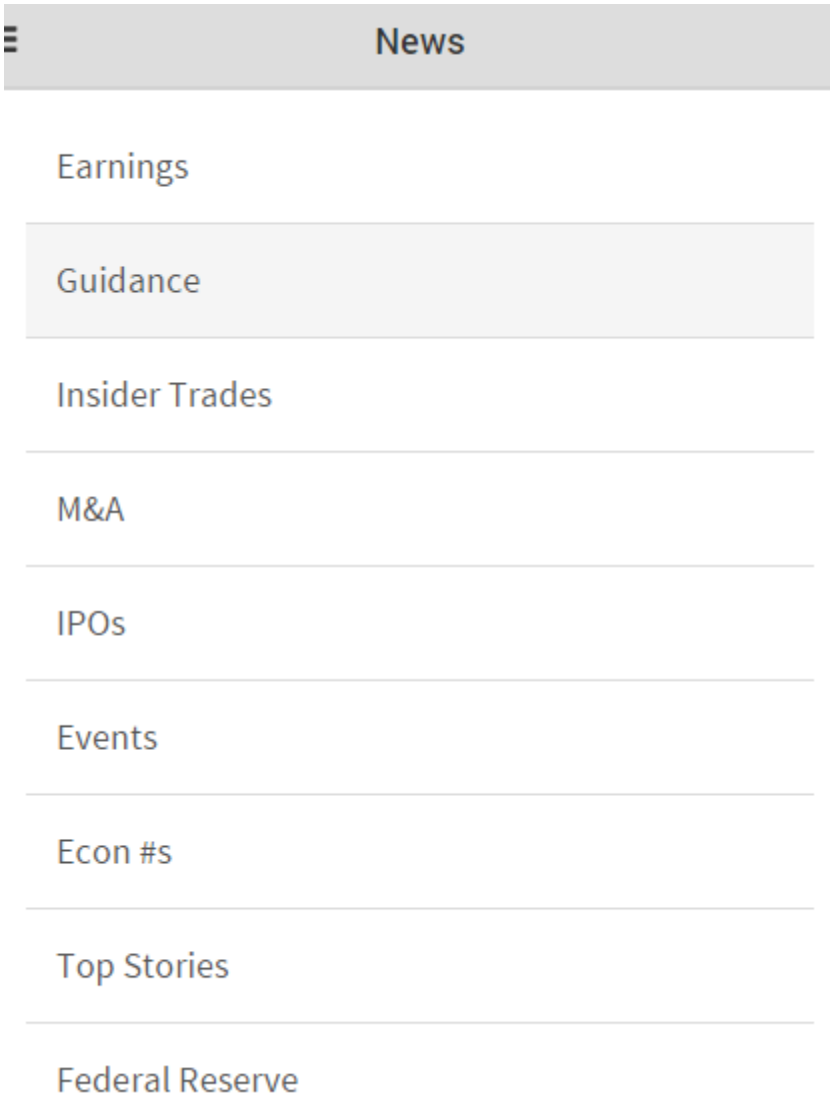


Figure 6.5 News Display Screen

8. Settings

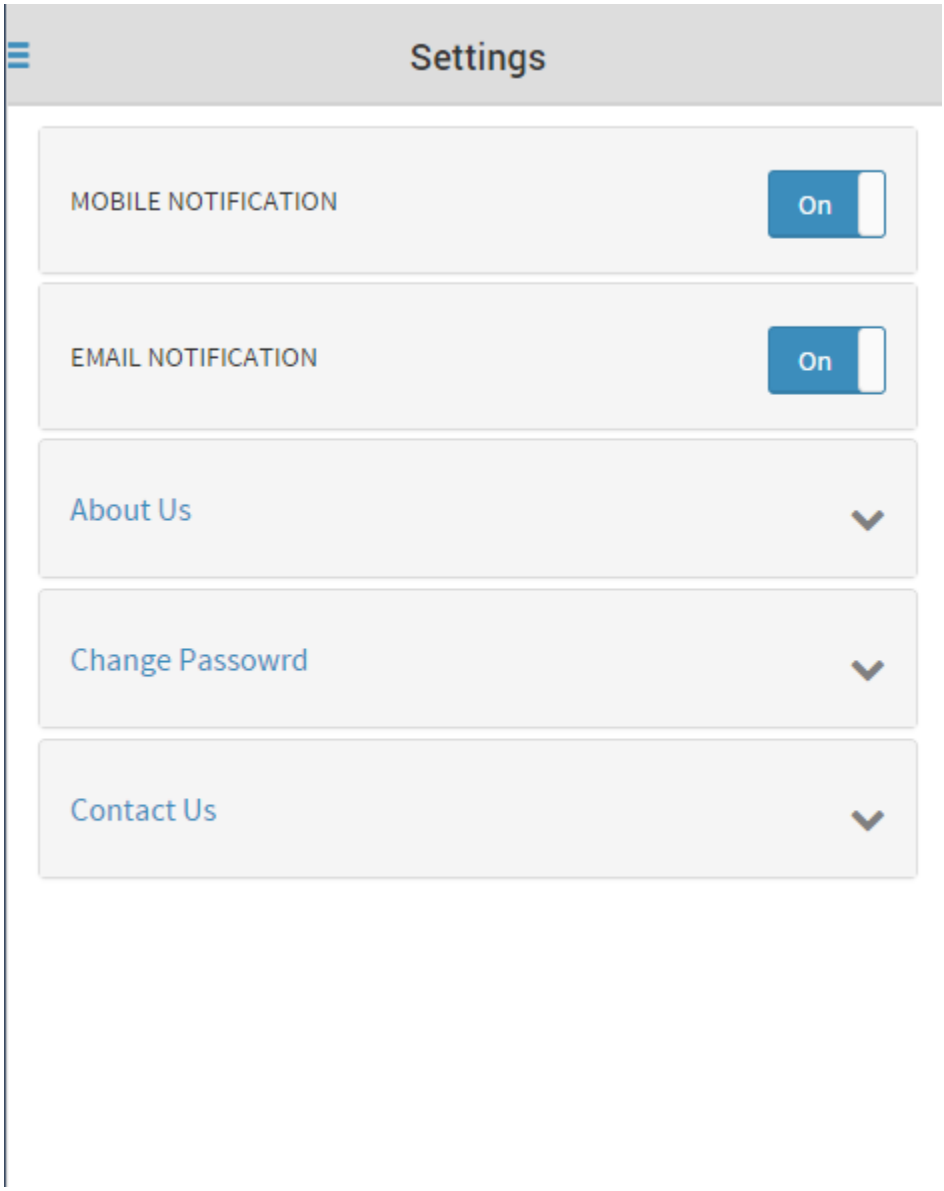


Figure 6.6 Settings Screen

9. Navigation Drawer

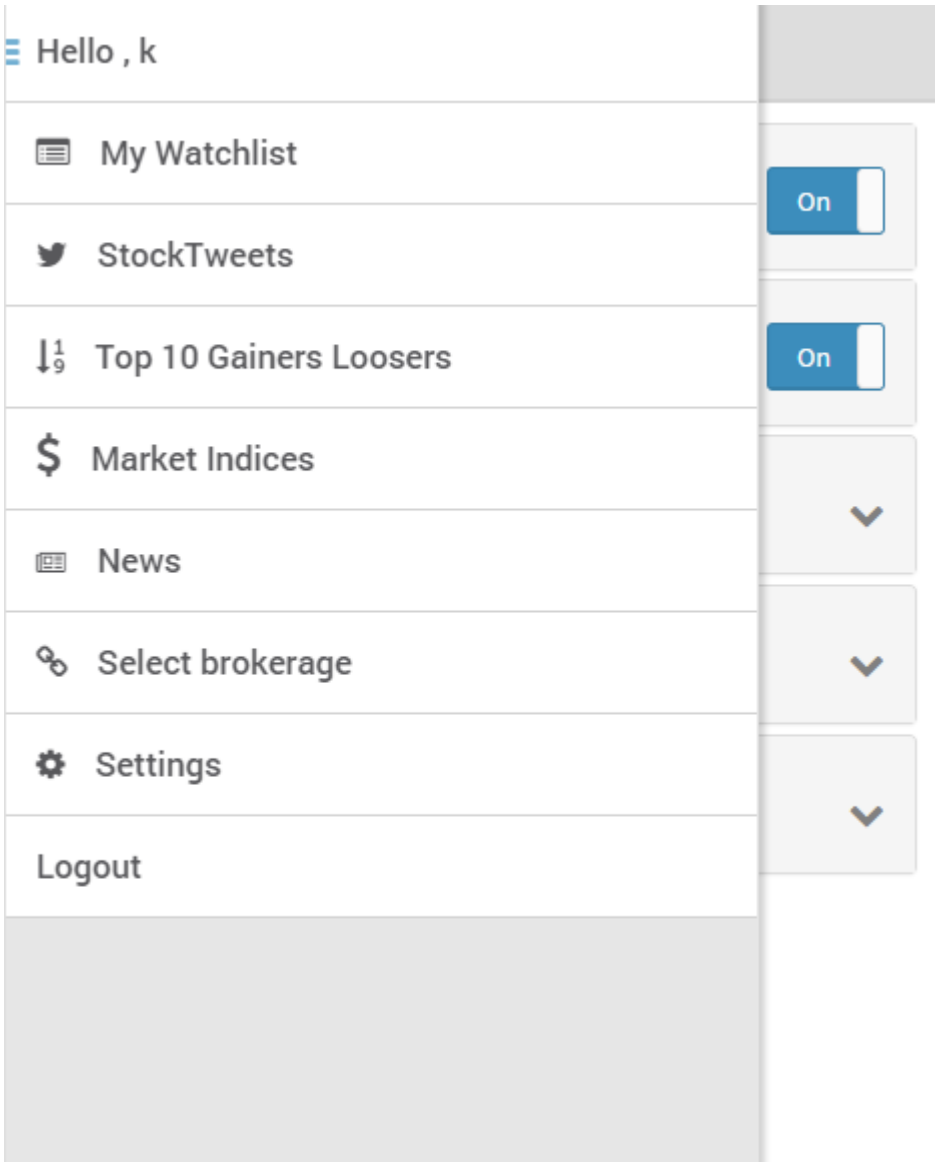


Figure 6.7 Navigation Drawer Screen

7 CONCLUSION

Now a day's manual process for the citizens to sales for their product such like mobile, computer, laptop, stock share etc… has become a huge task. The main object of the website is to reduce the effort by a customer to provide smooth flow to place an order and monitor its status after placing it. The main features of this site includes flexibility, reduce manual work in an efficient manner, a quick, convenient, reliable and effective way to apply for their online trading market committee records. The project could very well be enhanced further as per the requirements.

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