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Design and Implementation of the Virtual Trading Simulator

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ABSTRACT- The purpose of this virtual trading simulator is to provide trading knowledge without loss of capital. As estimated, 95 per cent of day traders lose money in the stock market because they lack trading knowledge, effective trading strategies, and trading psychology. This will help them developing an effective trading system and trading psychology, using this Website, users can use a virtual currency so they can practice, learn, test, and upgrade their strategies in a virtual environment. And also, users can perform technical analysis of stocks & indices to predict their future price and build a trading strategy based on it.

KEYWORDS – stock trading simulator, virtual trading simulator virtual trading website

I. INTRODUCTION

Trading can be termed as a specific way of investing. But with time the definition also changes, as the world is heading ahead with pace, people view towards money, market, life is also changing. Investing is buying a share to achieve price gains in long term while trading is buying and selling a stock quickly. Trading is much more active than our traditional investing. If one wants to become successful with online trading they need to reserve more time for it.

The stock market works through a network of exchanges, Companies list shares of their stock on an exchange through a process called an initial public offering, or IPO. Investors purchase those shares, which allows the company to raise money to grow its business. Investors can then buy and sell these stocks among themselves. Buyers offer a “bid,” or the highest amount they’re willing to pay, which is usually lower than the amount sellers “ask” for in exchange. This difference is called the bid-ask spread. For a trade to occur, a buyer needs to increase her price or a seller needs to decrease his.

One can have a bullish view on any particular stock i.e. if a particular person is feeling that a stock price of any specific stock would go up they he/she must be long on that stock likewise if a person feels that a stock doesn’t have much potential and the stock price should go down then the person would be short on that stock. Also, a lot of research and analysis goes before buying and selling of stocks, if something goes wrong in our analysis then to protect our money, we also have something called as stop loss (sl). A stop loss is limit that we set to protect our money from huge losses in markets. If a stock price goes against our trend then the stop loss comes in our picture which prevents us from losses. It exists our position in that stock at a certain set limit, a limit which we can bear with. Likewise a stop loss we also have our target levels up to which a stock price might go and that level can be called as our target level in a particular stock or trend.

The main aim or the main objective of making this system is that not to trade actually but virtually. A person do not have to literally buy or sell a stock in the real markets. The same experience of buying and selling can be experienced in our system, by putting a virtual order,i.e.in our system same real market user experience will be created of any particular stock trading in the real exchange but the main catch here is that we will make use of virtual currency [1]. In simple words those will just be the simple numbers trading. A person can add any amount i.e. any number and that would be regarded as the currency from which they can trade. Even if a person makes loss that loss would be just a

virtual loss and not his/her real money. So clearly a person can improve his trading journey by just trading virtually and not losing actual hard earned money. As it is said that a penny saved is a penny earned likewise by making virtual currency [1] a trader can excel in his trading journey and in the upcoming future they can make real money by trading in the markets.

II. LITERATURE SURVEY

In previous existing systems, the major drawback we saw was the lack or the poor quality of the user interface experience. A lot of things we're randomly put forth in the system, also major or the main features were missing in the system. These systems were also struggling for the real-time updation of the market value which is the main part of the system.

Along with the user interface, some important things like candlestick pattern system was also not much responsive and accurate, due to which it was difficult to trade in the markets. A chat box for community traders, for making it easier to connect with each other was also absent. Basket order system for executing large order at a time was not also seen, previously a trader used to put a order one by one, one at a time which used to result in price slippage, quantity mismatch and used to lead to many other problems. Also, main features like stoploss, for stopping or cutting down major loss in one trade. Also trigger price system was missing, suppose you take a trade and the price hits your targeted price then the system will automatically cut that trade when the price hits the price. A proper, systematic profit and loss system was also missing in the systems, which used to measure or track your progress. Tick by tick feed was also missing in the systems for live market updation. Storage and retrieval of user transaction details, user account details for also missing in the systems. Managing user account and storing user profile in the system.

III. BACKGROUND

This website explores the concepts of virtual trading and virtual stock trading for educational purpose with the help of digital currency to gain knowledge about the concepts, strategies and do analysis of stock exchange. This website will help the users to live experience of real world training.

In short, stock market is a place where traders buy and sell shares of a company [2]. By using virtual trading simulator learners can train and practice stock exchange without the loss of real capital. They can also come up with strategies and perform analysis with the help of our website. And without being in the real market they can gain the experience of how real trading works in a simulated and safe environment.

Our virtual trading simulator is user friendly and has great data visualization facilities and reporting capabilities. However, there is a dearth of stock trading desktop applications [2] that integrate various features and trading options. In addition, the inclusion of irrelevant information on the simulator website and the lack of clear system feedback messages do not stimulate a positive user experience. The virtual Trading Simulator attempts to overcome the above problems by implementing a highly functional and easy-to-use stock market simulator.

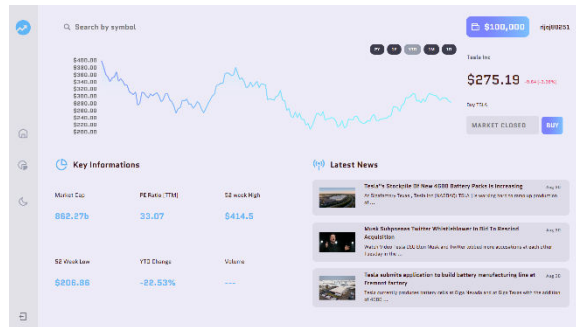
As in previous systems available in the market

There are many up gradations also some of the major changes that we have done into our systems. The major and the visible system differences that are seen is the user interface. Here in our system the user interface is extremely user friendly and simple along with much interactive features added to it. Also sometimes lags can be seen in their systems, but here in our case the data available to us is in much faster, easier way. The availability of data, stock information was also much less in comparison to our system [4]. Many more advanced and lucrative features such as basket order, chat box for community traders [2,3], live market data were missing in the previous systems. Responsiveness of the system has also increased by a lot more times in comparison to the previous system. Also a lot of user base or user database have been created by our system which can be used later in many ways to meet more needs of the people and to make our system more and more interactive, simple, responsive value adding into the domain.

The uniqueness of our system can be seen in our user friendly, value adding features that are been made available to its user. More features means more easily more advanced trading experience in one's trading journey that will help shaping their trading career in towards a better tomorrow.

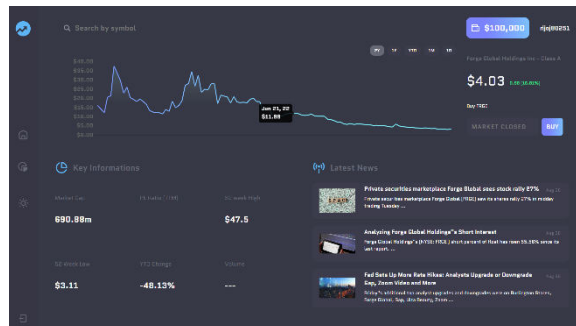
Main Features:

TICK BY TICK FEED - Almost Real time market feed of all Equities.



BASKET ORDERS [2] - Create your baskets and execute them manually or set triggers using an algorithm. Execute baskets in Isolation or combined mode.

LIVE MARKET, VIRTUAL MONEY [1,4] - Real trading experience of live market with virtual money.



SCANNER - It scans the entire market and shows you the gainers/losers/trending equities. Quick to find and easy to trade!

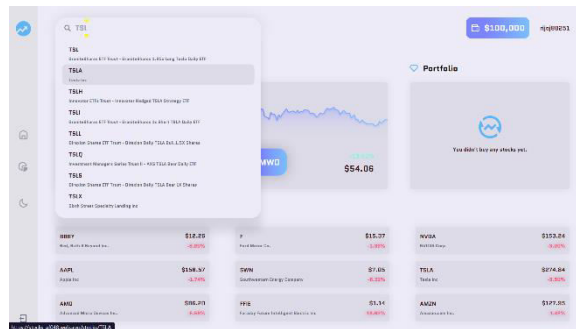
MEASURE YOU'RE PROGRESS - Regular quizzes can be held for learners to analyze their progress and see where they stand.

DISTINCTIVE UI - A distinctive UI for people with special needs is a key aspect of this project.

RESPONSIVE [6] - The website will be responsive for all kinds of devices for ease of accessibility and better user experience.

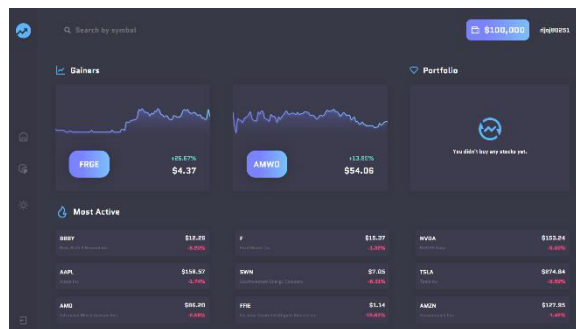
2. DESIGN AND IMPLEMENTATION OF THE VIRTUAL TRADING SIMULATOR

A) System Development: The Virtual Trading Simulator includes a great user interface i.e U.I that allows the user to interact with the system. This system will offer different features to the user as soon as it logs into the account. It allows user to select its desired options on the login page. The selected option takes use to a new window where other additional features are available to the user. The U.I has highly interactivity with animations to enhance the user interface.



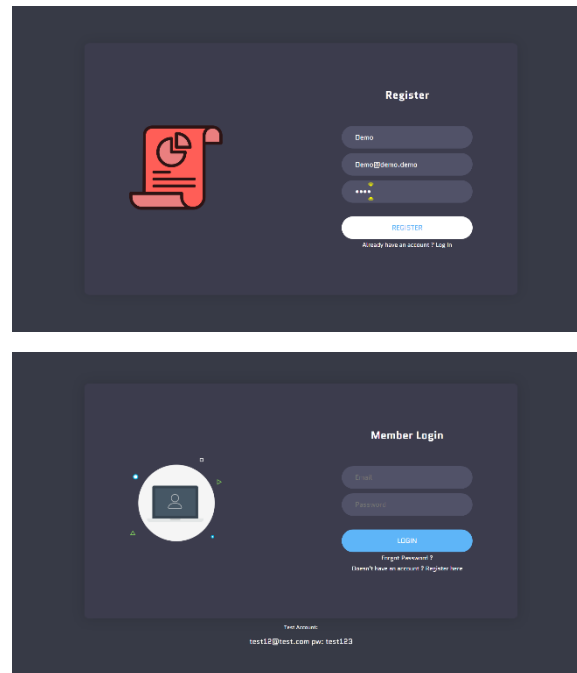
B) Communication Interface: This Virtual Trading Simulator System m is required to communicate with the web server using POST and GET Hypertext Transfer Protocol (HTTP) methods for client and server. POST is best suited to work with long confidential and sensitive data whereas GET method is not concerned with the security aspects and has a limited number of parameters and size to pass in the request. The code on the server uses GET and POST methods interchangeably depending on the nature and complexity of the request to retrieve the data passed from the client application. The virtual trading simulator also uses HTTP client request to get response from Google stock API and display the results to users.

C) Major Functions: The main Virtual Trading Simulator system users are the people that are new to the markets. Also people that have been with huge or less losses or the people with less knowledge of stock market are our main customer base. Also the other type of the system user is the developer itself which needs to administer and operate the functioning of the website. Also to regulate, add and or remove certain functions/features as per the betterment of the user. Also to store and manage historical data of the user and of the user and of the companies.



This Virtual Trading Simulator provides following features to its users:

- a) candlestick chart patterns [7]
- b) Manage user accounts and keep profile in the system.[5]
- c) Virtual money to be used.[1]
- d) Basket order system for bulk orders.[2]
- e) Chat box for trader community.[3]
- f) Display stock information of company. [4]
- g) Store and retrieve user's transactions details.[6]
- h) Store and retrieve user account detail.[6]



In order to allow the user to fully benefited and use this system from host services and API calls, the virtual trading simulator needs to be connected to the internet all the time.

IV. FUTURE WORK

There are number of future opportunities that can help us to improve the proposed solution and produce a fully functional product and to target wider application areas. Some of the possible future improvements are shown below:

1. The trading functionality can be further enhanced by creating a mobile version of the tool for phones and tablets to increase the availability of the tool on different platforms. This would also allow for desktop users to directly interact with users on mobile platforms and trade directly from anywhere because it will be pocket friendly.
2. Adding real trading is another option to consider which can transition users to real trading options after sufficient experience is gained. Users would still be able trade in real stock market but their transactions will be completed using real funds rather than virtual funds. The system will accept card payments as well as UPI and the orders can be sent to experts for review.
3. Expert advice can also be a good enhancement for future. Live sessions as well as one to one sessions of experts will help the user to gain more experience and learn from experts. The experts will help the user to trade efficiently and increase their trading confidence.
4. Another future scope that can be added is crypto trading. It will provide the user to learn new concepts of crypto currency and trade in different virtual currencies from all over the world. It will also show the realworld ups and downs in the crypto market.
5. Another future scope consists of a new concept which is Algorithm trading. It will help the users to learn the methods of algorithm trading which are based on time, price and volume. It will leverage the speed of computers relative to humans.



VI. CONCLUSION

The virtual trade simulator can be used as a valuable tool to learn trading similar to real world trading with the help of virtual currencies. There are areas of further improvements in the existing prototype, however majority of initial requirements are full filled, tested and works in a good manner.

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