Simulated Share Trading System

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Abstract – *Peoples thought about buying stock in a certain company but sometimes they don't have cash to trade or perhaps they do not have enough knowledge about share market or they are worried to invest in particular company. Online stock market games are simple, easy-to-use programs that imitate the real-life workings of the equities markets. These charges can significantly affect an investor's bottom line, and including these in simulated trading helps users learn to factor these costs in when making purchasing decisions. Using real data from the markets, the trading occurs in context of a game, which can involve joining an existing game or the creation of a custom game that allows the user to configure the rules. The goal of this project was to achieve a basic understanding of the stock market through research and trading simulation. By using proper investment and technical analysis strategies in addition to online simulation tools, investment theories were put into practice.*

Key Words: **Stocks, Investor, Simulation, FIX, Exchanger.**

1. INTRODUCTION

A stock market simulator is a program or application that attempts to reproduce or duplicate some or all features of a live stock market on a computer so that a player may practice trading stocks without financial risk. Paper trading (sometimes also called "virtual stock trading") is a simulated trading process in which would-be investor can 'practice' investing without committing real money .This is done by the manipulation of imaginary money and investment positions that behave in a manner similar to the real markets. Before the widespread use of online trading for the general public, paper trading was considered too difficult by many new investors. Our aim is to create software that helps customer to perform Buy/Sell Stocks or trading through stock data of certain companies, with help of certain parameters that affect stock value. We are going to implement these values in data mining algorithms and we will be able to decide which algorithm gives the best result. This will also help us to determine the values that particular stock will have in near future.

The allocation and price of resources is a topic which influences every aspect of our lives are

- The quality of education available to staff wages

- To understand how to maximize utilization of these resources in order to benefit the greatest number of people.

The stock market is often indicative of how resources are distributed and how prices are agreed as, for all 'stock', there is massive scope for buying and bargaining. This system is currently controlled by a number of traders who buy and sell units according to cost and demand. This is a very well-paid profession as it is assumed that to optimize allocative efficiency requires highly-skilled and knowledge able persons, yet experiments have shown that when simulation is applied, using only simple rules and with no market knowledge, both artificial and human 'Zero-Intelligence' agents will converge to an equilibrium where, not only is allocation efficiency high, but the percentage of transactions occurring is also great

2. LITERATURE SURVEY

In [8] Yung-Wei Tang proposed "stock market simulation" review about investment strategies in the stock market was conducted first. Then by analyzing the investor's personality and knowledge background, the most suitable investment objective and investment strategy were selected. The objective of this project is to study the basic principle of the stock market and to learn ways to select right stocks based on different investment strategies and risks by using the short term trading method. First, companies from different industries are reviewed. Then 10 stocks with strong backgrounds or high potentials are selected among those companies. Secondly, selection of an appropriate investment strategy and using it to identify a goal (risk goal and return goal). The simulation allows using $100,000 in the time period of seven weeks.

In [9] Machine Learning applications in financial markets prashant pawar proposed Like textual representation, there are also a variety of machine learning algorithms available. Almost all techniques start off with a technical analysis of historical security data by selecting a recent period of time and performing linear regression analysis to determine the price trend of the security. From there, a Bag of Words analysis is used to determine the textual keywords. These outcomes are then classified into stock movement prediction classes such as up, down, and unchanged. Much research has been done to investigate the various techniques that can lead to stock price classification. Following Table illustrates Stock Market prediction taxonomy of the various machine learning techniques.

In [10] Agent based modeling stock market using existing order book data in by mark harman Agent-Based Simulation with Order Book Data (ABSORBD) Our model aims to replicate the activity of a single day on the Chi-X

exchange. The two main types of orders are market orders, where a trader can buy or sell a particular amount of stock at the best price available at the moment, or a limit order, where the trader specifies a price above which is unwilling to buy, if she submits a bid, or a price under which she is unwilling to sell, if submits an offer for a stock.

3. OBJECTIVE

- Create an abstract world with buyer and seller agents capable of generating random numbers within constraints
- Allow capabilities for transactions to take place
- Display past transactions graphically
- Observe if transaction price tends towards the predicted equilibrium and how long this takes

4. EXISTING SYSTEM

A stock exchange, securities exchange is a facility where stock brokers and traders can buy and sell securities, such as shares of stock and bonds and other financial instruments. Stock exchanges may also provide for facilities the issue and redemption of such securities and instruments and capital events including the payment of income and dividends citation needed. Securities traded on a stock exchange include stock issued by listed companies, unit trusts, derivatives, pooled investment products and bonds. Stock exchanges often function as "continuous auction" markets with buyers and sellers consummating transactions at a central location such as the floor of the exchange.

5. PROPOSED SYSTEM

The proposed system will predict best stock prizes either for buyer or seller depending upon the conditions based on the environment of company. peoples are getting more confused and they are not able to find any way so this new virtual stock exchange technology, stock market simulators stock market games that let you pick securities, make trades and track the results all without risking and that will help in building their confidence to invest in stock market.

Online stock market games are simple, easy-to-use programs that imitate the real-life workings of the equities markets. Most stock market games give users $100,000 in pretend money to start. Most online stock simulators try to match real-life circumstances and actual performance as much as possible. Many even charge broker fees and commissions.

The Stock Simulator is well integrated with the site's familiar educational content. Using real data from the markets, the trading occurs in context of a game, which can involve joining an existing game or the creation of a custom game that allows the user to configure the rules. Through the use of FIX protocol the exchange between the

shares would be fast and also easy to use for the new customers for their better understanding in share trading.

6. METHODOLOGY

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These charges can significantly affect an investor's bottom line, and including these in simulated trading helps users learn to factor these costs in when making purchasing decisions. Along the way, they'll also learn the basics of finance and learn the basic terminology of investing, such as momentum trading, shorts and P/E ratios. The Stock Simulator is well integrated with the site's familiar educational content. Using real data from the markets, the trading occurs in context of a game, which can involve joining an existing game or the creation of a custom game that allows the user to configure the rules.

6.1 Fix Protocol

The transfer protocol will be FIX it is electronic communication protocol for international real time exchange of information related to securities. FIX is comprised of the message types such as a 'quote request' or 'new order' that mirror the steps of the trade cycle.
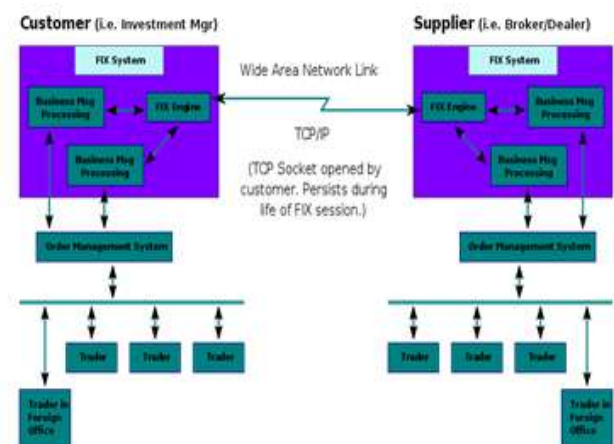
FIX Protocol

6.2 Usage Of FIX Protocol

1. Architecture.

2. Buyer and seller side.

3. Integration Method.

4. Commercial Engine.

5. Implementation Steps.

6. Testing Tips.

FIX protocol is a business and industry driven messaging standard for exchange of trading related information. It provides an electronic Messaging and communication model. As mainly FIX protocol is used for Broker dealers, exchanges, educational investors and other types of investors for trading. For our simulated share trading FIX protocol is an important protocol used for exchanging shares in the market through various customers. FIX protocol contains software packages, wide support and easy to get on board. It is simple and platform independent protocol for exchange and share trade.

In FIX Protocol message contains three parts:

1.   Header

2.   Body

3.   Trailer/Footer

7. ARCHITECTURE OF SIMULATED SHARE TRADING

A stock exchange, securities exchange is a facility where stock brokers and traders can buy and sell securities, such as shares of stock and bonds and other financial instruments. Stock exchanges may also provide for facilities the issue and redemption of such securities and instruments and capital events including the payment of income and dividends.[citation needed] Securities traded on a stock exchange include stock issued by listed companies, unit trusts, derivatives, pooled investment products and bonds. Stock exchanges often function as "continuous auction" markets with buyers and sellers consummating transactions at a central location such as the floor of the exchange.

This is a very well-paid profession as it is assumed that to optimize allocative efficiency requires highly-skilled and knowledge able persons, yet experiments have shown that when simulation is applied, using only simple rules and with no market knowledge, both artificial and human 'Zero-Intelligence' agents will converge to an equilibrium where, not only is allocation efficiency high, but the percentage of transactions occurring is also great.
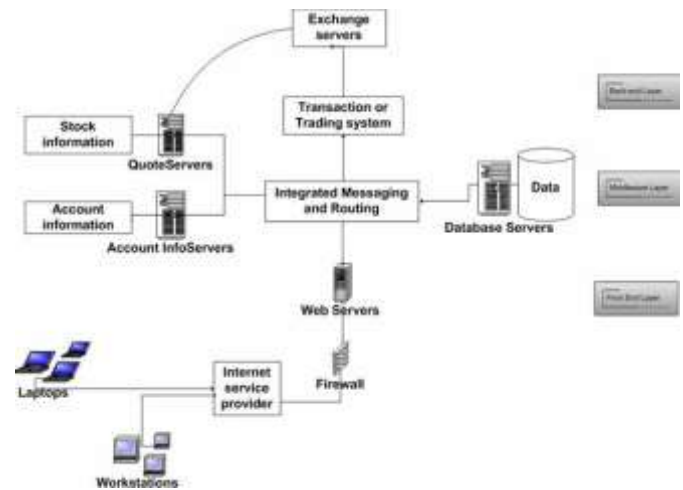

Architecture of Simulated Share Trading

 Stock exchanges may also provide for facilities the issue and redemption of such securities and instruments and capital events including the payment of income and dividends.[citation needed] Securities traded on a stock exchange include stock issued by listed companies, unit trusts, derivatives, pooled investment products and bonds. Stock exchanges often function as "continuous auction" markets with buyers and sellers consummating transactions at a central location such as the floor of the exchange.

Users taking part in the computer-based simulation become private investors who are able to buy and sell stocks, bonds or stock options. The simulation facilitates the understanding of the complex system of a stock market and increases the motivation and learning intensity of students. The stock exchange simulation is based on the WIL-MA architecture (Wireless Interactive Learning at the University of Mannheim) that was developed at our institute to support interactive lectures with mobile devices.

It provides a basic client/server functionality as well as an administrator tool. This technology has so far been used to support interactivity in university lectures by providing different services like hand-raising, feedback or quiz sessions.

7.1 Software Development Paradigm

We have used Iterative and Incremental model for our project development. This development approach is also referred to as Iterative Waterfall Development approach. Iterative and incremental development is a software development process developed in response to the more traditional waterfall model.
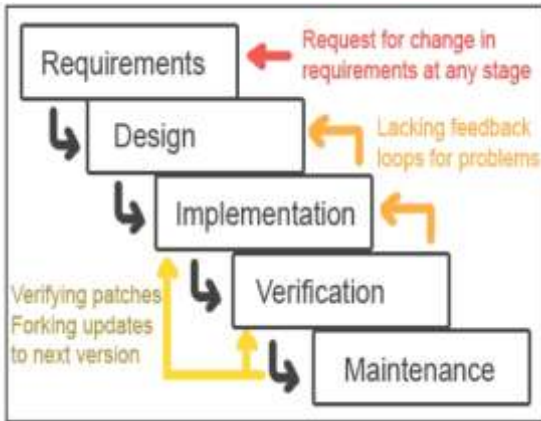
7.2 Requirements Analysis

In this phase the requirements of the software system are defined. This answers the 'What is the software system to be developed' question. It involves extensive user participation and ends with an approved set of requirements documented in a software requirement specification document. This document is the basis of next stages of the project.

- **Design**

In this phase the logical design of the system is defined. This answers the 'How is the software system will be developed' question. This phase uses the requirements specified in the previous phase and translates them into design which will solve the problem. The design phase is an intermediate phase and bridge between 'What' the user/customer wants and the implemented system (code) that will be created to satisfy the requirements.

- **Coding**

This stage of the model involves the writing of the code. The actual design is turned into a set of programs.
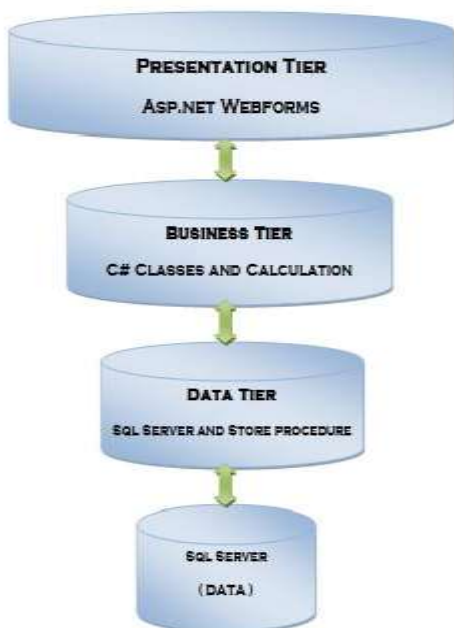
Three-Tired Architecture

7.3 Application of Analysis in Our Selected Domain

Buy/Sale Stocks will be useful for new or existing customer to invest in stock market based on the various factors considered by the software.

Stock market includes daily activities like Sensex calculation, exchange of shares. The exchange provides an efficient and transparent market for trading in equity, debt instruments and derivatives.

Our software will be analyzing Sensex based on company's stock value. The stock values of company depend on some of the following factors:

- Corporate results: This will be regarding to the profits or progress of the company over a span of time say 3 months or varies.

- Inflation: The overall rise in price of all the products which affects purchasing power.

The stock value depends on other factors as well, but we are taking into consideration only these particular factors

7.4 Prominent Features of the Project

- Analyzing stock data.

We have obtained row stock data of some companies that affect the Sensex.

- Analyzing the factors.

We have to obtain the data in the same period for the following factors.

We have to analyze the variations in the stock value of the companies with respect to these factors using some data mining algorithms

8. CONCLUSIONS

The members in the simulation team each chose their favorite companies and investing strategies to create his/her own portfolio. The project included four separate portfolios managed by each of the individual members during an eight-week simulation process. Microsoft Excel was used to keep a record of all the transactions made, while software was chosen as a stock simulator. An allowance of $500,000 was given to each group member to invest. Each portfolio had its own focus in either the pharmaceutical, gaming or technology sectors.

The part of the hypothesis that seems most challenged superficially by this set of circumstances is the underlying assumption that the stock market as a whole will continue to reflect the creation of value by American industry. Despite this down market, this still seems true. It is not as if all of these large-cap companies just stopped selling products (regardless of the analyst talk of reduced consumer spending) there is still value being created

every day. The same factors that cause stock prices to fluctuate can cause the entire market to temporarily trend in one direction or the other. While this experiment might not be the strongest support for the hypothesis, it is certainly not a refutation. The down market does not affect the logic that the best way to capture the market return (however bad it might be) is to hold as much of the market as possible, and that the market will eventually recover. When it does recover, it is still likely that an index fund will be the most reliable to profit from it. It might be best to focus on bond index funds for now, however.

In conclusion, this simulation provided a basic introduction to the investment world. We have accomplished our goals through the research in various investment vehicles and trading strategies. Our understanding of the stock market and its potential to increase the value of an investor's portfolio over time was also improved after the simulation and research experience.

9. ACKNOWLEDGEMENT

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