Stock Exchange Share Analyzer

By Muhammad Ali

Supervised by Dr. Akmal Saeed Khattak

Department of Computer Science,

Quaid-i-Azam University,

Islamabad, Pakistan.

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Abstract

Stock Exchange Share Analyzer is a web based project in which a user can view daily stock data of stock exchange companies and their historic data as well. The data of stock exchange companies are scraping from ksestocks.com website. A user can view different interactive charts to understand the stock market. A basic feature of this application is that a user can view stock exchange company prediction the prediction in terms of profit and lost. A user can view prediction and invest in those companies of stock exchange which are in profit through they can earn more. Stock exchange companies can view also their prediction to improve their company performance.

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Chapter 1

(Software Project Management)

1.1 Introduction

Stock exchange share analyzer (SESA) is a web based application for predicting stock exchange shares value based on its passed history. The user can search, browse companies and their stock. Also they can view interactive graphs for better understanding of stocks. Stock exchange analyzer provide extra feature to register user to view predictions of different companies.

1.1.1 Project Overview

This project is mainly for those individual investors who have no insight to stock financial market. It is difficult to invest stock exchange share for any individual for that purpose this application help for investor to invest stock exchange share. It will be predict stock exchange shares value based on its past history. Any individual interested in investing his/her money in buying shares wish to analyze different shares for investment to maximize his/her margin of profit. It will be provide stock data and history data of stock exchange companies which is gathered from ksestock.com through web crawling, web scraping and web data extraction techniques. It also provide user friendly interface, basic search facilities such as searching or browsing many companies shares. Later this application showing different graphs and analysis of selected shares representing sales, purchase, profit and loss. The graphs describe which company shares are going profit or loss which helps for investors to invest company shares. The main feature of this application is prediction of any firm shares. So this application will help in analyzing and predicting different firm shares before any possible purchase and sale giving edge to individual having no insight to stock exchange market.

1.1.2 Opportunity

It is difficult to invest any individual investor in stock exchange companies shares because they don't have idea which company grow well, also they don't know the share of company is down or up in near future. If the shares of company down, the companies investor lost their huge amount of money. The investor invest stock exchange share on the basis of his knowledge and market position. If we apply modern computing technologies for predicting stock exchange companies in their lost and profit it will help for investor, before he invest in company he will be look for prediction and then he will be invest to any company through this way we can increase the chance to earn more for stock market. These prediction techniques are used in many felid of life some are weather forecaster, cricket, defense and etc.

1.1.3 Goal

The goal of a project is to design an analyzing application for stock exchange shares which will predict stock exchange share value based on its passed history. The prediction will help investor to invest in companies and earn more. Application will provide basic search facilities on stock data and interactive charts.

1.1.4 Objective

The project basic objective is to make analyzer application for investors who have not good knowledge of stock exchange and want to invest in stock exchange companies in order to earn more. This application helps investors through prediction of company's shares, the prediction tells investors that company shares either going up or down. So if the investor wants to investment in company share he first looks the company prediction and then invest in order to earn more from its investment.

1.2 Project Organization

Project organization provide information about which software process model is followed, what are roles of different team members and which tools and techniques are used in this project

1.2.1 Software Process Model

A software process model is a standardized format for planning, organizing and running a development project. There are different models exist and are used. They all have their own advantages and disadvantages. The process model we used for Stock Exchange Share Analyzer (SESA) is rapid application development (RAD).

1.2.1.1 What is RAD Model?

Rad model is Rapid Application Development model. It is a type of incremental model. In RAD model the component or functions are developed in parallel as if they were mini projects. The development is time boxed, delivered and then assembled to working prototype. This can quickly give the customer to something to see and use to provide feedback regarding the delivery and their requirements.

1.2.1.2 Why RAD Model for SESA?

The reason for choosing RAD model is time constraint as we have only one semester to complete project. Also we have cleared requirements of project that we can build it thorough modular approach and discuss it with our project manager. Some module of project are Crawling module in this module we have to crawl daily data and historic data from ksestock.com, Searching module we have a basic search engine for user to company and their stock information, interface module we have to develop basic user interface for

the site, interactive graph module we develop graph of stock exchange companies and their shares and Prediction module in which we are predicting company lost and profit depending on their history shares.

1.2.3 Roles and Responsibilities

There is no team involved in this project because Stock Exchange share Analyzer is an individual project. So I have different roles and responsibilities which are stated as follows.

- Develop a project plan.
- Determine each phase.
- Determine the methodology used in the project.
- Discuss project with supervisor and update project status.
- Gathering project requirements.
- Determine project modules.
- Test module meets the requirements.
- Approve requirements from supervisor.
- Manage all issues that arise in the development of project.
- Deploy project in the real environment

1.2.4 Tools and Techniques

A tool is an item or implement used for specific purpose. A tool can be physical object or a technical object such as software program. Different tools use to complete this project as follows.

- Microsoft word 2013 for documentation development.
- Eclipse (develop SESA).
- XAMPP server for database.
- Tomcat server for JSP pages to run in browser.
- Microsoft Visio and other tools used for diagrams use case diagram, domain model, visual paradigm etc.

A technique is way of carrying out a particular task, especially the execution or performance of an artistic work or a scientific procedure. The object oriented technique used to complete this project. We are using MVC pattern model view controller.

Chapter 2

(Background)

2.1 Introduction

In this chapter we will briefly discussed stock exchange, importance of stock exchange, motivation, indexes, existing systems, and proposed systems.

2.2 Stock Exchange

Stock Exchange (also called stock market or share market) is one important constituent of capital market. Stock Exchange is an organized market for the purchase and sale of industrial and financial security. It is convenient place where trading in securities is conducted in systematic i.e. as per certain rules and regulations.

It performs various functions and offers useful services to investors and borrowing companies. It is an investment intermediary and facilitates economic and industrial development of a country.it is a secondary markets where investors can sell their securities to other investors for cash thus reducing the risk of investment and maintaining liquidity in the system. Stock exchange imposes stringent rules, listing requirements, and statutory requirements that are binding on all listed and trading parties.

2.2.1 Importance of Stock Exchange

Important of stock exchange functions as follows

Providing Liquidity and Marketability to Existing Securities stock exchange is a market place where previously issued securities are traded. Various types of securities are traded here on regular basis. Whenever required, an investor his money through this market into securities and can reconvert this investment into cash. Availability of ready market for sale and purchase of securities increases their marketability and enhances liquidity.

Pricing Securities

A stock exchange provides platform to deal in securities. The forces of demand and supply work freely in the stock exchange. In this way, prices of securities are determined.

Safety of Transactions

Stock exchange is organized markets. They fully protect the interest of investors. Each stock exchange has its own laws and bye-laws. Each member of stock exchange has to follow them and if any member is found violating them, his membership cancelled.

For instance, if any broker working in stock exchange charges more commission than stipulated from any investor or misleads him in any other way, then the management committee of the stock exchange can fine the broker and even his membership can be cancelled. Contributes to Economic Growth

A stock exchange provides liquidity to securities. This gives the investor a double benefit- first, the benefit of the change in the market price of securities can be taken advantage of, and secondly, in case of need for money they can be sold at the existing market price at any time.

These advantages provided by the share market encourage the people to invest their money in securities. In this way, people's money gets invested in industries and economic development becomes possible.

Spreading Equity Cult

Share market collects every type of information (more particularly about their economic condition) in respect of the listed companies. Generally, this information is published or in case of need anybody can get it from the stock exchange free of any cost.

In this way, the stock exchange guides the investors by providing various types of information. Consequently, the number of shareholders in companies is increasing continuously. Thus, the stock exchanges are playing a vital role in ensuring wider ownership.

Providing Scope for Speculation

When securities are purchased with a view to getting profit as a result of change in their market place, it is called speculation. It is allowed or permitted under the provisions of the relevant act. It is accepted that in order to provide liquidity to securities, some scope for speculation must be allowed. The share market provides the facility.

2.2.2 Key Terms

Some of the essential key terms which is used in stock exchange that should know? Some of them are as follows.

Agent

A brokerage firm is said to be an agent when it acts on behalf of the client in buying or purchasing of shares. At no point of time in the entire transaction the agent will own the shares.

Assets

Everything the company owns on its name, including the cash, equipment's, land, technology etc. which shows the total wealth of the company.

Bid

It is a measurement of relationship between stock price of any particular stock and the movement of whole market.

Close price

The final price at which the stock traded on a given particular day. The closing price represents the most up to date valuation of a security until trading commences again on the next trading day.

Securities

A transferable certificate of ownership of investment in products such stocks, bonds, future contracts and options which an individual holds.

Volume

Volume is the number of shares or contracts traded in a security or an entire market during a given period of time. For every buyer, there is a seller, and each transaction contributes to the count of total volume. That is, when buyers and sellers agree to make a transaction at a certain price, it is considered one transaction. If only five transactions occur in a day, the volume for the day is five.

Change

Change can refer to many things in finance. For an options futures contract, it's the difference between the current price and the previous day's settlement price. For an index or average, change is the difference between the current value and the previous day market close. For a stock bound quote, change is the difference between the current price and the last trade of the previous day. For interest rates, change is benchmarked against a major market rate and may only be updated once a quarter.

Low

A security low intraday low trading price. Today's low is the lowest price at which a stock trades over the course of a trading day. Today's low is typically than the opening or closing price.

High

A security's intraday high trading price. Today's high is the highest price at which a stock traded during the course of the day. Todays' high is typically higher than the closing or opening price. More often than not this is higher than the closing price.

Open

The start of trading on a securities exchange. The open on a trading exchange signals the start of an official day for the exchange, and that buy and sell transactions can commence for the business day.

Broker

A broker is an individual or firm that charges a fee or commission for executing buy and sells orders submitted by an investors. The role of a firm when it acts as an agent for a customer and charges the customer a commission for its services.

2.2.3 Indexes in Stock Exchange

Different indexes in Pakistan stock exchange are given below.

What is Index?

An index is a benchmark which is used as a reference marker for traders and portfolio managers. A 10 % may sound good, but if the market index returned 12%, then you did not do very well since you would have just invested in index fund and saved time by not trading frequently. Examples are the Dow jones industrial average and standard and poor's.

KSE 100 Index

Karachi stock exchange 100 index is a stock index acting as a benchmark to compare prices on the Pakistan stock exchange over a period. In determining representative companies to compute the index on, companies with highest market capitalization are selected. However, to ensure full market representative, the company with the highest market capitalization from each sector is also included.

KSE 30 Index

KSE Meezan index is a stock market index on the Pakistan stock exchange in Pakistan of thirty companies that have been screened for Islamic shariah criteria. The index was introduced in 2009 and the base period for Islamic index is June 30, 2008. It was created as a joint effort by the Karachi stock exchange (now Pakistan stock exchange) and Al Meezan investment bank.

The index is calculated using free float market capitalization. At any point in time, the level of the index reflects the fee float market value of selected shariah compliant shares in comparison with the base period. KMI-30 is recomposed semi-annually.

2.2.4 Pakistan Stock Exchange

The Pakistan stock exchange (PSX) is the stock exchange of Pakistan with trading floors in Karachi, Islamabad and Lahore. PSX was establishing on 11 January 2016 after the merger of individual stock exchange of Karachi, Lahore and Islamabad. PSX's origins where laid with the establishment of the Karachi stock exchange in 1927, the Lahore stock exchange in 1970 and the Islamabad stock exchange in 1992 as May 28, 2016 there are 560 companies listed PSX and the market capitalization in $98 billion. The investors on the exchange include 1,886 foreign institutional investors and 883 domestic institutional investors along with about 0.22 million retail investors. There are also about 200 brokerage houses which are members of the PSX as well as 21 asset management companies. PSX is among world's best performing stock markets between 2009 and 2015 it delivered a 26% a year. In December 2016, PSX sold 20% strategic shares to a Chinese consortium for $85 million.

2.3 Proposed System

In our proposed system we build a web based application Stock Exchange Share Analyzer (SESA). In today stock exchange investors sit's and watch trade in stock exchange but they have difficulty to invest in particular company in stock exchange. They normally investment in particular company according to

their knowledge of stock exchange and market performance. They have no computerized system which predict and tell which company shares perform well in future (in terms of lost and profit). So we build an application where investor gets daily stock information of all companies belonging to Pakistan stock exchange (PSX) and their historic data as well. Also the investor can search particular date stock data, company information. The application provide different interactive graph through which investor can analyze which company or sector perform well that day. The most important thing that our application provides for investor is a prediction of company shares on the basis of their previous stock data. The prediction is in terms of lost and profit which should show using different graph through one can easily understand and investment in particular company. After building this application investors can view prediction before they invest in a particular company in order to earn more from their investment.

2.4 Motivation

A prediction or forecast is a statement about an uncertain event. Today technology is changed now they are based on some prediction. For example prediction based tools are WASP (winning and score predictor) is a calculation tool used in cricket to predict scores and possible results of a limited overs match, e.g. one day and twenty 20 matches. We are building stock exchange share analyzer for Pakistan stock exchange, the prediction is on the base of their historic share data. Stock market prediction is the act of trying to determine the future value of a company or other financial instrument traded on an exchange. The successful prediction of a stock future price could yield significant profit. So we are building such tool which predict stock company share on the bases of historic share data. This will help for investor who wants to invest in stock exchange, they will first look the prediction before investment in exchange company. This will increase their profit percentage and lost will decrease. Also the companies can improve their performance from this prediction in order to get more investment to their company.

2.5 Existing Systems

Some of existed system related to stock exchange is as follows.

2.5.1 MetaStock

MetaStock has invested heavily with the highly acclaimed MetaStock XV, the edge they have is global market access, excellent news services, expert advisors and system development, with a huge range of indicators and powerful scanning. The edge this year is the beefing up of forecaster system and improved back testing, these are serious move by the MetaStock.

2.5.2 TradeStation

TradeStation has a huge feature set most areas, but it truly excels with the broker integration. Trading from charts and live P&L portfolio management and it is free if you have a brokerage account.

2.5.3 TradeCast

TradeCast is a new era in the world of personal stock trading. The software has certain features such as fast order execution, user friendly interface and real time rates.

2.5.4 TC2000

Worden brothers TC2000 is joint 1st position with an organizational shakeup that has yielded continual innovation and new powerful features such as trading from charts broker integration, trading options and advanced options strategies that are elegantly integrated and a new silent video feature that has to be seen to be believed.

2.6 Stock Charts websites

Performing technical analysis is no easy task for any investor unless conducted with a good stock charting service.

2.6.1 Trading View

http://TradingView.com offers clean and flexible way of looking at stock charts. These stock are community driven to provide analysis in the form of optional annotations on each chart. Community aside, Trading View also supports extensively detailed charts, not to mention better pricing than stockCharts.com for those who access to advance featured and or real time data.

2.6.2 StockCharts.com

http://Stockcharts.com takes a high sport for its simplicity, cleanliness, and overall scalability. It is the most widely utilized free stock charting site for financial bloggers alongside tradingView and is also the primary charting service used here for our weekly market recaps. The site offers a wide variety of different free tools and ways to analyze any stock desired. For investors who want historical charting and further analysis they can upgrade to a paid subscription.

2.6.3 Yahoo Finance

http://yahoofinace.com provides a similar charting service to Google finance just less the extra bullet points highlighting key dates. Yahoo's charting services is clear, easy to use and great for regular investor.

2.6.4 Google Finance

Google finance provides a very clean charting solution for investors. Two of its nice features include the ability to see what key events occurred on major days for the stock being analyzed and the ability to

easily look back in time and analyze a stock's historical performance. Comparing multiple charts or indices by having them overlap is also a breeze.

2.6.5 FINVIZ.com

Finviz charts are simple, easy to read, and include technical analysis overlays on them by default which is something the order chart provides do not do, making it unique.

Chapter 3

(Software Requirement Specification)

3.1 Introduction

The Software Requirement Specification will provide detailed description of the Stock Exchange Share Analyzer (SESA). This SRS will provide base of the project. From this it will design, constructed and tested. In this chapter we will discuss scope, functional requirements, definition acronyms and abbreviation, user characteristic, use cases, use case diagram.

3.2 Project Scope

Stock Exchange Share Analyzer (SESA) main function is to get stock data from different websites save in file, database or disk. User can view this daily and historic data. SESA will provide some interactive graph to the user for the better understanding of stock share data. A basic search facility will provide user to search different companies share. SESA will provide prediction of different company's shares in terms of lost and profit. The register user can view these prediction and they can invest according to that prediction in order to earn more from it. SESA will display these predictions in graph or some other technique.

3.3 Definitions, Acronyms and Abbreviations

Some of definitions, acronyms and abbreviations used in this system are given in Table 2.1 which is shown below.

SESA	Stock Exchange Share Analyzer
GUI	Graphical user interface
OS	Operating System
SRS	Software Requirement Specification
SQL	Structure Query Language
SEC	Stock Exchange Companies
PSX	Pakistan Stock Exchange
KSE	Karachi Stock Exchange
UC	Use Case

Table 3. 1 Definition Acronyms and Abbreviation

The users of this web application are non-register user and register user. We assume that both have basic internet browsing and computer knowledge.

3.3.1 Non Register User

- They can view daily stock data of stock exchange companies.
- They can view historic data of stock exchange companies.
- They can search different companies, Sectors and Symbols.
- They can also view different interactive charts and graph related to stock exchange companies, sectors, Stock Data etc.

3.3.2 Register User

- Register user can do all those work which can do non-register user.
- They can view prediction of different companies and then invest according to that prediction to earn more from their investment.
- They can delete his account.
- They can view his personal information.
- They can edit his personal information.
- They can subscribe alerts of stock exchange companies.
- They can view notification.

3.4 Project Requirements

Project requirement are condition or tasks that must be completed to ensure the success or completion of the project. They provide a clear picture of the work that needs to be done. They are meant to align projects resources with the objective of the organization.

3.4.1 Non Functional Requirements

- We have one semester to complete SESA.
- Interface of SESA is a user friendly.

3.4.2 Functional Requirements

The functional requirement specification documents the operations and activities that a system must be able to perform.

3.4.2.1 Non Registered Users

- They can view daily stock data of stock exchange companies.
- They view historical data of stock exchange companies.
- They view different interactive graphs and charts.
- They register themselves to SESA.

- They can search different companies, sectors and Symbols.

3.4.2.2 Register Users

- Register users login to the system.
- They can view daily stock data of SEC.
- They can view historical data of SEC.
- They can view different companies' prediction.
- They can search different companies, sectors.
- They can delete his account.
- They can view his account information.
- They can edit his account information.

3.5 System Requirements

- A system can crawl or extract stock exchange company's data from stock exchange websites and save into database.
- System will provide prediction of different companies on base of their historical stock data.
- System will generate different graphs for user for their better understanding of stock exchange shares.
- System will send notification to the register user.

3.6 Interfaces

Interfaces of the SESA include software interface, hardware interface and user interface.

3.6.1 Software Interfaces

- **Client**

  Web browser (any), operating system (any)
- **Web Server**

  Apache, XAMPP
- **Database Server**

  MySQL
- **Development End**

  Eclipse, HTML, CSS, JQuery, JavaScript, Bootstrap, SQL, JSP, java, Ajax

3.6.2 Hardware Interfaces

The hardware interfaces required to run application on a particular hardware. The application can be run one of the following.

- Desktop
- Laptop
- Smart Phone

3.6.3 User Interfaces

User interface of Stock Exchange Share Analyzer is user friendly. The color scheme of the application is friendly and attractive. All the user input is validating, the input validation messages are user friendly.

3.7 Use Case Diagram

A use case diagram is a graphic depiction of the interactions among the elements of a system. A use case is a methodology used in system analysis to identify, clarify, and organize system requirements. Stock Exchange Share Analyzer use case diagram as shown Figure 3.1.

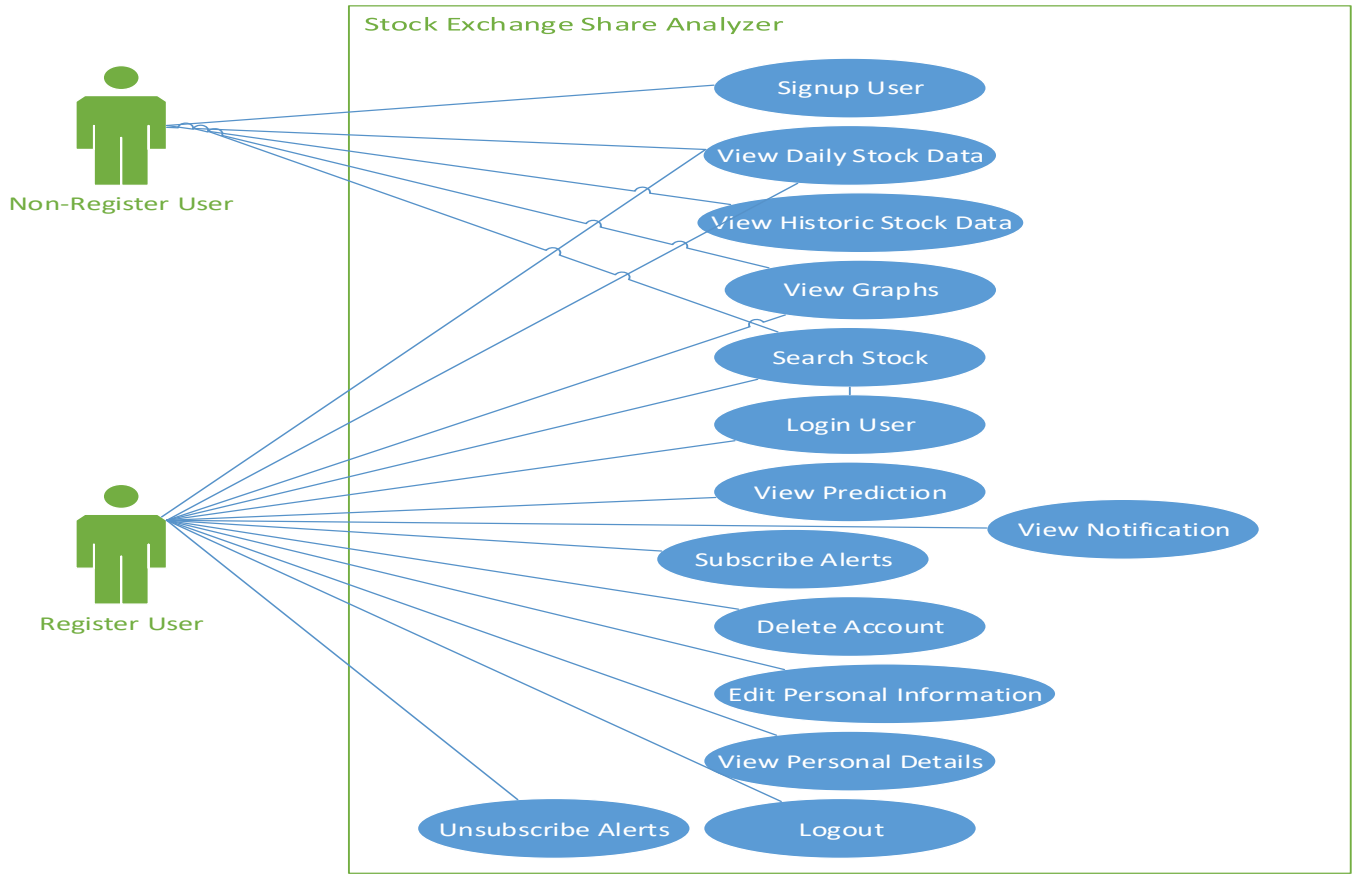

Figure 3. 1 Use case Diagram

3.8 Use Case Description

The use case description is a written account of the sequence of steps performed by an analyst to accomplish a complete business transaction. It's a way of understanding system requirements.

3.8.1 UC1: Login User

Primary Actor: Register User

Stakeholder and Interests: user wants to login to the system and perform its task.

Pre-Condition: User must have an account.

Post Condition: user successfully login to the system and perform its task.

Basic Flow (Success Scenario)

1. User select login option.
2. System request user to enter username and password.
3. User enters his username and password.
4. System validates username and password.
5. User login to the system.

Alternative Flow (Failure Scenario)

1a) System fails at any time. In this case system will roll back the process.

3a) User enters his username or password wrong. System give login failed message.

4a) User submits empty fields System prompt input validation messages.

3.8.2 UC2: Signup User

Primary Actor: Non- Register User.

Stakeholder and Interests: User wanted to sign up in a system.

Pre-Condition: user does not have account in the system.

Post Condition: user successfully signs up to the system.

Basic Flow (Success Scenario):

1. User select signup option.
2. System request user to enter relevant data such as (Full name, username, password, phone no, address, email and his type).
3. User enters relevant data to the fields.
4. System validates user data in order to complete his registration process.
5. System creates the account to the user.

Alternative Flow (Failure Scenario):

1a) System fails at any time. In this case system will roll back the process.

4a) Invalid data such that user name or email is not unique that are already exist in the system. System prompts input validation messages.

4b) User submit empty field of data which is required. The system prompt input validation messages

3.8.3 UC3: View Daily Stock Data

Primary Actor: Register User, Non-Register User

Stakeholder and Interests: user wanted to view daily data of stock exchange.

Pre-Condition: Interfaces are properly display.

Post Condition: user successfully views the daily stock data.

Basic Flow (Success Scenario):

1. User selects the daily view stock data option.
2. System gets the latest stock data.
3. System displays the latest stock data of stock exchange companies.

Alternative Flow (Failure Scenario):

1. a) System fail at any time. In this case system will roll back the process.
2. a) System not gets any data.

3.8.4 UC4: View Historic Stock Data

Primary Actor: Register User, Non Register user

Stakeholder and Interests: user wanted to view historic data of stock exchange companies.

Pre-Condition: interface should be display to the user.

Post Condition: User successfully view historic stock data of Stock Exchange Company.

Basic Flow (Success Scenario):

1 User Select historic stock data option.

2 System request user to select date.

3 User select date form calendar.

4 System gets the data of that date.

5 System display stock data of that particular date.

Alternative Flow (Failure Scenario):

1a) System fails at any time. In this case system will roll back the process.

4a) System not finds any data of that date.

5a) System has nothing to display.

3.8.5 UC5: View Graphs

Primary Actor: Register User and Non-Register User

Stakeholder and Interests: user wanted to see interactive charts and graphs of different to understand the stock exchange.

Pre-Condition: interface should be display to the user.

Post Condition: user successfully views the graphs.

Basic Flow (Success Scenario):

1. User selects the graph option.
2. User selects particular graph option.
3. System display graph.

Alternative Flow (Failure Scenario):

1. (a) System fails at any time. In this case system will roll back the process.

3.8.6 UC6: Search Stock

Primary Actor: Register User, Non-Register User

Stakeholder and Interests: user want to search.

Pre-Condition: interface should be display to the user.

Post Condition: User search item success fully.

Basic Flow (Success Scenario):

1. User Select search option.
2. System request user to enter search key word and select category which he want to search.
3. User enters keyword.
4. User select particular category.
5. The system matches that keyword in the database and display results.

Alternative Flow (Failure Scenario):

1a) System fails at any time. In this case system will roll back the process.

3a) user enters invalid character like (.

3a) user submits empty filed then system prompt the message.

4a) user does not select any category.

5a) System match the keyword but nothing matched, so results are empty.

3.8.7 UC7: View Prediction

Primary Actor: Register User

Stakeholder and Interests: User wanted to view which company of stock exchange raised.

Pre-Condition: User must login to the system.

Post Condition: user successfully views the prediction of a company.

Basic Flow (Success Scenario):

1. User select prediction option.
2. System request user to select particular company.
3. User selects particular company.
4. The system displays the prediction of that company.

Alternative Flow (Failure Scenario):

1a) System fails at any time. In this case system will roll back the process.

3a) user select company but he/she did want to see that company prediction.

3b) user wanted to see company prediction which is not in list.

4a) System display wrong company prediction.

3.8.8 UC8: Delete Account

Primary Actor: Register User

Stakeholder and Interests: User wanted to delete his account from the system.

Pre-Condition: User must login to the system.

Post Condition: User successfully delete his account.

Basic Flow (Success Scenario):

1. User select delete option.
2. System request user to enter his password.
3. User enters his password.
4. System validate user password.
5. System deletes user account.

Alternative Flow (Failure Scenario):

1a) System fails at any time. In this case system will roll back the process.

3a) User enter wrong password. System prompt messages password does not match.

4a) User submit empty field. System prompts validation messages.

3.8.9 UC9: Edit Personal Information

Primary Actor: Register User

Stakeholder and Interests: User wanted to edit his personal information.

Pre-Condition: User must login to the system.

Post Condition: User successfully edits his account information.

Basic Flow (Success Scenario):

1. User select edit personal information.
2. System request user to enter data such as (name, email, address).
3. User enters his information which he wants to edit.
4. System validates user data.
5. System updates user information.

Alternative Flow (Failure Scenario):

1a) System fails at any time. In this case system will roll back the process.

3a) user submits data field empty or improper length. So system prompts validation messages.

5a) System does not update user information.

3.8.10 UC10: View Personal Details

Primary Actor: Register User

Stakeholder and Interests: User wanted to view his personal information.

Pre-Condition: User must login to the system.

Post Condition: user successfully views his personal information.

Basic Flow (Success Scenario):

1. User select view personal information.
2. System gets the user personal information.
3. System display user personal information.

Alternative Flow (Failure Scenario):

1a) System fails at any time. In this case system will roll back the process.

3.8.11 UC11: Logout User

Primary Actor: Register User

Stakeholder and Interests: User wanted to logout.

Pre-Condition: User must login to the system.

Post Condition: User successfully logout from the system.

Basic Flow (Success Scenario):

1. User select logout option.
2. The user cannot access non-public pages. User success fully logout.

Alternative Flow (Failure Scenario):

1a) System fails at any time. In this case system will roll back the process.

3.8.12 UC11: View Notification

Primary Actor: Register User

Stakeholder and Interests: User wanted to view his notification.

Pre-Condition: User must login to the system.

Post Condition: User successfully view's the notification.

Basic Flow (Success Scenario):

1. User select notification option.
2. View Particular notification which he wants.
3. User successfully views the notification.

Alternative Flow (Failure Scenario):

1a) System fails at any time. In this case system will roll back the process.

2.9.13 UC11: Subscribe Alerts

Primary Actor: Register User

Stakeholder and Interests: User wants to subscribe alerts.

Pre-Condition: User must login to the system.

Post Condition: User successfully subscribes the alerts.

Basic Flow (Success Scenario):

1. User select subscribe alerts option.
2. User selects particular company which he wants to subscribe alerts.
3. User successfully subscribes alerts of that company.

Alternative Flow (Failure Scenario):

1a) System fails at any time. In this case system will roll back the process.

2.9.14 UC11: Unsubscribe Alerts

Primary Actor: Register User

Stakeholder and Interests: User wants to unsubscribe alerts.

Pre-Condition: User must login to the system.

Post Condition: User successfully unsubscribes the alerts.

Basic Flow (Success Scenario):

1. User select unsubscribe alerts option.
2. User selects particular company which he wants to unsubscribe alerts.
3. User successfully unsubscribes alerts of that company.

Alternative Flow (Failure Scenario):

1a) System fails at any time. In this case system will roll back the process.

3.9 System Sequence Diagram (SSD)

A system sequence diagram (SSD) is a sequence diagram that shows, for a particular scenario of a use case, the events that external actors generate their order, and possible inter-system events. SSD are visual summaries of the individual use cases.

3.9.1 Login User

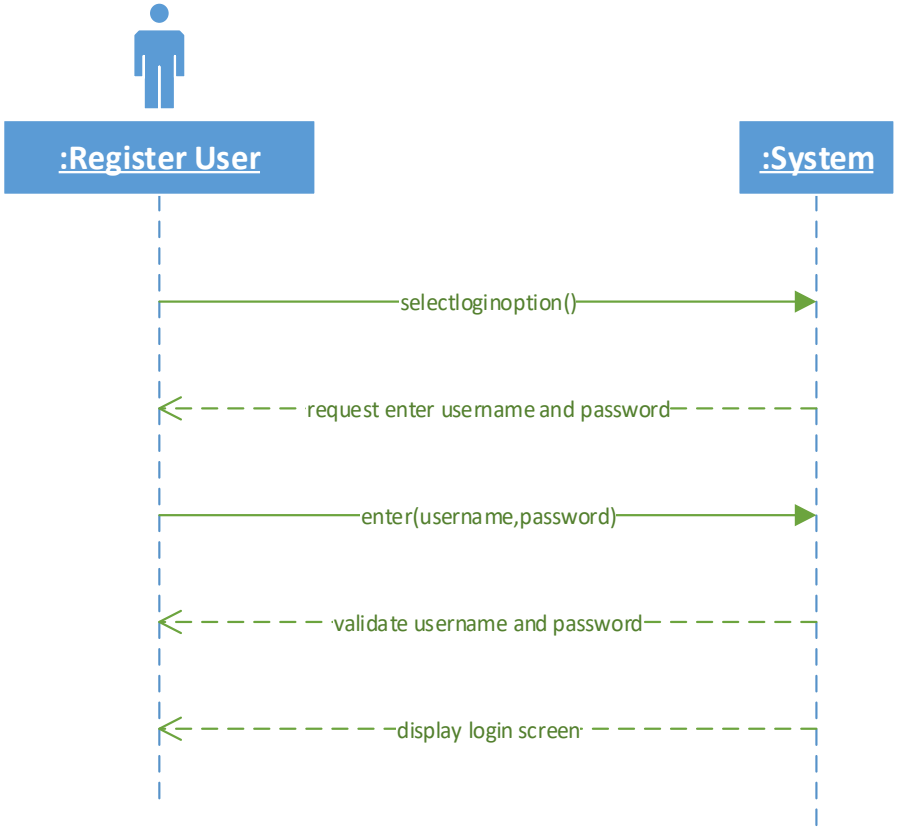

Figure 3. 2 Login User SSD

3.9.2 Signup User

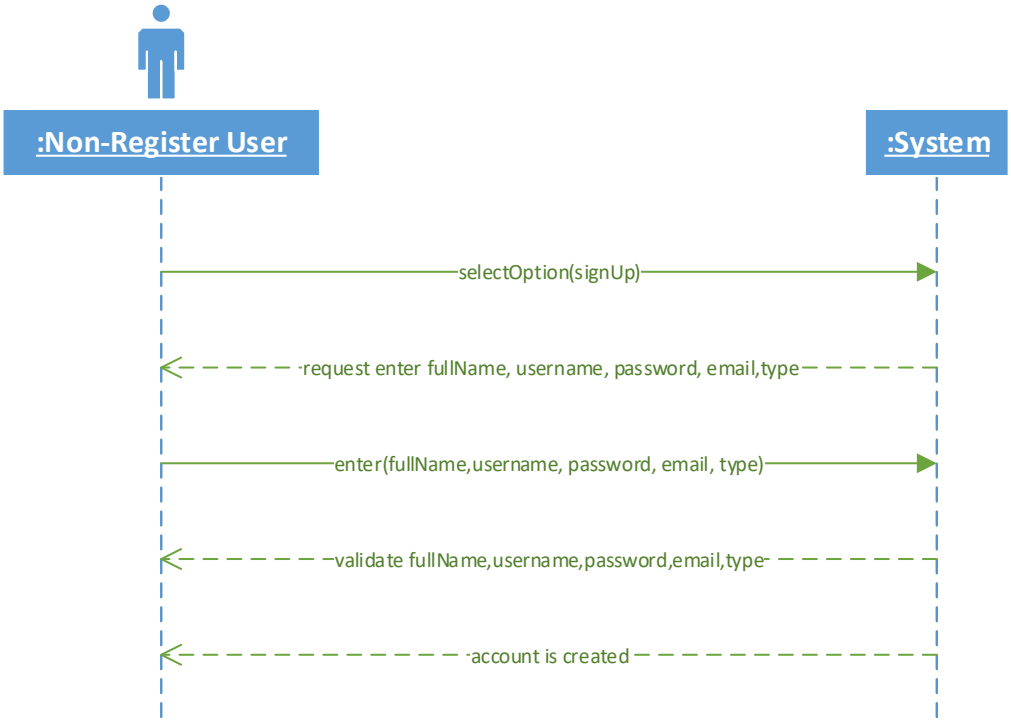

Figure 3. 3 Sign up User SSD

3.9.3 View Daily Stock

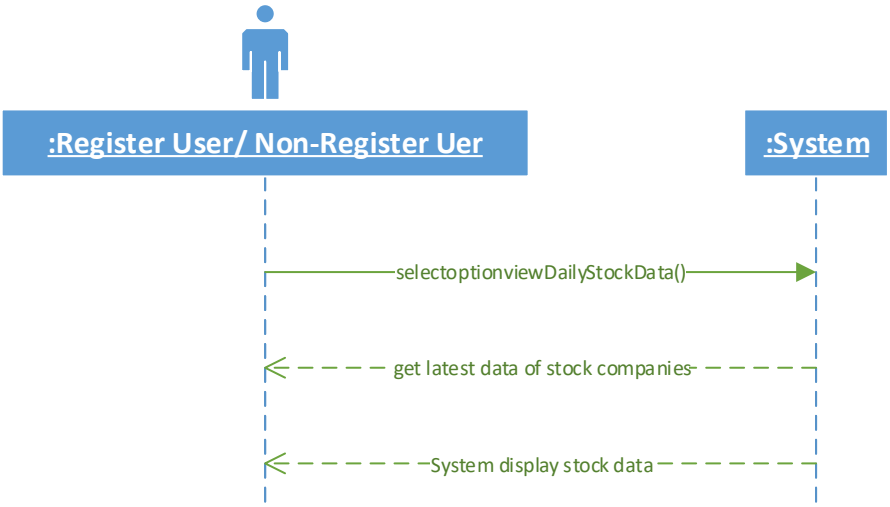

Figure 3. 4 View Daily Stock Data SSD

3.9.4 View Historic Stock

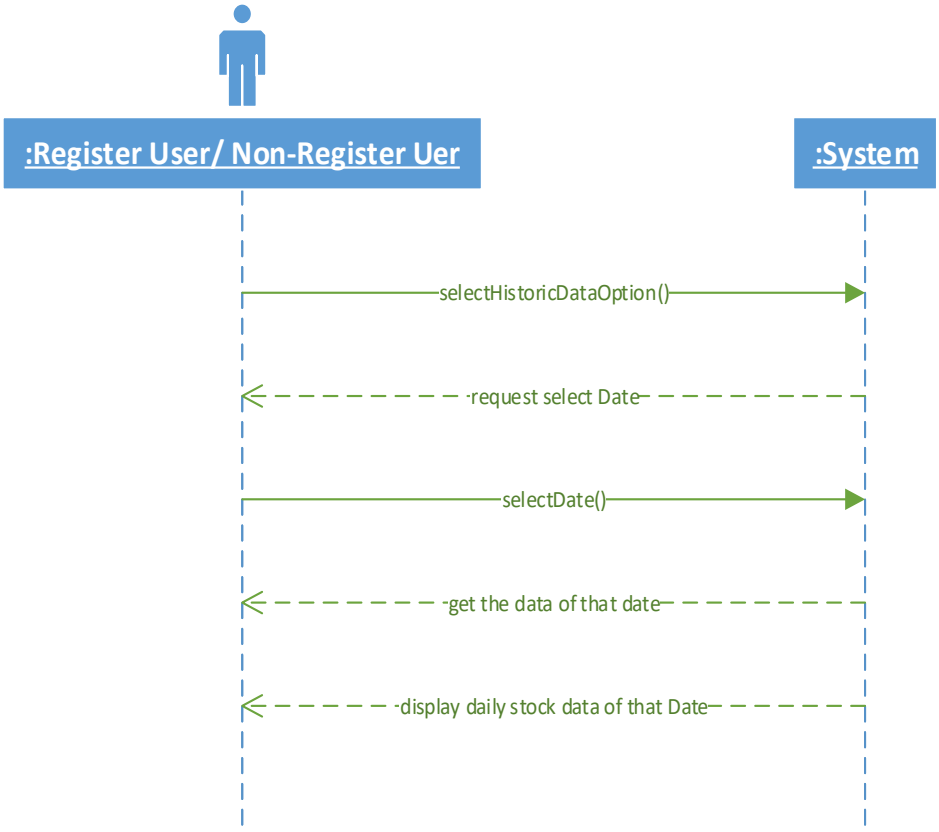

Figure 3. 5 View Historic Stock Data SSD

3.9.5 View Graphs

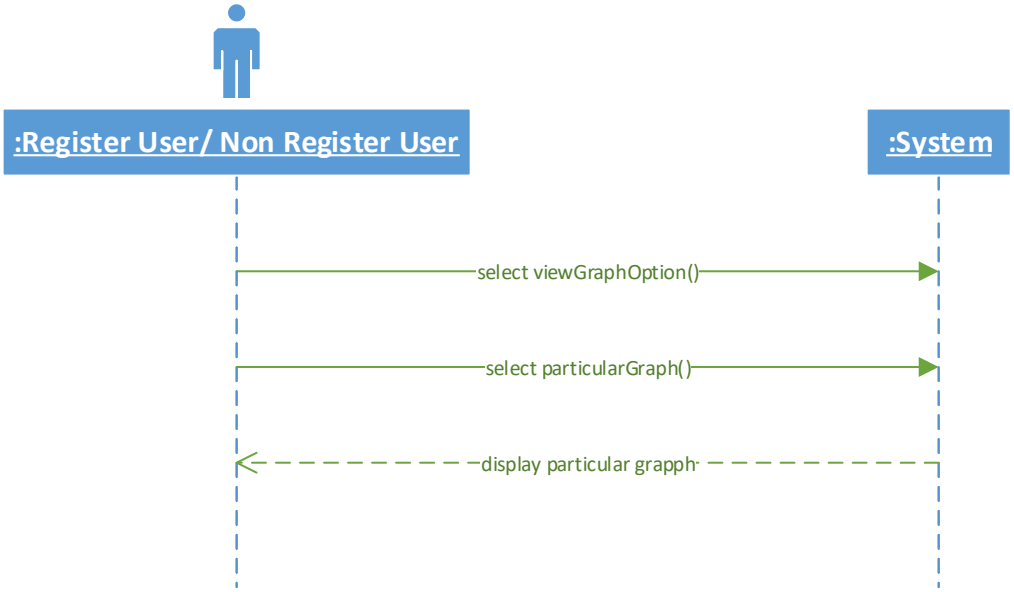

Figure 3. 6 View Graphs SSD

3.9.6 Search Stock

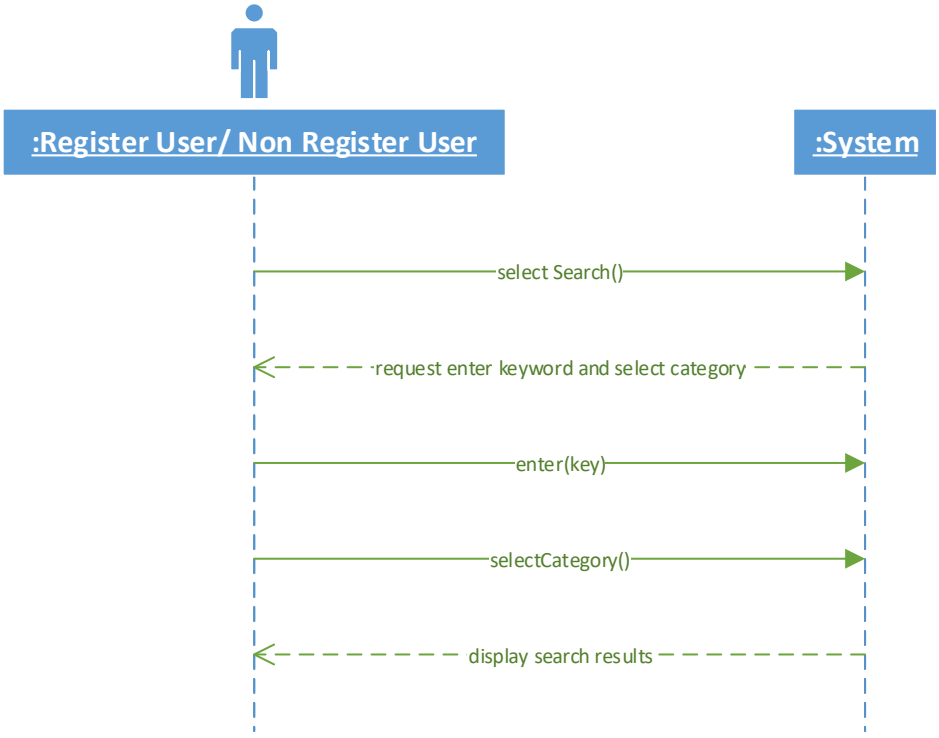

Figure 3. 7 Search Stock SSD

3.9.7 View Prediction

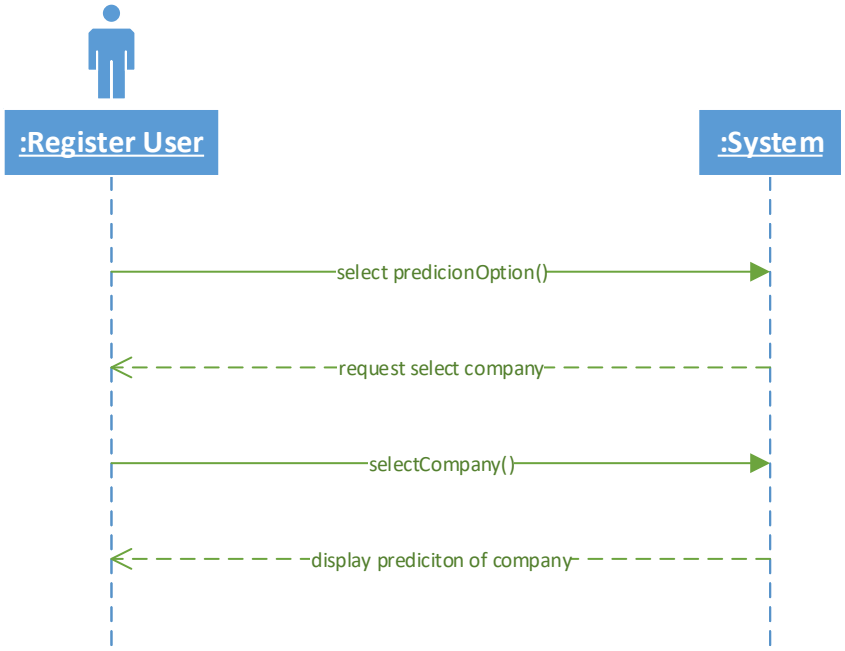

Figure 3. 8 View Prediction SSD

3.9.8 Delete Account

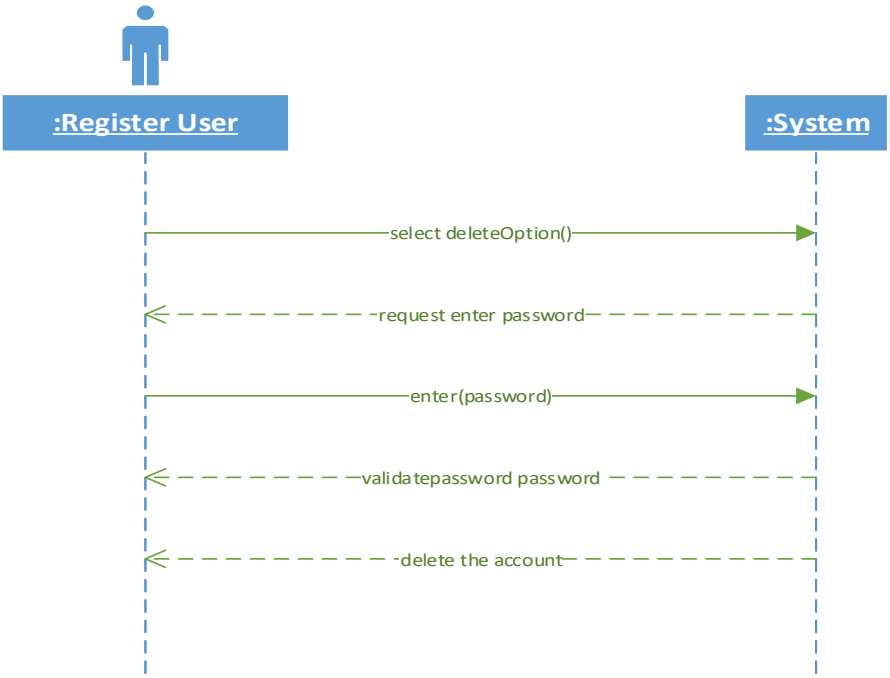

Figure 3. 9 Delete Account SSD

3.9.9 Edit Personal Information

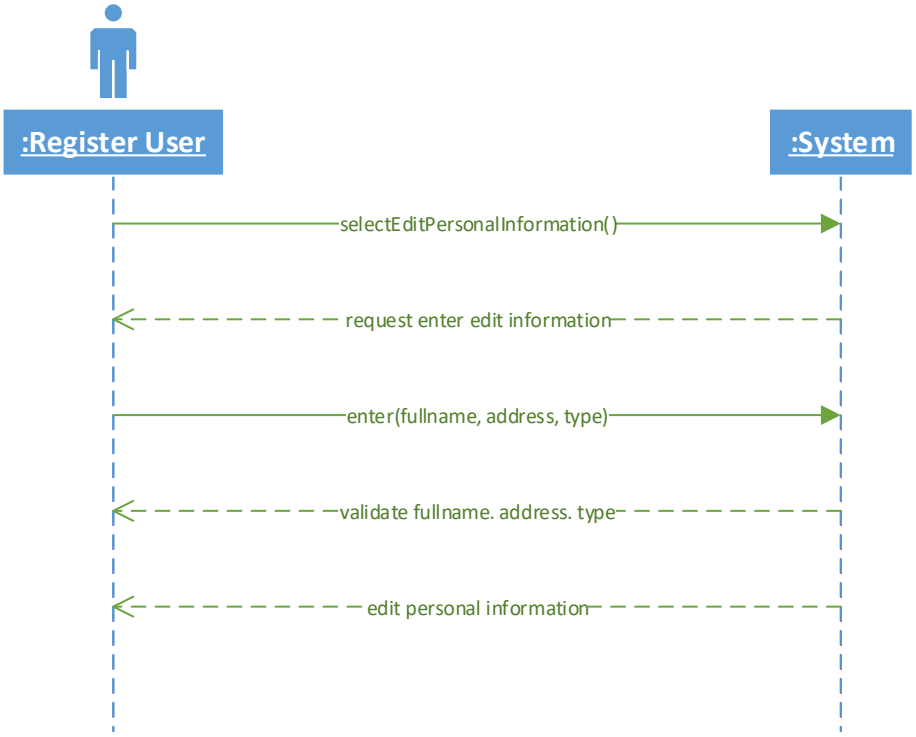

Figure 3. 10 Edit Personal Information SSD

3.9.10 View Personal Information

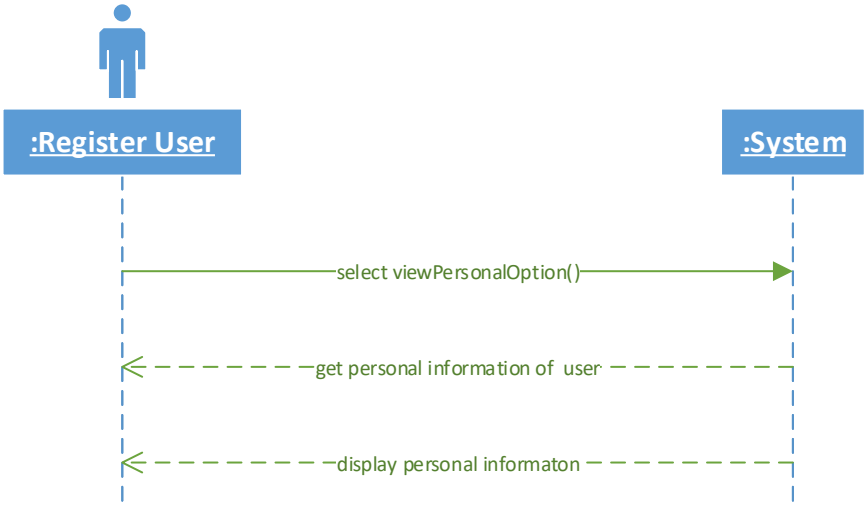

Figure 3. 11 View Personal Details SSD

3.9.11 View Notification

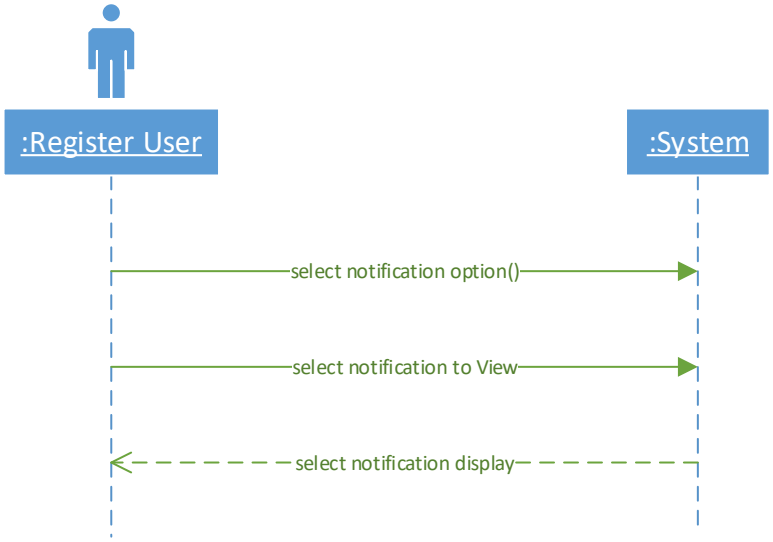

Figure 3. 12 View Notification SSD

3.9.12 Subscribe Alerts

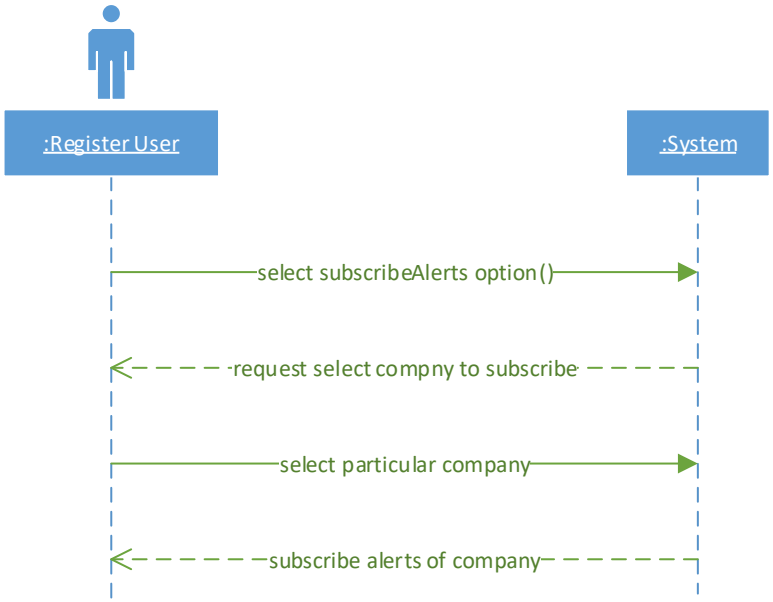

Figure 3. 13 Subscribe Alerts

3.9.13 Unsubscribe Alerts

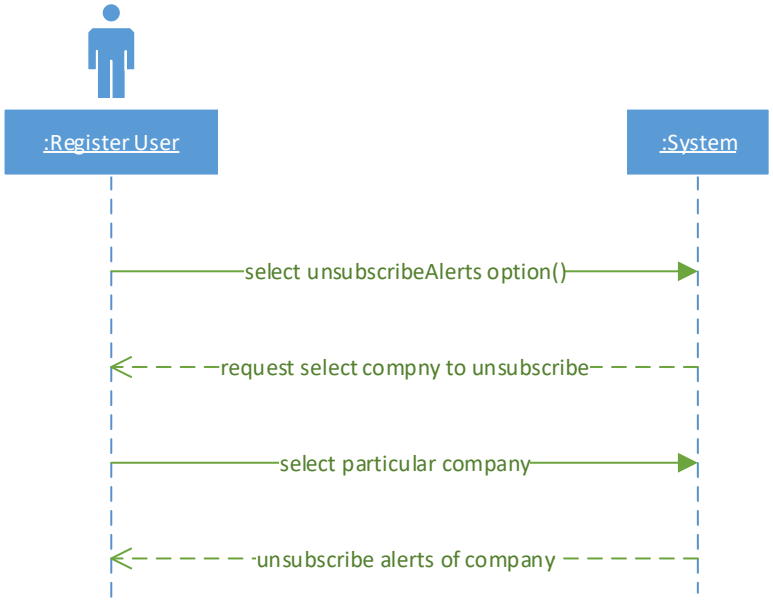

Figure 3. 14 Unsubscribe Alerts

3.10 Domain Model

Domain model is a representation of real world concepts, not software concepts. The model can then be used to solve problems related to that domain.

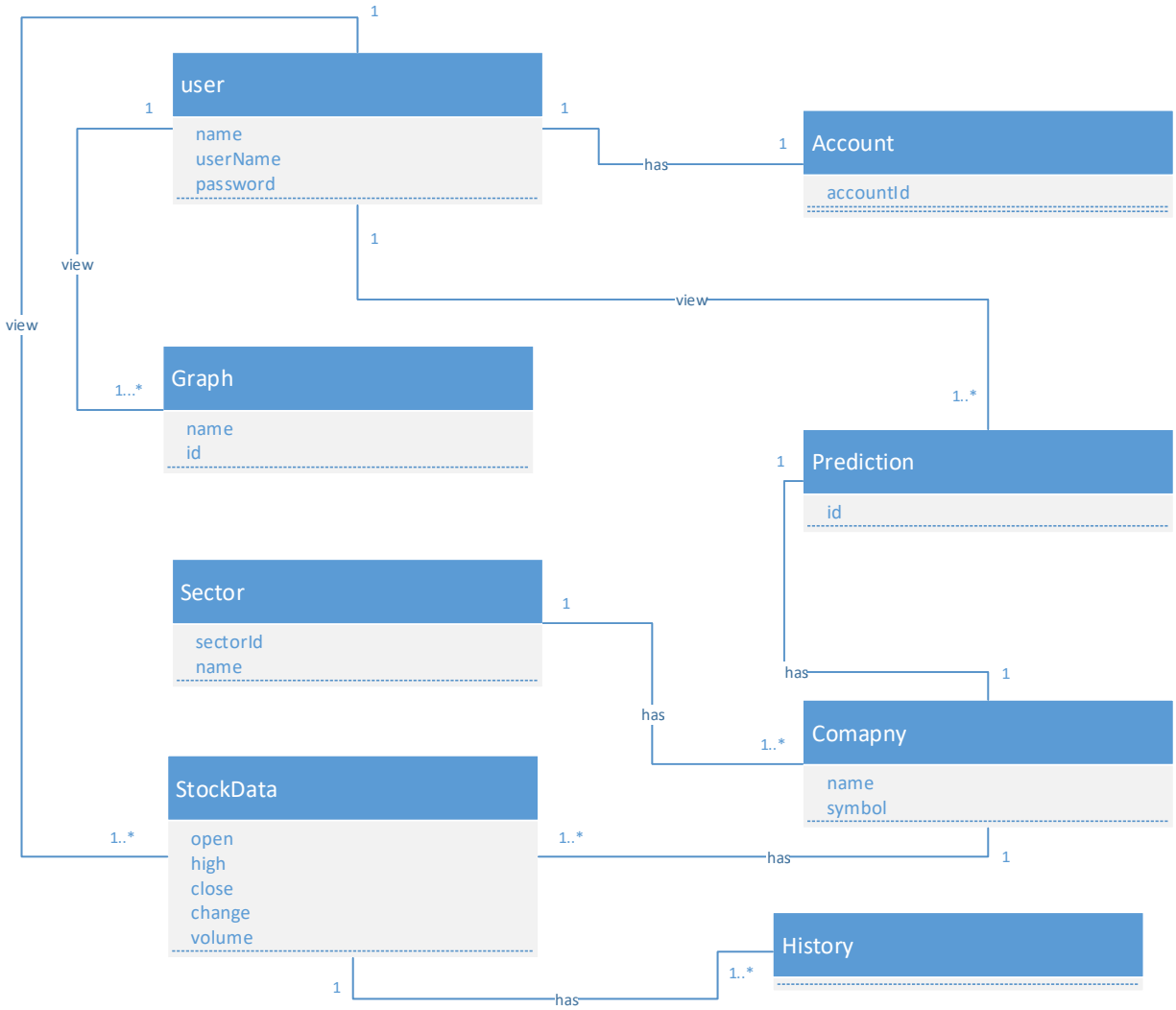

Figure 3. 15 Domain Model

3.11 Entity Relationship Diagram (ERD)

An entity relationship diagram (ERD) is a data modeling technique that graphically illustrates an information systems entities and the relationship between those entities.

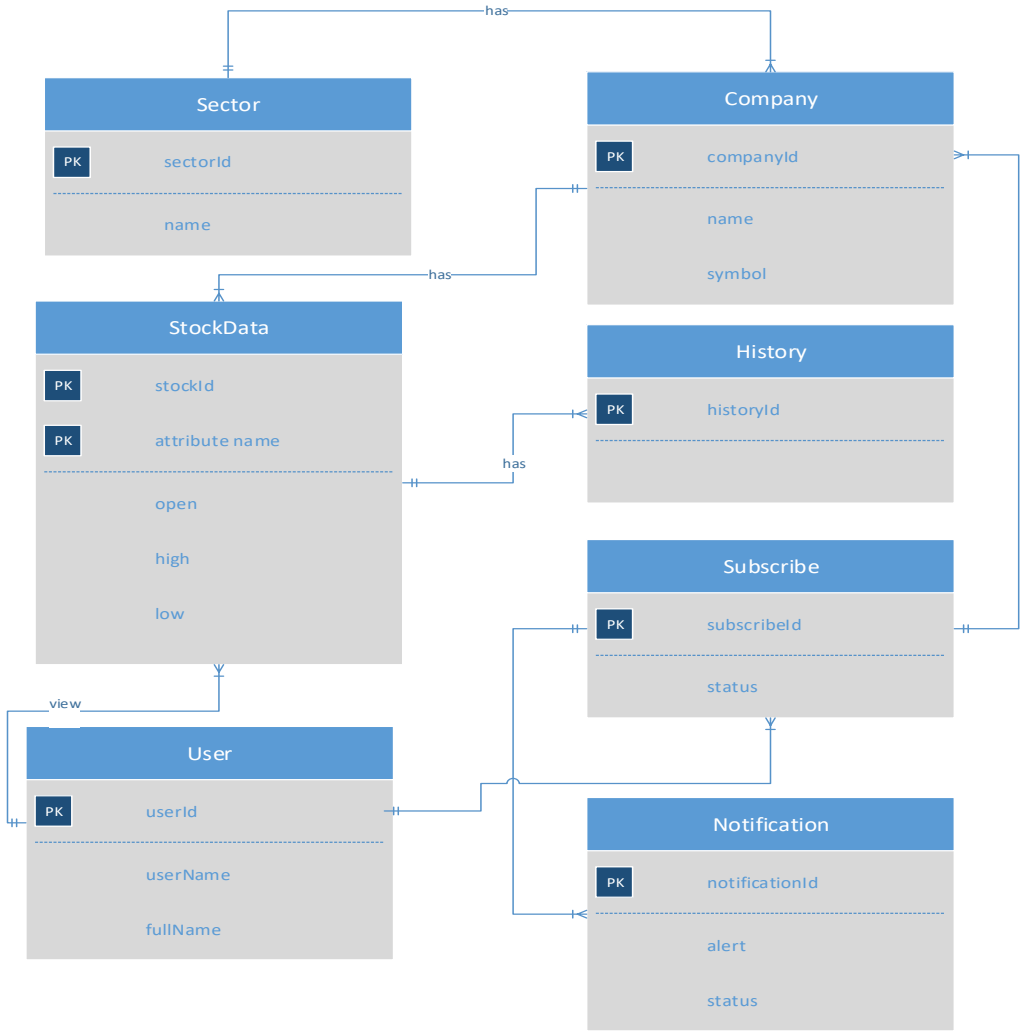

Figure 3. 16 ERD Diagram

Chapter 4

(System Design)

4.1 Introduction

This chapter describes the detailed design of SESA. In detailed design we will discuss some diagrams like architecture, sequence diagrams, class diagrams and database of the system to clear the requirements further.

4.2 Software Architecture Design

Software application architecture is the process of defining a structured solution that meets all of the technical and operational requirements, while optimizing common quality attributes such as performance, security, and manageability. It involves a series of decisions based on a wide range of factors, and each of these decisions can have considerable impact on the quality, performance, maintainability, and overall success of the application.

4.2.1 Chosen System Architecture

The Stock exchange share analyzer is a web based application. We chose three tier architecture for this application.

4.2.2 Three-tier Architecture

Three tier architecture is software architecture that can be separated into the presentation tier, functional/process logic tier, and data storage. Each tier carries out separate tasks, and the layer can be developed, maintained and changed separately, based on the assumption of an unchanging [backwards compatibility] interface between individual layers.

The Presentation tier

The presentation tier or user interface tier is responsible for interactions with operation, information gathering, as well as displaying it in a legible and user friendly format.

The business Logic tier

The business logic tier plays the role of transferring information between the website and the data tier, including integration of the required decision logic or transformation of transferred data.

The data storage tier

The data storage tier implements persistent data storage, with a relational database [RDBMS] or another type of database.

4.4 Architecture Diagram

A graphical representation of the concepts, their principles, elements and components that are part of architecture.

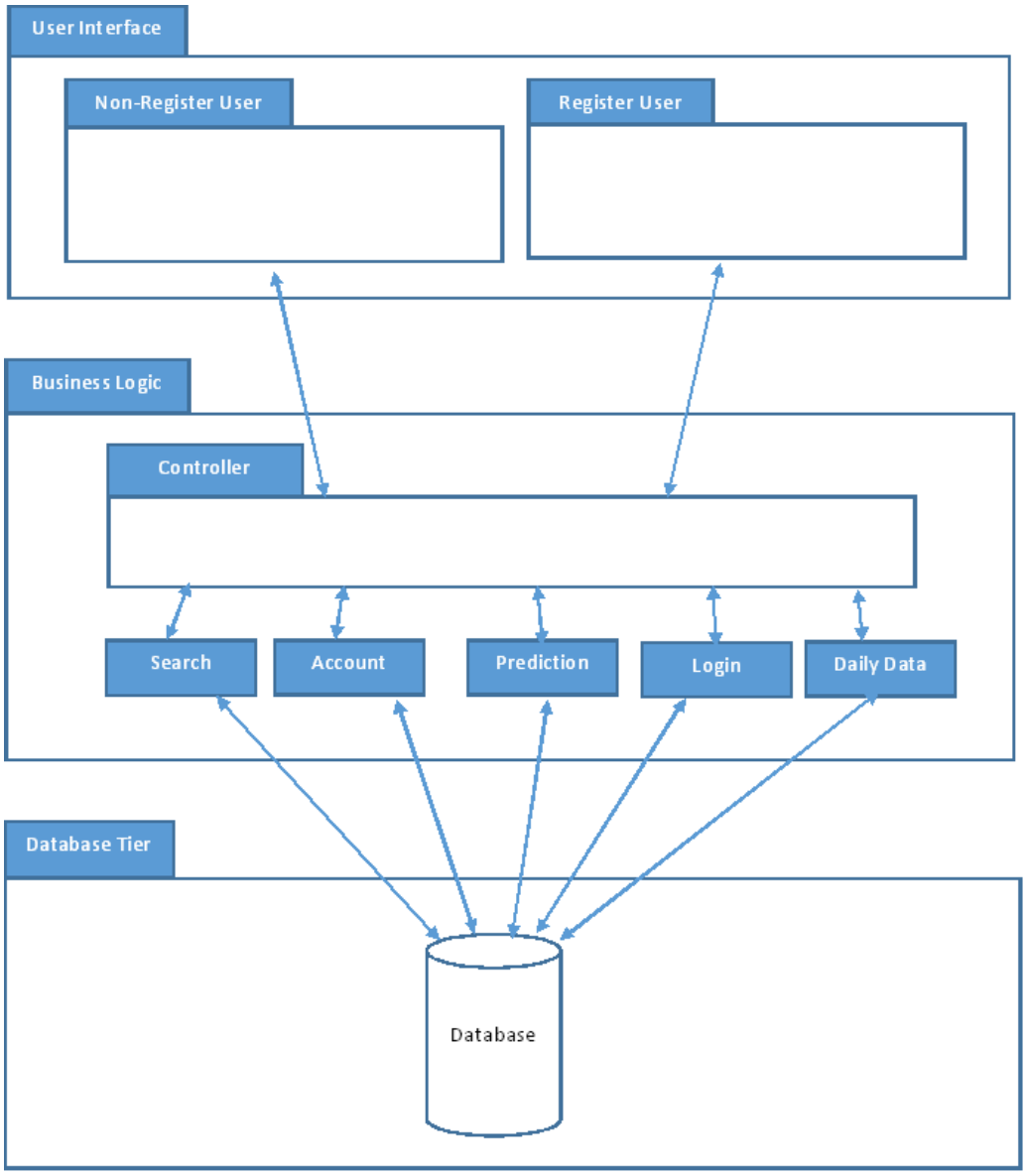

Figure 4. 17 Architecture Diagram

4.4 Sequence Diagrams (SD)

A sequence diagram is an interaction diagram that shows how objects operate with one another and in what order. It is focus on life line of an object.

4.4.1 Login User

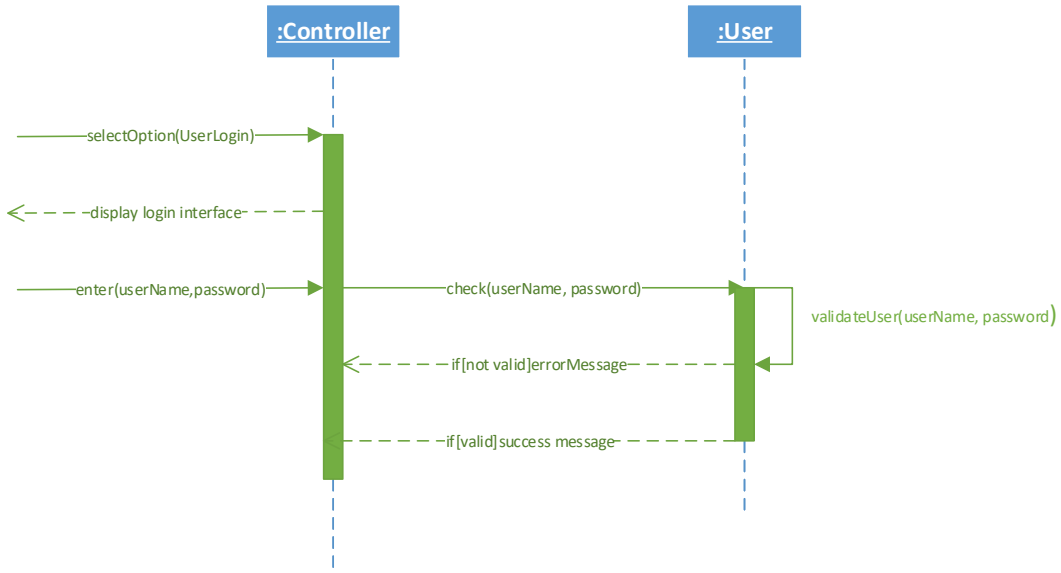

Figure 4. 18 Login User SD

4.4.2 Sign up User

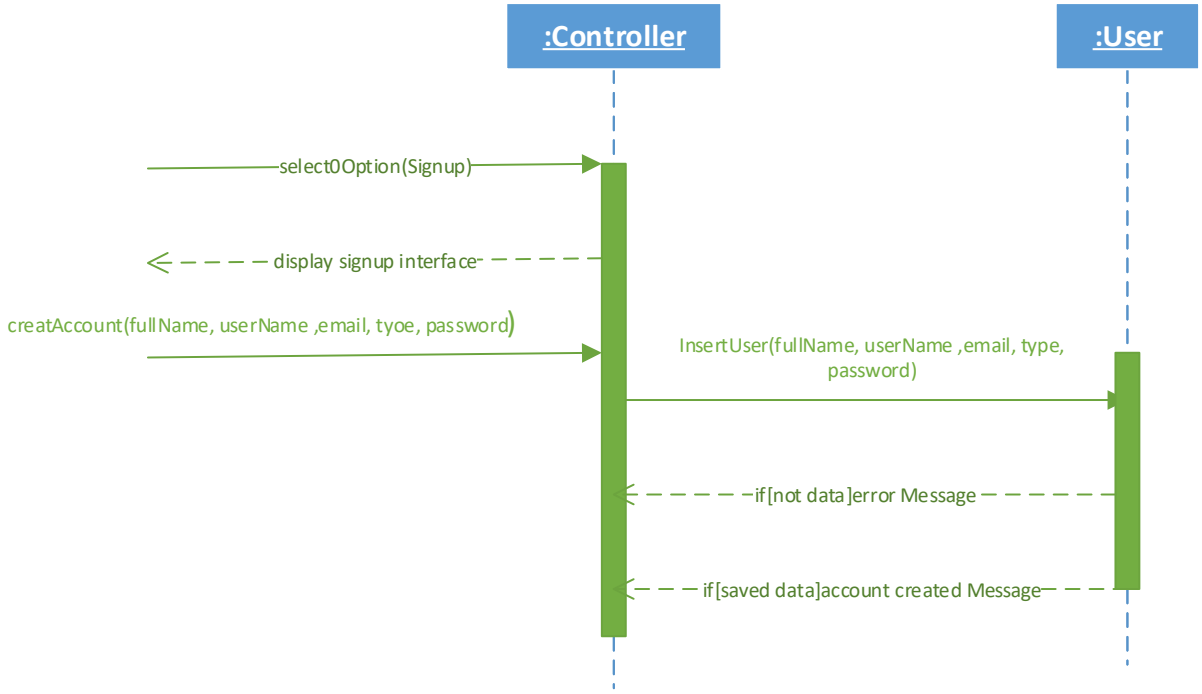

Figure 4. 19 Sign Up User

4.4.4 View Daily Stock Data

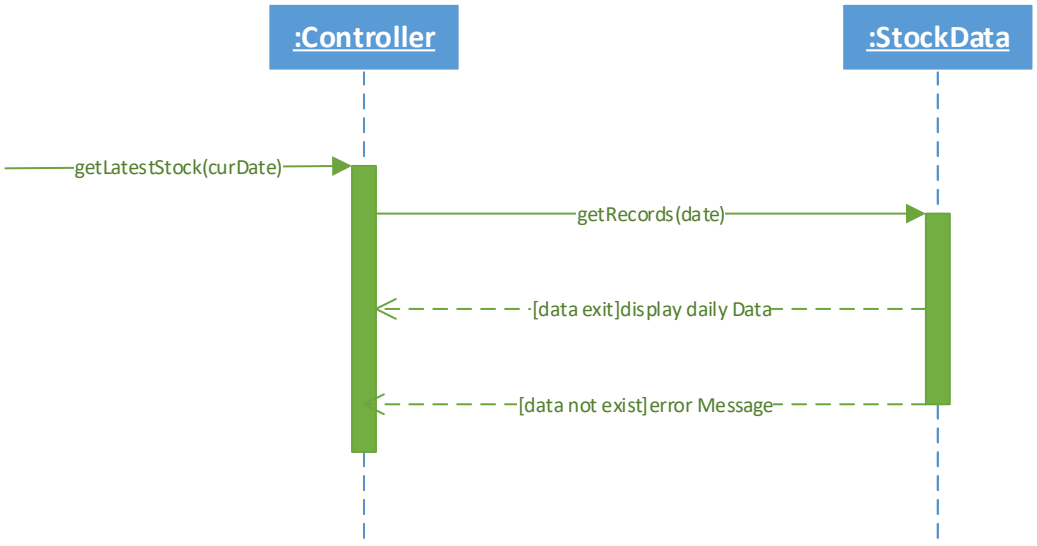

Figure 4. 20 View Daily Stock Data

4.4.4 View Historic Stock Data

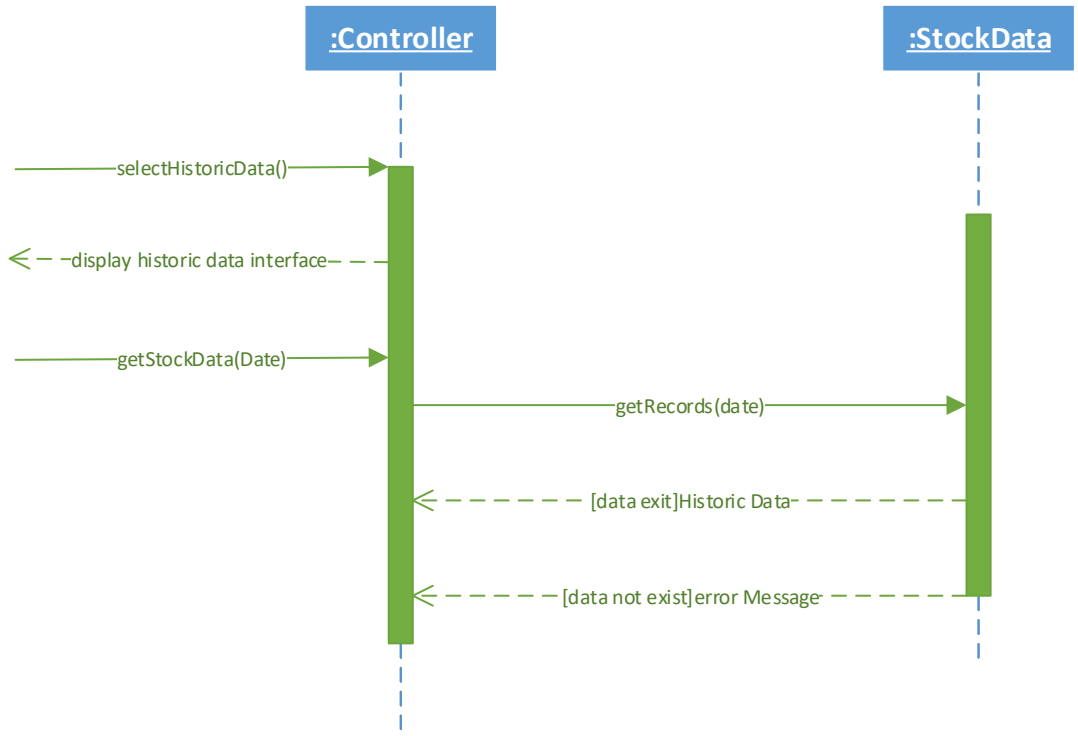

Figure 4. 21 View Historic Stock Data SD

4.4.5 View Graphs

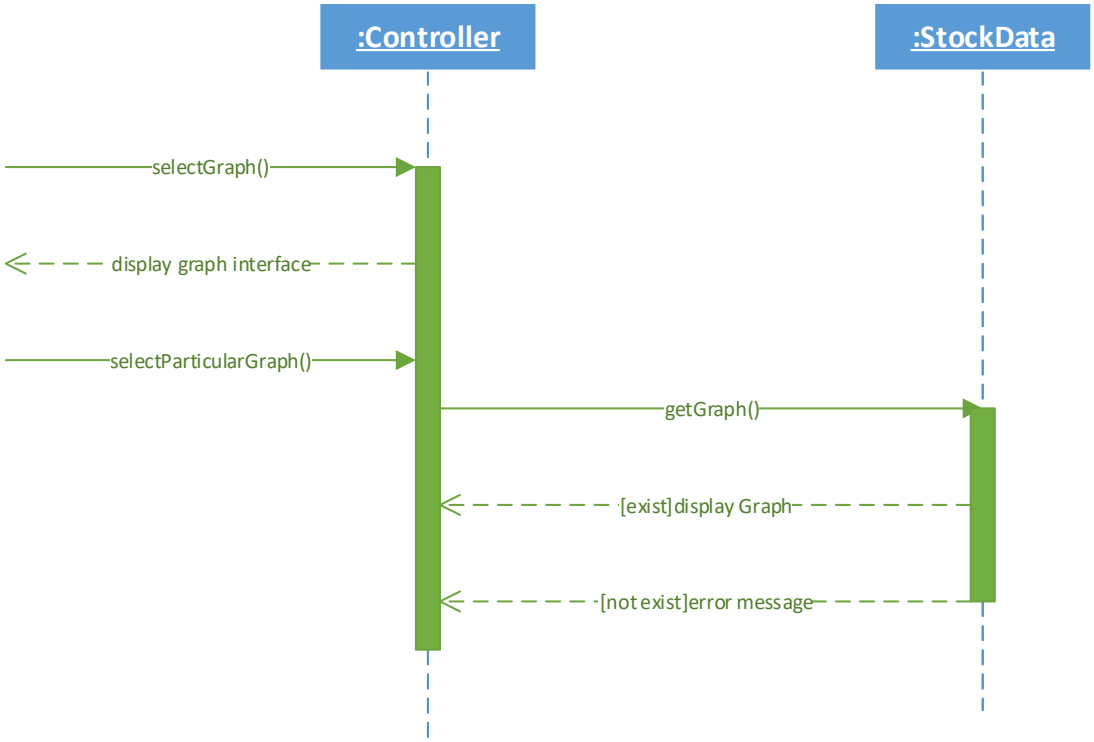

Figure 4. 22 View Graphs SD

4.4.6 View Prediction

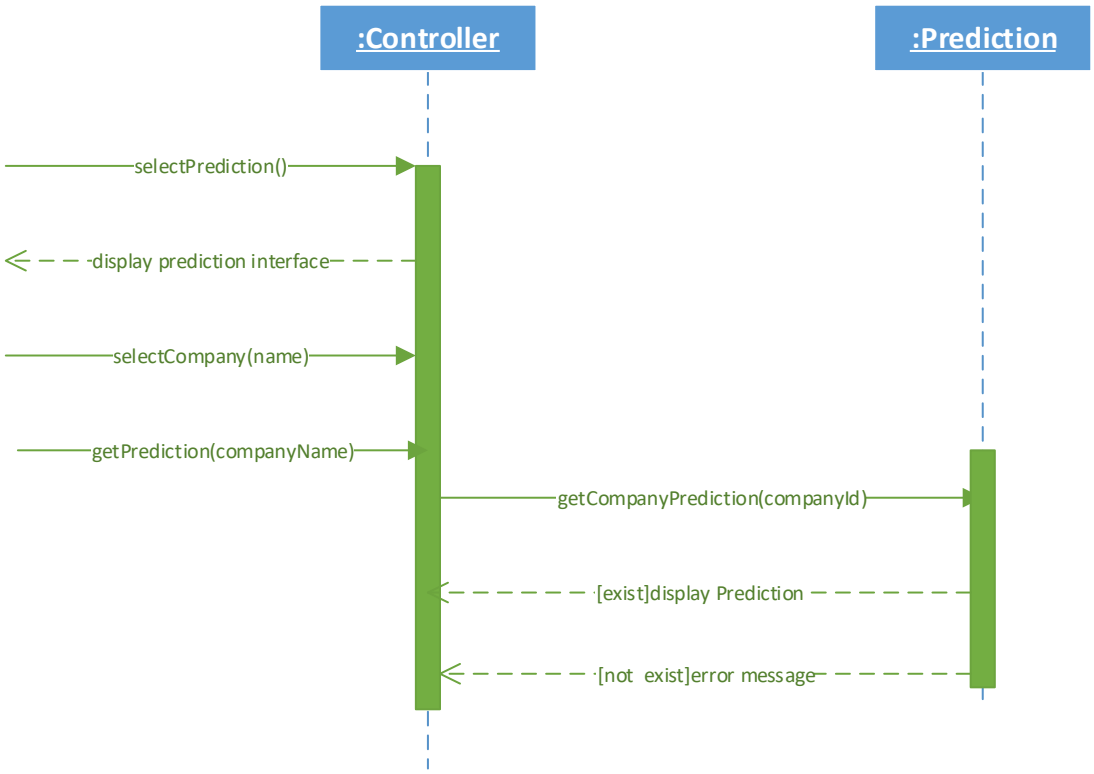

Figure 4. 23 View Prediction SD

4.4.7 Delete Account

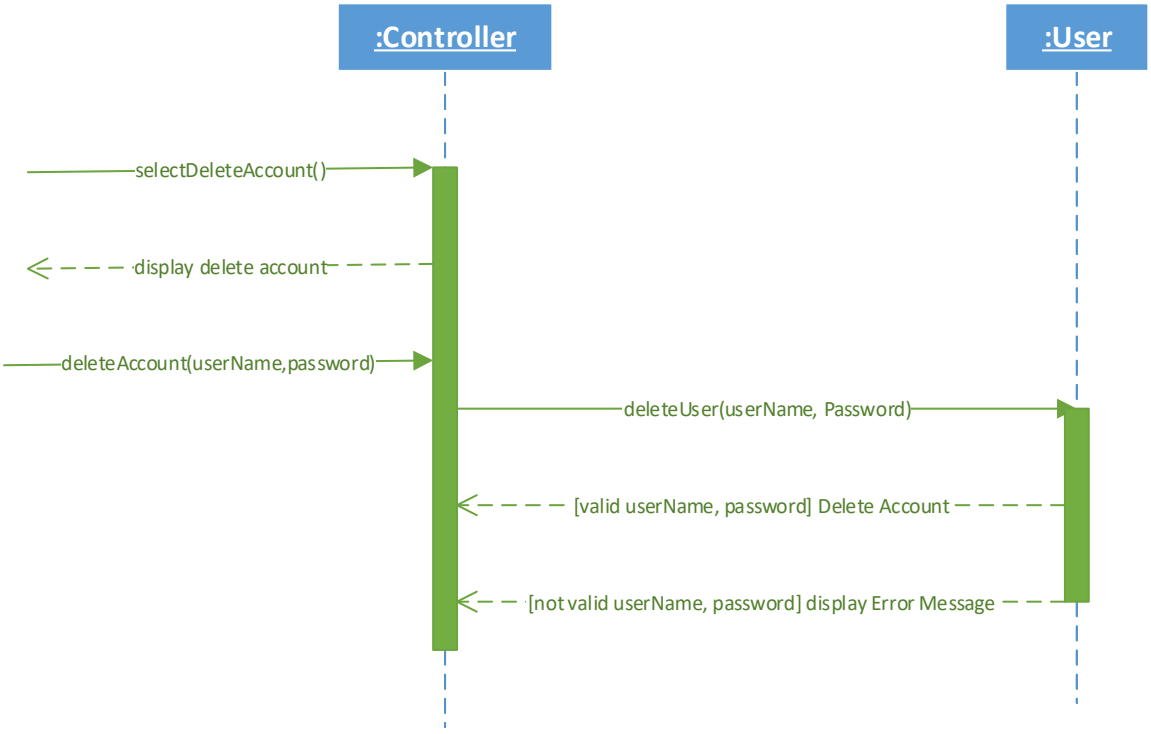

Figure 4. 24 Delete Account SD

4.4.8 Search Stock

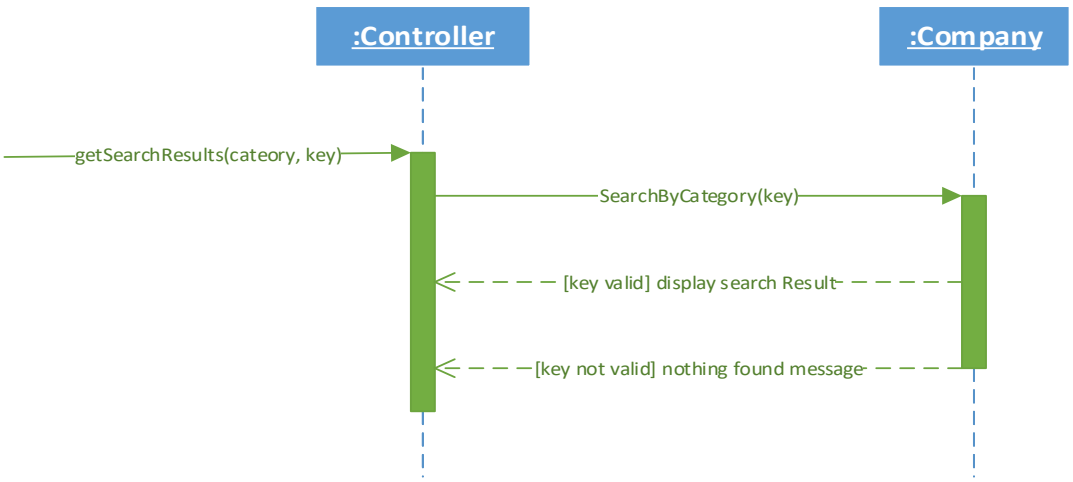

Figure 4. 25 Search Stock SD

4.4.9 Edit Personal Information

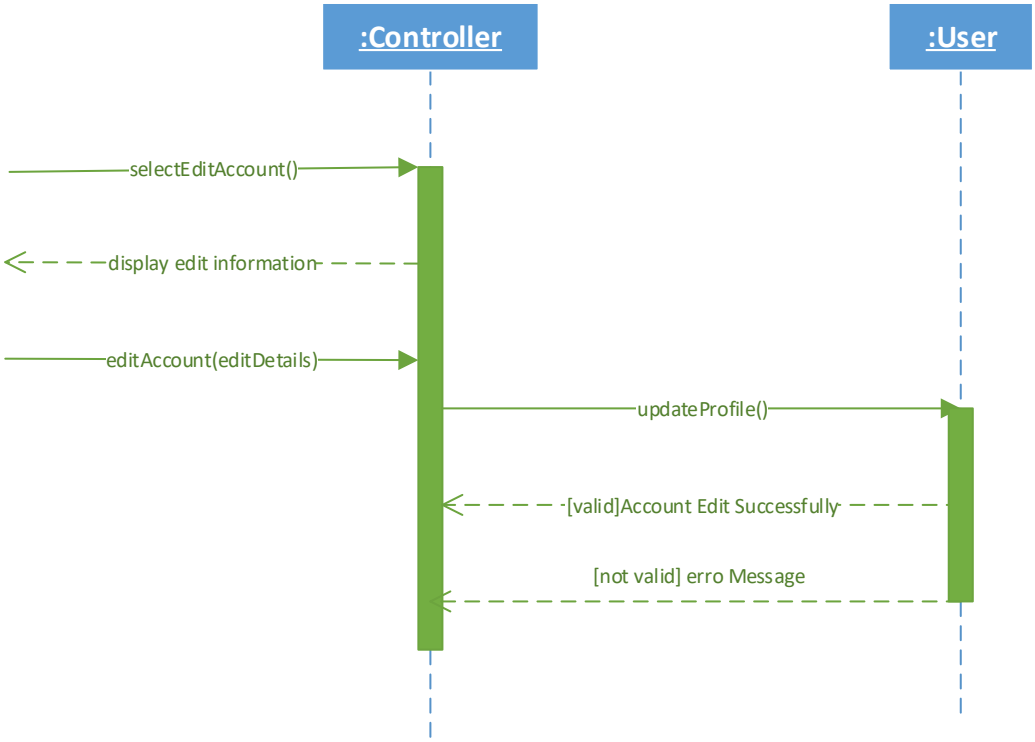

Figure 4. 26 Edit Personal Information

4.4.10 View Personal Details

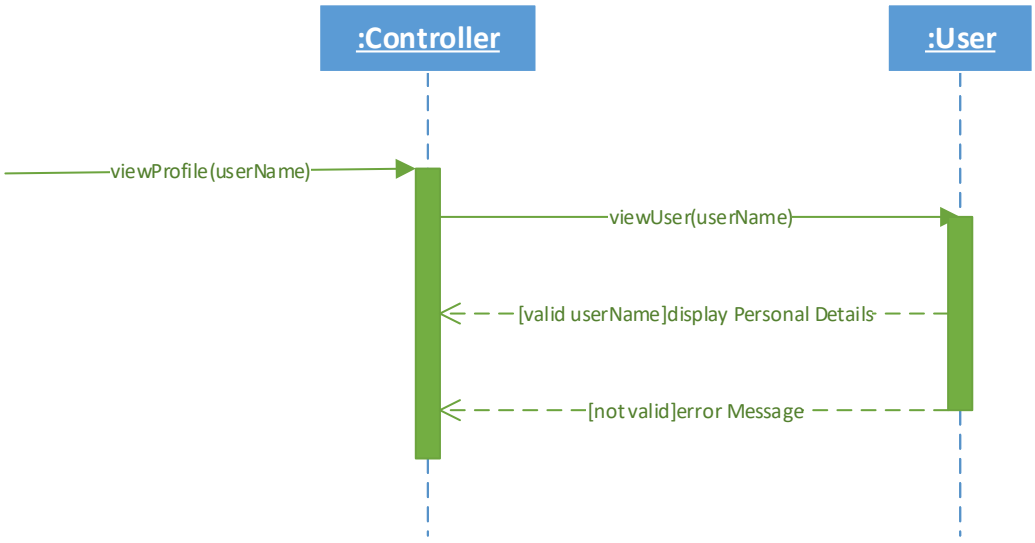

Figure 4. 27 View Personal Information

4.4.11 Subscribe Alerts

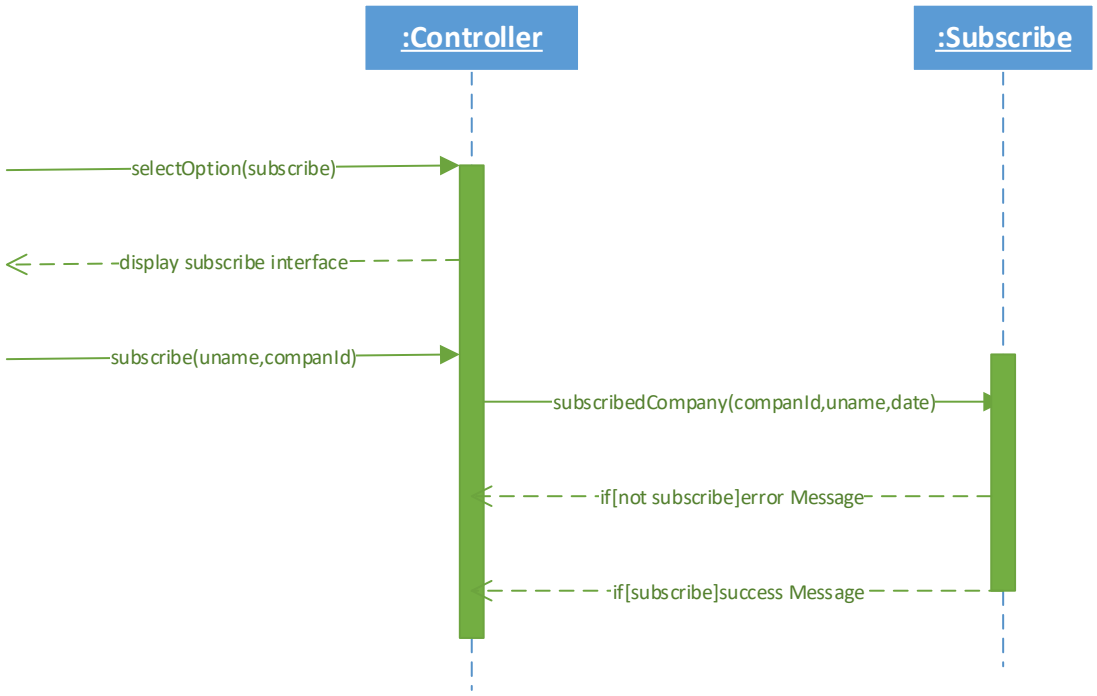

Figure 4. 28 Subscribe Alerts SD

4.4.12 Unsubscribe Alerts

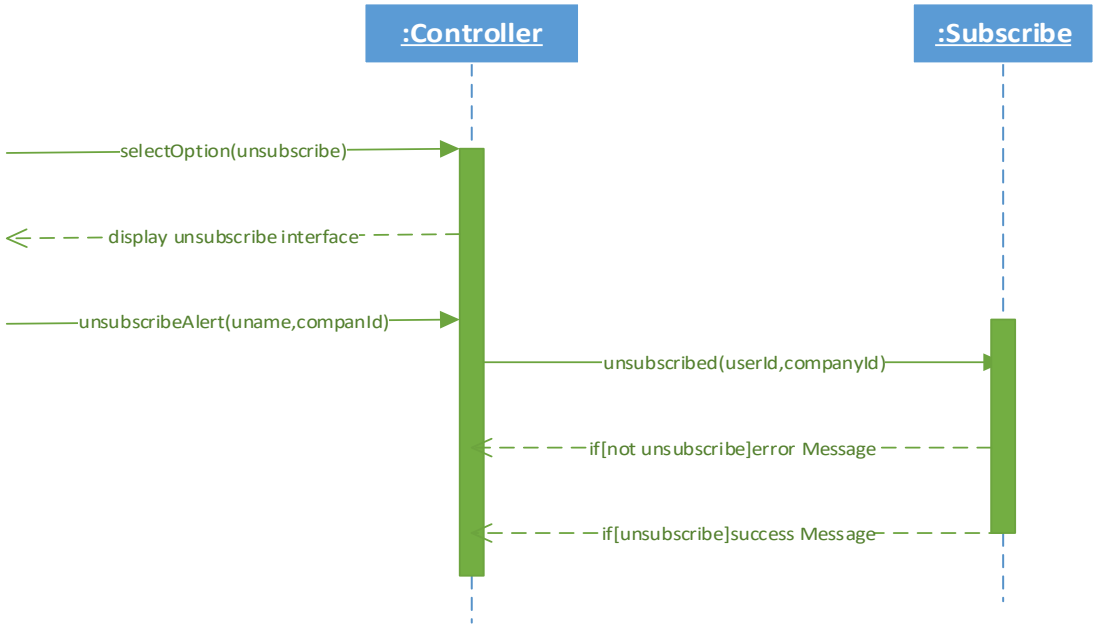

Figure 4. 29 Unsubscribe Alerts SD

4.4.14 View Notification

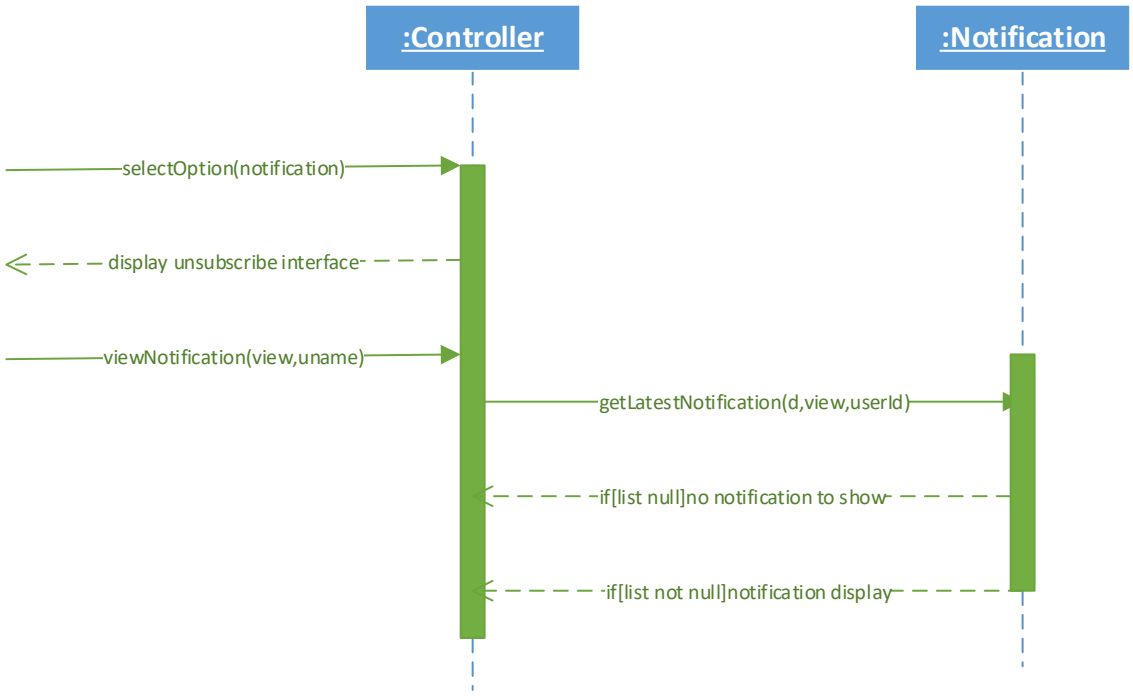

Figure 4. 30 View Notification SD

4.5 Class Diagram

A Class diagram models the static structure of a system. It shows relationship between classes, objects, attributes, and operations. It represents an abstraction of entities with common characteristics. Association represents the relationships between classes. Domain model and collaboration diagram are very useful to identify software classes. Following are the classes used in Stock exchange share analyzer (SESA).

- Controller
- User
- StockData
- Company
- Sector
- Date

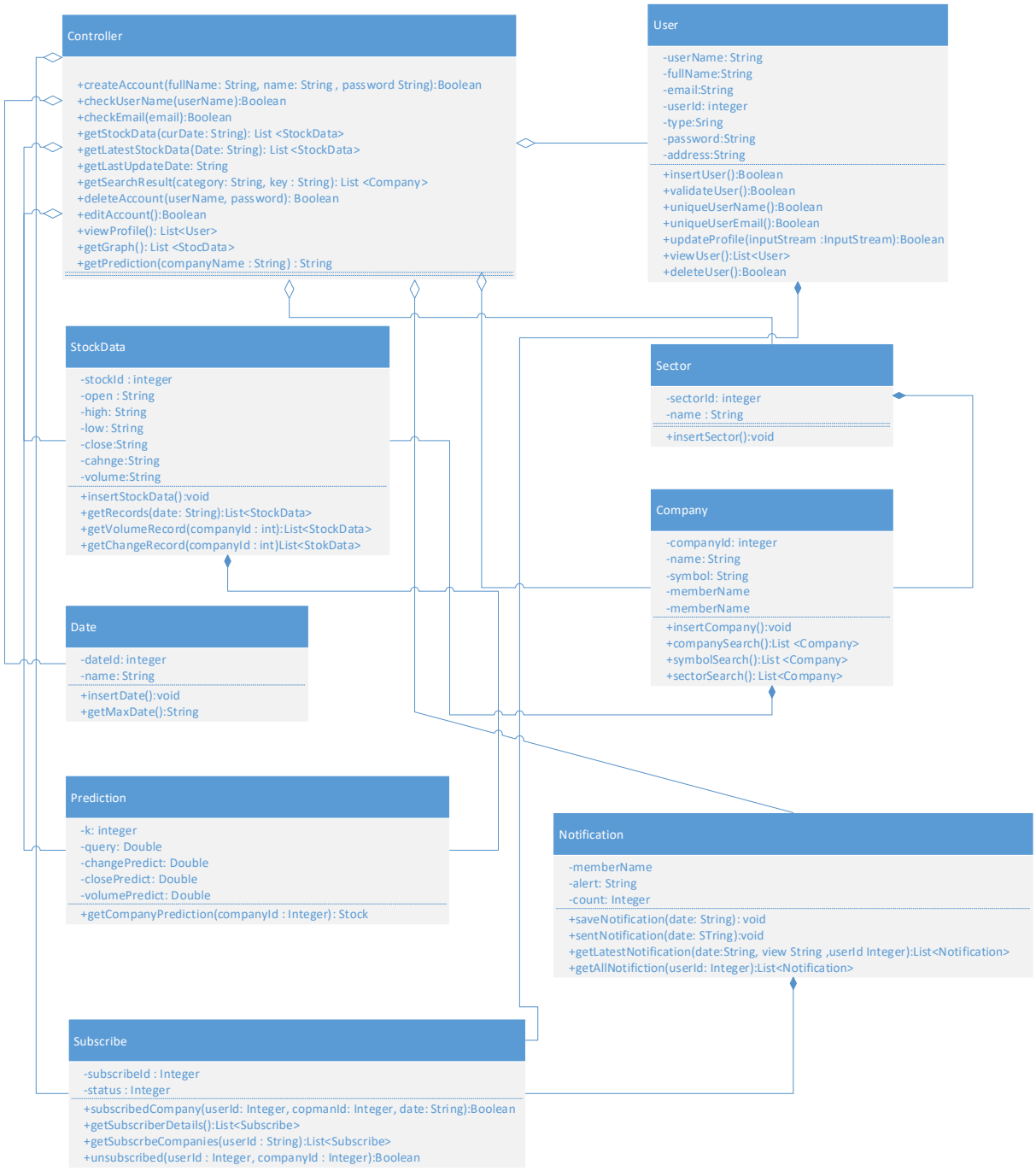

Figure 4. 31 Class Diagram

Chapter 5

(Methodology)

5.1 Introduction

In this chapter we will brief discuss how we will build stock exchange share analyzer. How the stock companies data has been crawl from website and store? How the interface of SESA design? How we create different interactive charts and at last we will discuss how we will predict companies profit and lost.

5.2 Web Scraping

Web Scrapping (also termed screen scraping, web data extraction, web harvesting etc.) is a technique employed to extract large amounts of data from website whereby the data is extracted and saved to a local file in your computer or to database in table (spreadsheet) format.

Data displayed by most websites can only be viewed using a web browser. They do not offer the functionality to save a copy of this data for personal use. The only option then is to manually copy and paste the data, a very tedious job which can take many hours or something days to complete. Web Scraping is the technique of automating this process, so that instead of manually copying the data from websites, the web scraping software will perform the same task within a fraction of time.

A web scraping software will automatically load and extract data from multiple pages of websites based on your requirement. It is either custom built for a specific website or is one which can be configured to work with any website. With the click of a button you can easily save the data available in the website to a file in your computer.

5.2.1 How we scrape data?

To scrape Pakistan stock exchange company's daily stock data, we choose ksestocks website, link of site http://www.ksestocks.com. We use java library to scrape data from any website named org.jsoup.jsup. First of all I find all the links of ksestocks, in which I find link of market summary page i.e. http://www.ksestocks.com/MarketSummary from that page of ksestocks we scrape stock data of Pakistan stock exchange companies. After Scraping stock data we saved in database names "sea", we use MySQL database. We scrape 37 sectors of Pakistan stock exchange company information. We scrape almost 400 companies data belong to different sectors of Pakistan stock exchange. We have last 7 months of stock data of Pakistan stock exchange companies. Now we daily scrape data from this site and update to our database. We display daily data in our site and give an option to view historic data as well.

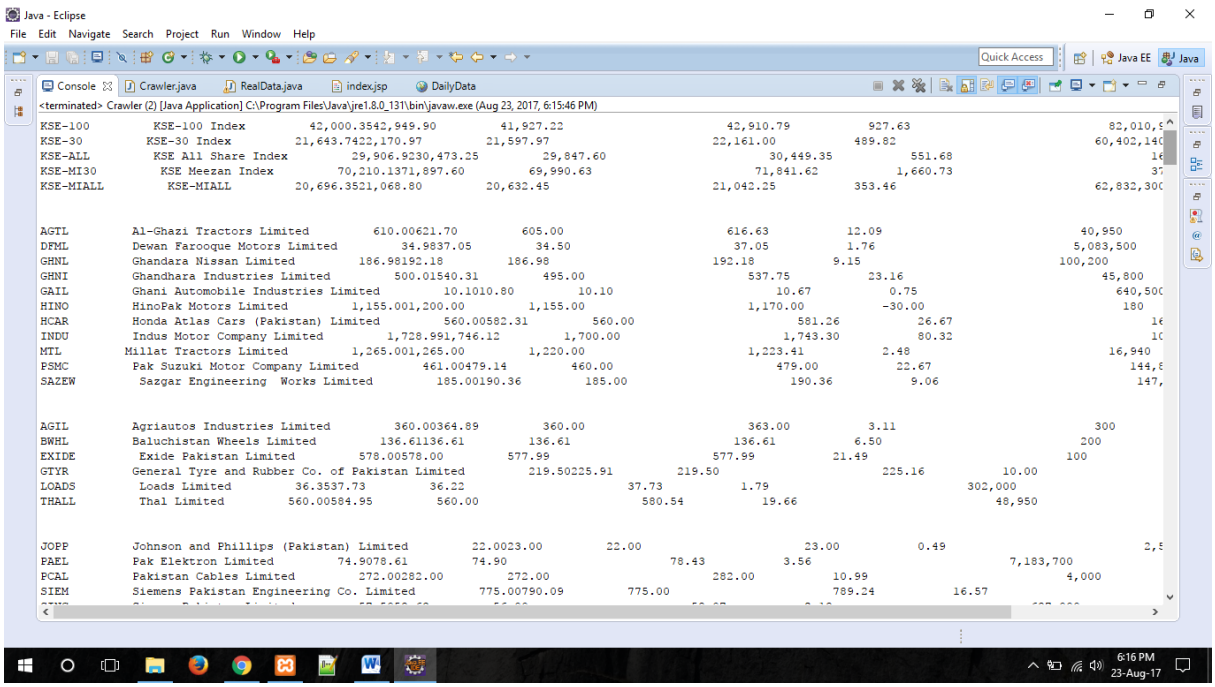

Figure 5. 1 Crawling Data from site

5.3 User Interface Design

User interface design (UI) or user interface engineering is the design of user interfaces for machines and software, such as computers, home appliances, mobile devices, and other electronic devices, with the focus on maximizing usability and the user experience. Stock Exchange Share Analyzer, user interface is simple and user-friendly. We use html, CSS, JSP, Bootstrap, jQuery, Java Script to create user interface. The site is fully responsive as it can view in all screen same as it looks. We use data pages to display data on our site, data page provide different features to user such as search display data, limit, ascending and descending order of data base on any column.

5.4 Interactive Charts

Some interactive charts as well in stock exchange share analyzer, which make easier to understand the market status. Different charts are given below. We create these charts with the help of Google chart library following are link https://developers.google.com/chart/.

- Top Ten Sector of the Day
- Top Ten Companies of the Day
- A company Graph on the basis of Volume
- A company Graph on the basis of Change
- Tow company comparison Chart based on their volume
- Tow company comparison chart based on their change value

5.5 Prediction of Company

The most important feature of stock exchange share analyzer is prediction of company. We use historic data of stock companies to predict their next day profit or lost. For this purpose we trainee machine using machine learning algorithm i.e. K Nearest Neighbor which analyze historic data and predict company prediction in terms of profit and lost. Let's describe KNN algorithm.

5.5.1 K nearest Neighbor Algorithm

KNN can be used for both classification and regression predictive problems. However, it is more widely used in classification problems in the industry. Let's take simple example to understand this algorithm. Following is a spread of red circles (RC) and green squares (GS).

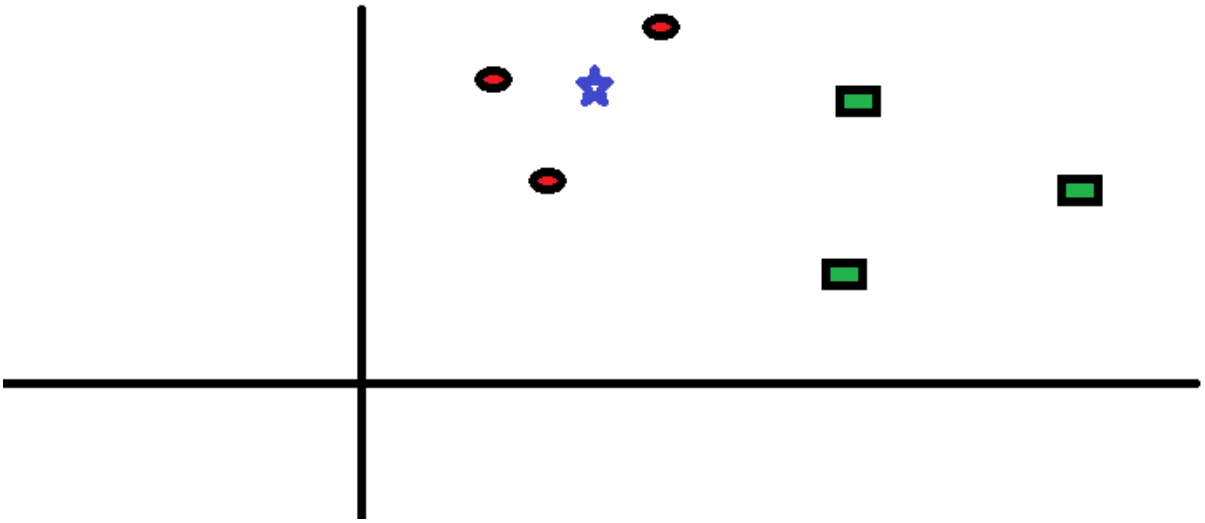

Figure 5. 2 Scenario 1

You intend to find out the class of the blue stat (BS). BS can either be RC or GS and nothing else. The "K" is KNN algorithm is the neighbors we wish to take vote from. Let's say k = 3. Hence we will now make a circle with BS as center just as big as to enclose only three data points on the plane. Refer to following diagram for more details.

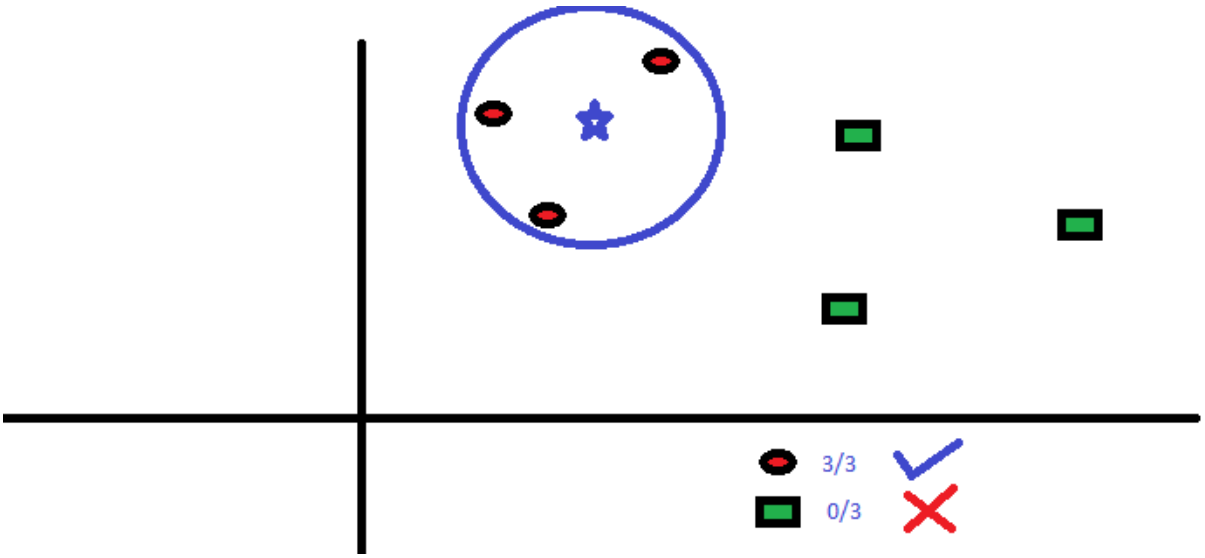

Figure 5. 3 Scenario 2

The three closest points to BS is all RC. Hence with good confidence level we can say that BS should belong to the class RC. Here the choice became very obvious as all three votes from the closest neighbor went to RC. We used KNN in terms of Extrapolation, Prediction and Forecasting.

5.5.2 KNN Extrapolation, Prediction and Forecasting

Let's we describe KNN Extrapolation, prediction and forecasting with the help of an example. We have 5 data pair (X, Y) as shown below. The data are quantitative in nature. Suppose the data is sorted as in time series. Then the problem is to estimate the value of Y bussed on K-Nearest Neighbor (KNN) algorithm at X = 6.5.

X	Y
1	23
1.2	17
3.2	12
4	27
5.1	8
6.5	?

Table 5. 1 KNN 1

1. Determine parameter K = number of nearest neighbors. Suppose use K = 2.
2. Calculate the distance between the query-instance and all the training samples.

(Coordinate of query instance is 6.5. As we are dealing with one dimensional distance, we simply take absolute value from the query instance to value of X. For instance for X = 5.1, the distance is |6.5-5.1| = 1.4, for X = 1.2 the distance is |6.5-1.2| = 5.3 and son on).

3. Sort the distance and determine nearest neighbor based on K-th minimum or maximum distance.
4. Gather the values of Y of the nearest neighbors.
5. Use average of nearest neighbor as the prediction- value of the query instance.

X	Y	Distance	Nearest Neighbor
1	23	5.5	
1.2	17	5.3	
3.2	12	3.3	
4	27	2.5	27
5.1	8	1.4	8

Table 5. 2 KNN 2

In this case, we have prediction value of 27 + 8 / 2 = 17.5.

We map different formulas on this algorithm like cosine similarity, distance formula, Euclidian distance. Let's discuss one by one

5.5.3 How We Predict

We map these technique in our data, as we have market open value of next day on the base of open value we predict market closed value, then we user these two feature commonly and predict volume of a company. After predicting volume we have three features on the base of these feature we predict company high value on that day. Now we have four feature open, high, close and volume on the base we find low value of company at that day. At the end we find change value of company which we conclude profit or lost if it is in positive we say company in profit if it is in negative we say it is in lost.

5.5.3.1 Distance Formula

We have a data set which include market open, close, high, low, volume and change. For this purpose we select a stock exchange company named Oil Gas Development Company Limited (OGDC). We take its 5 days historic data on the base of it we predict next day its stock values. The data set are given in the table 5.3 OGDC 5 day's stock below.

Open	Close	High	Low	Volume	Change	Date
146.00	147.97	148.0	145.35	680700	1.96	Aug 16
147.95	142.31	147.95	141.07	1349100	-4.66	Aug 17
142.50	146.3	148.0	141.0	212800	4.03	Aug 18
146.00	145.80	147.00	141.00	2339100	-0.01	Aug 22
146.0	147.70	147.80	144.2	904800	0.90	Aug 23

Table 5. 3 OGDC 5 days stock

We have last five days of OGDC data, on the base of it we have to find Aug. 24 its stock values. Now first we will predict close market on the base of open market values. Then the problem is .estimate the value of close market bussed on K-Nearest Neighbor (KNN) algorithm at open = 147.70.

Open	Close
146.00	147.97
147.95	142.31
142.50	146.3
146.00	145.80
146.0	147.70
147.70	?

Table 5. 4 Predicting close value

1. Determine parameter K = number of nearest neighbors. Suppose use K = 2.
2. Calculate the distance between the query-instance and all the training samples.

(Coordinate of query instance is 147.70. As we are dealing with one dimensional distance, we simply take absolute value from the query instance to value of X. For instance for open = 146.0, the distance is |147.70-146.0| = 1.7, for open = 142.95 the distance is |147.70-142.50| = 5.2 and son on).

3. Sort the distance and determine nearest neighbor based on K-th minimum or maximum distance.
4. Gather the values of Y of the nearest neighbors.
5. Use average of nearest neighbor as the prediction- value of the query instance.

Open	Close	Distance
146.00	147.97	1.7
147.95	142.31	-0.25
142.50	146.3	5.2
146.00	145.80	1.7
146.0	147.70	1.7

Table 5. 5 Distance Table for Close

Now sorting distance and get k-nearest neighbors, we are taking minimum distance.

Open	Close	Distance	K- Nearest Neighbor
147.95	142.31	-0.25	142.31
146.00	147.97	1.7	147.97
146.00	145.80	1.7	
146.0	147.70	1.7	
142.50	146.3	5.2	

Table 5. 6 K-Nearest Neighbors for Closed

In this we have **predict close** value is 142.31 + 147.97 / 2 = 147.64. Now we have open market value and close market value on the base we have to predict volume of a OGDC. So we have data set given in able 5.7 below.

Open	Close	Volume
146.00	147.97	680700
147.95	142.31	1349100
142.50	146.3	212800
146.00	145.80	2339100
146.0	147.70	904800
147.70	147.64	?

Table 5. 7 Data set for predict volume

1. Calculate the distance between the query-instance and all the training samples.

(Coordinate of query instance is 147.70 and 147.64. As we are dealing with one dimensional distance, we simply take absolute value from the query instance to value of X. For instance for open = 146.0 and close 147.70 the distance is |147.70-146.0| + |147.64+147.70| = 1.64, for open = 142.50 and close 146.3 the distance is |147.70-142.50| + |147.64 – 146.3| = 6.54 and son on).

2. Sort the distance and take minimum k nearest neighbors.

Open	Close	Volume	Distance
146.00	147.97	680700	1.37
147.95	142.31	1349100	5.08
142.50	146.3	212800	7.04
146.00	145.80	2339100	3.54
146.0	147.70	904800	1.64

Table 5. 8 Volume Distance

Open	Close	Volume	Distance	K- Nearest Neighbor
146.00	147.97	680700	1.37	680700
146.0	147.70	904800	1.64	904800
146.00	145.80	2339100	3.54	
147.95	142.31	1349100	147.95	
142.50	146.3	212800	142.50	

Table 5. 9 K-Nearest Neighbor Volume

Predict Volume = 680700 + 904800/ 2 = 792750.

Now we have open, close and volume of next day of OGDC. We have to predict now market low value on the base of these three; we find distance of each and add all of them which are our distance.

Open	Close	Volume	Low	Distance
146.00	147.97	680700	145.35	112051.37
147.95	142.31	1349100	141.07	-551042
142.50	146.3	212800	141.0	579957.04
146.00	145.80	2339100	141.00	-1546346.46
146.0	147.70	904800	144.2	-112048.36
147.70	147.64	792750	?	

Table 5. 10 Low Distance

Now Sorting distance and get minimum k nearest neighbors

Open	Close	Volume	Low	Distance	K- Nearest Neighbor
146.00	145.80	2339100	141.00	-1546346.46	141.00
146.0	147.70	904800	144.2	-112048.36	144.2
147.95	142.31	1349100	141.0	-551042	
--	147.97	680700	145.35	112051.37	
142.50	146.3	212800	141.0	579957.04	

Table 5. 11 K-Nearest Neighbor for Low

Predict Low: 141.00 + 144.2 / 2 = 142.6

Now we have four feature of stock open, close, volume and low. We have to predict High market value of OGDC for same procedure now we calculate distance and add all of four distance open, close, volume and low.

Open	Close	Volume	Low	High	Distance
146.00	147.97	680700	145.35	148.0	112048.62
147.95	142.31	1349100	141.07	147.95	-551040.47
142.50	146.3	212800	141.0	148.0	579958.04
146.00	145.80	2339100	141.00	147.00	-1546344.86
146.0	147.70	904800	144.2	147.80	-112049.96
147.70	147.64	792750	142.6	?	

Table 5. 12 Distance values for high

Now sort the distance and find the minimum k-nearest neighbor of high values.

Open	Close	Volume	Low	High	Distance	K-Nearest Neighbors
146.00	145.80	2339100	141.00	147.00	-1546344.86	147.00
146.0	147.70	904800	144.2	147.80	-112049.96	147.80
147.95	142.31	1349100	141.07	147.95	-551040.47	
146.00	147.97	680700	145.35	148.0	112048.62	
142.50	146.3	212800	141.0	148.0	579958.04	

Table 5. 13 K-Neatest Neighbors for High

High Predict: 147 + 147.80/ 2 = 147.4

Now we have to predict our last stock value of OGDC change value which determine company is in lost or profit. We will predict on the base of these entire features open, close, volume, low and high. We add all those feature distance and select minimum k-nearest neighbors to predict change value.

Open	Close	Volume	Low	High	Change	Distance
146.00	147.97	680700	145.35	148.0	1.96	112048.02
147.95	142.31	1349100	141.07	147.95	-4.66	-551041.02
142.50	146.3	212800	141.0	148.0	4.03	579957.44
146.00	145.80	2339100	141.00	147.00	-0.01	-1546344.46
146.0	147.70	904800	144.2	147.80	0.90	-112050.36
147.70	147.64	792750	142.6	147.4	?	

Table 5. 14 Distance values for change

Now sort distance and minim k nearest neighbor s for change.

Open	Close	Volume	Low	High	Change	Distance	K-Neatest Neighbors
146.00	145.80	2339100	141.00	147.00	-0.01	-1546344.46	-0.01
146.0	147.70	904800	144.2	147.80	0.90	-112050.36	0.90
147.95	142.31	1349100	141.07	147.95	-4.66	-551041.02	
146.00	147.97	680700	145.35	148.0	1.96	112048.02	
142.50	146.3	212800	141.0	148.0	4.03	579957.44	

Table 5. 15 K-Nearest Neighbors for Change

Change Predict: -0.01 + 0.90/ 2 = 0.89

According to change predict. We predict that OGDC will in profit 24 August 2017.

5.5.3.2 Euclidian Distance

Same approach is follow in Euclidian distance as above we are used, the formula of Euclidian distance are given below.

Distance = open – historic open

Distance = Power (Distance)

Distance = Sqrt(Distance)

Equation 5. 1 Euclidian Formula

5.5.3.3 Cosine Similarity

In cosine similarity first of all we normalized data using techniques which are log frequency weighting and length normalization. Now we are applying these techniques in our data set which are given in table 5.3.

- Log Frequency Weighting

We find log of each value and add 1 to find log frequency weighting. The formula is given below.

Log frequency = Log (open) + 1

Open	Close	High	Low	Volume	Change	Date
3.16	3.17	3.17	3.16	6.83	1.29	Aug 16
3.17	3.15	3.17	3.14	7.13	1.66	Aug 17
2.15	3.16	3.17	3.14	6.32	1.6	Aug 18
3.16	3.16	3.16	2.15	7.36	-1	Aug 22
3.16	3.16	3.16	3.16	6.95	0.95	Aug 23

Table 5. 16 Log Frequency Weighting

- Length Normalization

Now we apply length normalization on table 5.16.

O = square (3.16) + square (3.17) + square (2.15) + square (3.16) + square (3.16) and so on all other stock values. We apply open value all are similar to other stock values. After finding power all open values and adding them we take square root of that value which is given below. **O = square root (O)**

Then we divide each open value of stock to that O value to normalize.

Open	Close	High	Low	Volume	Change	Date
0.01	0.06	0.063	0.071	0.028	0.1875	Aug 16
0.01	0.06	0.063	0.070	0.029	0.2412	Aug 17
0.0068	0.063	0.063	0.070	0.026	0.2325	Aug 18
0.0099	0.063	0.062	0.048	0.030	-0.14	Aug 22
0.0099	0.063	0.062	0.071	0.0289	0.1380	Aug 23

Table 5. 17 Length Normalization

After normalizing the data we apply same approach on table 5.17 to find predict value of close, high, low, volume, and change.

Chapter 6

(System Testing, Experiments and Results)

6.1 Introduction

Software testing is a process of executing a program or application with the intent of finding the software bugs. It can also be started as the process of validating and verifying that a software program or application or product. In this chapter we will discuss software testing of stock exchange share analyzer, feature to be tested and test cases. We can also describe different prediction experiments with different techniques i.e. (Cosine similarity, Euclidian Distance and simple distance). We compare these experiments with each other and finally we conclude which technique is better for stock exchange company prediction.

6.2 Feature to be tested

All the important functional and nonfunctional requirements of stock exchange share analyzer to be tested. Following are the list of feature to be tested.

6.2.1 Functional Requirements

- Login User
- Signup User
- Delete Account
- Categorized Search
- View Prediction
- Edit Personal Account
- View Historic Stock Data.

6.3 Test Cases

A test case is a set of condition or variable under which a tester will determine whether a system under test satisfies requirements or work correctly. The process of developing test case can also help to find problems in requirements and design of an application.

6.3.1 Login Test case

Test Case ID: TC: 001

Actor: Register User

Purpose: Login to the account

Input	Frequency	Expected Output	Observed Output	Verdict
User enters his correct username and password.	5	User login to the system.	User cannot login	Pass
User enters his incorrect username and password.	3	User not exists.	User exist	Pass
User submit login form with empty username and empty password	5	Empty fields are not allowed.	Empty fields are not allowed	Pass

Table 6. 1 Login Test Case

6.3.2 Signup Test Case

Test Case ID: TC: 002

Actor: Non-Register User

Purpose: Register to the system.

Input	Frequency	Expected Output	Observed Output	Verdict
User enters data in all the required fields with correct information.	3	User successfully registers in system.	User failed to register in system	Pass
User enters information like wrong name. abc123.	5	Enter valid name to proceed.	Enter valid name to proceed.	Pass
User submits correct information but user of that name already exist.	5	User name already exist in the system.	User name not exist in the system.	Pass
User submits correct information but email already exists in the system.	5	User email already exists in the system.	User email already exists in the system.	Pass

Table 6. 2 Signup Test Case

6.3.3 Delete Account Test Case

Test Case ID: TC: 003

Actor: Register User

Purpose: user wanted to delete his account.

Input	Frequency	Expected Output	Observed Output	Verdict
User enters his correct password.	5	User successfully deletes his account.	User cannot delete his account	Pass
User enters his incorrect password.	3	User password does not match. Please enter correct password.	User password matched.	Pass
User submits delete form empty.	3	Please enter password.	Please enter password	Pass

Table 6. 3 Delete Account Test Case

6.3.4 Search Stock Test Case

Test Case ID: TC: 004

Actor: Register User/Non Register User

Purpose: User wants to search company.

Input	Frequency	Expected Output	Observed Output	Verdict
User selects category companies and enters correct company Name.	5	User successfully fined company.	User does not find any company.	Pass
User select category and enter incorrect company Name	5	Nothing is found.	Nothing is found.	Pass
User submits form with empty category and empty search field.	5	All fields are required to search company.	Nothing is found.	Pass
User select category sector and enter correct sector name.	3	User successfully finds sector.	User successfully find sector.	Pass
User select category symbol and enter correct symbol.	5	User successfully finds symbol.	User failed to find Symbol.	Pass
User select category symbol	5	Nothing found.	Nothing found.	Pass

and enter incorrect symbol.				

Table 6. 4 Stock Search Test Case

6.3.5 View Prediction Test Case

Test Case ID: TC: 005

Actor: Register User/ Non-Register User

Purpose: Wanted to view prediction of company.

Input	Frequency	Expected Output	Observed Output	Verdict
User selects company and submits.	5	User successfully views company prediction.	User does not view any prediction.	Pass
User selects company and submits.	3	Prediction of company does not exist.	Perdition of company does not exist.	Pass
User submits form with empty company field.	5	You must select particular company.	You must select particular company.	Pass

Table 6. 5 View Prediction Test Case

6.3.6 View Historic Stock Data Test Case

Test Case ID: TC: 006

Actor: Register User/Non-Register User

Purpose: User wants to view Historic stock data.

Input	Frequency	Expected Output	Observed Output	Verdict
User enters correct date and submits.	5	User successfully views the historic stock data.	User does not view historic stock data.	Pass
User enters correct date and submits.	5	No record is found.	No record found.	Pass
User enters incorrect date and submits.	3	No record is found.	Record is found.	Pass
User submits empty form.	5	Please enter date.	Please enter date.	Pass

Table 6. 6 View Historic Stock Data Test Case

6.3.7 Edit Personal Information Test Case.

Test Case ID: TC: 007

Actor: Register User

Purpose: To Edit his personal information.

Input	Frequency	Expected Output	Observed Output	Verdict
User enters correct information to edit his account.	5	User successfully edits his information.	User cannot edit his information.	Pass
User enter incorrect field like name abc445.	3	Only alphabets are allowed in name filed.	User successfully edits information.	Pass
User submits empty form.	3	Please enter form to edit your information.	Please enter form to edit your information.	Pass

Table 6. 7 Edit Test Information Test Case

6.4 Prediction Experiments

We find company prediction in terms of lost and profit with different technique. Some experiments are given below.

6.4.1 Distance Formula

Using distance formula as we discuss in chapter 5 methodology. We test 100 companies and find their respective prediction on date 16-aug-2017.

Company Name	Change	Change Predict	Verdict
KSE-100 Index	287.51	48.817142857142876	True
KSE-30 Index	153.6	107.36142857142856	True
KSE All Share Index	137.01	-31.708571428571418	False
KSE Meezan Index	296.27	-78.49428571428577	False
KSE-MIALL	53.5	55.35285714285714	True
Al-Ghazi Tractors Limited	-8.26	1.4014285714285717	False
Atlas Honda Limited	-9.7	1.2699999999999998	False
Dewan Farooque Motors Limited	-1.49	-0.4428571428571429	True
Ghandara Nissan Limited	-0.78	-0.8071428571428569	True
Ghandhara Industries Limited	-8.59	1.374285714285713	False
Ghani Automobile Industries Limited	0.13	0.07142857142857142	True
HinoPak Motors Limited	52.49	6.902857142857143	True
Honda Atlas Cars (Pakistan) Limited	8.16	-0.5457142857142857	False
Indus Motor Company Limited	-8.42	7.692857142857143	False
Millat Tractors Limited	-8.48	1.6271428571428568	False
Pak Suzuki Motor Company Limited	-18.23	-0.7342857142857142	True
Sazgar Engineering Works Limited	-5.76	0.07999999999999956	False
Agriautos Industries Limited	4.99	2.684285714285714	True
Atlas Battery Limited	2.5	3.861428571428571	True
Baluchistan Wheels Limited	-0.46	1.5385714285714285	False
Exide Pakistan Limited	-27.99	7.8500000000000005	False
General Tyre and Rubber Co. of Pakistan Limited	-0.22	0.4485714285714288	False
Loads Limited	-0.24	0.10714285714285718	False

Thal Limited	18.74	5.178571428571428	True
Johnson and Phillips (Pakistan) Limited	-0.9	0.35714285714285715	False
Pak Elektron Limited	-1.37	0.04285714285714277	False
Pakistan Cables Limited	-2.01	0.6357142857142855	False
Siemens Pakistan Engineering Co. Limited	8.59	-3.0100000000000007	False
Singer Pakistan Limited	-1.75	-0.1428571428571428	True
TPL Trakker Limited	0.32	0.05571428571428573	True
Attock Cement (Pakistan) Limited	3.11	2.3785714285714286	True
Bestway Cement Limited	0.91	-0.19999999999999998	False
Cherat Cement Company Limited	2.22	0.08571428571428576	True
D.G. Khan Cement Company Limited	1.58	-0.05428571428571433	False
Dandot Cement Company Limited	-0.3	0.09857142857142853	False
Dewan Cement Limited	-0.07	0.02285714285714286	False
Fauji Cement Company Limited	0.23	-0.11714285714285713	False
Fecto Cement Limited	1.04	-0.26999999999999996	False
Flying Cement Company Limited	-0.91	-0.37285714285714283	True
Gharibwal Cement Limited	0.1	0.7357142857142857	True
Javedan Corporation Limited	0.6	0.03428571428571431	True
Kohat Cement Limited	-1.77	0.1557142857142857	False
Lucky Cement Limited	-8.43	0.1571428571428576	False
Maple Leaf Cement Factory Limited	0.83	0.8885714285714287	True
Pioneer Cement Limited	1.98	0.8185714285714286	True
Power Cement Limited	0.48	0.1042857142857143	True
Safe Mix Concrete Limited	0.17	-0.04857142857142585	False
Thatta Cement Company Limited	-0.23	0.11285714285714286	False
Agritech Limited	0.36	0.07571428571428569	True
Akzo Nobel Pakistan Limited	-2.63	0.12857142857142861	False
Archroma Pakistan Limited	-21.44	-2.665714285714285	True
Bawany Air Product Limited	-0.99	-0.1585714285714286	True
Berger Paints Pakistan Limited	-2.24	0.5557142857142858	False
Biafo Industries Limited	-12.81	-1.9785714285714284	True
Buxly Paints Limited	-1.4	0.547142857142857	False
Colgate Palmolive (Pakistan) Limited	-9.99	41.70142857142857	False

Data Agro Limited	-0.38	0.06571428571428573	False
Descon Oxychem Limited	-0.13	-0.24000000000000002	True
Dynea Pakistan Limited	-0.13	-0.7414285714285713	True
Engro Polymer and Chemicals Limited	0.14	0.09857142857142863	True
Ghani Gases Limited	-0.56	-0.12000000000000001	True
I.C.I. Pakistan Limited	2.54	12.104285714285714	True
Ittehad Chemical Limited	-0.66	-0.05428571428571426	True
Leiner Pak Gelatine Limited	1.67	-0.31857142857142856	False
Linde Pakistan Limited	5.76	2.6142857142857148	True
Lotte Chemical Pakistan Limited	0.09	0.08857142857142855	True
Nimir Industrial Chemicals Limited	-1.49	0.12571428571428567	False
Nimir Resins Limited	0.44	0.13428571428571429	True
Pakistan Gum and Chemiclas Limited	0.0	1.8800000000000001	False
Pakistan PVC Limited	0.07	0.4042857142857143	True
Shaffi Chemical Industries Limited	-0.61	-0.13571428571428573	True
Sitara Chemical Industries Limited	20.0	8.187142857142856	True
Sitara Peroxide Limited	-0.69	-0.18285714285714286	True
Wah Noble Chemicals Limited	-4.55	2.4914285714285715	False
Golden Arrow Selected Funds Limited	0.34	0.03285714285714287	True
PICIC Growth Fund	-0.65	-0.10285714285714286	True
PICIC Investment Fund	0.25	0.3357142857142857	True
Tri-Star Mutual Fund Limited	0.05	-0.47428571428571425	False
Allied Bank Limited	-0.72	-0.13857142857142854	True
Askari Bank Limited	0.16	-0.022857142857142864	False
Bank Al-Falah Limited	0.85	0.17142857142857143	True
Bank Al-Habib Limited	0.0	0.051428571428571414	False
Bank Of Khyber Limited	0.44	0.25857142857142856	True
Bank Of Punjab Limited	0.08	-0.09714285714285716	False
Bankislami Pakistan Limited	1.0	0.1714285714285714	True
Faysal Bank Limited	1.09	0.19	True
Habib Bank Limited	1.81	0.23714285714285713	True
Habib Metropolitan Bank Limited	0.47	0.12571428571428572	True
JS Bank Limited	0.05	0.06571428571428571	True
MCB Bank Limited	1.96	1.114285714285714	True

Meezan Bank Limited	-0.31	0.36571428571428566	False
National Bank Of Pakistan	0.87	0.4328571428571429	True
NIB Bank Limited	0.24	0.019999999999999997	True
Silkbank Limited	0.0	-0.008571428571428574	False
Soneri Bank Limited	0.02	0.03428571428571429	True
Standard Chartered Bank Limited	0.91	0.34142857142857147	True
Summit Bank Limited	0.11	0.06428571428571427	True
United Bank Limited	-4.87	0.13714285714285715	False
Aisha Steel Mills Limited	0.41	0.004285714285714258	True
Aisha Steel Mills Limited (Preference Shares)	1.1	0.6114285714285714	True

Table 6. 8 Prediction 1

Total Companies: 100

True Predict: 65

False Predict: 35

Results: 65%

6.4.2 Euclidian Distance

Prediction of Stock Exchange Companies on the date 16-aug-2017.

Company Name	Change	Change Predict	Verdict
KSE-100 Index	287.51	38.82000000000001	True
KSE-30 Index	153.6	-13.516000000000002	False
KSE All Share Index	137.01	-209.91	False
KSE Meezan Index	296.27	366.3460000000001	True
KSE-MIALL	53.5	-174.456	False
Al-Ghazi Tractors Limited	-8.26	3.428	False
Atlas Honda Limited	-9.7	-0.6880000000000001	True
Dewan Farooque Motors Limited	-1.49	-0.3	True
Ghandara Nissan Limited	-0.78	0.029999999999999895	False
Ghandhara Industries Limited	-8.59	-3.8419999999999996	True
Ghani Automobile Industries Limited	0.13	-0.48600000000000004	False
HinoPak Motors Limited	52.49	4.093999999999999	True
Honda Atlas Cars (Pakistan) Limited	8.16	-3.79	False
Indus Motor Company Limited	-8.42	-11.033999999999999	True

Millat Tractors Limited	-8.48	-15.776	True
Pak Suzuki Motor Company Limited	-18.23	-6.648000000000001	True
Sazgar Engineering Works Limited	-5.76	2.1919999999999997	False
Agriautos Industries Limited	4.99	6.096	True
Atlas Battery Limited	2.5	0.8340000000000003	True
Baluchistan Wheels Limited	-0.46	-2.282	True
Exide Pakistan Limited	-27.99	3.876	False
General Tyre and Rubber Co. of Pakistan Limited	-0.22	-4.272	True
Loads Limited	-0.24	-0.422	True
Thal Limited	18.74	-3.786	False
Johnson and Phillips (Pakistan) Limited	-0.9	0.0040000000000000036	False
Pak Elektron Limited	-1.37	0.49800000000000005	False
Pakistan Cables Limited	-2.01	0.7400000000000002	False
Siemens Pakistan Engineering Co. Limited	8.59	-3.182	False
Singer Pakistan Limited	-1.75	0.7779999999999999	False
TPL Trakker Limited	0.32	-0.10400000000000001	False
Attock Cement (Pakistan) Limited	3.11	2.384	True
Bestway Cement Limited	0.91	-1.764	False
Cherat Cement Company Limited	2.22	1.006	True
D.G. Khan Cement Company Limited	1.58	-0.03600000000000003	False
Dandot Cement Company Limited	-0.3	-0.21400000000000002	True
Dewan Cement Limited	-0.07	0.015999999999999993	False
Fauji Cement Company Limited	0.23	0.622	True
Fecto Cement Limited	1.04	-0.1	False
Flying Cement Company Limited	-0.91	-0.22799999999999998	True
Gharibwal Cement Limited	0.1	0.059999999999999984	True
Javedan Corporation Limited	0.6	-0.016000000000000014	False
Kohat Cement Limited	-1.77	2.708	False
Lucky Cement Limited	-8.43	-1.5839999999999999	True
Maple Leaf Cement Factory Limited	0.83	0.09400000000000013	True
Pioneer Cement Limited	1.98	-2.62	False
Power Cement Limited	0.48	-0.184	False

Safe Mix Concrete Limited	0.17	-0.06999999999999999	False
Thatta Cement Company Limited	-0.23	-0.52	True
Agritech Limited	0.36	-0.039999999999999994	False
Akzo Nobel Pakistan Limited	-2.63	3.096	False
Archroma Pakistan Limited	-21.44	-1.8960000000000004	True
Bawany Air Product Limited	-0.99	-0.4779999999999999	True
Berger Paints Pakistan Limited	-2.24	-1.988	True
Biafo Industries Limited	-12.81	-2.006	True
Buxly Paints Limited	-1.4	0.31000000000000016	False
Colgate Palmolive (Pakistan) Limited	-9.99	1.4699999999999995	False
Data Agro Limited	-0.38	-0.049999999999999975	True
Descon Oxychem Limited	-0.13	-0.07400000000000001	True
Dynea Pakistan Limited	-0.13	1.0	False
Engro Polymer and Chemicals Limited	0.14	-0.22400000000000003	False
Ghani Gases Limited	-0.56	-0.08399999999999998	True
I.C.I. Pakistan Limited	2.54	-5.026	False
Ittehad Chemical Limited	-0.66	-0.306	True
Leiner Pak Gelatine Limited	1.67	0.23399999999999999	True
Linde Pakistan Limited	5.76	-1.5559999999999998	False
Lotte Chemical Pakistan Limited	0.09	0.007999999999999997	True
Nimir Industrial Chemicals Limited	-1.49	-0.798	True
Nimir Resins Limited	0.44	-0.11599999999999999	False
Pakistan Gum and Chemiclas Limited	0.0	3.7640000000000002	False
Pakistan PVC Limited	0.07	0.308	True
Shaffi Chemical Industries Limited	-0.61	0.178	False
Sitara Chemical Industries Limited	20.0	3.386	True
Sitara Peroxide Limited	-0.69	0.7859999999999999	False
Wah Noble Chemicals Limited	-4.55	-2.5460000000000003	True
Golden Arrow Selected Funds Limited	0.34	-0.006000000000000005	False
PICIC Growth Fund	-0.65	-0.048	True
PICIC Investment Fund	0.25	-0.086	False
Tri-Star Mutual Fund Limited	0.05	0.025999999999999978	True
Allied Bank Limited	-0.72	-1.0059999999999998	True
Askari Bank Limited	0.16	0.10599999999999998	True

Bank Al-Falah Limited	0.85	-0.23400000000000004	False
Bank Al-Habib Limited	0.0	-0.17200000000000001	False
Bank Of Khyber Limited	0.44	-0.10999999999999999	False
Bank Of Punjab Limited	0.08	-0.03199999999999999	False
Bankislami Pakistan Limited	1.0	-0.016000000000000004	False
Faysal Bank Limited	1.09	0.05399999999999996	True
Habib Bank Limited	1.81	-0.3899999999999997	False
Habib Metropolitan Bank Limited	0.47	0.41	True
JS Bank Limited	0.05	0.011999999999999999	True
MCB Bank Limited	1.96	-0.7060000000000001	False
Meezan Bank Limited	-0.31	0.308	False
National Bank Of Pakistan	0.87	-0.15799999999999997	False
NIB Bank Limited	0.24	0.174	True
Silkbank Limited	0.0	0.033999999999999996	False
Soneri Bank Limited	0.02	-0.168	False
Standard Chartered Bank Limited	0.91	0.26800000000000007	True
Summit Bank Limited	0.11	-0.08800000000000001	False
United Bank Limited	-4.87	0.992	False
Aisha Steel Mills Limited	0.41	0.178	True
Aisha Steel Mills Limited (Preference Shares)	1.1	0.08600000000000001	True

Table 6. 9 Euclidian Distance

Total Companies: 100

True Predict: 57

False Predict: 43

Result: 57%

6.4.3 Cosine Similarity

Prediction of Stock Exchange Companies on the date 16-aug-2017.

Company Name	Change	Change Predict	Verdict
KSE-100 Index	287.51	-95.49705882352941	False
KSE-30 Index	153.6	-95.41588235294118	False
KSE All Share Index	137.01	-113.8029411764706	False
KSE Meezan Index	296.27	-312.4376470588236	False

KSE-MIALL	53.5	-25.08529411764705	False
Al-Ghazi Tractors Limited	-8.26	-0.10352941176470595	True
Atlas Honda Limited	-9.7	-2.5758823529411763	True
Dewan Farooque Motors Limited	-1.49	-0.07294117647058823	True
Ghandara Nissan Limited	-0.78	-0.868235294117647	True
Ghandhara Industries Limited	-8.59	-2.894705882352941	True
Ghani Automobile Industries Limited	0.13	-0.041176470588235266	False
HinoPak Motors Limited	52.49	-8.29941176470588	False
Honda Atlas Cars (Pakistan) Limited	8.16	-1.143529411764706	False
Indus Motor Company Limited	-8.42	-2.933529411764706	True
Millat Tractors Limited	-8.48	8.035294117647059	False
Pak Suzuki Motor Company Limited	-18.23	-5.53235294117647	True
Sazgar Engineering Works Limited	-5.76	-0.7076470588235293	True
Agriautos Industries Limited	4.99	0.45705882352941185	True
Atlas Battery Limited	2.5	-1.010588235294118	False
Baluchistan Wheels Limited	-0.46	-0.3288235294117647	True
Exide Pakistan Limited	-27.99	-4.125294117647059	True
General Tyre and Rubber Co. of Pakistan Limited	-0.22	-0.3394117647058825	True
Loads Limited	-0.24	-0.32176470588235295	True
Thal Limited	18.74	9.909411764705881	True
Johnson and Phillips (Pakistan) Limited	-0.9	-0.40176470588235297	True
Pak Elektron Limited	-1.37	0.7023529411764706	False
Pakistan Cables Limited	-2.01	-1.2405882352941175	True
Siemens Pakistan Engineering Co. Limited	8.59	-1.8805882352941183	False
Singer Pakistan Limited	-1.75	0.18000000000000002	False
TPL Trakker Limited	0.32	5.882352941176313E-4	True
Attock Cement (Pakistan) Limited	3.11	-0.9958823529411762	False
Bestway Cement Limited	0.91	-0.49588235294117644	False
Cherat Cement Company Limited	2.22	-0.09000000000000007	False
D.G. Khan Cement Company Limited	1.58	-0.8052941176470588	False
Dandot Cement Company Limited	-0.3	-0.17823529411764708	True
Dewan Cement Limited	-0.07	-0.008235294117647073	True
Fauji Cement Company Limited	0.23	-0.08352941176470587	False

Fecto Cement Limited	1.04	-0.9505882352941174	False
Flying Cement Company Limited	-0.91	-0.028235294117647063	True
Gharibwal Cement Limited	0.1	0.1947058823529412	True
Javedan Corporation Limited	0.6	-0.4694117647058823	False
Kohat Cement Limited	-1.77	-0.09176470588235286	True
Lucky Cement Limited	-8.43	-5.534117647058823	True
Maple Leaf Cement Factory Limited	0.83	-0.5752941176470588	False
Pioneer Cement Limited	1.98	-0.056470588235294064	False
Power Cement Limited	0.48	-0.18588235294117647	False
Safe Mix Concrete Limited	0.17	-0.014117647058823532	False
Thatta Cement Company Limited	-0.23	-0.13411764705882354	True
Agritech Limited	0.36	-0.08352941176470588	False
Akzo Nobel Pakistan Limited	-2.63	-0.7323529411764704	True
Archroma Pakistan Limited	-21.44	-0.3464705882352939	True
Bawany Air Product Limited	-0.99	-0.1429411764705882	True
Berger Paints Pakistan Limited	-2.24	-0.3029411764705882	True
Biafo Industries Limited	-12.81	-1.0082352941176471	True
Buxly Paints Limited	-1.4	-1.6176470588235292	True
Colgate Palmolive (Pakistan) Limited	-9.99	3.6600000000000006	False
Data Agro Limited	-0.38	-0.022352941176470596	True
Descon Oxychem Limited	-0.13	0.9823529411764705	False
Dynea Pakistan Limited	-0.13	0.6505882352941176	False
Engro Polymer and Chemicals Limited	0.14	0.21764705882352942	True
Ghani Gases Limited	-0.56	-0.12823529411764706	True
I.C.I. Pakistan Limited	2.54	-1.7811764705882354	False
Ittehad Chemical Limited	-0.66	-0.11294117647058823	True
Leiner Pak Gelatine Limited	1.67	-0.1005882352941176	False
Linde Pakistan Limited	5.76	2.035294117647058	True
Lotte Chemical Pakistan Limited	0.09	0.028235294117647053	True
Nimir Industrial Chemicals Limited	-1.49	-0.09999999999999998	True
Nimir Resins Limited	0.44	0.0017647058823529373	True
Pakistan Gum and Chemiclas Limited	0.0	-1.436470588235294	False
Pakistan PVC Limited	0.07	0.025882352941176485	True
Shaffi Chemical Industries Limited	-0.61	-0.1358823529411765	True

Sitara Chemical Industries Limited	20.0	-3.1558823529411764	False
Sitara Peroxide Limited	-0.69	-0.15235294117647058	True
Wah Noble Chemicals Limited	-4.55	-0.9199999999999999	True
Golden Arrow Selected Funds Limited	0.34	0.00529411764705882	True
PICIC Growth Fund	-0.65	-0.05411764705882354	True
PICIC Investment Fund	0.25	0.014705882352941183	True
Tri-Star Mutual Fund Limited	0.05	-0.2088235294117647	False
Allied Bank Limited	-0.72	-0.6882352941176471	True
Askari Bank Limited	0.16	-0.03294117647058824	False
Bank Al-Falah Limited	0.85	-0.12705882352941172	False
Bank Al-Habib Limited	0.0	-0.08764705882352943	False
Bank Of Khyber Limited	0.44	-0.058235294117647066	False
Bank Of Punjab Limited	0.08	-0.03588235294117647	False
Bankislami Pakistan Limited	1.0	-0.12058823529411766	False
Faysal Bank Limited	1.09	-0.13294117647058826	False
Habib Bank Limited	1.81	-1.2994117647058823	False
Habib Metropolitan Bank Limited	0.47	-0.08823529411764705	False
JS Bank Limited	0.05	-0.030000000000000006	False
MCB Bank Limited	1.96	-1.0176470588235293	False
Meezan Bank Limited	-0.31	-0.025882352941176467	True
National Bank Of Pakistan	0.87	0.06823529411764706	True
NIB Bank Limited	0.24	-0.004705882352941176	False
Silkbank Limited	0.0	-0.002352941176470588	False
Soneri Bank Limited	0.02	-0.11176470588235295	False
Standard Chartered Bank Limited	0.91	-0.20882352941176466	False
Summit Bank Limited	0.11	0.024705882352941164	True
United Bank Limited	-4.87	-0.4735294117647058	True
Aisha Steel Mills Limited	0.41	0.05470588235294119	True
Aisha Steel Mills Limited (Preference Shares)	1.1	0.20235294117647062	True

Table 6. 10 Cosine Similarity

Total Companies: 100

Predict True: 60

Predict False: 40

6.5 Conclusion

On these results we conclude that distance formula predict better results as compared to other methods.

Chapter 7

(Implementation)

7.1 Introduction

In this chapter we describe the tools, language, API which is used to build the system. After the design phase, the implementation phase comes. In this phase we decide how to implement design and which interface is used. System implementation is the process of defining how the information system should be built (physical system design).

7.2 Language Selection

Java is selected language to implement the system. Java is a programing language and computing platform first released by Sun Microsystem in 1985. When I crawl data from website http://www.ksestocks.com/MarketSummary i used java language and backend purpose like database and other I used java programing. As my project is web based so I also used java servlet and JSP.

7.2.1 Java Servlet

Java Servlets are programs that run on web or application server and act as a middle layer between a requests coming from a web browser or other HTTP client and database or application on the HTTP server.

Using servlets, you can collect input from users through web page from s, present records from a database or another source, and create web pages dynamically.

7.2.2 Java Server Pages

Java Server Pages (JSP) is a server-side programing technology that enables the creation of dynamic, platform independent method for building web based application. JSP have access to the entire family of java APIs, including the JDBC API to access enterprise databases.

7.3 Database Selection

MySQL database is used to implement the system. MySQL is a freely available open source Relational Database Management System (RDBMS) that uses structured query language (SQL). SQL is the most popular language for adding, accessing and managing content in a database. MySQL has become the leading database choice for web based application.

7.4 Software used

Some software which are used in developing Stock Exchange Share Analyzer are given below.

7.4.1 Eclipse Mars 2

New java IDE features, including hierarchical view of nested projects, ability to customize perspective and speed improvements for text search. Automated error reporting that allows eclipse users to report errors directly to eclipse projects.

7.4.2 Tomcat Server

Apache Tomcat, often referred to as Tomcat Server, is open-source Java Servlet container developed by the apache software foundation (ASF). Tomcat implements several Java EE specification including java Servlet, java server pages (JSP) and provides a pure Java HTTP web server environment in which java code can run.

7.4.3 XAMPP

XAMPP is a free and open source cross platform web server solution stack package developed by Apache friends, consisting mainly of the Apache HTTP Server. XAMPP stands for Cross Platform (X), Apache (A), Maria DB (M), PHP (P) and Perl (P). It is extremely easy for developers to create a local web server for testing and deployment purpose.

7.5 Interfaces

Some interface of Stock Exchange Share Analyzer is given below with their description.

7.5.1 Login Screen

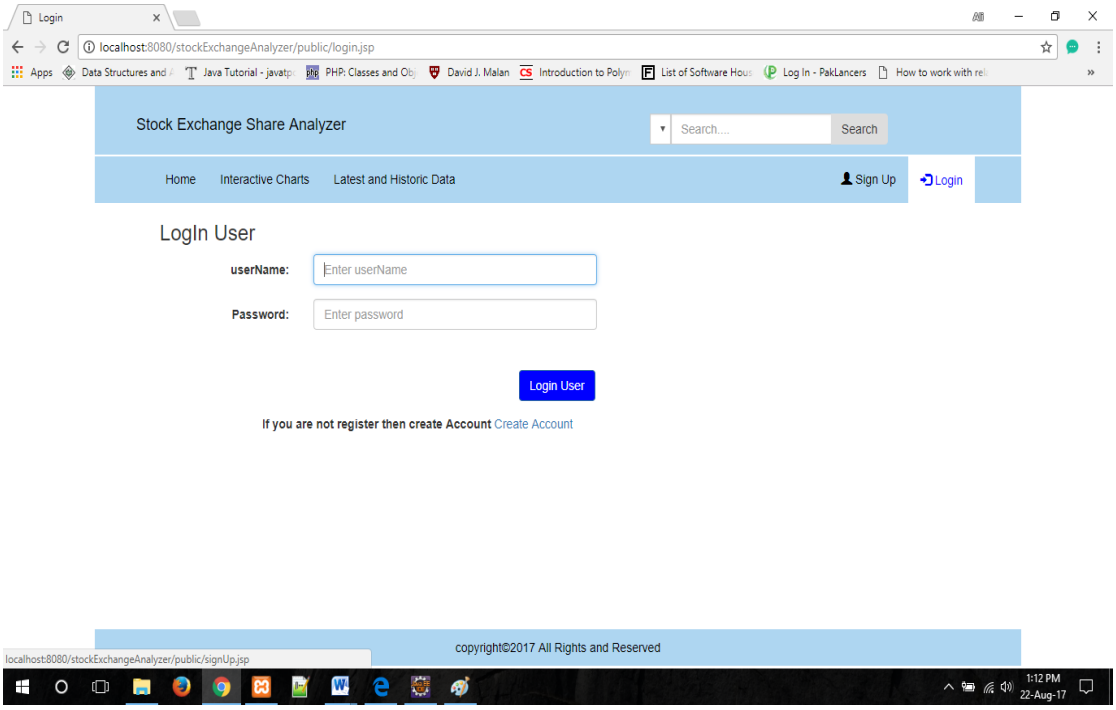

Figure 7. 1 Login Screen

7.5.2 Signup Screen

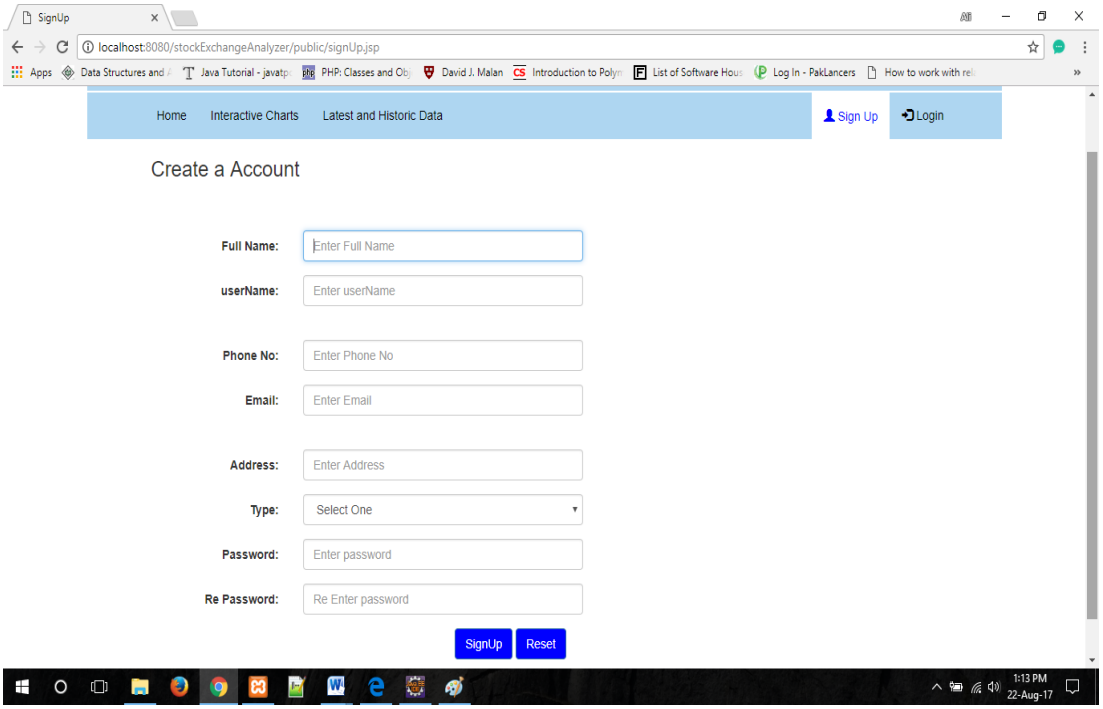

Figure 7. 2 Signup Screen

7.5.3 Latest and Historic Data

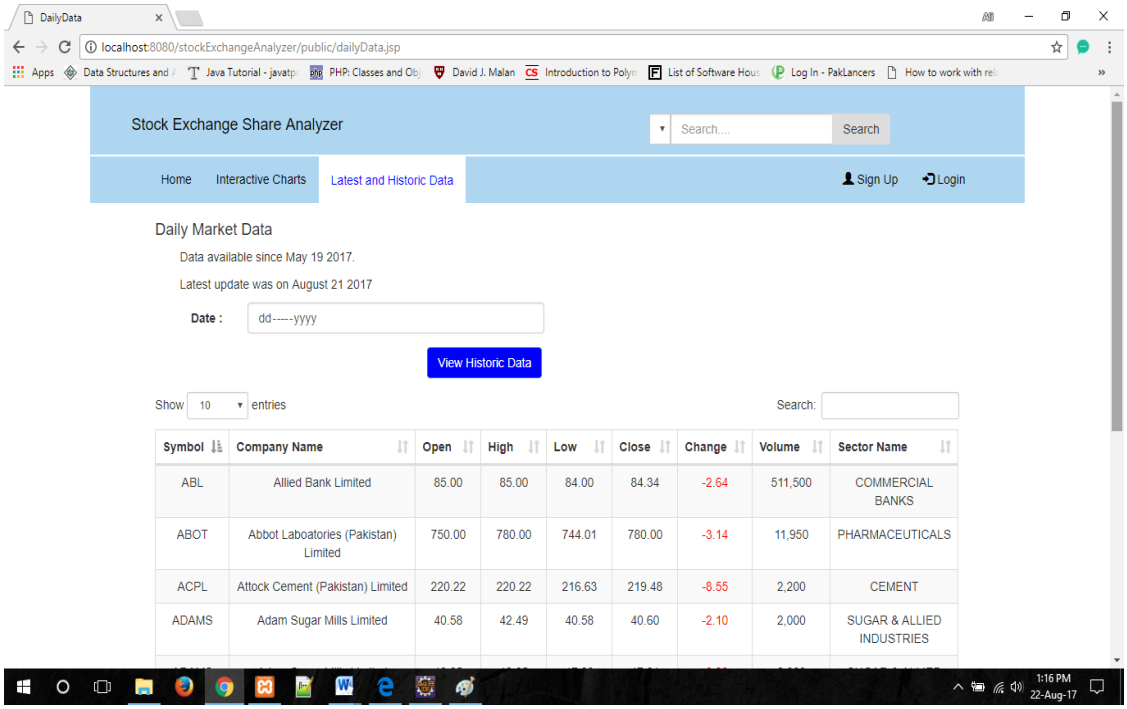

Figure 7. 3 Latest and Historic Screen

7.5.4 Interactive Charts

Some interactive charts are given below.

7.5.4.1 Top Ten Sectors

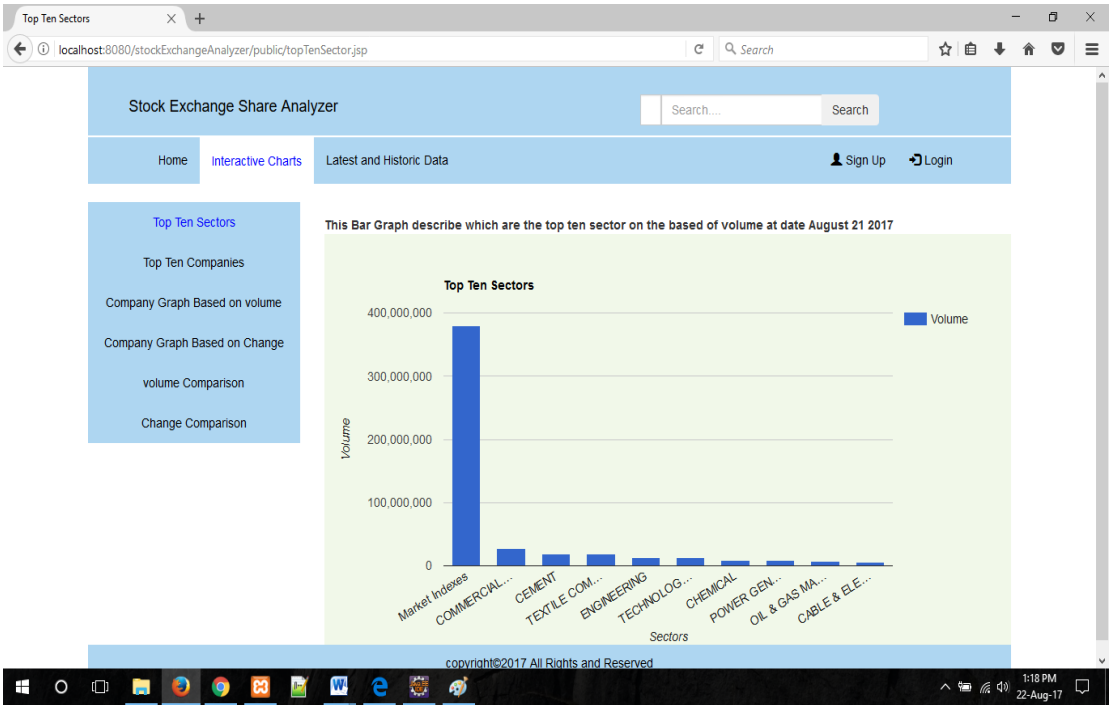

Figure 7. 4 Top Ten Sectors Screen

7.5.4.2 Top Ten Companies

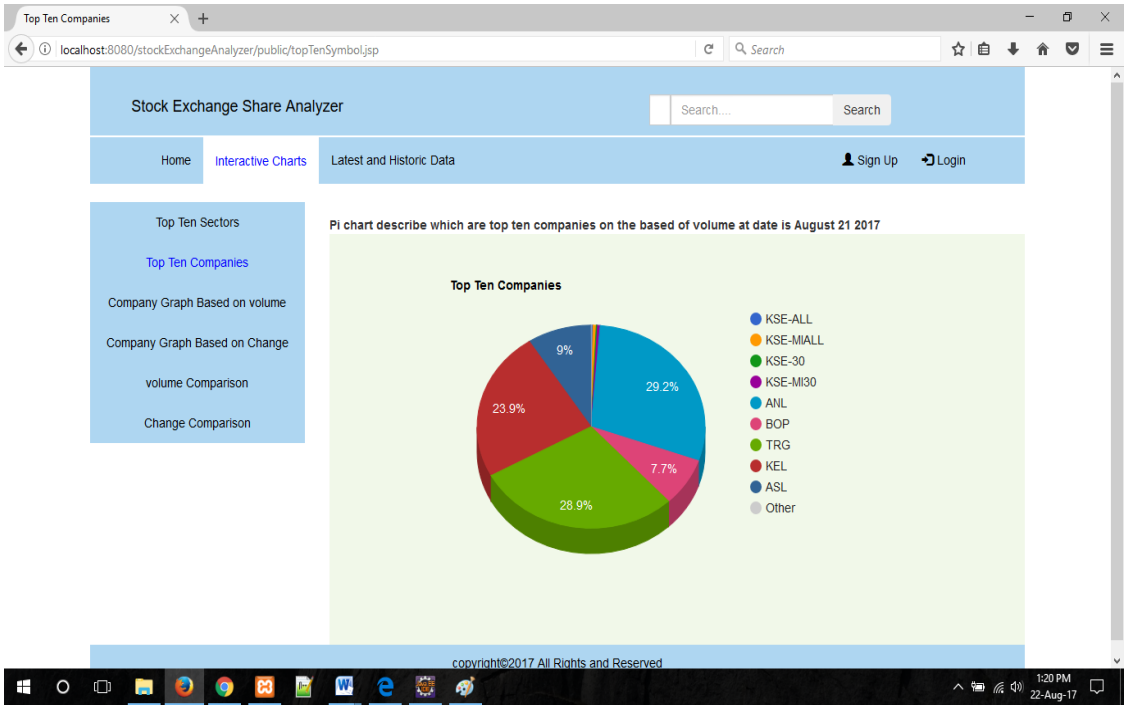

Figure 7. 5 Top Ten Companies Chart Screen

7.5.4.3 Company Graph Based on Volume

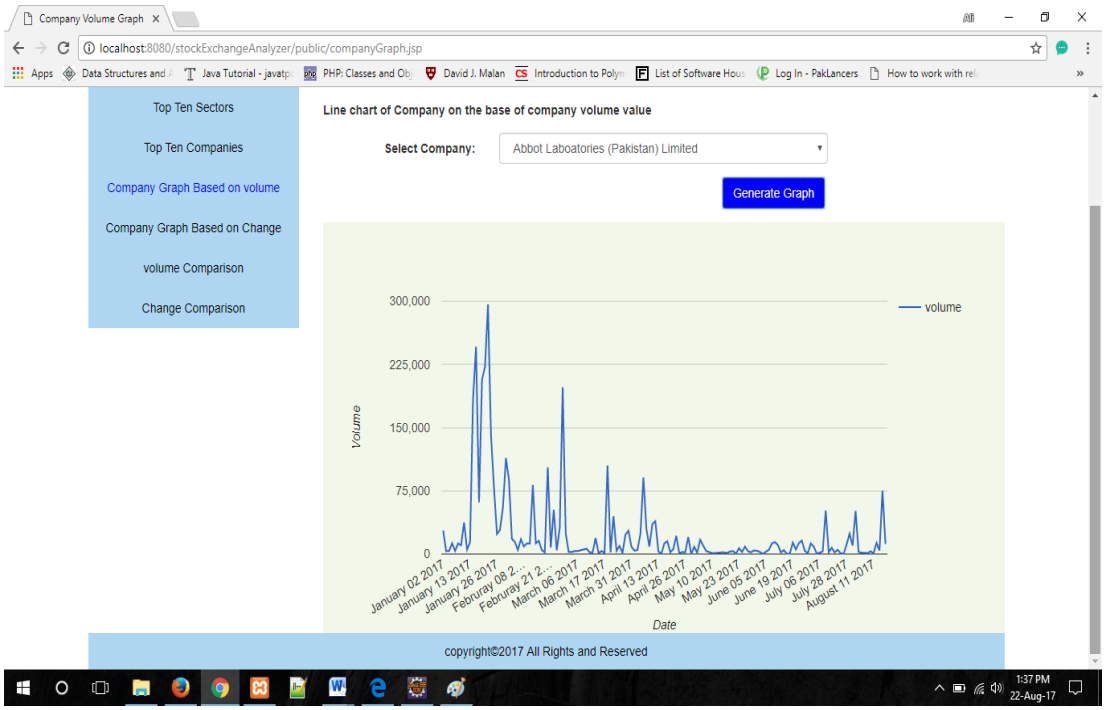

Figure 7. 6 Company Graph based on Volume Screen

7.5.4.4 Company Graph Based on change

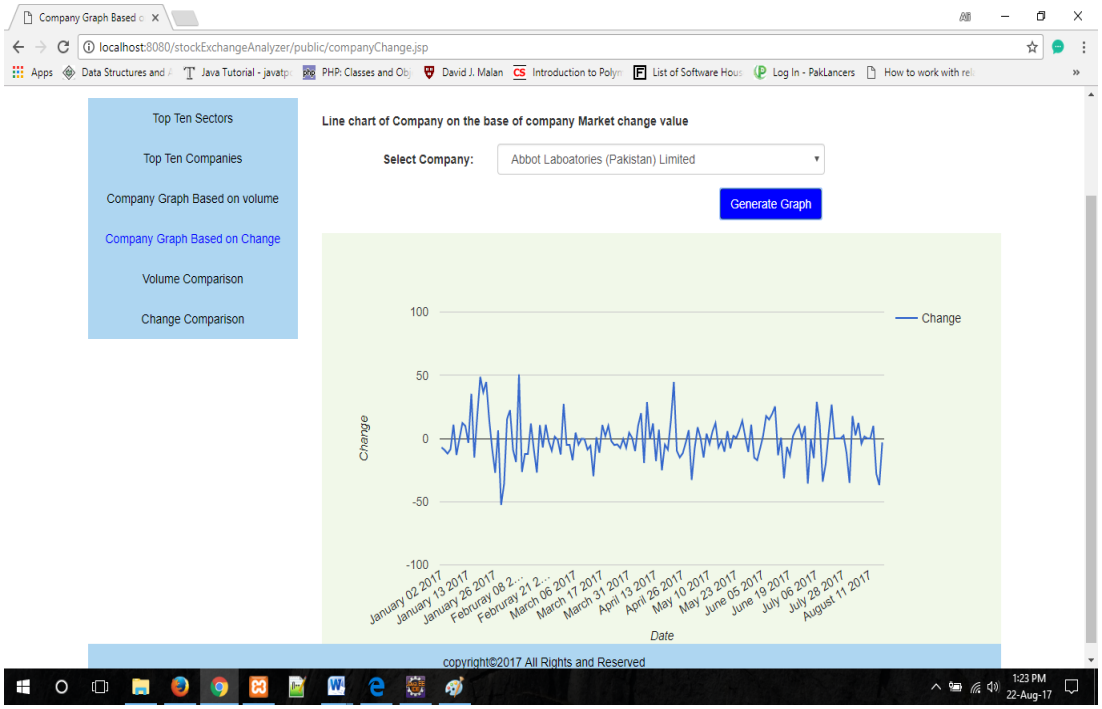

Figure 7. 7 Company Graph based o change Screen

7.5.5 View Prediction

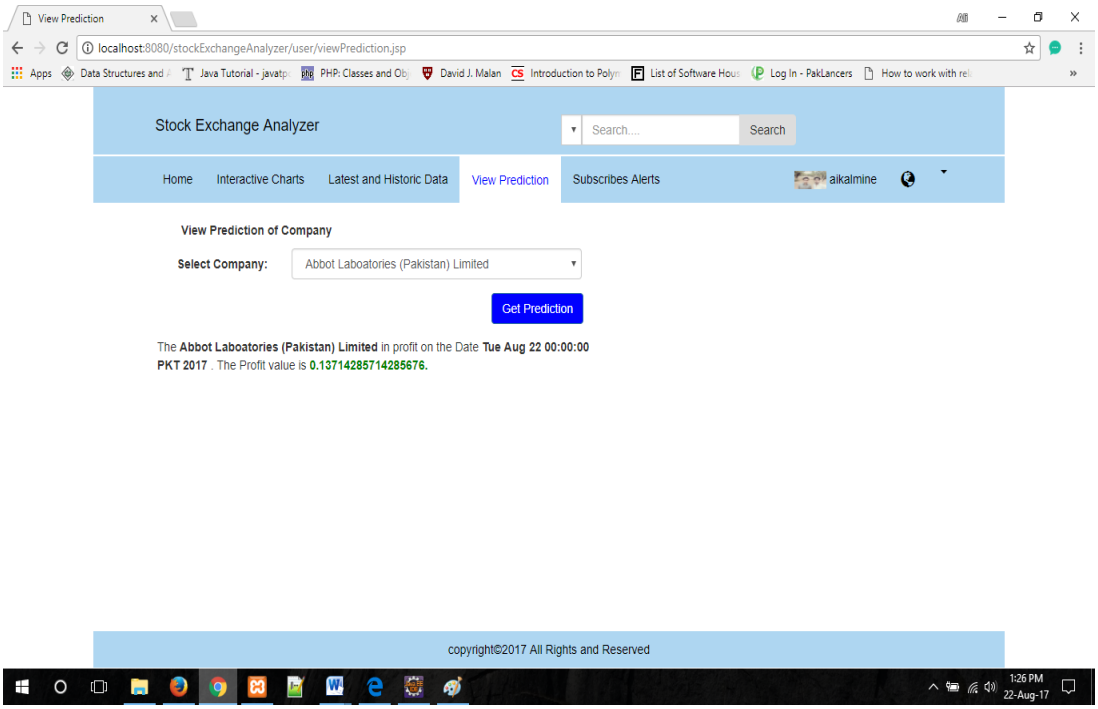

Figure 7. 8 View Prediction Screen

7.5.6 Subscribe Alerts

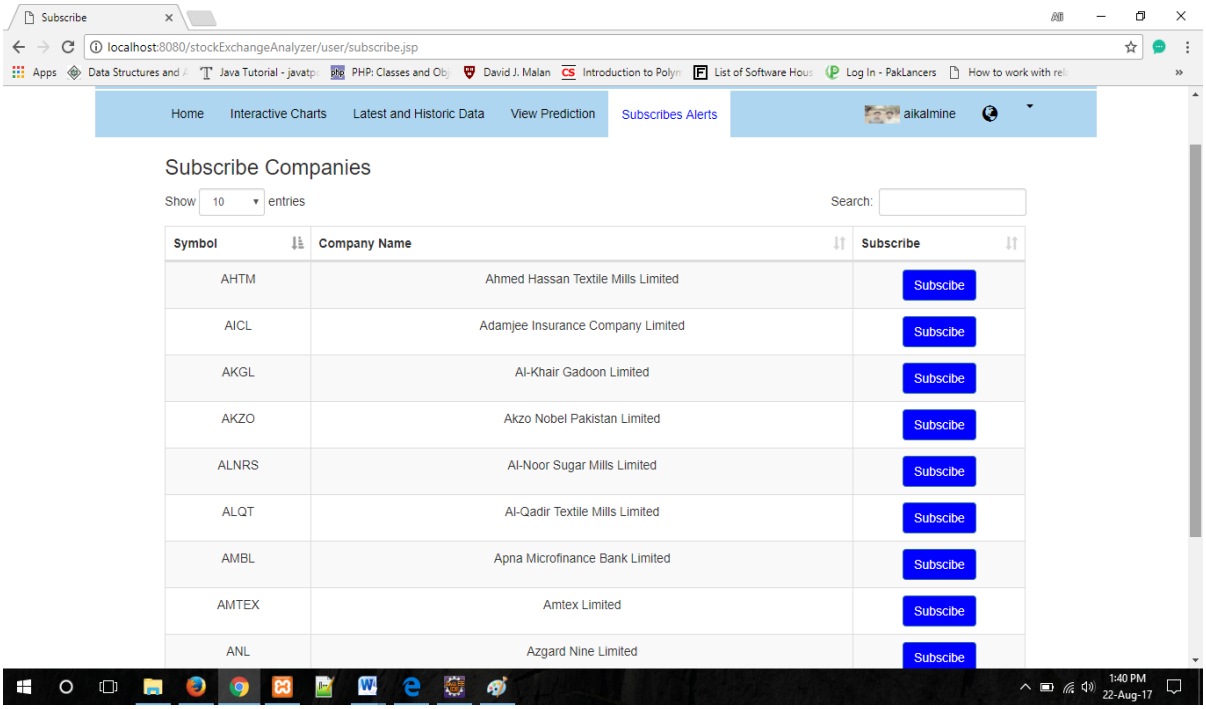

Figure 7. 9 Subscribe Alerts Screen

7.5.7 Search Stock

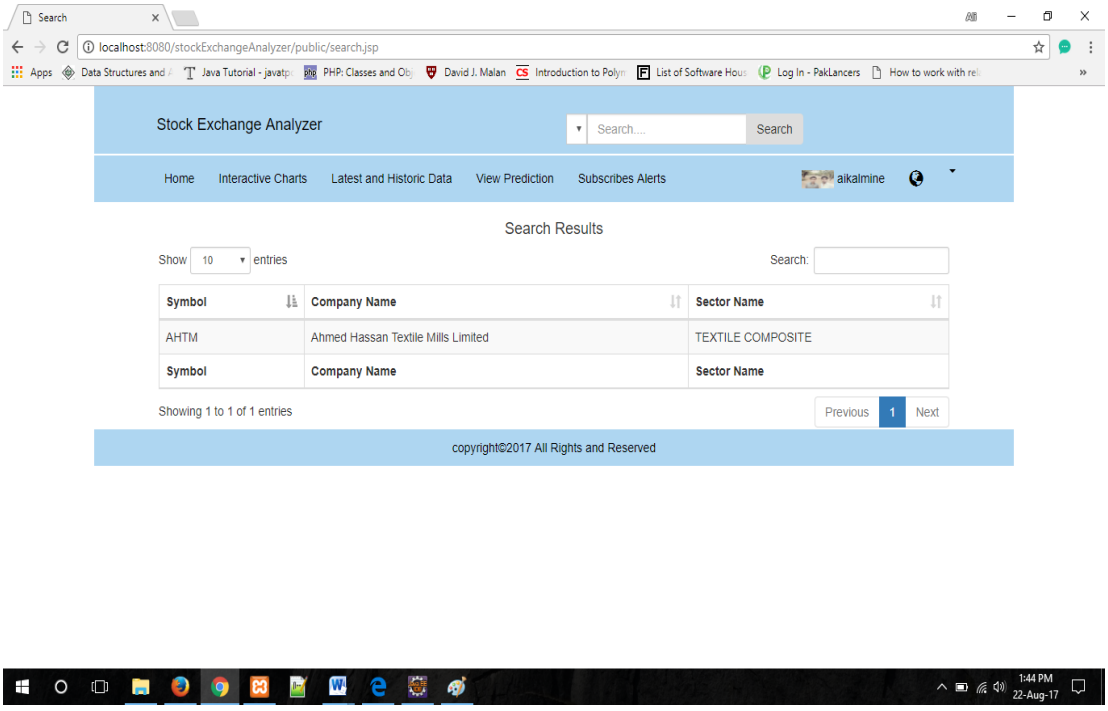

Figure 7. 10 Search Stock Screen

Chapter 8

(Conclusion)

8.1 Introduction

In this chapter we will describe what the end user will achieve from the stock exchange analyzer and what we will provide in the future to improve the system.

8.2 Conclusion

After the implementation of stock exchange analyzer the end user i.e. investor has an application where they can view daily and historic stock data. The interface of stock exchange is simple and user friendly one can easily use the system. The application provides a prediction of companies in terms of lost and profit. So the investor can now first view the prediction of company then decide whether he want to invest or not. Through this application the investor can improve their earning. Also companies can view their prediction and they improve their performance in market in order to improve their investment form the investor and grow their company.

8.3 Future Enhancement

Some future enhancement for stock exchange share analyzer is listed below.

- At this time we are analyzing last six to eight month of stock exchange data of different companies to predict the company's performance. In future we will analyze at least one to two year of data.
- In current application we are predicting one company in future we will like to predict the whole sector as well.
- We will make this application like a social media i.e. (Business Social media) where people can interact with each other and discuss about their business.

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