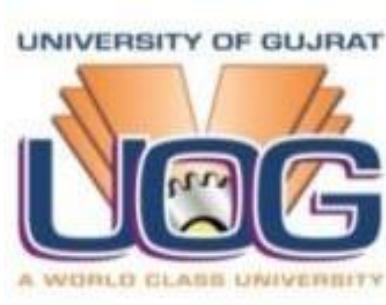


The screenshot shows a Gmail inbox with the following details:

- Inbox:** 2,536 emails.
- Compose:** Button to start a new email.
- Search mail:** Search bar at the top.
- UOG Logo:** University of Gujrat logo in the top right corner.

**Email Thread:**

- From:** UMME HABIBA (Wed, May 26, 10:32 AM)  
Subject: Approval of fyp documentation
- Message Content:** Asslam O Alaikum Sir.. Sir this is our Final Documentation of FYP "Web Based Smart Predictor for Stock Prices and Crypto Currency" .. Kindly Sir check it out and
- Reply:** Dr. Ansar Siddique (Wed, May 26, 10:34 AM)  
Message content: On Wed, May 26, 2021 at 10:32 AM UMME HABIBA <17221598-148@uog.edu.pk> wrote: Asslam O Alaikum Sir.. Sir this is our Final Documentation of FYP "Web Based Sma
- Reply:** Dr. Ansar Siddique (11:09 AM)  
Message content: to me, DILAWAR, SULEMAN  
Acknowledged.
- Reply:** Dr. Ansar Siddique (11:09 AM)  
Message content: Please proceed.
- Options:** Buttons for "Noted with thanks.", "Acknowledged.", and "Thanks a lot."
- Action Buttons:** Reply, Reply all, Forward.



## Department of Software Engineering

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University of Gujrat

# Web Based Smart Predictor for Stock Prices and Cryptocurrency



Session: BS-SE 2017-2021

**Project Advisor: Dr. Ansar Siddique**

### Submitted By:

Suleman Amjad	17221598-127
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---

Department of Software Engineering  
University of Gujrat

## **STATEMENT OF SUBMITION**

This is certify that Suleman Amjad Roll No 17221598-127,Dilawar Hussain Roll No 17221598-129 and Umm-e Habiba Roll No 17221598-148 has successfully completed the final year project named as “Web Based Smart Predictor for Stock Prices and Cryptocurrency” at the Department of Software Engineering, University of Gujrat, to fulfill the requirement of the degree of **BS in Software Engineering.**

---

Supervisor's Name: Dr Ansar Siddique  
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---

Project Coordination Office  
Faculty of C&IT -UOG

---

Head of the Department

## **Acknowledgement**

We truly acknowledge the cooperation and help make by Dr. Hannan Bin Liaqat Chairman Department of Software Engineering, University of Gujrat. He has been a constant source of guidance throughout the course of this project. We would also like to thank Dr.Anzar Siddique for his help and guidance throughout this project. We are also thankful to our friends and families whose silent support led us to complete our project.

Date: May 15, 2021

## **Abstract**

As we know Stock markets are some of the most important parts of today's global economy. Countries around the world depend on stock markets for economic growth. Similarly the popularity of Bitcoin that is a decentralize crypto(digital) currency has increased throughout the world due to faster payment, lower transaction fee, independence of governments, protection against inflation. Around the world, billions are being invested in bitcoin. Thus, the importance of both bitcoin and stocks in economy of world and ever-changing prices of both, have created demand of a sophisticated system or method to predict the prices. Investor also like to remain up to date with the news of the stock market and the crypto currency. So, our application is one stop solution for the investors by providing the future prices of stock markets and bitcoin. Our application "Smart Predictor for Stock and Crypto-Currency" is a web application, which will help investor to make certain decisions regarding investing their money in stock market and Bitcoin. The application is a predictive system that predicts the price of stocks and bitcoin. The investors and currency users will be able to keep track of the prices of bitcoin and stock using the application and will be provided with live news regarding stocks. The system provides provide up-to-date news about the stock markets and bitcoins. Graphs in System provided for easy evaluation and visualization of Stock and Bitcoin Prices.

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## **Chapter 1: Project Feasibility Report**

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## **1.1. Introduction**

**Stock** markets are some of the most important parts of today's global economy. Countries around the world depend on stock markets for economic growth. Stock markets allows you to own a portion of public corporation. These stocks are being sold and bought at stock markets. The concept similar to stock market exist even before the 1500s. But it was in 17th and 18th Centuries the Dutch modern financial system. For investors and companies predicting the trend of price of stock and cryptocurrency is one of the most widely investigated and challenging problems due to volatile and non-linear nature of the stock and cryptocurrency. Today, almost every country has its own stock market. Around the globe stock market presence cannot be denied. Stock price performance serves as a measure of positive and negative economic activity. Due to stock importance, predicting stock price using statistical analysis is popular topic throughout last 30 years.

**Crypto-currency** is a decentralize crypto(digital) currency. Bitcoin's first version was announced on January 8th,2009. After its release it become quite popular. Currently one Bitcoin is worth 10611.30 USD. Many countries have legalized the currency and being use for normal day uses. Companies like air Baltic, Expedia and many others are accepting Bitcoin as payment. Bitcoin is being getting accepted throughout world due to faster payment, lower transaction fee, independence of governments, protection against inflation. Around the world, billions are being invested in bitcoin. Investors like to keep an eye on the changing price of bitcoins and are tends to predict the prices of bitcoin. Thus, the importance of both bitcoin and stocks in economy of world and ever-changing prices of both, have create demand of a sophisticated system or method to predict the prices. Investor also like to remain up to date with the news of the stock market and the crypto currency.

So, our application will be one stop solution for the investors by providing the future prices of stock markets and bitcoin. It will also provide latest news regarding the markets and companies. Users will also be to pin his interested stock, markets, companies to keep a close eye and close inspection. The successful prediction of the stock will be a great asset for the stock market institutions and will provide real-life solutions to the problems that stock investors face.

### **1.1.1. Executive Summary**

During the first phase the overarching purpose of the project was to create a model to predict the future prices of stocks and bitcoin and provide latest news about them. The development of such a system would greatly help unseasoned investors with very little knowledge of the workings of the stock market, allowing them to earn a profit without having to perform research of their own.

In the second phase our team would like to use various signal analysis techniques to implement a mathematical model of the daily closing price of a stock. This model will took into account other inputs beyond previous values of the given stock's price. we are trying different combinations of analysis methods were experimented with, and those which provided the most accurate of forecasts were chosen for future research. Finally, the method which produced the least forecast error over a wide range of stocks was chosen for future analysis to one month of forecasts to make better investment decisions. With a fully-developed mathematical model of the price of a stock and the value of the bitcoin upon which it is traded. This proposed system allows investors to

make informed decisions, based on a given company's news presence and the mathematical model.

### **1.1.2. Description of product and services**

The “Smart Predictor for Stock and Crypto-Currency” is a web application, which will help investor to make certain decisions regarding investing their money. The application is a predictive system that will predict the price of stocks and bitcoin. The investors and currency users will be able to keep track of the prices of bitcoin and stock using the application and will be provided with live news regarding stocks. The system should provide up-to-date news about the stock markets and bitcoins. Graphs will be provided for easy evaluation and visualization.

### **1.1.3. Product Marketplace**

The marketplace for smart predictor is actually all around the globe because stock market is the essential part of every country economy. On the other hand the marketplace for bitcoin is the cryptocurrency. But we initially try to predict some stock prices of five to six companies and only the bitcoin not all currencies include in the cryptocurrency domain. Therefore, to determine marketplace for this system is quite tough question to ask. On the other hand when it comes to competitors honestly no real competitor exist in our local marketplace of Pakistan.

### **1.1.4. Marketing Strategy**

First of all this all is for academic purpose so we don't need much for the marketing strategy for our system. However, in case of marketing we would like to use social media platform like Facebook, twitter, Instagram and online newspapers to advertise our system because Marketing through social media is one of the most versatile and cost-effective strategies that small businesses can use to reach their target audience and boost sales over time. That's why 97% of marketers are using social media to reach their audiences.

## **1.2. Project/Product Feasibility Report**

This feasibility report is an assessment of the practicality of our proposed project. Our aim here is to objectively, and rationally uncover the strengths, weaknesses, opportunities and threats, the resources required to carry out the work, and eventually the predictions for success of this proposed system. The two criteria to judge feasibility are cost required and value to attain.

### **1.2.1. Technical Feasibility**

It is definitely possible to develop Web Based Smart Predictor for Stock Prices and Crypto-Currency. Web Based Smart Predictor for Stock Prices and Crypto-Currency is going to be a Web Based application. It will be built using Java language will use to develop Representational state transfer (REST) API's, Python for implementing **Machine Learning** algorithms to predict the prices and Html5, Css3 and Bootstrap4 for web designing in order to make web application responsive and user friendly. Project can be developed in 7 to 8 months. The project will use the Technical analysis and also Fundamental analysis. There is no noticeable technical constraint in it. It is possible to develop and implement the proposed system with all functionality. All the group members possess the required technical expertise. Apart

from being aware of the needed technology for this project, we are also a team possessing the skills needed to implement these technologies.

### **1.2.2. Operational Feasibility**

Team members possesses the required technical ability to operate the project. It is widely investigated problem throughout last thirty years so accurate prediction in Web Based SPSC will provides the real life solution for the problems the stock investors face. User will be able to view the predicted prices and select different companies to view data. The problem may occur if the user does not have internet availability of 24/7.

### **1.2.3. Economic Feasibility**

The project has been quite economically feasible for us, we did not have to pay any amount to any platforms, nor did we use technologies that require money to be paid. In fact, the technologies used are freely available on respective websites. Being a web application SPSC will have an associated hosting cost. Since the system doesn't consist of any multimedia data transfer, bandwidth required for the operation of this application is very low. Now, let us talk about benefit, In absolute terms, the system will not cost anything to users for using it; it will provide monitoring of resources and its efficient management.

### **1.2.4. Schedule Feasibility**

This project is feasible with respect to schedule as whole team is mostly available and working properly. We are arranging meetings, with our instructor, which helps us matching up with schedule. It is possible to complete all the amount and scope of work lying ahead, utilizing the given amount of resources, within required period All the Project Estimation, Gantt & PERT chart and CPM prove that the project can be completed in scheduled time.

### **1.2.5. Specification Feasibility**

The requirements of this system are clear to certain extent as it is not a customer's demanded project, rather whole market is our customer, so firstly we have picked the requirements that matters more to facilitate investors. We defined scope boundaries to the requirements according to our time plan.

### **1.2.6. Information Feasibility**

Information through this project will be complete, reliable and meaningful. We will try to provide real and accurate information as much as possible.

### **1.2.7. Motivational Feasibility**

We are a team of highly motivated individuals, who have strong understanding of one another. We did not just divide work between each other; we have also always been there for each other throughout the journey of this project. If one of us had a difficulty with something, the others always helped. The most important thing to play a huge role in the project's completion is our mutual understanding and decision-making. No silly arguments came into our ways, consequently the project completed without delays or disappointments.

### **1.2.8. Legal & Ethical Feasibility**

The project is legal and ethically feasible and there are no infringements or liabilities raised through this project. We are owed to develop the application that is both

professional and ethical. There will be no nepotism, accountability or violation of privacy. Project confirms the legal and ethical requirements.

### ***1.3. Project/Product Scope***

The application will help investor to make certain decisions regarding investing their money. The application is a predictive system that will predict the price of stocks and bitcoin. Using machine learning algorithms, the application will aim to provide as accurate as possible future values/prediction of some specific stocks and bitcoin. Thus, providing investors a clear estimate of the result of their investments. The system will be able to collect the historical information of stock market and bitcoin for some previous years and then accordingly predict the results for the predicting stock or bitcoin what would happen next. The application should show graphical representation to the stock and bitcoin prices with the help of different graphs and charts. The investors and currency users will be able to keep track of the prices of bitcoin and stock using the application and will provided with live news regarding stocks and currency.

### ***1.4. Project/Product Costing***

The aim of software costing is to accurately predict the cost of developing the software. This helps with the planning process and the effective use of resources. To estimate the cost of our project we will use the function point analysis base on the degree of functionalities that the system provides to the end user and Constructive Cost Model.

#### **1.4.1. Project Cost Estimation By Function Point Analysis**

The FPA is a reliable method for measuring the size of computer software. It essentially measures functionality that the user requests and receives. It also measures the software development and maintenance cost and size independently of the technology used for implementation.

- ❖ The general approach that FPA follows is
  - Count the number of inputs, outputs, inquiries, master files, and interfaces from each modules of our project, then calculate the Unadjusted Function Points (UFP).
  - Calculate the adjusted function point (AFP) by multiplying these counts by an adjustment factor; the UFP and the product complexity adjustment.
  - Calculate the Source Lines of Code (SLOC) with the help of the AFP and the Language Factor (LF)

**Step 1:** The FPA measures functionality that the user requires. The specific user functionality is a measurement of the functionality delivered by the application as per user request.

<b><i>Function Type</i></b>	<b><i>Explanation</i></b>
<b>External Input (EI)</b>	Receives information from outside the application boundary like input screen etc.

<b>External Output (EO)</b>	Presents information of the information system such as output screen and reports.
<b>External Inquiry (EQ)</b>	Special kind of an external output on user action such as Prompts and interrupts
<b>Internal Logical File (ILF)</b>	Contains permanent data that is relevant to the user such as Databases.
<b>External Interface File (EIF)</b>	Contains permanent data that is relevant to the users but the data is maintained by another information system such as shared database and API's.

**Table\_1.1**

➤ **Function point of our project**

Function points	User Management	User Personalize	Live Stock's News	Visualization Module	Research Module	Total
<i>EI</i>	3	4	3	3	2	15
<i>EO</i>	1	4	5	5	2	17
<i>EQ</i>	0	2	1	1	0	4
<i>ILF</i>	1	0	0	0	1	2
<i>EIF</i>	0	1	1	0	0	2

**Table\_1.2**

**Calculate Unadjusted Function Point ( UFP):** As weighting factors is also basic mode. Therefore, we will multiply each individual function point to corresponding values.

$$\text{UFP} = (15*3) + (17*4) + (4*3) + (2*7) + (2*5) = 149$$

**Total Unadjusted Function Point: 149**

**Adjusted Function Points**

Number	Complexity Weighting Factor	Value
1	Data communications	3
2	Distributed data processing	3
3	Performance	4
4	Heavily used configuration	2

5	Transaction rate	2
1.	On-Line data entry	2
2.	End-user efficiency	4
3.	On-Line update	2
4.	Complex processing	2
5.	Reusability	4
6.	Installation ease	2
7.	Operational ease	2
8.	Multiple sites	2
9.	Facilitate change	2
	<b>Total complexity adjustment value(F)</b>	<b>36</b>

**Table\_1.3**

### **Complexity Adjustment Factor**

$$CAF = 0.65 + (0.01 * F)$$

$$CAF = 0.65 + (0.01 * 36)$$

**Total CAF= 1.01**

### **Calculate Function Point.**

$$\text{Function Point. FP} = \text{UFP} * \text{CAF}$$

$$FP = 149 * 1.01$$

**FP est= 150.49**

### **Calculate the Lines of Code (SLOC):**

FPs can be used to estimate LOC depending on the average number of LOC per FP for a given language.

$$LOC = AVC * \text{number of function points}$$

Where AVC is a language-dependent factor the Value of AVC for **JavaScript is 47**.

**AVC= 47**

$$LOC = 150.49 * 47$$

**LOC=7073.03**

**LOC=7.07 KLOC**

#### **1.4.2. Project Cost Estimation by using COCOMO'81 (Constructive Cost Model)**

The COCOMO model is a good measure for estimating the number of person-months required to develop software. My project, the Statistical analysis package is a web application. This model will help us to calculate the Effort (MM), time required for the project completion and team member required to complete the project within the proposed time frame. We will use basic cocomo'81 and semi detached mode.

In order to Calculate cost estimation using COCOMO model we will first have to choose that which mode of COCOMO model to choose.

There are three Modes of COCOMO model as:

- 1.Organic
- 2.Semi Detached
- 3.Embeded

Our software project has similar specifications and characteristics as Semi Detached mode of COCOMO model.

#### **Basic COCOMO**

Type	Effort	Schedule
<b>Semi-Detached</b>	<b>PM= 3.0 (KLOC) 1.12</b>	<b>TD= 2.5(PM)0.35</b>
Effort= $3(7.07)^{1.12}$		Schedule= 2.5(26.8)0.35
Effort =26.8 Person Month		TD= 7.9 Number of months

$$\text{People Required} = \text{Effort} / \text{Duration} = 26.8 / 7.9 = 3$$

$$\text{Productivity} = \text{FP/Effort} = 150.49 / 26.8 = 5.6$$

#### ***Important Result:***

<b>People Required</b>	3 Persons
<b>Effort</b>	26.8 Person Month
<b>TD</b>	7.9 Number of Months
<b>Productivity</b>	5.6

**Table\_1.4**

#### **1.4.3. Activity Based Costing**

**Basic Cost Drivers:**

For each activity state in state diagram, the basic cost drivers are:

**Product Attribute:**

Required Reliability:	Nominal – 1.00
Database Size:	Nominal – 1.00
Product Complexity:	V. High – 1.30

**Personnel Attribute:**

Language Experience:	V. High – 0.95
----------------------	----------------

**Project Attribute:**

Software Tools:	High – 0.91
-----------------	-------------

### 1.5. Task Dependency Table

Activity	Activity Description	Predecessors	Duration(weeks)	Dependency Relationship
A	Project Proposal/Initiation	—	2 weeks	N/A
B	Project Feasibility/Planning	A	2 weeks	Finish to Start
C	Requirement Gathering	A,B	4 weeks	Start to Start
D	Design	C	5 weeks	Start to Start
E	Development	C, D	9 weeks	Finish to finish or Finish to start
F	Testing	E	4 weeks	Finish to Finish
G	Deployment	F	2 weeks	Finish to start

Table\_1.5

### Dependency Relationship Description

**Finish-to-Start (FS):** In this relationship, task B cannot start until task A finishes.

**Finish-to-Finish (FF):** In this relationship, task B cannot finish until task A finishes.

**Start-to-Start(SS):** In this relationship, task B cannot start until task A starts.

**Start-to-Finish(SF):** In this relationship, task B cannot finish until task A starts.

### 1.6. CPM – Critical Path Method

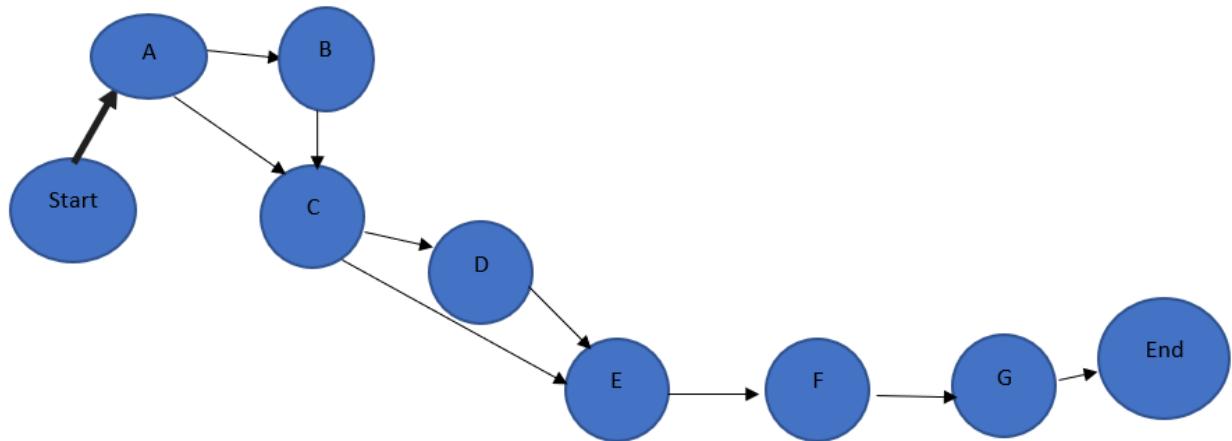
The critical path is the sequence of activities with the longest duration. A delay in any of these activities will result in a delay for the whole project.

Activity	Activity Description	Predecessors	Duration(weeks)
A	Project Proposal/Initiation	—	2 weeks

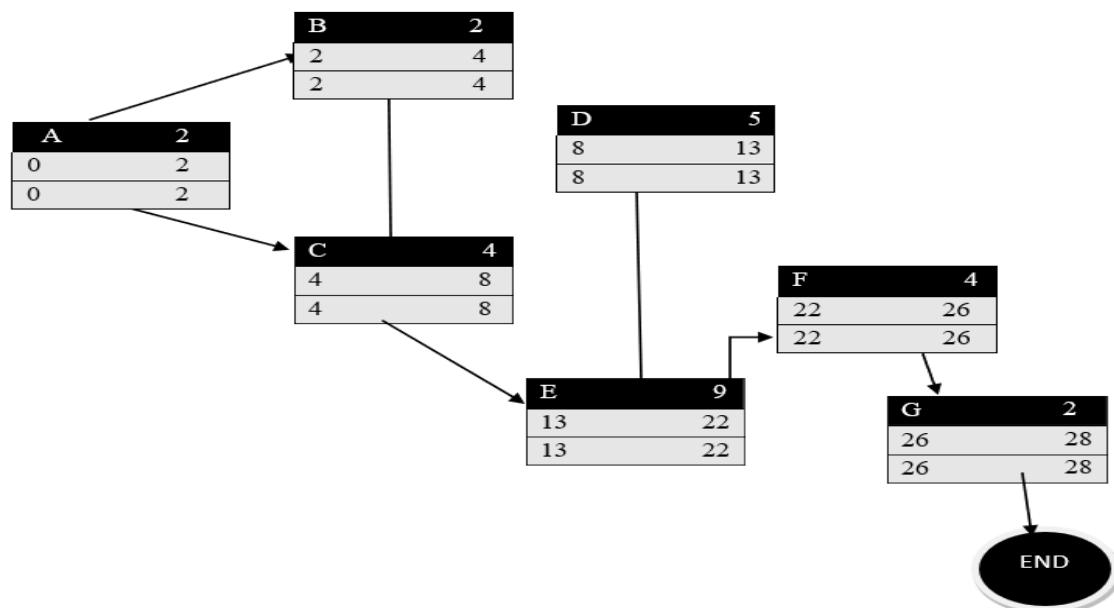
B	Project Feasibility/ Planning	A	2 weeks
C	Requirement Gathering	A,B	4 weeks
D	Design	C	5 weeks
E	Development	C, D	9 weeks
F	Testing	E	4 weeks
G	Deployment	F	2 weeks

Table\_1.6

### Network Diagram:



### General Foundry's ES and EF times:



## Identify the Critical Path:

Activity	ES	EF	LS	LF	SLACK	Critical Path
A	0	2	0	2	0	YES
B	2	4	2	4	0	YES
C	4	8	4	8	0	YES
D	8	13	8	13	0	YES
E	13	22	13	22	0	YES
F	22	26	22	26	0	YES
G	26	28	26	28	0	YES

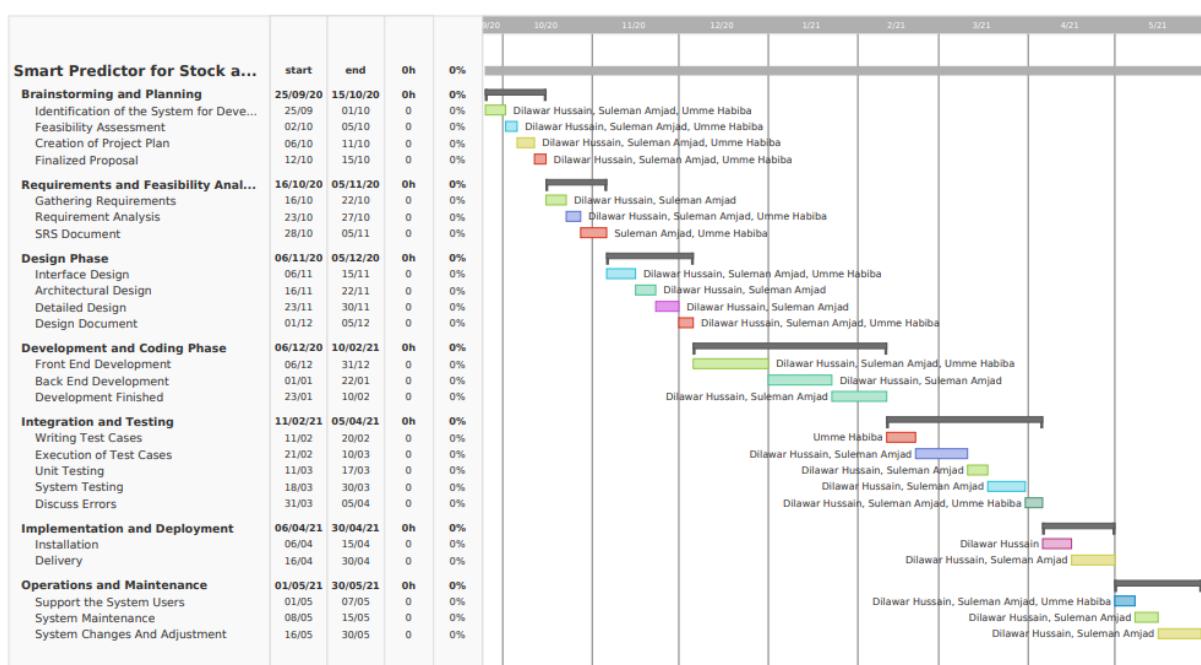
Table\_1.7

The parameters and slacks are calculated as follows:

Slack Time= LS – ES, or Slack = LF – EF

Critical Path= A → B → C → D → E → F → G

## 1.7. Gantt Chart



Fig\_1.1

### **1.8. Introduction to Team member and their skill set**

Name	Roll No	Skill set	Task
<i>Suleman Amjad(M1)</i>	17221598-127	Backend Expert, Html, Css3 and Java-Script, Web Architecture, Python	Application Front-End, Analysis of Documentation, Deployment
<i>Dilawar Hussain(M2)</i>	17221598-129	Front End Developer, Python and Machine Learning, Design Expert, Angular Expert	Application Front-End, Analysis of Documentation, Prediction and data analysis.
<i>Umm-e Habiba(M3)</i>	17221598-148	Research, Front-End Developer, Documentation	Data Analysis and Management, Analysis of Documentation, Application Front-End development

**Table\_1.8**

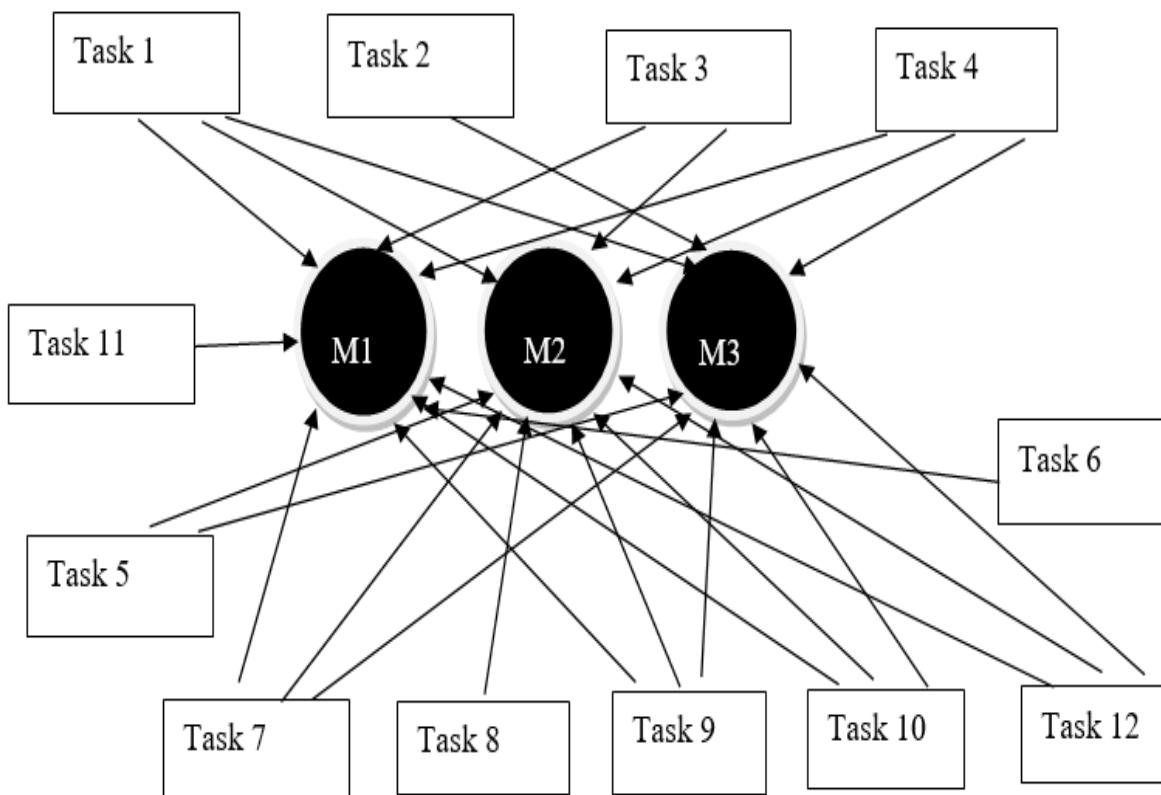
### **1.9. Task and Member Assignment Table**

Task	Task Name	Duration (weeks)	Dependencies	Members
T1	Project Charter	2 Weeks	N/A	All
T2	Feasibility Report	1 Week	T1	Dilawar
T3	Budget, WBS	1 Week	T1	Dilawar
T4	Requirement Elicitation	3 Weeks	T1 T2	All
T5	Identify/Use Cases and Stakeholders	1 Weeks	T4	Habiba
T6	Architecture Design	1 Week	T4	Habiba
T7	UML Diagrams	4 Weeks	T4	Suleman
T8	Prototype	2 Weeks	T4 T7	Habiba
T9	Application Development	7 Weeks	T4 T6 T7	All
T10	System Testing	4 weeks	T9	Dilawar Habiba

T11	Deployment	1 Week	T10	Suleman
T12	User Manual/ User Technical Manual	1 Week	T11	Habiba

**Table\_1.9**

**Task durations and dependencies:**



**Table\_1.10**

### **1.10. Tools and Technology with reasoning**

Technologies and tools required for the proposed system detail is describe below.

#### **Front-end Tools**

Django and Python with using visual studio code which is a streamlined code editor with support for development of web application with machine Learning.

#### **Back-end Tools**

The application tools which are to be used on back end of the system to be developed, by Python with PostgreSQL.

- It will use for the development of web (API's) Application Programming interface.

**SQL Server Management Studio** allows you to create and manage databases. It performs multiple tasks which are necessary to develop our system like

- Create, modify & delete databases and database objects such as tables, views, stored procedures with both Java and Python Language.
- PostgreSQL server is used in our application in order to store users records and to store datasets of stock and Crypto-Currency.

**Python** is one of the most popular and general purpose programming language. We can implement machine learning algorithms using python which work well with python numerical libraries such as Numpy, Scipy and JavaScript like Tensor-flow etc.

### **1.11. Vision Document**

Our vision is to make web application for our country Pakistan means which provide prediction of all the stocks available in Pakistan stock. This application will enable investor to keep a close on changing prices of stocks and bitcoin and also have a predictive price of stock and bitcoin. We also like to predict the more crypto-currency prices instead of the bitcoin. We would like to make android app of the same application in future.

### **1.12. Risk List**

- Large and continuous changing data
- Integration of Machine Learning techniques with front end framework
- Not able to get correct data for certain stocks
- Improper time management
- Deadlines fulfillment
- Number of API hits per day

### **1.13. Product Features/Product Decomposition**

- Login and Registration
- Stock Price Predictions
- Bitcoin Price Predictions
- Up-to-date news
- Graphs to provide data

### **1.14. Findings and Recommendations**

Based on the information presented in this feasibility study, it is recommended that stock predictor approves the online prediction of Stock and Bitcoin Prices. The findings of this feasibility study show that this initiative will be highly beneficial for stock and bitcoin traders and has a high probability of success. Key findings are as follows:

- **Technology:**
  - ❖ Will utilize machine learning technology which lowers project risk of prediction
  - ❖ Once in place this technology is simple to operate and maintain for a relatively free of cost to use.
  - ❖ Smart Predictor will be a web application which is available for 24/7 for use.

➤ ***Marketing:***

- ❖ Use of social media for marketing will allow smart predictor to reach large number of target groups electronically at a low cost
- ❖ Smart Predictor can expand customer base beyond geographic areas where stock markets are currently located
- ❖ Smart Predictor is able to differentiate itself from its competitors and will utilize incentive programs to target new consumers.

➤ ***Organizational:***

- ❖ No new facilities or capital investments are required

## **Chapter 2: System Requirement Specification**

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## **2.1. Introduction**

### **2.1.1. System Specifications:**

#### **Introduction**

The stock market is one of the most critical aspects of the global economy today. For economic development, countries all over the world depend on stock markets. The stock market helps you to buy a piece of a public company. At stock exchanges, these stocks are bought and sold. Before the 1500s, there was a concept similar to the stock market. However, the Dutch modern financial system emerged in the 17th and 18th centuries. Almost every nation now has its own stock exchange. The existence of financial markets all over the world cannot be ignored. The New York Stock Exchange, NASDAQ, and other well-known stock exchanges in the world.

Bitcoin is a crypto(digital) currency that is decentralized. On January 8, 2009, the first version of Bitcoin was released. It became very successful after its publication. As a result, the value of bitcoin and stocks in the global economy, as well as their constantly changing prices, have created a market for a sophisticated system or method to forecast their prices. As a result, our application will serve as a one-stop shop for investors, providing potential stock market and bitcoin rates. It will also have the most recent industry and company news. Users will also be able to pin their favorite stocks, currencies, and companies to keep an eye on them.

#### **Existing System**

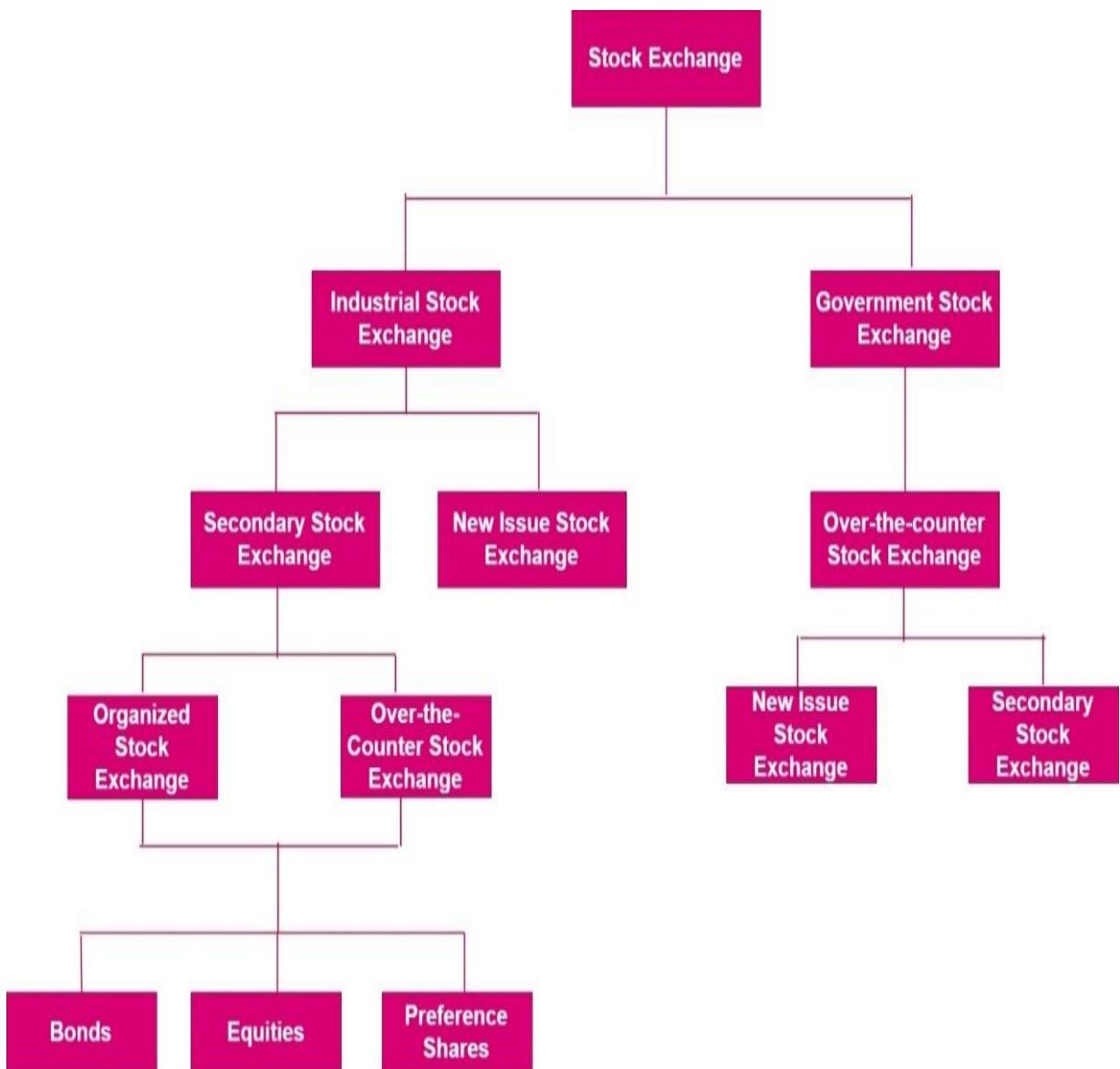
Almost every nation now has its own stock exchange. The existence of financial markets all over the world cannot be ignored. On stock exchanges, trillions of dollars are exchanged every day. Countries' economic development is reliant on financial markets. The success of the stock market is used to gauge both positive and negative economic activity.

The currency has been legalized in a number of nations, and it is now commonly used in daily life. Many firms, including air Baltic, Expedia, and others, support Bitcoin. Because of faster payments, lower transaction fees, government independence, and inflation control, Bitcoin is becoming more widely accepted around the world. Bitcoin is a digital currency that is worth billions of dollars all over the world.

The previous stock market prediction method attempted to forecast stock valuation using quarterly financial ratios and a dataset. As a result, depending on a single dataset for prediction may not be appropriate and may result in an incorrect result. Meanwhile, using conventional processing tools like Big Data to forecast crypto-currency prices is difficult. If improved prediction algorithms for both stocks and crypto-currencies are not proposed, the problem of predicting stock and crypto-currency prices will remain a problem. As a result, we're thinking about using machine learning with a variety of datasets to forecast cryptocurrency and stock market developments.

## Organizational Chart

The projectized organization framework includes the smart predictor. The project management team structure in this case is structured such that the project manager has project authority. He is in charge of the budget, schedule, and project team for the project. He'd be at the top of the corporate ladder, in charge of everything, with staff playing supporting roles in the project. The project team members are released at the end of the project, and resources are diverted to more important areas.



## **Scope of the System**

This is a real-time system that forecasts stock and bitcoin prices for the future. A predictive system is used in this application. The system will use machine learning algorithms to provide as accurate future stock and bitcoin values as possible. As a result, investors would have a better idea of the outcome of their investments. The application will forecast stock and bitcoin prices using historical data and will provide real-time stock news. The application of machine learning algorithms to historical data of stock prices of various companies is used in technical research. The technique entails gathering data sets and extracting individual sentiments. Then, after applying algorithms, the output will be analyzed, and the stock values will be analyzed.

Smart Predictor for Stock and Crypto-Currency is divided into three phases.

### **Phase I**

Phase I includes following business areas:

- Analyzing the data
- Graphical Representation of the Data

### **Phase II**

Phase II involves designing the algorithm. Phase II includes following business areas:

- Predicting prices of stock
- Predicting prices of bitcoin

### **Phase III**

Phase III covers a complete solution for stock and bitcoin price prediction. Phase III includes remaining business areas which are not developed in previous phases. It will give us a user friendly and progressive web application. It will provide latest news of stocks and crypto-Currency(Bitcoin).It will provide better visualization experience to the user.

## **Summary of Requirements: (Initial Requirements)**

The purposed system must fulfill following requirements as follow:

### **1.0– System “shall” allow user to register himself.**

First and foremost, if the user is about to use the system for the first time, he must register himself. Once he is registered, he can simply login to the system whenever he wants to use it the next time.

### **2.0– System “shall” allow user to login himself.**

The user shall log in to the system by providing his/her Username and Password at the Login screen. After initial stage of registration, user needs to login to the system to use it.

### **3.0 –System “shall” allow user to customize as well as see the stock and bitcoin prices over a specific time frame.**

The user shall be able to customize and see the stock and bitcoin price with different times intervals like minutes, weeks and days. Chart sand graphs provide an easy-to-read graphical representation of stock's and bitcoin price movement over a specific period of time.

#### ***4.0 –System “shall” allow user to view latest news and updates about stocks and bitcoin.***

The user shall view the key upcoming economic events, announcements and news related stock and bitcoin prices. Breaking down everything you need to know about Bitcoin and stock markets prices with the help of just one fingertip.

#### ***5.0 –System “shall” predict stock prices.***

The System shall predict the stock prices of a particular companies for next 30 days. If Stocks Prediction that are judged undervalued means those prices increases in future are bought, while stocks that are judged overvalued means those prices decreases are sold, in the expectation that undervalued stocks will overall rise in value, while overvalued stocks will generally decrease in value.

#### ***6.0 – System “shall” predict the bitcoin price.***

The System shall predict the bitcoin price for next 30 days. If bitcoin Prediction judged undervalued means those prices increases in future are bought, while bitcoin that are judged overvalued means those prices decreases are sold, in the expectation that undervalued stocks will overall rise in value, while overvalued stocks will generally decrease in value.

#### ***7.0 –System “shall” provide graphical representation of stock and bitcoin prices.***

The system shall provide graphical representation of the stock and bitcoin prices with the help of different graphs and charts. Chart sand graphs provide graphical representation of how a stock's price or trading volumes have changed over time.

#### ***8.0 – System “shall” provide facility to evaluate stocks and bitcoin performance with the help of comparison.***

The system shall provide facility to Compare stock and bitcoin prices to evaluate the performance. The system will show comparison between companies to evaluate different companies previous and current performance. Performance indicators should help investors to take certain decisions regarding their investment.

#### ***9.0 – System “shall” provide facility to identify certain trends with different stock Indicators.***

The system shall provide facility to identify certain trends within the market with the help of different Indicators. They aid investors' investment/trading decisions to forecast stock market movements.

#### ***10.0– System “should” show watchlist of some specific companies.***

The system sha show watchlist of some specific companies. The watchlist can help investors track companies and stay abreast of financial or other news that could impact these instruments.

## **11.0– System “shall” provide graphical representation for fundamental analysis.**

The system shall provide graphical representation for the fundamental Analysis of the stock base on quarterly financial report. The fundamental analysis is to come up with a fair value of a company by evaluating all aspects of the business, along with the industry, the market as a whole with the help of income statement, balance sheet and cash flow statement.

## **12.0– System “should” provide list of stock companies.**

The system shall provide list of companies for stock for different countries.

## **13.0 – System “shall” provide live market data.**

The system shall provide live market data for the different stock and bitcoin categories. View real-time stock and bitcoin prices as well as quotes for a full financial overview.

## **14.0– System “shall” provide facility to change password.**

The system shall allow a student/admin to change/personalize their account password.

## **15.0 – System “should” display the profile of stock company.**

The system should display the profile of the stock company.

## **16.0– System “shall” allow user to convert currency bitcoin.**

The user shall be able to convert the currency into another in order to check its corresponding value according to his/her desire.

### **2.1.2. Identifying External Entities:**

The Identification of External Entities is done in two phases.

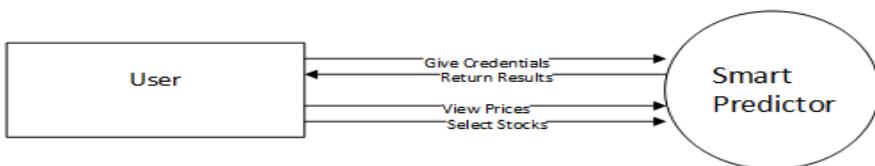
#### **a. Over Specify Entities from Abstract:**

- User
- System
- News
- Stock Exchange
- Bitcoin
- Login

#### **b. Perform Refinement:**

- User
- System

### **2.1.3. Context Level Data Flow Diagram:**



#### **2.1.4. Capture "shall" Statements:**

The following functional requirements are previously defined in detail, under the heading “Summary of requirements”.

Para #	Initial Requirements
<b>1.0</b>	System “shall” allow user to register himself.
<b>2.0</b>	System “shall” allow user to login himself.
<b>3.0</b>	System “shall” allow user to customize as well as see the stock and bitcoin prices over a specific time frame.
<b>4.0</b>	System “shall” allow user to view latest news and updates about stocks and bitcoin.
<b>5.0</b>	System “shall” predict stock prices.
<b>6.0</b>	System “shall” predict the bitcoin price.
<b>7.0</b>	System “shall” provide graphical representation of stock and bitcoin prices.
<b>8.0</b>	System “shall” provide facility to evaluate stocks and bitcoin performance with the help of comparison.
<b>9.0</b>	System “shall” provide facility to identify certain trends with different stock Indicators.
<b>10.0</b>	System “should” show watchlist of some specific companies.
<b>11.0</b>	System “shall” provide graphical representation for fundamental analysis.
<b>12.0</b>	System “should” provide list of stock companies.
<b>13.0</b>	System “shall” provide live market data.
<b>14.0</b>	System “shall” provide facility to change password.
<b>15.0</b>	System “shall” display the profile of stock company.
<b>16.0</b>	System “shall” allow user to convert currency bitcoin.

**Table 2.1 – “Shall” & “should” Requirements**

#### **2.1.5. Allocate Requirements:**

Para #	Initial Requirements	Use Case Name
<b>1.0</b>	System “shall” allow user to register himself.	UC_registration
<b>2.0</b>	System “shall” allow user to login himself.	UC_login

<b>3.0</b>	System “shall” allow user to customize as well as see the stock and bitcoin prices over a specific time frame.	UC_customize_see_prices
<b>4.0</b>	System “shall” allow user to view latest news and updates about stocks and bitcoin.	UC_view_news
<b>5.0</b>	System “shall” predict stock prices.	UC_stock_prediction
<b>6.0</b>	System “shall” predict the bitcoin price.	UC_bitcoin_prediction
<b>7.0</b>	System “shall” provide graphical representation of stock and bitcoin prices.	UC_display_visualiztion
<b>8.0</b>	System “shall” provide facility to evaluate stocks and bitcoin performance with the help of comparison.	UC_evaluate_performance
<b>9.0</b>	System “shall” provide facility to identify certain trends with different stock Indicators.	UC_identify_stock_bitcoin_trends
<b>10.0</b>	System “should” show watchlist of some specific companies.	UC_show_watchlist
<b>11.0</b>	System “shall” provide graphical representation for fundamental analysis.	UC_fundamental_analysis
<b>12.0</b>	System “should” provide list of stock companies.	UC_show_company
<b>13.0</b>	System “shall” provide live market data.	UC_live_updates
<b>14.0</b>	System “shall” provide facility to change password.	UC_change_password
<b>15.0</b>	System “shall” display the profile of stock company.	UC_show_profile
<b>16.0</b>	System “shall” allow user to convert currency bitcoin.	UC_convert_currency

**Table 2.2 - Allocate Requirements**

### 2.1.6. Prioritize Requirements:

Para #	Rank	Initial Requirements	Use Case ID	Use Case Name
<b>1.0</b>	High	System “shall” allow user to register himself.	UC_1	UC_registration
<b>2.0</b>	High	System “shall” allow user to login himself.	UC_2	UC_login
<b>3.0</b>	High	System “shall” allow user to customize as well as see the stock and bitcoin prices over a specific time frame.	UC_3	UC_customize_see_prices
<b>4.0</b>	High	System “shall” allow user to view latest news and updates about stocks and bitcoin.	UC_4	UC_view_news
<b>5.0</b>	High	System “shall” predict stock prices.	UC_5	UC_stock_prediction
<b>6.0</b>	High	System “shall” predict the bitcoin price	UC_6	UC_bitcoin_prediction
<b>7.0</b>	High	System “shall” provide graphical representation of stock and bitcoin prices.	UC_7	UC_display_visualization
<b>8.0</b>	Medium	System “shall” provide facility to evaluate stocks and bitcoin performance with the help of comparison.	UC_8	UC_evaluate_performance
<b>9.0</b>	High	System “shall” provide facility to identify certain trends with different stock Indicators.	UC_9	UC_identify_stock_bitcoin_trends
<b>10.0</b>	Medium	System “should” show watchlist of some specific companies.	UC_10	UC_show_watchlist
<b>11.0</b>	High	System “shall” provide graphical representation for fundamental analysis.	UC_11	UC_fundamental_analysis
<b>12.0</b>	Medium	System “should” provide list of stock companies.	UC_12	UC_show_company

<b>13.0</b>	High	System “shall” provide live market data.	UC_13	UC_live_updates
<b>14.0</b>	High	System “shall” provide facility to change password.	UC_14	UC_change_password
<b>15.0</b>	Low	System “shall” display the profile of stock company.	UC_15	UC_show_profile
<b>16.0</b>	High	System “shall” allow user to convert currency bitcoin.	UC_16	UC_convert_currency

**Table 2.3 - Prioritize Requirements**

#### **2.1.7. Requirements Traceability Matrix:**

Sr#	Para#	System Specification text	Build	Use Case Name	Category
<b>1</b>	<b>1.0</b>	System “shall” allow user to register himself.	B1	UC_registration	Business
<b>2</b>	<b>2.0</b>	System “shall” allow user to login himself.	B1	UC_login	Business
<b>3</b>	<b>3.0</b>	System “shall” allow user to customize as well as see the stock and bitcoin prices over a specific time frame.	B1	UC_customize_see_prices	Business
<b>4</b>	<b>4.0</b>	System “shall” allow user to view latest news and updates about stocks and bitcoin.	B1	UC_view_news	Business
<b>5</b>	<b>5.0</b>	System “shall” predict stock prices.	B1	UC_stock_prediction	Business
<b>6</b>	<b>6.0</b>	System “shall” predict the bitcoin price	B1	UC_bitcoin_prediction	Business
<b>7</b>	<b>7.0</b>	System “shall” provide graphical representation of stock and bitcoin prices.	B1	UC_display_visualization	Business
<b>8</b>	<b>8.0</b>	System “shall” provide facility to evaluate stocks and bitcoin performance with the help of comparison.	B1	UC_evaluate_performance	Business
<b>9</b>	<b>9.0</b>	System “shall” provide facility to identify certain	B1	UC_identify_stock_bitcoin_trends	Business

		trends with different stock Indicators.			
<b>10</b>	<b>10.0</b>	System “should” show watchlist of some specific companies.	B1	UC_show_watchlist	Business
<b>11</b>	<b>11.0</b>	System “shall” provide graphical representation for fundamental analysis.	B1	UC_fundamental_analysis	Business
<b>12</b>	<b>12.0</b>	System “should” provide list of stock companies.	B1	UC_show_company	Business
<b>13</b>	<b>13.0</b>	System “shall” provide live market data.	B1	UC_live_updates	Business
<b>14</b>	<b>14.0</b>	System “shall” provide facility to change password.	B1	UC_change_password	Business
<b>15</b>	<b>15.0</b>	System “shall” display the profile of stock company.	B1	UC_show_profile	Business
<b>16</b>	<b>16.0</b>	System “shall” allow user to convert currency bitcoin.	B1	UC_convert_currency	Business

**Table 2.4 - Requirement Traceability Matrix**

#### **2.1.8. Non-Functional Requirements:**

<b>NFR Type</b>	<b>Reliability</b>
<b>Description</b>	The product's dependability can be determined by the precision with which stock and bitcoin prices are predicted. Regular updates will be made to the prediction models.

**Table 2.5 – NFR 1 Reliability**

<b>NFR Type</b>	<b>Security</b>
<b>Description</b>	The user will only be able to access the website after the authentication and authorization provided by the system.

**Table 2.6 – NFR 2 Security**

<b>NFR Type</b>	<b>Functionality</b>
<b>Description</b>	Website should display normal data on the stock such as the current price last close and volume.

**Table 2.7 – NFR 3 Functionality**

<b>NFR Type</b>	<b>Portability</b>

<b>Description</b>	The website is completely responsive it will provide a standard compliant browser experience for both desktop and mobile devices.
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**Table 2.8 – NFR 4 Portability**

<b>NFR Type</b>	<b>Supportability</b>
<b>Description</b>	The service will be available in the form of a website, which will allow it to be accessed by most browsers. Configuration options available to users.

**Table 2.9 – NFR 5 Supportability**

<b>NFR Type</b>	<b>Availability</b>
<b>Description</b>	The website must be available online anytime.

**Table 2.10 – NFR 6 Availability**

<b>NFR Type</b>	<b>Usability</b>
<b>Description</b>	The system should have simple interface for users to use.

**Table 2.11 – NFR 7 Usability**

### 2.1.9. High Level Usecase Diagram:

Here the functional requirements of this project are shown in the form of a high-level use case diagram.

**Use-Cases:** UC\_registration, UC\_login, UC\_change\_password, UC\_customize\_see\_prices, UC\_convert\_currency, UC\_view\_news, UC\_stock\_prediction, UC\_bitcoin\_prediction, UC\_display\_visualization, UC\_evaluate\_performance, UC\_stock\_bitcoin\_trends, UC\_show\_watchlist, UC\_show\_company, UC\_fundamental\_analysis, UC\_live\_updates, UC\_show\_profile

**Actors:** User, Admin, Database and API

**Use Case Diagram:**

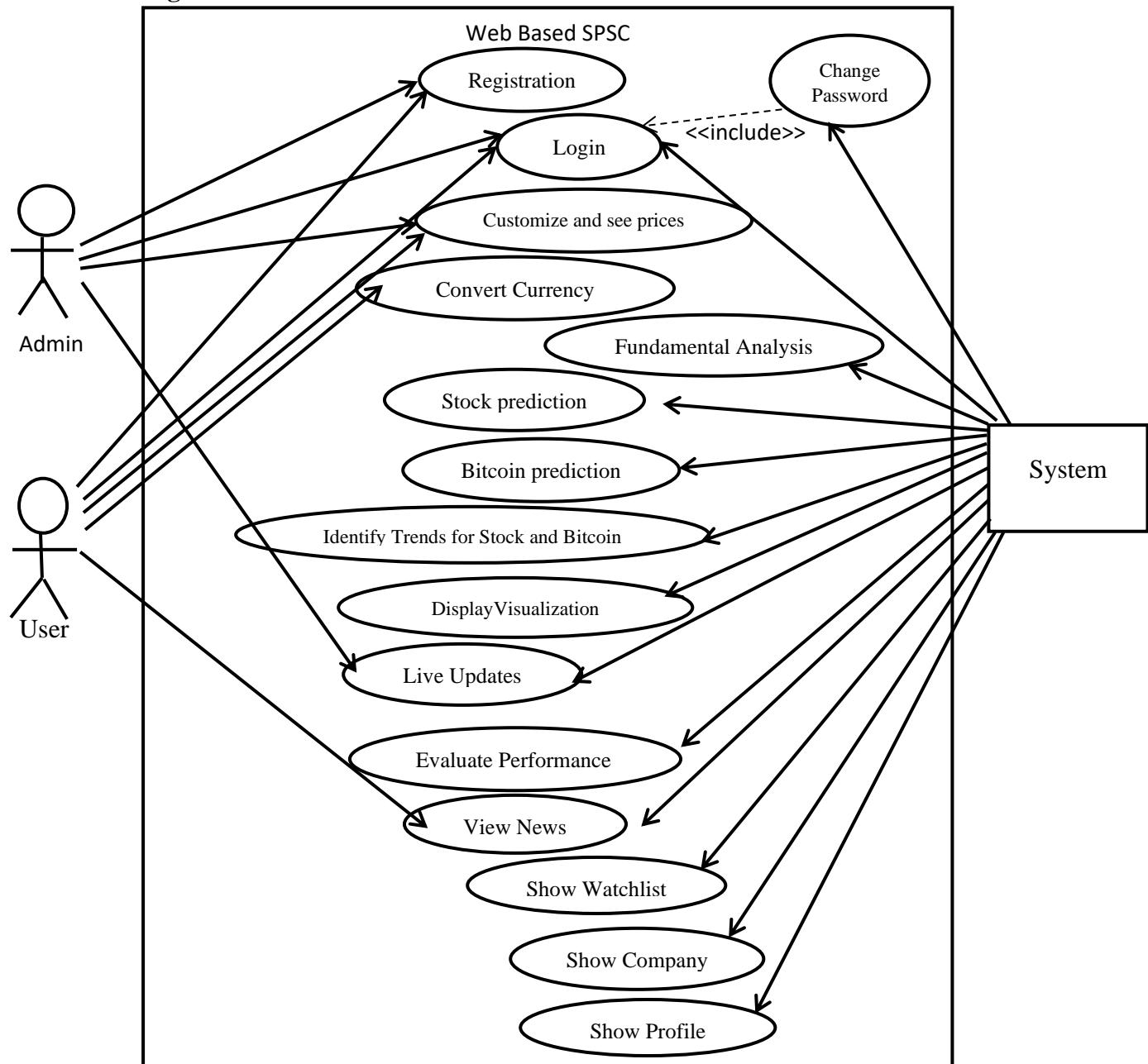


Figure 2.1 - High Level Use Case Diagram

### 2.1.10. Analysis Level Use Case Diagram

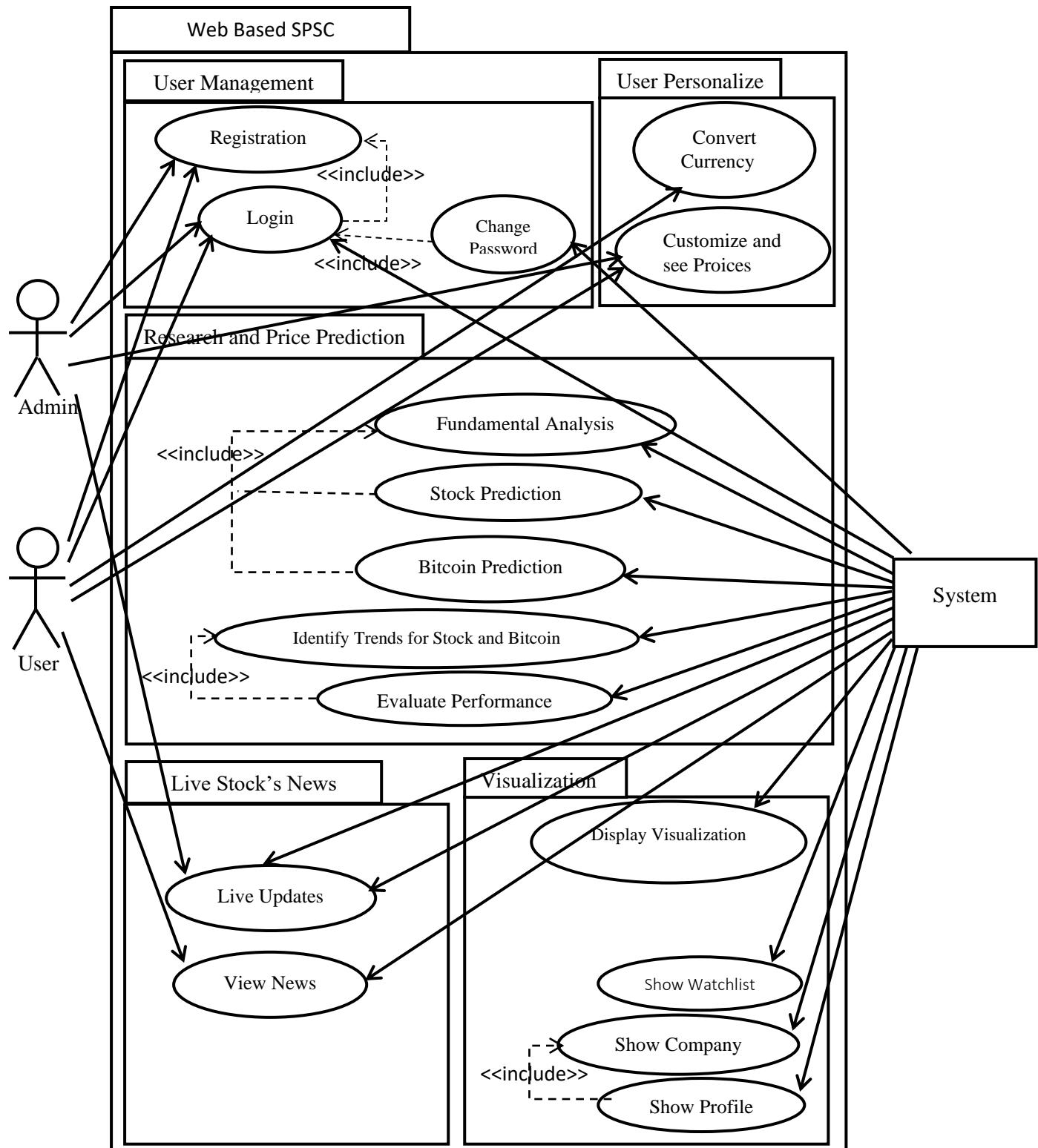


Figure 2.2 - Analysis Level Use Case Diagram

### 2.1.11. Use Case Description

<b>Name</b>	<b>Registration</b>	
<b>Actor</b>	User,Admin	
<b>Priority</b>	High	
<b>Description</b>	User shall be able to register himself.	
<b>Basic Flow</b>	1.In this usecase user visits the website and wishes to access the system.For this user enters the required details. 2.Now user can access the system.	1.System allows user to register himself.
<b>Pre-Condition</b>	-	
<b>Post-Condition</b>	User successfully registered himself.	

Table 2.12 - UC Register

<b>Name</b>	<b>Login</b>	
<b>Actor</b>	User,Admin,System	
<b>Priority</b>	High	
<b>Description</b>	User shall be able to login to the System.	
<b>Basic Flow</b>	This usecase starts when the user or admin wishes to login to the system. If actor is 'User' 1.User is asked to enter his/her username and password. 2.User enters the required details. If actor is 'Admin' 1.Admin enters the required details and going to login to the system.	1.System validates the details and allows user to login to the system. 2.System logs the Admin into the system.
<b>Pre-Condition</b>	User must be registered first.	
<b>Post-Condition</b>	User successfully login.	

Table 2.13 - UC Login

<b>Name</b>	<b>Change Password</b>	
<b>Actor</b>	Admin,User,System	
<b>Priority</b>	High	
<b>Description</b>	This usecase allows a user/admin to change/personalize their account password.	
<b>Basic Flow</b>	Use case starts when user clicks on a "change password" link. Current password must match their current password and the new password should match its confirmation.	The system navigates them to a page with a change password form. If failed, then the system shall refresh the change password form page.

	Password is going to successfully changed.	
<b>Pre-Condition</b>	User must click on change password link.	
<b>Post-Condition</b>	Password successfully changed.	

Table 2.14 - UC Change Password

Name	Customize See Prices	
<b>Actor</b>	User,Admin	
<b>Priority</b>	High	
<b>Description</b>	After logging in user can customize and see the stock and bitcoin price with different times intervals like minutes, weeks and days.	
<b>Basic Flow</b>	User is going to customize and see the stock and bitcoin prices.	System allows user to customize and see the prices of both stock and bitcoin.
<b>Pre-Condition</b>	User must be logged in.	
<b>Post-Condition</b>	User successfully see and customize the prices.	

Table 2.15 - UC Customize See Prices

Name	View News	
<b>Actor</b>	User	
<b>Priority</b>	High	
<b>Description</b>	User shall be able to view latest news and updates.	
<b>Basic Flow</b>	In this usecase user is going to see the news.	System provide access to user that he/she can see all news related stock and bitcoin prices.
<b>Pre-Condition</b>	User successfully logged in.	
<b>Post-Condition</b>	News successfully viewed	

Table 2.16 - UC View News

Name	Stock Prediction	
<b>Actor</b>	System	
<b>Priority</b>	High	
<b>Description</b>	System shall predict the stock prices	
<b>Basic Flow</b>	In this usecase system is going to show the results of prediction algorithms for stock prices.	User will see the results of prediction algorithms for stock prices.
<b>Pre-Condition</b>	System used fundamental and technical analysis for prediction.	
<b>Post-Condition</b>	System successfully predict the stock prices.	

Table 2.17 - UC Stock Prediction

Name	Bitcoin Prediction	
<b>Actor</b>	System	
<b>Priority</b>	High	
<b>Description</b>	System shall predict the bitcoin prices	

<b>Basic Flow</b>	In this usecase system is going to show the results of prediction algorithms for bitcoin prices.	User will see the results of prediction algorithms for bitcoin prices.
<b>Pre-Condition</b>	System used fundamental and technical analysis for prediction.	
<b>Post-Condition</b>	System successfully predict the bitcoin prices.	

**Table 2.18 - UC Bitcoin Prediction**

Name	Display Visualization	
<b>Actor</b>	System	
<b>Priority</b>	High	
<b>Description</b>	System shall provide graphical representation of the stock and bitcoin prices with the help of different graphs and charts.	
<b>Basic Flow</b>	System is going to preview data or result or information with different graphs and charts.	User will be able to have a detailed look on graphs and charts for bitcoin and stock prices.
<b>Pre-Condition</b>	The system must provide different graphs and charts display facility or option	
<b>Post-Condition</b>	Graphs and charts are displayed.	

**Table 2.19 - UC Display Visualization**

Name	Evaluate Performance	
<b>Actor</b>	System	
<b>Priority</b>	Medium	
<b>Description</b>	Same with stocks, the value appreciation of Bitcoin results to profit for investors. System shall provide facility to Compare stock and bitcoin prices with each other.	
<b>Basic Flow</b>	The system is going to show comparison between companies to evaluate different companies previous and current performance.	The user able to see the comparison between different companies to evaluate different companies previous and current performance.
<b>Pre-Condition</b>	The system should provide compare stock trend facility.	
<b>Post-Condition</b>	Compared Prices shown.	

**Table 2.20 - UC Evaluate Performance**

Name	Identify Stock Bitcoin Trends	
<b>Actor</b>	System	
<b>Priority</b>	High	
<b>Description</b>	System shall provide facility to identify certain trends.	
<b>Basic Flow</b>	The system should preview result of stock when different indicators are applied on the stock.	User ables to see the results when different indicators applied on the stock.
<b>Pre-Condition</b>	The system should provide list of different indicators.	
<b>Post-Condition</b>	Trends are successfully identified.	

**Table 2.21 - UC Identify Stock Bitcoin Trends**

Name	Show Watchlist	
Actor	System	
Priority	Medium	
Description	System shall show watchlist of some specific companies.	
Basic Flow	The system should display different companies list .	The user will be able to see the watclist of different companies.
Pre-Condition	The system must display different stock and crypto-currency symbols in the watchlist.	
Post-Condition	Watchlist successfully shown.	

Table 2.22 - UC Show Watchlist

Name	Fundamental Analysis	
Actor	System	
Priority	High	
Description	System shall provide graphical representation for fundamental analysis.	
Basic Flow	The system display graphical representation of the income statement, balance sheet and the cash flow of the certain stock.	User also able to see the income statement ,balance sheet and cash flow of the certain stock graphically.
Pre-Condition	The system must have quarterly financial report.	
Post-Condition	Graphical representaion for fundamental analysis.	

Table 2.23 - UC Fundamental Analysis

Name	Show Company	
Actor	System	
Priority	Medium	
Description	System shall provide list of companies.	
Basic Flow	The system is going to provide list of companies for stock.	User see the list of companies for stock.
Pre-Condition	System must provided by the details of comapines.	
Post-Condition	Companies successfully shown.	

Table 2.24 - UC Show Company

Name	Live Updates	
Actor	System, Admin	
Priority	High	
Description	System shall provide live market data for the different stock and bitcoin .	

<b>Basic Flow</b>	The system is going to provide the latest price of certain stocks and bitcoin.	Admin will update the live market data for the different stock and bitcoin latest prices. And user will be able to see the live updates.
<b>Pre-Condition</b>	Latest prices details should be provided by the system.	
<b>Post-Condition</b>	Live updates provided.	

Table 2.25 - UC Live Update

<b>Name</b>	Show Profile	
<b>Actor</b>	System	
<b>Priority</b>	Low	
<b>Description</b>	System shall display the profile of the stock company.	
<b>Basic Flow</b>	System is going to provide information about company website name and other addition details.	User able to see the stock company profile.
<b>Pre-Condition</b>	System must provide by the company information.	
<b>Post-Condition</b>	Profiles successfully shown.	

Table 2.27 - UC Show Profile

<b>Name</b>	Convert Currency	
<b>Actor</b>	User	
<b>Priority</b>	High	
<b>Description</b>	User shall be able to convert the currency into another currency in order to check its corresponding value.	
<b>Basic Flow</b>	User is going to convert the currency.	System allows user to convert the currency into his/her desired currency.
<b>Pre-Condition</b>	User must entered an amount of money and chooses the currency he/she wishes to check the monetary value of.	
<b>Post-Condition</b>	Currency converted into another.	

Table 2.28 - UC Convert Currency

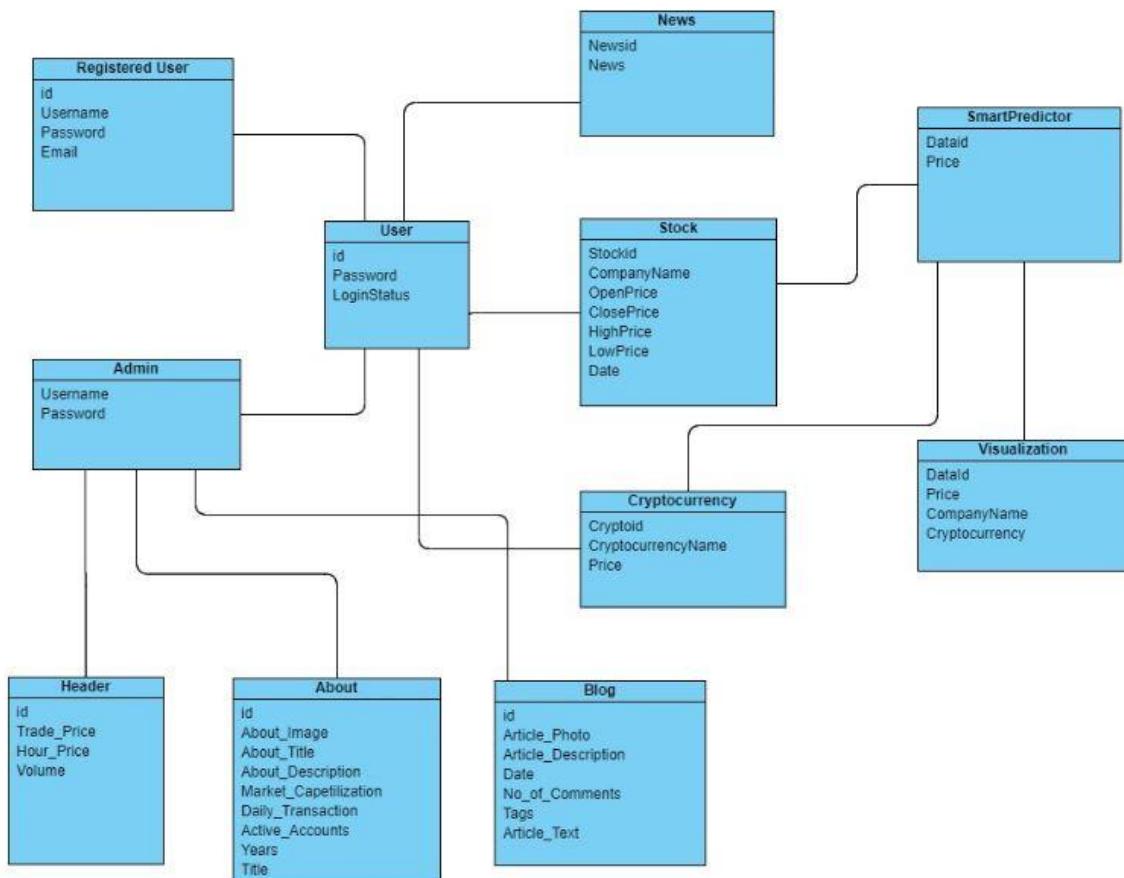
## **Chapter 3: Design Document**

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### 3.1. Introduction:

We have laid out the design diagrams of our system to show its flow. Each individual diagram represents what our system is and how it works. Six diagrams have been presented, which include: Domain Model, Sequence Diagram, Collaboration Diagram, Class Diagram, State Machine Diagram and Data Model Diagram. The main purpose of all these diagrams is to make a solution of the requirements of our system that we analyzed. We clearly identified the structural and behavioral flow of our system through these diagrams.

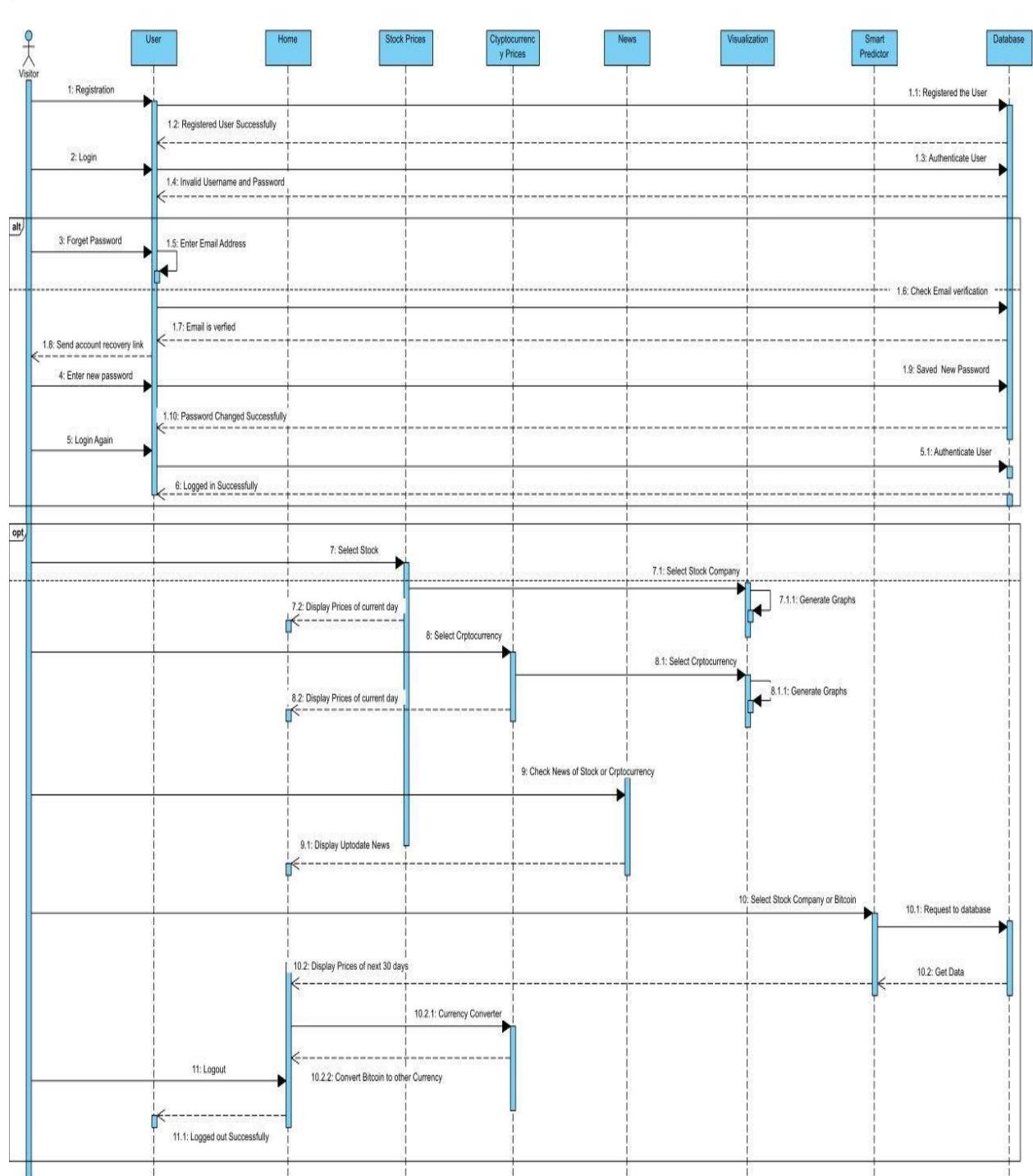
### 3.2. Domain Model



The project is mainly on the stock and cryptocurrency prices prediction. Initially the user has to login to the system and user have a specific role either admin/investor. After the complete authentication and authorization of user, user can check the stock prices of international brands and cryptocurrencies. In cryptocurrency there are many digital currencies especially bitcoin, user can check the prices of all of them that system should provide. User can also check the news of stock and cryptocurrencies where many types of news should be displayed. System should also predict the stock and cryptocurrency prices of next 30 days. User can also check it through visualization. In visualization, system should display the prices via graphs where user easily check and identify the situation of prices for next days.

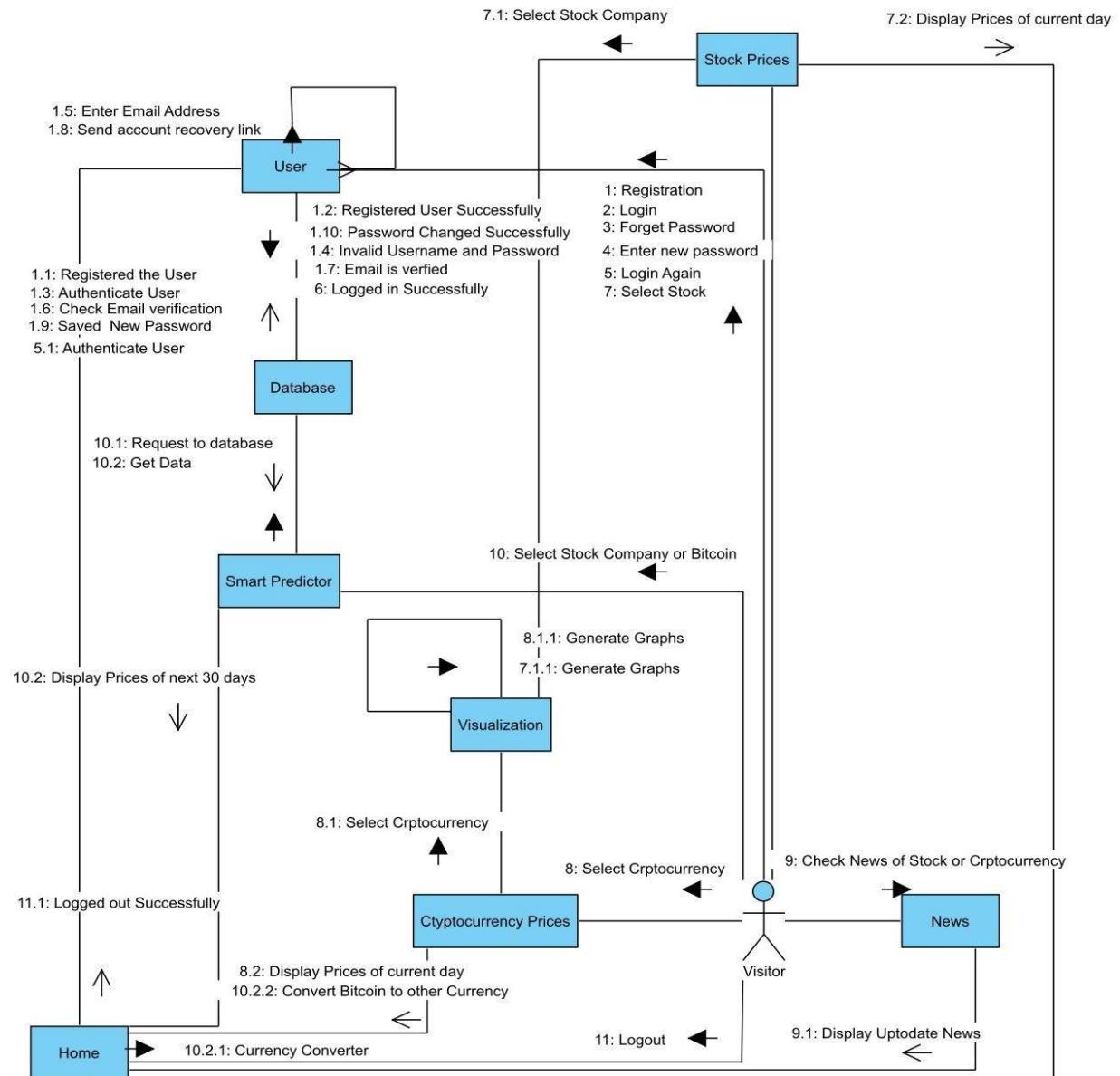
The domain model above shows the kinds of attributes each relevant class owns which will help the user to perform some tasks to fulfil there needs to efficiently manage and monitor the system.

### 3.3. System Sequence Diagram



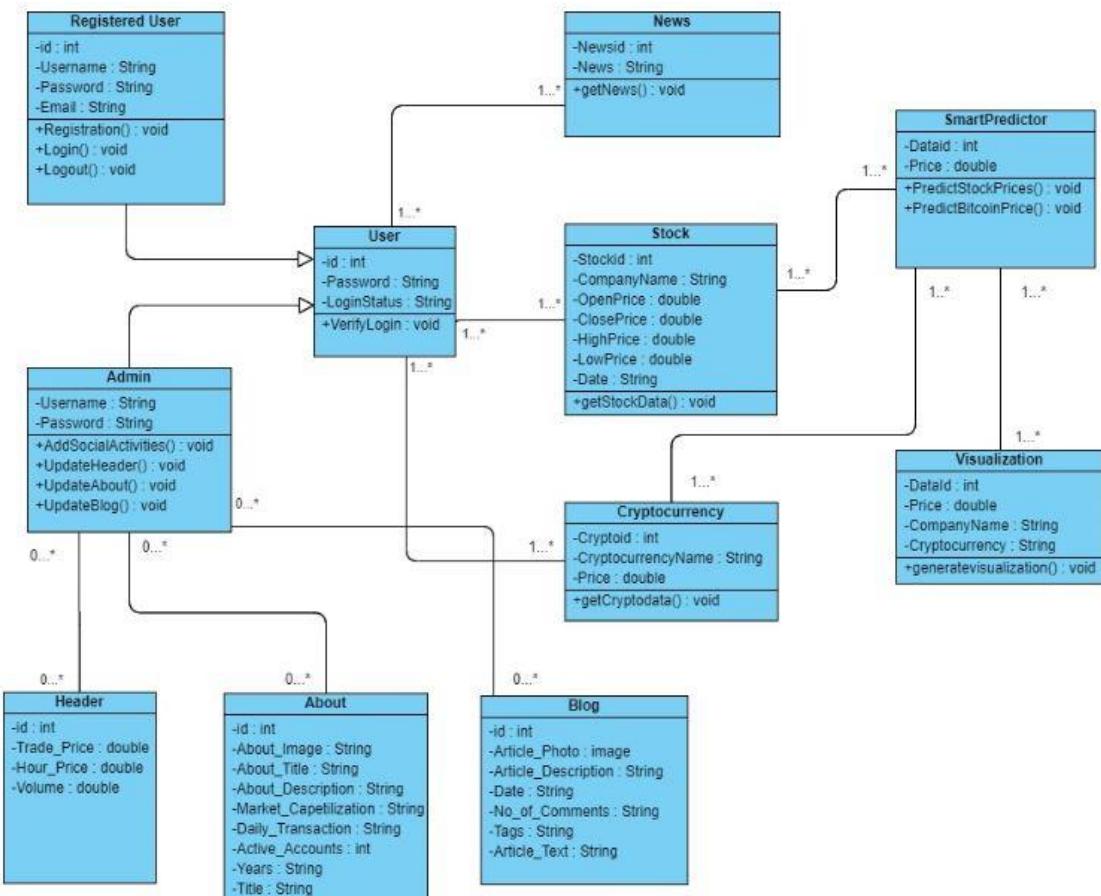
Here, the sequence diagram shows the working of the system in sequential manner. Firstly, a new user will be registered him/her in the system with signing up and there information will be saved to database. In order to use the system, it is necessary for each user to login to the system and after authentication they can perform their tasks. The alternative steps occur when user want to change their password or their credential for login or invalid. The sequence in which the system works is displayed above in the diagram. All the steps of system in sequential manner, so might be user perform their tasks that are not according to this flow. Therefore, we make all the steps in optional mode(opt).

### 3.4. Collaboration Diagram



So here, this is collaboration diagram and we also called it as a communication diagram. The communication diagrams show message passing order the system works in. The order of message shows the flow in which they are passed, the numbering of each message is representing which message is followed by which operation. We simply represent the messages that we used for each operation.

### 3.5. Class Diagram

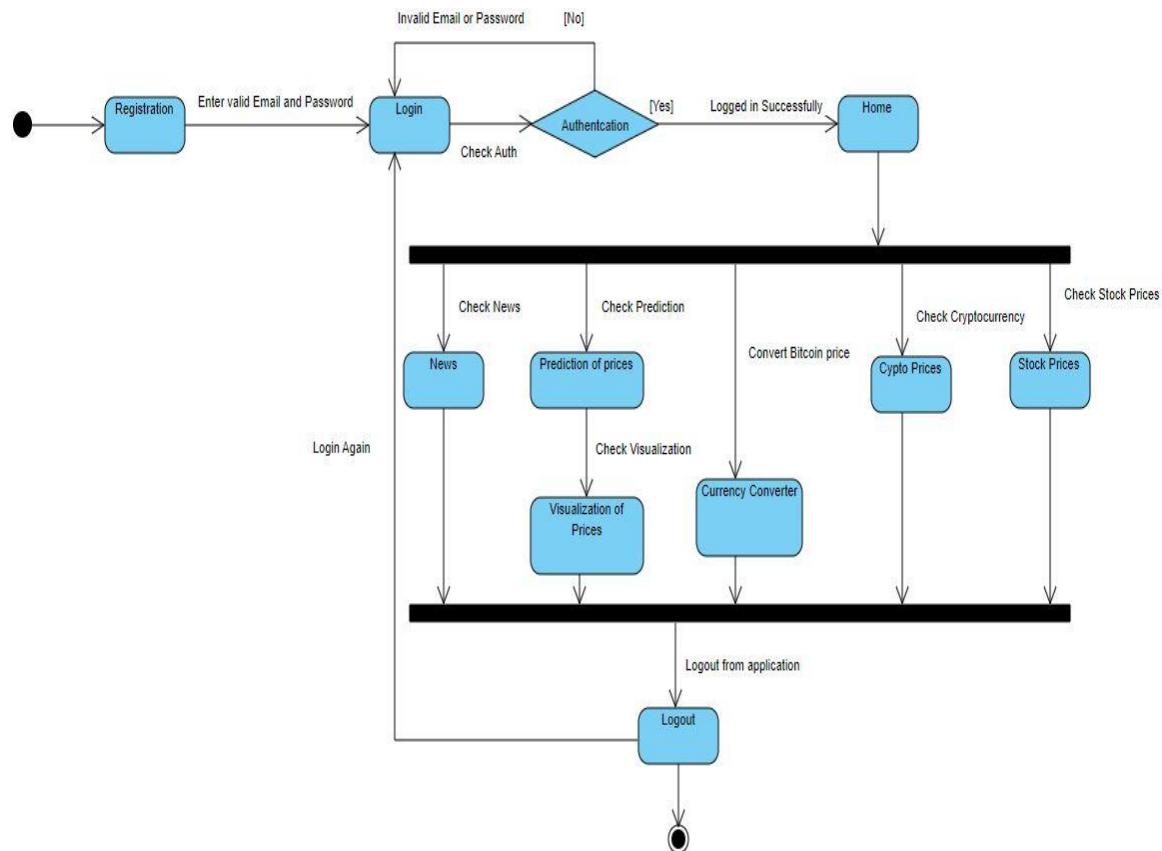


Here, this is class diagram that represent all the classes of our system. A user must be login to the system. If user can't do it, he/she can't get access to the system. There are two roles named as admin and investor. Admin and investor have different operations but act as a user.

User can check one or more than one news at a time on the system. User can also check one or more than one stock company prices on the system. User can also check one or more than one cryptocurrency prices on the system at a time. A smart predictor class indicate that it predicts the prices of stock and cryptocurrencies of next thirty days. A visualization class indicate that it visualizes the details of prices through graphs for the better understanding of prices for users.

The class diagram presents the structural flow of our system through different classes and their attributes and operations and main thing the relationships between the classes.

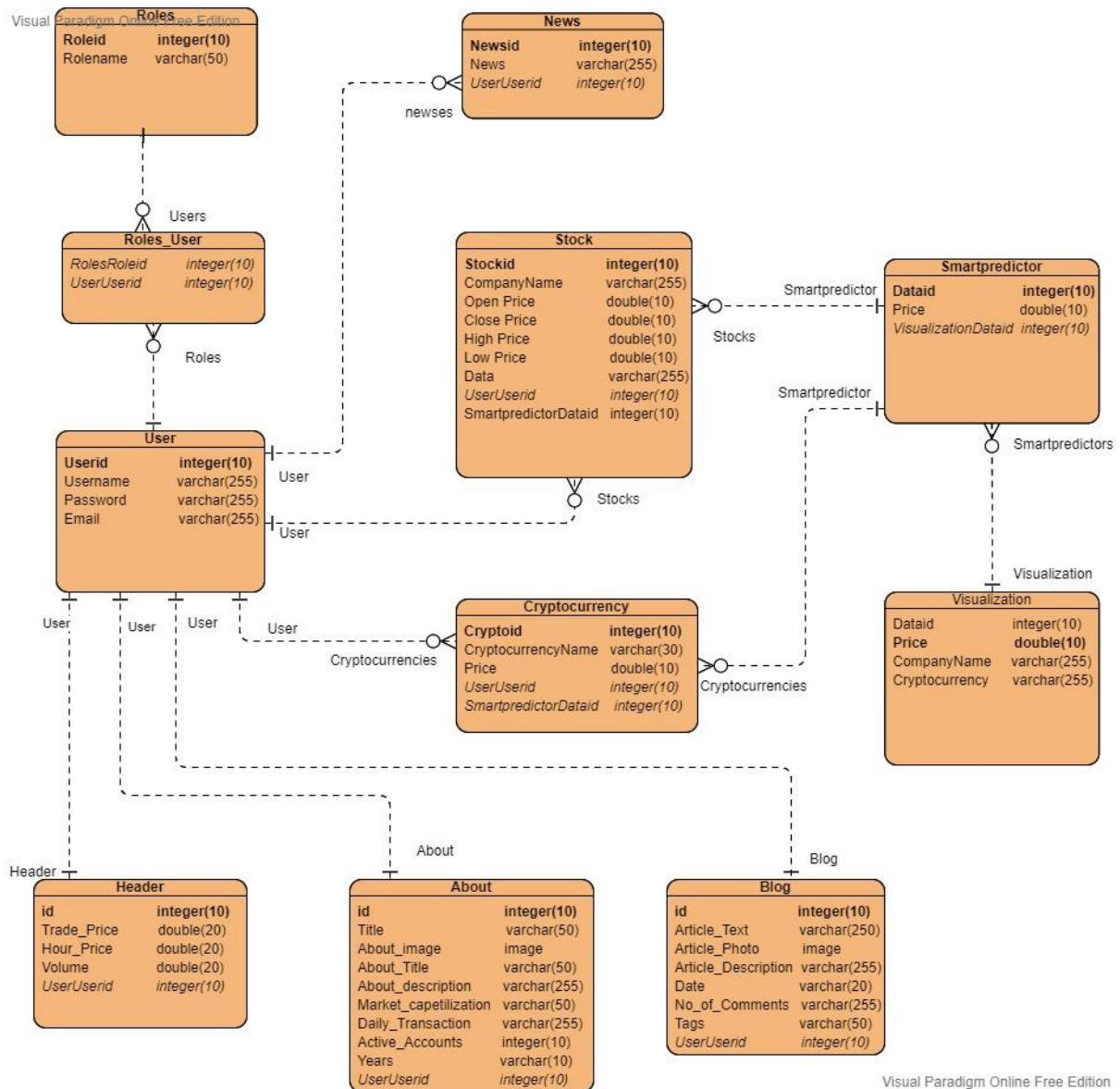
### 3.6. State Machine Diagram



The state chart diagram is representing the states that occur during the running of the system. Initially, when a user wants to use the system for the first time, they need to go through the registration state for signup. Once they are registered, they now need to login, to use the system. It is important for user to login, for other operations to be performed, so that none other than registered people have access to the system.

After the user has logged in, they can move towards the home state where user have access to perform multiple actions according to their needs and what the user want either he/she check stock or cryptocurrency prices or news or stock and bitcoin prices prediction. User can also able to use the currency converter for bitcoin price. When user is on prediction of prices state, he/she can also visualize the prices through different graphical techniques for the better understanding of user. If user do not want to check visualization, he/she move towards the logout state where the system states are terminated.

### 3.7. Data Model Diagram



Here, this is data model diagram that also named as an entity relationship diagram or database diagram. That is, we use to understand the design of database of our system and relationship between the database tables. When we make a diagram, we have need to overcome the dependencies. In this diagram to remove the relationship many-to-many between user and roles by adding new table named as Roles User. With the help of this table, we able to make a relationship one-to-many instead of many-to-many. In all these tables there one-to-many or many-to-one relationship that prove that we make it according to standard rules.

## **Chapter 4: User Interface Design**

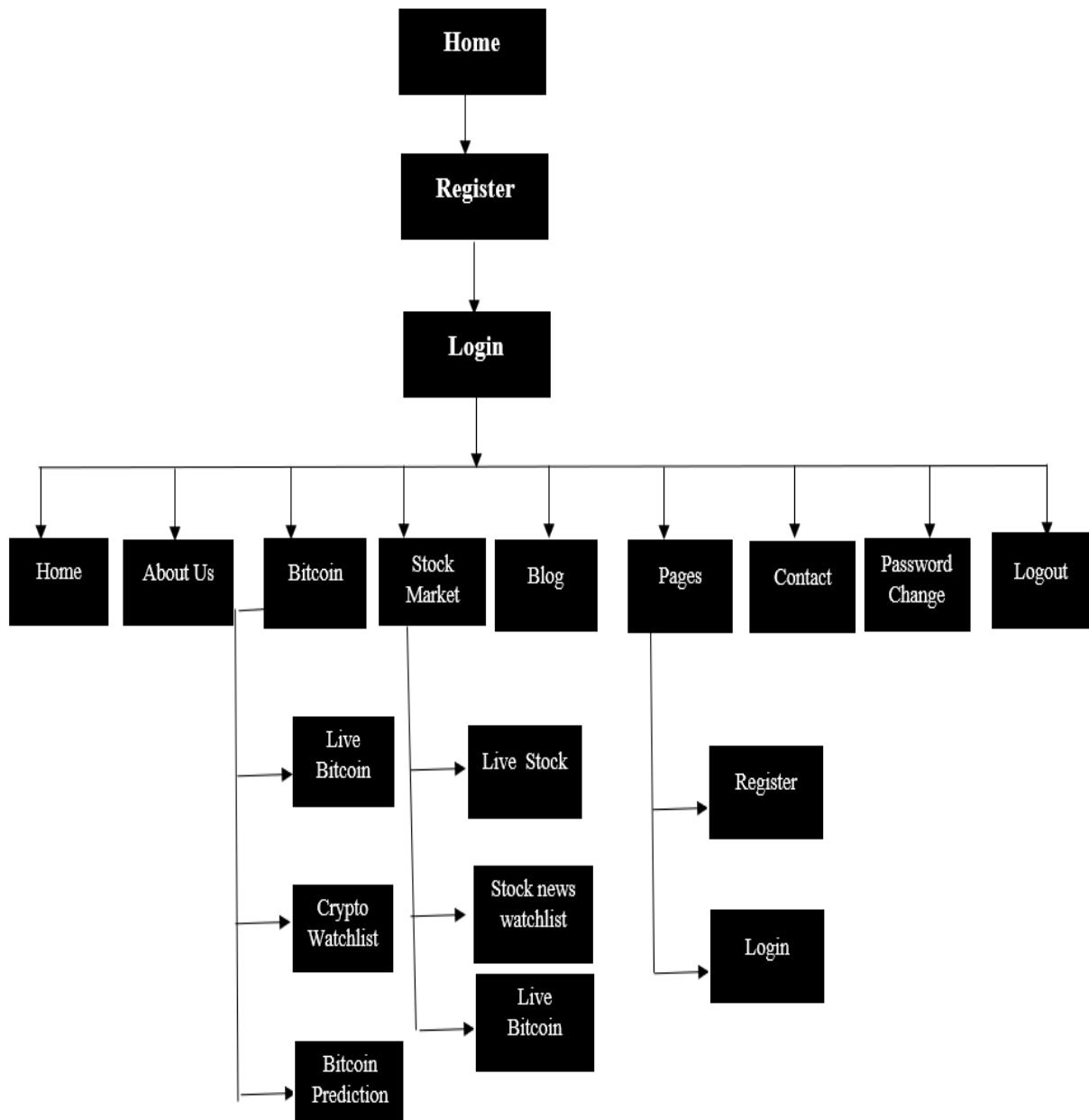
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## 4.1. Introduction

This chapter presents our project's appearance and navigation scheme to show kind of a walkthrough of the system. Combination of system screenshots, navigational diagrams and features are presented to display an overview of system appearance.

## 4.2. Site Maps

The site map presented here shows an overall architecture of the system to visualize several level of hierarchy and to grasp the system as whole in one or two glances.



### 4.3. Story Boards

Here, storyboards show what the user can see when they are interacting with system to perform necessary tasks.

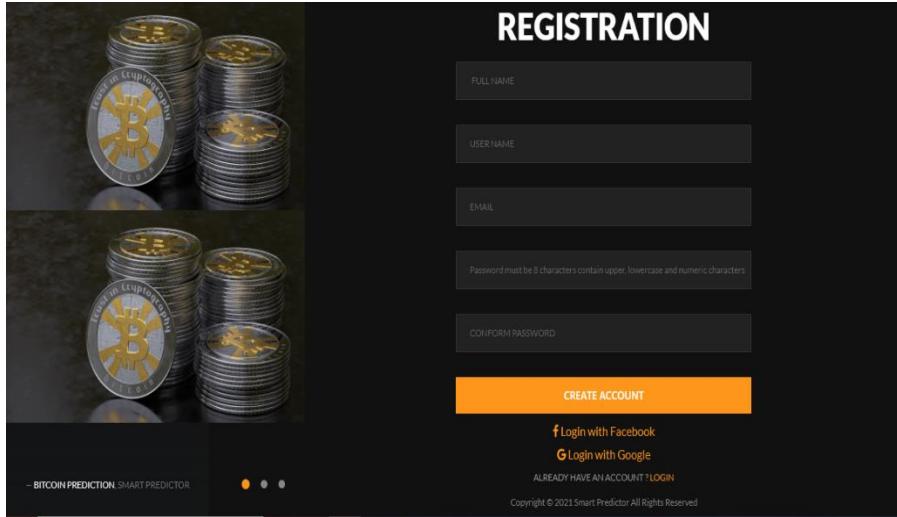
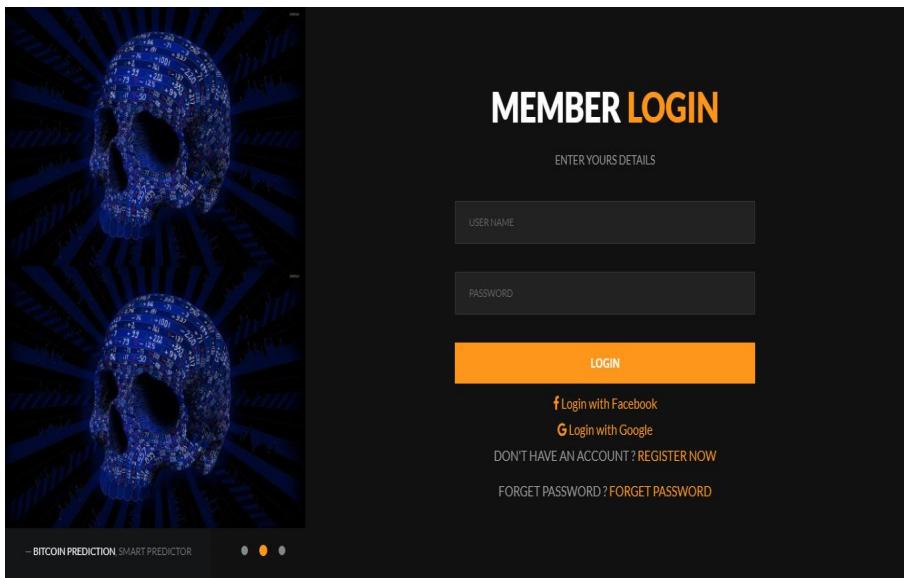
UI ID	1
Interface	
Visual Cues	This is the Registration screen that the user can see. Here, user can choose to sign in, or login (by clicking on <i>login</i> ) instead, if they already have an account and after this user can access the resources.
Audible Cues	No Audible Cues are Available for this story card.
Tactical Cues	Interface will displays editable text boxes for entering username, Email address and password for confirmation. Create Account button is also there to submit registration information.
User Input	User can enter username, Email Address and password.
System Output	System will allow user to sign up into the system.
Technology	Django Authentication, JavaScript and Bootstrap
Quality of experience	Excellent

Table 4.1 – REGISTER

<b>UI ID</b>	2
<b>Interface</b>	
<b>Visual Cues</b>	The user will see this login screen. Here, user can choose to login by entering their credentials or they can create new account if they do not have one already.
<b>Tactical Cues</b>	System should display text boxes to user for entering Email and Password in order to login into the system if user enter the require valid information by clicking on Login button.
<b>User Input</b>	User can enter the Email and password.
<b>System Output</b>	System will allow user to sign up into the system.
<b>Technology</b>	Django Authentication, JavaScript and Bootstrap
<b>Quality of experience</b>	Excellent

**Table 4.2 - LOGIN**

UI ID	3
Interface	
Visual Cues	The users can see the Home Screen after they login. Here system should display description what the system should provide to the user. Home page provide different navigations to the user in order to visit vital features of the system.
Tactical Cues	Here user can see about us, Bitcoin, Stock Market , contact us related pages that the system should provide. User can also see livestock and bitcoin ticker.
User Input	User can click on different buttons or pages in order to navigate into the system
System Output	User can access the relevant information according to the button or page selected.
Technology	Django and Bootstrap
Quality of experience	Excellent

Table 4.3 – HOME

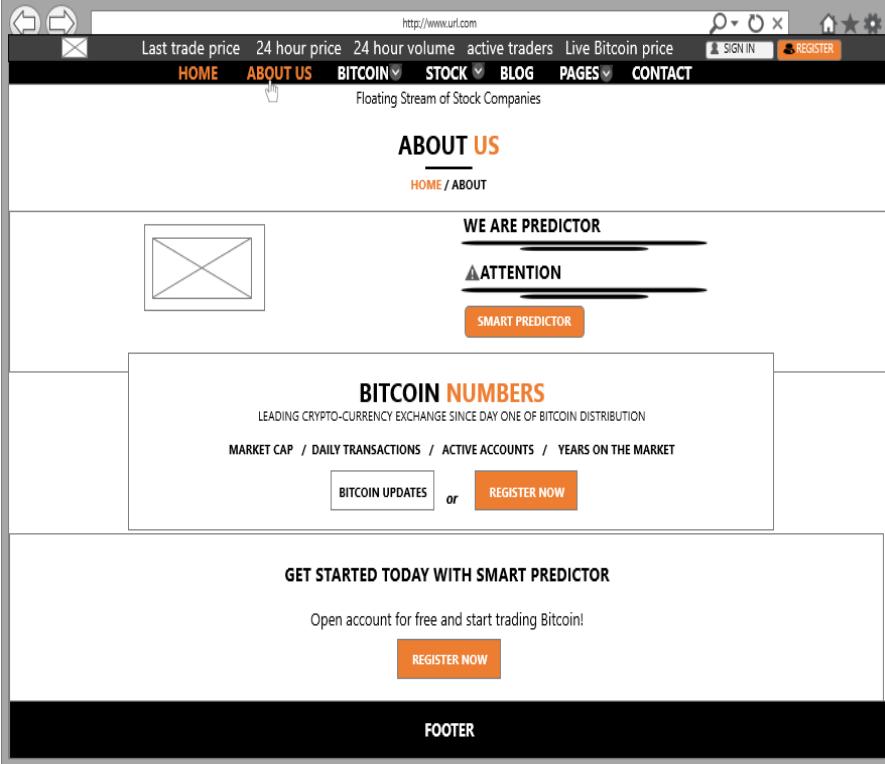
UI ID	4
Interface	
Visual Cues	System should display About us page to users to inform them about the website and its operations.
Tactical Cues	Users can know about the owners of the website About us also provide information about what kind of potentials customers can use the website.
Technology	Django and Bootstrap
Quality of experience	Good

Table 4.4 – ABOUT US

<b>UI ID</b>	<b>5</b>
<b>Interface</b>	
<b>Visual Cues</b>	User can see latest news about Bitcoin with help of graphical representation. Graphs provide users graphical representation of how Crypto Currency price or trading volumes have changed over time.
<b>Tactical Cues</b>	User can also see different currencies from the Crypto Currency list with the help of graphs and users also customize the time.
<b>User Input</b>	User can enter different time intervals to see the bitcoin performance.
<b>System Output</b>	System should display graphs and charts.
<b>Technology</b>	Django and Java Script Libraries
<b>Quality of experience</b>	Excellent

**Table 4.5 – BITCOIN>LIVE BITCOIN**

<b>UI ID</b>	<b>6</b>
<b>Interface</b>	
<b>Visual Cues</b>	User can see watchlist of some specific crypto Currency. These watchlist can help users to track companies and stay abreast of financial or other news that could impact these instruments.
<b>Tactical Cues</b>	User can see different cryptocurrency prices with help of different graphs and charts. User can see graphs according to different timeframes. User also compare bitcoin with other currencies of the crypto Currency.
<b>User Input</b>	User can enter crypto Currency Name or Symbols in order to get Particular Currency.
<b>System Output</b>	System display the respective currency what the user will enter if that currency is available in the system or else show system does not has information about this Currency.
<b>Technology</b>	Django and Java Script Libraries
<b>Quality of experience</b>	Excellent

**Table 4.6 – BITCOIN>CRYPTO WATCHLIST**

UI ID	7
Interface	
Visual Cues	User can see the prediction of the bitcoin and the other crypto Currency prices. User can also see different technical details of the particular crypto currency.
Tactical Cues	User can see Crypto Currency and Trading volumes with the help of different graphs and charts according to their will. User also see graphical representation of income statement, balance sheet.
User Input	User can enter crypto Currency Name or Symbols in order to get Particular Currency.
System Output	System display the respective currency what the user will enter if that currency is available in the system or else show system does not has information about this Currency.
Technology	Django Chart Library and Machine Learning
Quality of experience	Excellent

Table 4.7 – BITCOIN>BITCOIN PREDICTION

<b>UI ID</b>	8
<b>Interface</b>	
<b>Visual Cues</b>	User can see latest news about Stock Market with help of graphical representation. Graphs provide users graphical representation of how a stock's price or trading volumes have changed over time.
<b>Tactical Cues</b>	User can also see different currencies from the stock with the help of graphs and also customize the time.
<b>User Input</b>	User can enter different time intervals to see the particular stock performance.
<b>System Output</b>	System should display graphs and charts.
<b>Technology</b>	Django and Java Script Libraries
<b>Quality of experience</b>	Excellent

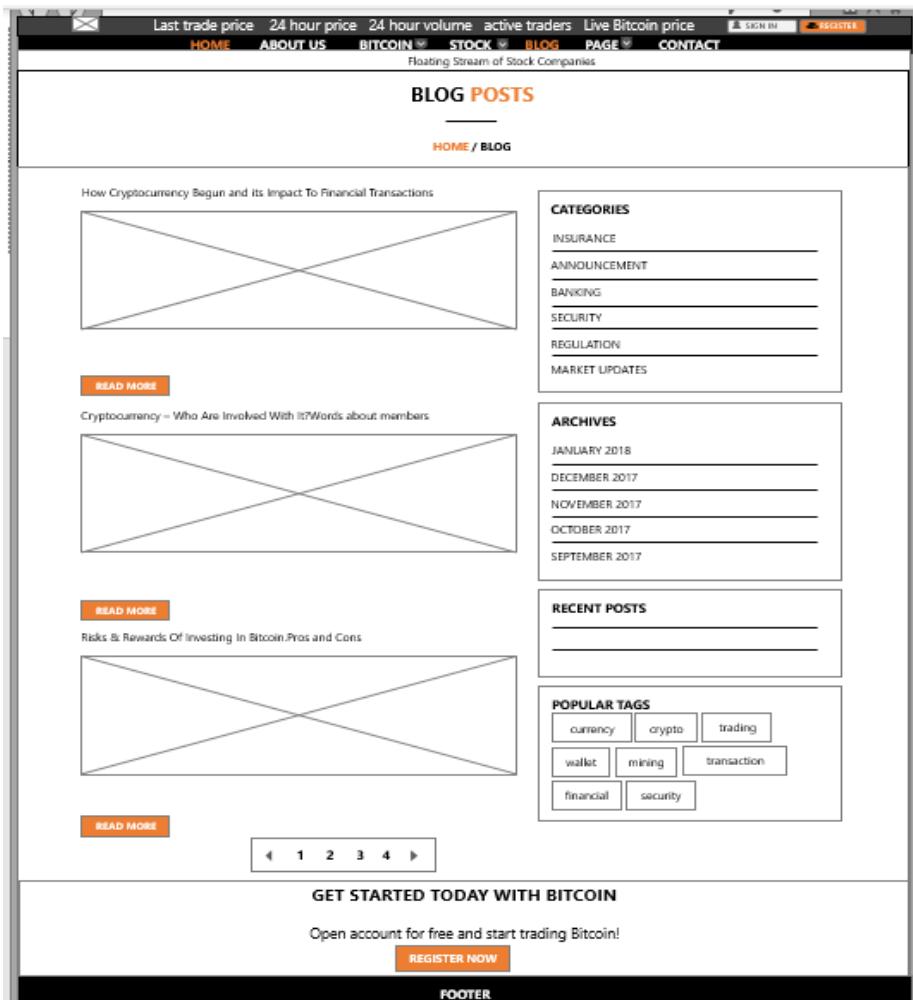
**Table 4.8 – STOCK>LIVE STOCK**

UI ID	9
Interface	
Visual Cues	User can see watchlist of some specific stocks Companies. These watchlist can help users to track companies and stay abreast of financial or other news that could impact these instruments.
Tactical Cues	User can see different Stock companies prices with help of different graphs and charts. User can see graphs according to different timeframes. User also compare stock company with other stock companies in order to evaluate the performance.
User Input	User can enter stock company Name or Symbols in order to get Particular Stock details.
System Output	System display the respective stock company what the user will enter if that stock is available in the system or else show system does not has information about this stock.
Technology	Django Java script Libraries and Bootstrap
Quality of experience	Excellent

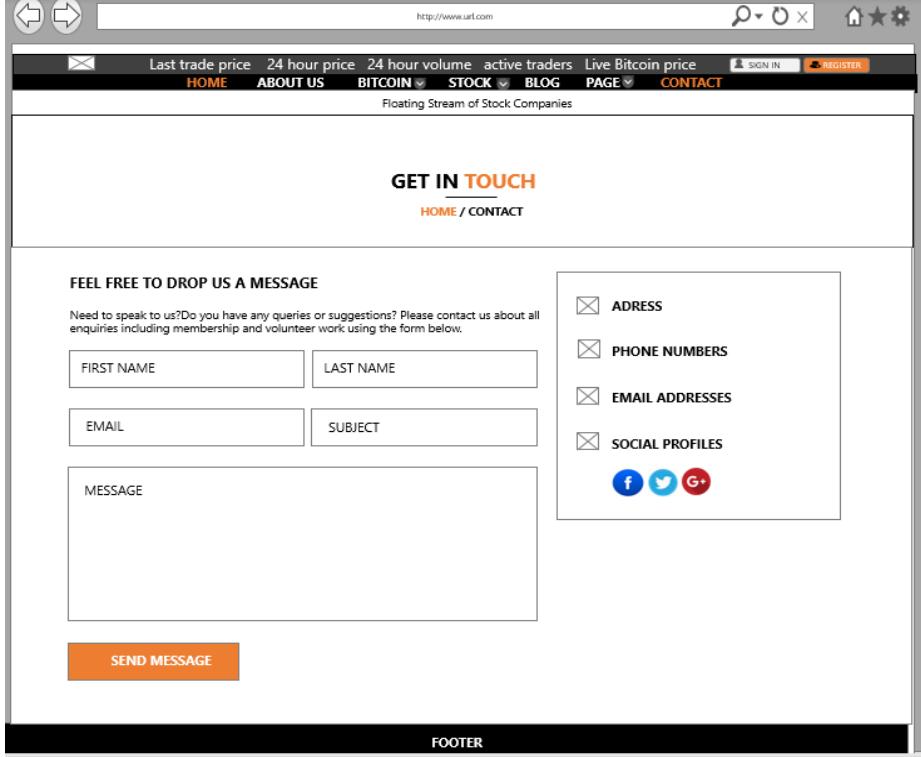
Table 4.9 – STOCK>STOCK WATCHLIST & NEWS

UI ID	10
Interface	
Visual Cues	User can see the prediction of the different stocks. User can also see different technical details of the particular stock.
Tactical Cues	User can see stock company prices and Trading volumes with the help of different graphs and charts according to their will. User also see graphical representation of income statement, balance sheet.
User Input	User can enter stock company Name or Symbols in order to get Particular Stock details.
System Output	System display the respective stock company what the user will enter if that stock is available in the system or else show system does not has information about this stock.
Technology	Django Java Script and Machine Learning
Quality of experience	Excellent

Table 4.10 – STOCK>STOCK PREDICTION

<b>UI ID</b>	11
<b>Interface</b>	 <p>The screenshot shows a blog page with the following structure:</p> <ul style="list-style-type: none"> <li><b>Header:</b> Last trade price, 24 hour price, 24 hour volume, active traders, Live Bitcoin price, SIGN IN, REGISTER.</li> <li><b>Navigation:</b> HOME, ABOUT US, BITCOIN, STOCK, BLOG, PAGE, CONTACT.</li> <li><b>Title:</b> BLOG POSTS (highlighted in orange).</li> <li><b>Breadcrumbs:</b> HOME / BLOG.</li> <li><b>Content:</b> <ul style="list-style-type: none"> <li>Article 1: How Cryptocurrency Began and Its Impact To Financial Transactions. Includes a large X-shaped placeholder image and a 'READ MORE' button.</li> <li>Article 2: Cryptocurrency – Who Are Involved With It? Words about members. Includes a large X-shaped placeholder image and a 'READ MORE' button.</li> <li>Article 3: Risks &amp; Rewards Of Investing In Bitcoin.Pros and Cons. Includes a large X-shaped placeholder image and a 'READ MORE' button.</li> </ul> </li> <li><b>Footer:</b> GET STARTED TODAY WITH BITCOIN, Open account for free and start trading Bitcoin!, REGISTER NOW, FOOTER.</li> <li><b>Sidebar:</b> <ul style="list-style-type: none"> <li>CATEGORIES: INSURANCE, ANNOUNCEMENT, BANKING, SECURITY, REGULATION, MARKET UPDATES.</li> <li>ARCHIVES: JANUARY 2018, DECEMBER 2017, NOVEMBER 2017, OCTOBER 2017, SEPTEMBER 2017.</li> <li>RECENT POSTS: (empty)</li> <li>POPULAR TAGS: currency, crypto, trading, wallet, mining, transaction, financial, security.</li> </ul> </li> </ul>
<b>Visual Cues</b>	User can see different information about the website. This section is include to build relationship with the potential customers. The blog content can be perfect for sharing details of the website on the social media platform.
<b>Tactical Cues</b>	User can see various details of the website.
<b>Technology</b>	Angular and Bootstrap
<b>Quality of experience</b>	Good

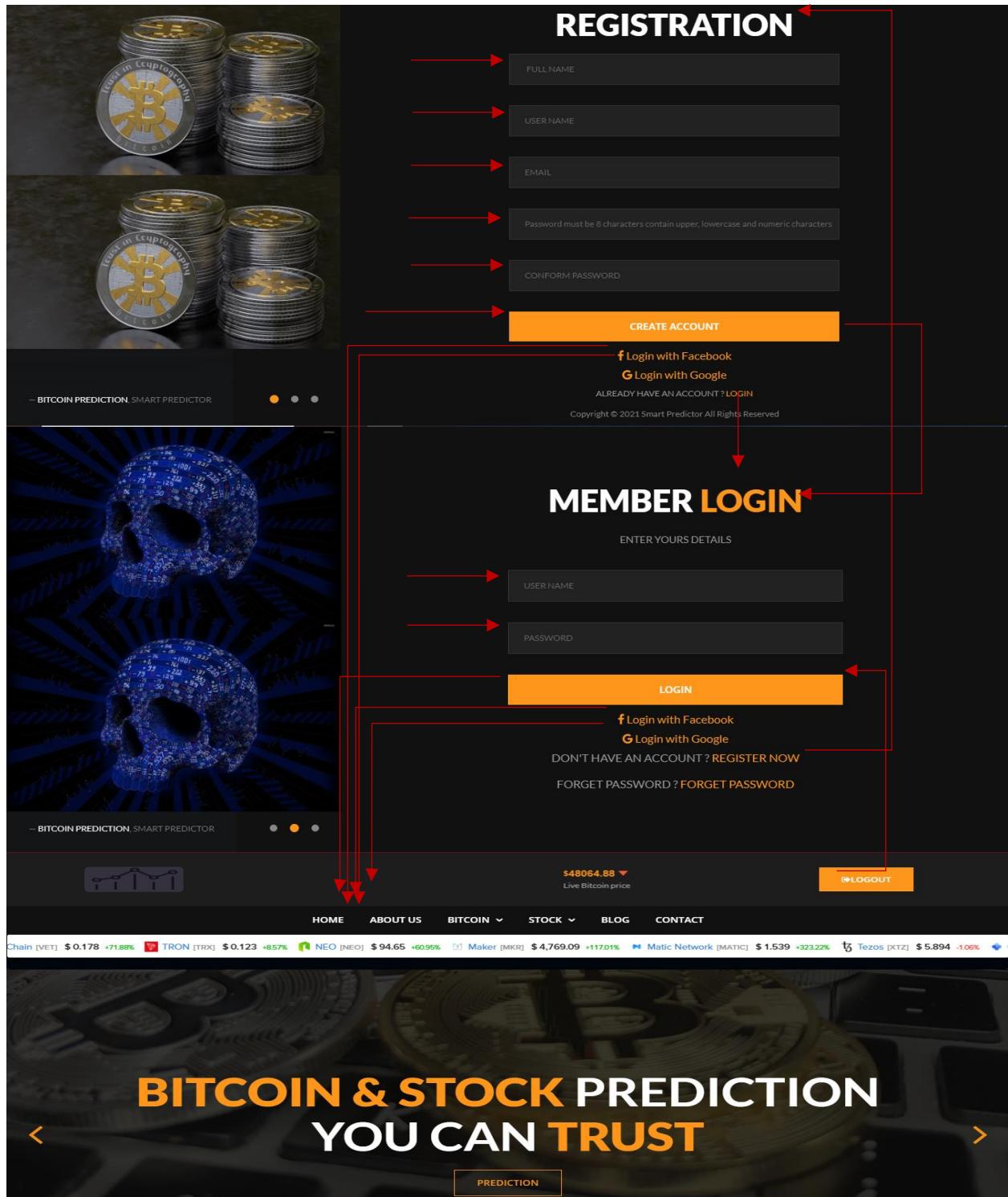
**Table.4.11 Blog**

UI ID	12
<b>Interface</b>	 <p>The screenshot shows a contact form on a website. At the top, there's a navigation bar with links for 'Last trade price', '24 hour price', '24 hour volume', 'active traders', 'Live Bitcoin price', 'SIGN IN', 'REGISTER', and 'HOME / CONTACT'. Below the navigation, a banner reads 'GET IN TOUCH' with 'HOME / CONTACT' underneath. The main form area has a heading 'FEEL FREE TO DROP US A MESSAGE' and a note: 'Need to speak to us? Do you have any queries or suggestions? Please contact us about all enquiries including membership and volunteer work using the form below.' It contains fields for 'FIRST NAME', 'LAST NAME', 'EMAIL', 'SUBJECT', and a large 'MESSAGE' text area. To the right is a sidebar with checkboxes for 'ADDRESS', 'PHONE NUMBERS', 'EMAIL ADDRESSES', and 'SOCIAL PROFILES', each accompanied by a small icon. At the bottom is a 'SEND MESSAGE' button and a 'FOOTER' section.</p>
<b>Visual Cues</b>	User can see the contact information about the owners of the website. User can also see owner social media accounts in order to get latest news about the system.
<b>Tactical Cues</b>	User can see owner contact details. User can fill the form if user has any question or query regarding the system.
<b>User Input</b>	User can fill up the form
<b>Technology</b>	Django and Bootstrap
<b>Quality of experience</b>	Excellent

**Table 4.12 – CONTACT**

#### 4.4. Navigational Maps

After storyboards, navigational maps are the next move. Device screenshots illustrate how the consumer will switch from one screen to the next throughout the system. Each button press advances the user to the next step in completing the task at hand.



## In case of Forget Password

The image consists of two main parts. The top part shows a 'MEMBER LOGIN' page for 'STOCK PREDICTION SMART PREDICTOR'. It features a background of stock market charts and a blue skull graphic. The login form includes fields for 'USER NAME' and 'PASSWORD', a large orange 'LOGIN' button, and social media login options for Facebook and Google. Below the login are links for 'REGISTER NOW' and 'FORGOT PASSWORD?'. The bottom part shows an email inbox entry titled 'Password reset on localhost:8000' from 'mirdilawar895@gmail.com' to 'me'. The email body contains instructions for password reset, a link to 'http://localhost:8000/account/reset/MQ/armqe2c-7c87061fdb3fb3e4f32a3e0d7bb3702b/' (highlighted with a red arrow), and a message of thanks from the 'localhost:8000 team'. The footer of the email includes a 'BITCOIN PREDICTION SMART PREDICTOR' logo.

**MEMBER LOGIN**

ENTER YOURS DETAILS

USER NAME

PASSWORD

LOGIN

f Login with Facebook  
G Login with Google

DON'T HAVE AN ACCOUNT ? REGISTER NOW

FORGOT PASSWORD ? [FORGOT PASSWORD](#)

STOCK PREDICTION SMART PREDICTOR

BITCOIN PREDICTION SMART PREDICTOR

Copyright © 2021 Smart Predictor All Rights Reserved

**Password Reset**

FORGOTTEN YOUR PASSWORD??.

Email: mirdilawar895@gmail.com

Copyright © 2021 Smart Predictor All Rights Reserved

Password reset on localhost:8000 [Inbox x](#)

mirdilawar895@gmail.com to me 7:56 AM (0 minutes ago) [Print](#) [Email](#) [Star](#) [More](#)

You're receiving this email because you requested a password reset for your user account at localhost:8000.

Please go to the following page and choose a new password:

<http://localhost:8000/account/reset/MQ/armqe2c-7c87061fdb3fb3e4f32a3e0d7bb3702b/>

Your username, in case you've forgotten: mirdilawar

Thanks for using our site!

The localhost:8000 team

**Enter new password**

PLEASE ENTER YOUR NEW PASSWORD TWICE SO WE CAN VERIFY YOU TYPED IT IN CORRECTLY.

New password:

- Your password can't be too similar to your other personal information.
- Your password must contain at least 9 characters.
- Your password can't be a commonly used password.
- Your password can't be entirely numeric.

New password confirmation:

BITCOIN PREDICTION SMART PREDICTOR

The image shows the homepage of the Smart Predictor website. The header features a navigation bar with links for HOME, ABOUT US, BITCOIN (with dropdown), STOCK (with dropdown), BLOG, and CONTACT. A live Bitcoin price of \$48084.36 is displayed, along with a chart icon. The main banner has a dark background with a golden circular pattern and the text "BITCOIN & STOCK PREDICTION YOU CAN TRUST". Below the banner is a "PREDICTION" button. The "ABOUT US" section contains a sub-menu with "HOME" and "ABOUT". The footer includes sections for "OUR COMPANY", "HELP & SUPPORT", "CONTACT US", and performance metrics like Market Cap (\$198.76B), Daily Transactions (243K), Active Accounts (369K), and Supported Countries (127). Social media icons for Facebook, Twitter, Google+, and LinkedIn are also present.

**BITCOIN & STOCK PREDICTION**  
YOU CAN **TRUST**

PREDICTION

**ABOUT US**

HOME / ABOUT

**WE ARE PREDICTOR**

A place for everyone who wants to predict the stock and bitcoin Prices. The system provided users latest news of stocks and crypto-Currency. The major benefit of the system is that it is free of cost.

**ATTENTION**

Our mission is to provide platform that will help you to enter and better understand of the stock and bitcoin and avoid any issues you may encounter.

**OUR COMPANY**

- HOME
- ABOUT
- BITCOIN
- STOCK MARKET

**HELP & SUPPORT**

- BLOG
- CONTACT

**CONTACT US**

- SMART\_PREDICTOR@WEBSITE.COM
- 00216 21 184 010
- GURJAT, PAKISTAN

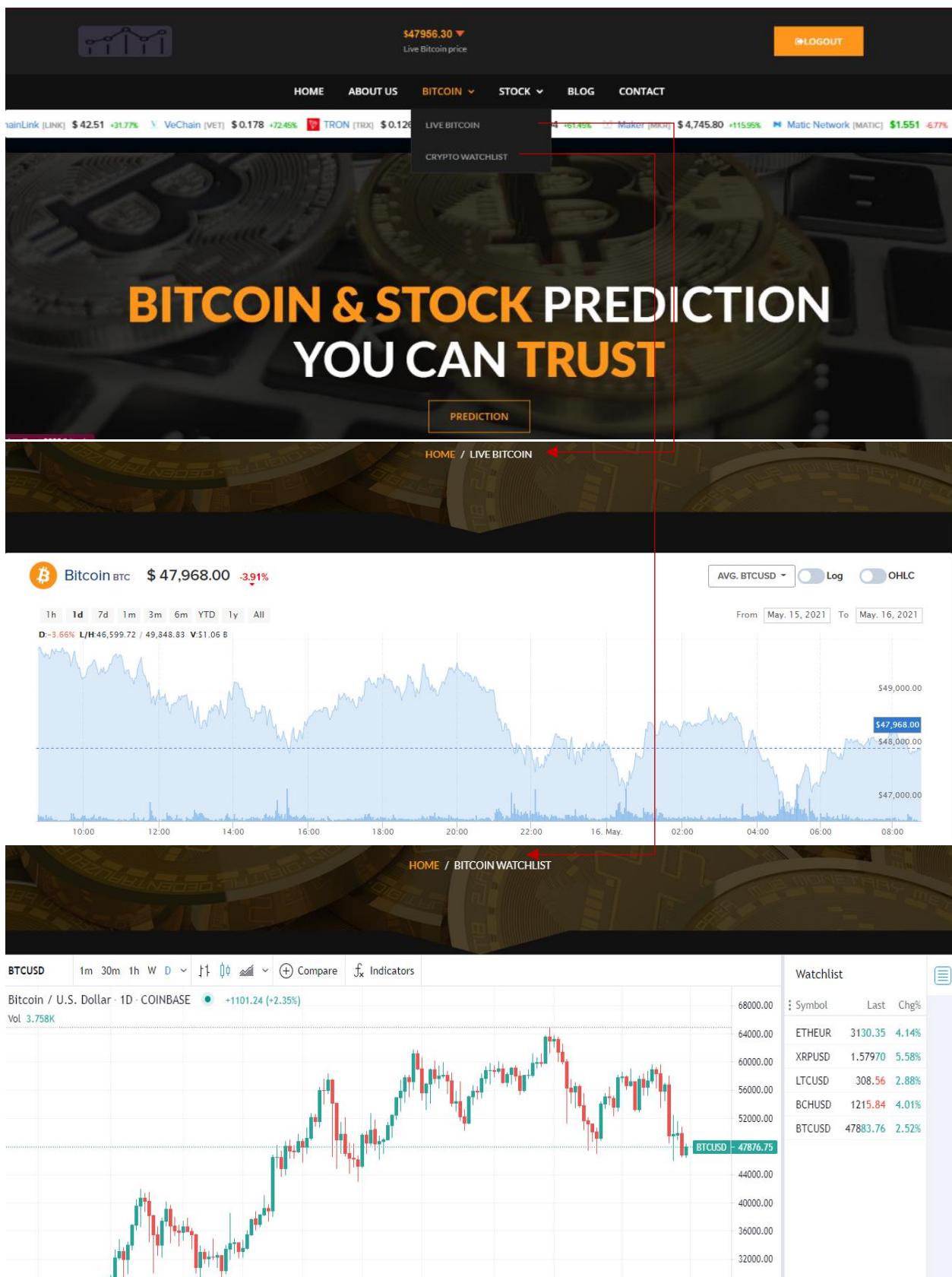
**\$198.76B**  
MARKET CAP

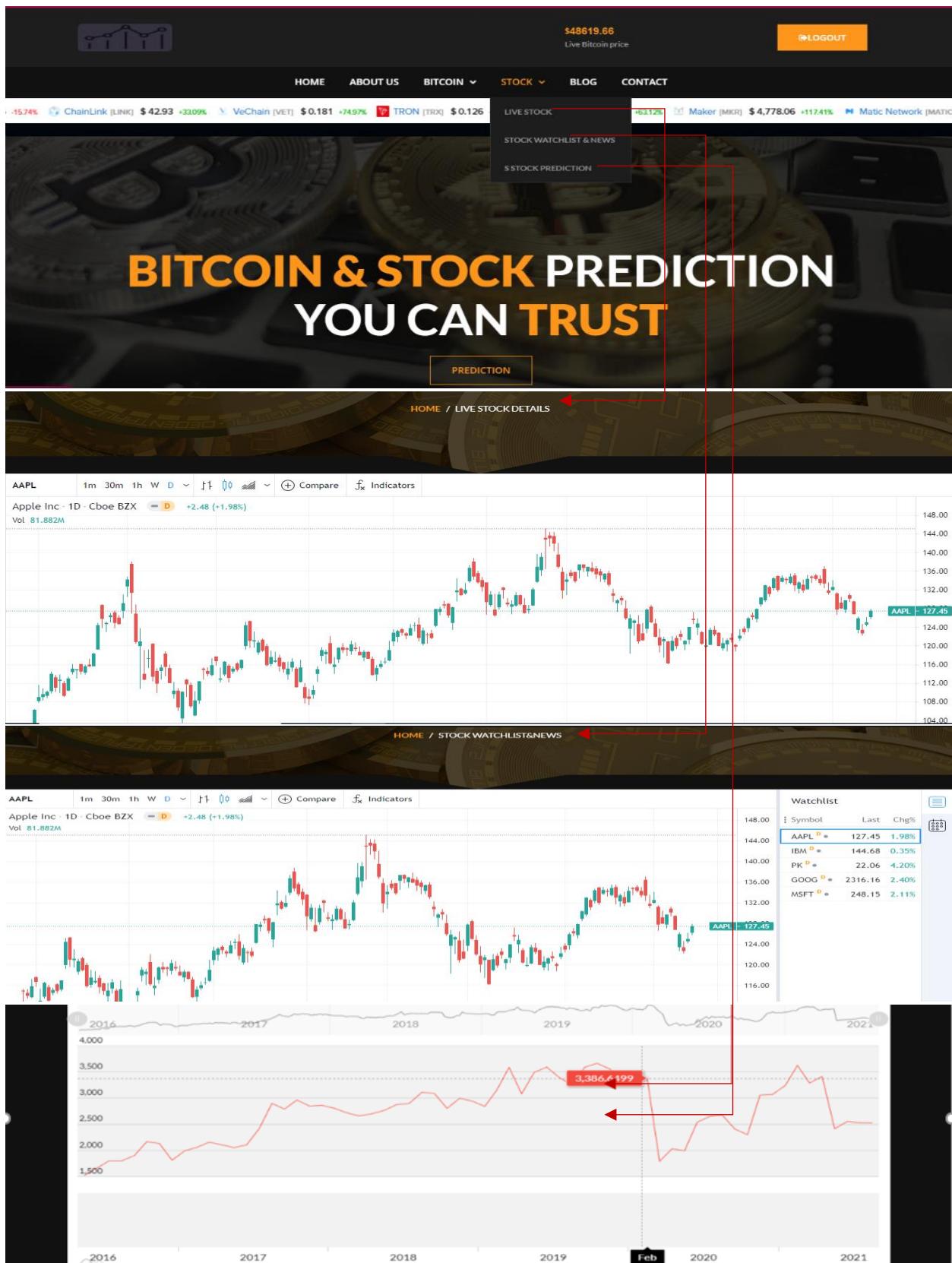
**243K**  
DAILY TRANSACTIONS

**369K**  
ACTIVE ACCOUNTS

**127**  
SUPPORTED COUNTRIES

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\$48431.56 
Live Bitcoin price
[LOGOUT](#)

[HOME](#)
[ABOUT US](#)
[BITCOIN !\[\]\(172484e65f87c22775069b8b646f97a2\_img.jpg\)](#)
[STOCK !\[\]\(10d081dc6ca0dcc0a1dee880e726ad16\_img.jpg\)](#)
[BLOG](#)
[CONTACT](#)

VET] \$0.180 -1.91% TRON [TRX] \$0.127 +11.56% NEO [NEO] \$95.53 -4.10% Maker [MKR] \$4,748.61 +116.07% Matic Network [MATIC] \$1.568 +331.14% Tezos [XTZ] \$5.882 -1.28% OKB Tol

# BITCOIN & STOCK PREDICTION YOU CAN TRUST

[PREDICTION](#)

[HOME](#) / [BLOG](#)

Cryptocurrency - Who Are Involved With It? Words about members



[HOME](#) / [CONTACT](#)

**CATEGORIES**

- [INSURANCE](#)
- [ANNOUNCEMENT](#)
- [BANKING](#)
- [SECURITY](#)
- [REGULATION](#)
- [MARKET UPDATES](#)

**FEEL FREE TO DROP US A MESSAGE**

Need to speak to us? Do you have any queries or suggestions? Please contact us about all enquiries including volunteer work using the form below.

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University of Gujarat, Pakistan

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+92 0320 4567 890  
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17221598-148@uog.edu.pk

Department of Software Engineering  
© University of Gujarat

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#### 4.5. Trace-Ability Matrix

<b>Feature</b>	Register
<b>UC_ID</b>	UC_1
<b>UI ID</b>	1
<b>Priority</b>	High
<b>Use Case Cross Ref</b>	UC_registration
<b>DB Table ID</b>	1
<b>Elaborated UC ID</b>	User can register to the system with the Email and a Password
<b>Dependent Classes</b>	User

Table 4.14 - Traceability Matrix of Register

<b>Feature</b>	Login
<b>UC_ID</b>	UC_2
<b>UI ID</b>	2
<b>Priority</b>	High
<b>Use Case Cross Ref</b>	UC_login
<b>DB Table ID</b>	2
<b>Elaborated UC ID</b>	User can login to the system by entering the Email and password
<b>Dependent Classes</b>	User

Table 4.15 - Traceability Matrix of Login

<b>Feature</b>	Customize See Prices
<b>UC_ID</b>	UC_3
<b>UI ID</b>	6
<b>Priority</b>	High
<b>Use Case Cross Ref</b>	UC_customize_see_prices
<b>DB Table ID</b>	3
<b>Elaborated UC ID</b>	The user can see and customize the prices with specific time intervals.
<b>Dependent Classes</b>	User

Table 4.15 – Customize See Prices

<b>Feature</b>	View News
<b>UC_ID</b>	UC_4
<b>UI ID</b>	9
<b>Priority</b>	High
<b>Use Case Cross Ref</b>	UC_view_news
<b>DB Table ID</b>	4
<b>Elaborated UC ID</b>	User shall be able to view latest news and updates.
<b>Dependent Classes</b>	User

**Table 4.15 – Customize See Prices**

<b>Feature</b>	Stock Prediction
<b>UC_ID</b>	UC_5
<b>UI ID</b>	10
<b>Priority</b>	High
<b>Use Case Cross Ref</b>	UC_stock_prediction
<b>DB Table ID</b>	5
<b>Elaborated UC ID</b>	User can see the results of prediction algorithms for stock prices with the help of graph.
<b>Dependent Classes</b>	User

**Table 4.15 – Stock Prediction**

<b>Feature</b>	Bitcoin Prediction
<b>UC_ID</b>	UC_6
<b>UI ID</b>	7
<b>Priority</b>	High
<b>Use Case Cross Ref</b>	UC_bitcoin_prediction
<b>DB Table ID</b>	6
<b>Elaborated UC ID</b>	User can see the results of prediction algorithms for bitcoin prices with the help of graph.
<b>Dependent Classes</b>	User

**Table 4.16 – Bitcoin Prediction**

<b>Feature</b>	Data Visualization
----------------	--------------------

<b>UC_ID</b>	UC_7
<b>UI ID</b>	6 and 8
<b>Priority</b>	High
<b>Use Case Cross Ref</b>	UC_display_visualization
<b>DB Table ID</b>	7
<b>Elaborated UC ID</b>	User can see graphical representation of how a stock's price or trading volumes have changed over time.
<b>Dependent Classes</b>	User

**Table 4.17 – Data Visualization**

<b>Feature</b>	<b>Evaluate Performance</b>
<b>UC_ID</b>	UC_8
<b>UI ID</b>	8 and 9
<b>Priority</b>	High
<b>Use Case Cross Ref</b>	UC_evaluate_performance
<b>DB Table ID</b>	8
<b>Elaborated UC ID</b>	User can evaluate stocks and bitcoin performance with the help of comparison.
<b>Dependent Classes</b>	User

**Table 4.18 – Evaluate Performance**

<b>Feature</b>	<b>Identify Stock Bitcoin Trends</b>
<b>UC_ID</b>	UC_9
<b>UI ID</b>	8 and 9
<b>Priority</b>	High
<b>Use Case Cross Ref</b>	UC_identify_stock_bitcoin_trends
<b>DB Table ID</b>	9
<b>Elaborated UC ID</b>	User can certain trends with different stock Indicators.
<b>Dependent Classes</b>	User

**Table 4.19 – Identify Stock Bitcoin Trends**

<b>Feature</b>	<b>Show Watchlist</b>
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<b>UC_ID</b>	UC_10
<b>UI ID</b>	6 and 9
<b>Priority</b>	Medium
<b>Use Case Cross Ref</b>	UC_show_watchlist
<b>DB Table ID</b>	10
<b>Elaborated UC ID</b>	User can certain trends with different stock Indicators.
<b>Dependent Classes</b>	User

**Table 4.20 – Show Watchlist**

<b>Feature</b>	<b>Fundamental Analysis</b>
<b>UC_ID</b>	UC_11
<b>UI ID</b>	10
<b>Priority</b>	High
<b>Use Case Cross Ref</b>	UC_fundamental_analysis
<b>DB Table ID</b>	11
<b>Elaborated UC ID</b>	User can see graphical representation for the fundamental Analysis of the stock base on quarterly financial report such as balance sheet, income state.
<b>Dependent Classes</b>	User

**Table 4.21– Fundamental Analysis**

<b>Feature</b>	<b>Show Company</b>
<b>UC_ID</b>	UC_12
<b>UI ID</b>	7 and 10
<b>Priority</b>	Medium
<b>Use Case Cross Ref</b>	UC_show_company
<b>DB Table ID</b>	-
<b>Elaborated UC ID</b>	User can see the list of different stock companies and crypto currency.
<b>Dependent Classes</b>	User

**Table 4.22 – Show Company**

<b>Feature</b>	<b>Live Update</b>
----------------	--------------------

<b>UC_ID</b>	UC_14
<b>UI ID</b>	7 and 10
<b>Priority</b>	High
<b>Use Case Cross Ref</b>	UC_live_updates
<b>DB Table ID</b>	-
<b>Elaborated UC ID</b>	User can see real-time stock and bitcoin prices as well as quotes for a full financial overview.
<b>Dependent Classes</b>	User

**Table 4.23– Live Update**

<b>Feature</b>	<b>Convert Currency</b>
<b>UC_ID</b>	UC_15
<b>UI ID</b>	8
<b>Priority</b>	High
<b>Use Case Cross Ref</b>	UC_convert_currency
<b>DB Table ID</b>	-
<b>Elaborated UC ID</b>	User can convert currency bitcoin prices.
<b>Dependent Classes</b>	User

**Table 4.24 – Live Update**

## **Chapter 5: Software Testing**

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## **5.1. Introduction**

This deliverable is based on the IEEE standard of software testing i.e. IEEE SOFTWARE TEST DOCUMENTATION Std 829-1998. This standard describes a set of basic test documents that are associated with the dynamic aspects of software testing (i.e., the execution of procedures and code). The standard defines the purpose, outline, and content of each basic document. While the documents described in the standard focus on dynamic testing, several of them may be applicable to other testing activities (e.g., the test plan and test incident report may be used for design and code reviews). This standard can be used for any industrial, science, or military program that runs on a computer. The scale, complexity, or criticality of the program have no bearing on its applicability. The norm, on the other hand, makes no mention of the type of software to which it must be applied. The standard covers the documentation of both initial implementation testing and subsequent so-called proof-of-concept testing. It can be used for all phases of testing, from module testing to user adoption, for a specific product update. However, since all of the basic test documents may not be applicable to all test phases, the specific documents to be included in each phase are not defined. Each company that uses the standard would have to define the software classes to which it applies, as well as the relevant document.

The norm does not include any new testing methodologies, approaches, methods, services, or resources, nor does it dictate how they should be recorded. It's possible that additional test documentation would be needed (e.g., code inspection checklists and reports). The standard also makes no recommendations or mandates for document control, configuration management, or quality assurance methodologies. Depending on the methodologies used, additional documentation (e.g., a quality assurance plan) may be required.

Following are standard artifacts, which must be included in this deliverable:

1. Test Plan
2. Test Design Specification
3. Test Case Specification
4. Test Procedure Specification
5. Test Item Transmittal Report
6. Test Log
7. Test Incident Report
8. Test Summary Report

## **5.2. Test Plan**

### **5.2.1. Purpose**

The aim of the test plan is to ensure that the system's features are consistent with one another and that the system reacts appropriately to the user's inputs. We may figure out what went wrong because of the error caused by invalid inputs. The research would also determine whether or not the predicted and real results are met. If a case fails, it

will be checked, and the necessary adjustments will be made. The main goals are to eliminate software threats, identify software risk items as early as possible, and fix them as quickly as possible.

### **5.2.2. Outline**

A test plan shall have the following structure:

- a.Test plan identifier
- b.Introduction
- c.Test items
- d.Features to be tested
- e.Features not to be tested
- f.Approach
- g.Item pass/fail criteria
- h.Suspension criteria and resumption requirements
- i.Test deliverables
- j.Testing tasks
- k.Environmental needs
- l.Responsibilities
- m.Staffing and training needs
- n.Schedule
- o.Risks and contingencies

#### **5.2.2.1. Test Plan identifier**

The unique identifier of this test plan is TPI – 1

#### **5.2.2.2. Introduction**

This test plan is a blueprint that aims at conducting the testing activities for the system **“Web Based Smart Predictor for Stock Prices and Cryptocurrency”**. The motivation behind this test plan is to make sure all required features are taken to test out their working. The testing phase is conducted in 17 to 20 days.

#### **5.2.2.3. Test Item**

- Registration/Signup
- Login
- Change / Reset Password
- Customization of Prices with time
- Latest news about the stock and bitcoin
- Stock Prediction
- Bitcoin Prediction
- Graphical Representation of Prices and trading Volume
- Comparison Result
- Stock Trend Indicators
- Fundamental Analysis
- List of Stock Companies
- Live Market Data
- Watchlist of specific stock and crypto currency

- Companies Profile

#### **5.2.2.4. Features to be tested**

The following features are tested

- Registration/Signup
- Login
- Change / Reset Password
- Customization of Prices with time
- Stock Prediction
- Bitcoin Prediction
- Graphical Representation of Prices and trading Volume
- Comparison of stock and crypto Currencies
- Stock Trend Indicators
- Fundamental Analysis
- Live market data
- Convert Currency

#### **5.2.2.5. Features not to be tested**

The following features are not tested

**Home Page:** This is the Home page of the website, there is no need to test it as it only displays the relevant information about the system.

**Watchlist of specific stock and crypto currency :** we don't need to test the watchlist feature of the system because this feature just shows some names of the stock market companies and some specific crypto currency on click any of the name mention in the list user can easily access the detail of that ticker with the help of just one figure tip which we will test during fundamental analysis. Therefore, we don't need to perform testing for this feature.

**Company Profile:** This feature just shows the company basis overview the website link and the number of Employees working in the company. This is just simple detail. Therefore, we don't need to write test cases for this feature

**Latest news about the stock and bitcoin:** System is properly providing the latest news about the stock and bitcoin which is coming with the help of Application Programming Interface(API).

#### **5.2.2.6. Approach**

We took a cautious approach to testing, which means that any problem or mistake that might arise is considered ahead of time, and implementation is done accordingly. Anything related to testing a function is recorded, including planned and actual outputs, as well as the test data used to test the feature. The aim is to see if the system is meeting and exceeding the stated requirements. The supervisor is asked to review the test report after the tests are completed.

#### **5.2.2.7. Item pass/fail criteria**

To show if the system performs its function according to the prescribed specifications and satisfies them, it must be classified as complete and operating. If any of the mentioned features fails to function properly, resulting in an unintended error, it will be classified as a fail. Each function is classified as pass if it produces the desired performance and demonstrates that it meets the requirement.

#### **5.2.2.8. Suspension criteria and resumption requirements**

The testing will be suspended when network issue occurs or 30% of the tests have failed. Once the above issues are resolved the testing will be resumed.

#### **5.2.2.9. Test Deliverables**

The following are deliverables required to perform testing and to know what the tests have result in:

- Test plans document.
- Test cases documents
- Test design specifications.
- Test data
- Test output
- Defect report

#### **5.2.2.10. Testing Tasks**

- Features to be tested must be selected
- Specification of features stated
- Test plan prepared
- Test data collected
- Setting up testing environment
- Performing the test

#### **5.2.2.11. Environmental needs**

The following are the desired properties of the testing environment:

- Access of internet
- Python 3.8 or later installed
- Django installed
- Alpha Vantage Api
- Yahoo Finance Api
- Deep Learning Libraries like TensorFlow etc.
- 

#### **5.2.2.12. Responsibilities**

Each member is responsible for designing, preparing testing of features properly. The test manager is responsible executing, managing, and resolving the issues of the project.

### **5.2.2.13. Staffing and training needs**

No special skills are required; however, tester must know how to use the system from start to end and how to carry out the designed tests.

### **5.2.2.14. Schedule**

Activities	Member	Time Required
Test Planning and Specification	Dilawar	16 days
Perform Testing	All	4 days
Test Report	Habiba	4 days
Test Delivery	Habiba	4 days

Table 5.1 - Testing Schedule

### **5.2.2.15. Risks and contingencies**

- Poor internet speed may cause the system not work properly and delay the results.
- Depend on the accuracy of data provided by the real time api like Alpha Vantage and Yahoo finance

### **5.2.2.16. Approvals**

Name	Title	Signature
Dr. Ansar	Project Supervisor	

Table 5.2 - Test Plan Approvals

## **5.3. Test Design Specification**

### **5.3.1. Purpose**

The purpose of test design specification is to specify important details about the testing that is carried out. It highlights which items tested based on which features. Also discussed the important tasks that need to be carried out to test perform actual testing, the relevant scheduling of testing and the responsibilities associated with each.

### **5.3.2. Outline**

A test design specification shall have the following:

- Introduction;
- Test items;
- Features to be tested;
- Approach;
- Item pass/fail criteria;
- Suspension criteria and resumption requirements;

- Approvals.

Note: All of the points in the outline have already been discussed in the previous section of Test Plan.

## **5.4. Test Case Specification**

### **5.4.1. Purpose**

According to the test design requirements, the test cases mentioned here are described. It's used as a guide for the tester so they'll know what to expect from the item being tested. It's a step-by-step guide that compares the use cases to the function that's being checked.

### **5.4.2. Outline**

Here, under the heading of test case specification identifier, all test cases are displayed. Each case shows the following:

- Test Case ID
- Test Case Designers
- Testers
- Use Case ID
- Test Case Description
- Test Data
- Expected Outcome
- Actual Outcome
- Status

#### **5.4.2.1. Test Case Specification Identifier**

<b>T_ID:</b> 1			<b>TC_Designers:</b> All Members		
<b>TC_Name:</b> Registration			<b>Tester:</b> Habiba		
<b>UC ID</b>	<b>TC Description</b>	<b>Test Data/Inputs</b>	<b>Expected Outcome</b>	<b>Actual Outcome</b>	<b>Status</b>
		Full Name, new email, new username, password, confirm password	New user account created	New user account created	Pass
		New email, Existing	Error, username already exists please try	Error message, username already exists	Pass

UC_registration	username, password, confirm password	with another username and again redirect to registration page	please try with another Username and again redirect to registration page	
	New email, new username, password,	Error, password and conform password did not match	Error message, password and conform password did not match	Pass
	New email, new username, password (password must contain upper case ,lower case and numeric characters and minimum length required is 8), confirm password	Error, please match the required pattern	Error message, please match the required pattern	Pass
	Leave one or more field blank	Leave one or more field blank	Error, all fields are required	Pass
	Existing email, new username, password, confirm password	Error message, account already exists with this email	Error, account already exists with this email	Pass
	Existing email, Existing username,	Error message, account already exists	Error, account already exist with this	Pass

		password, confirm password	exist with this email and username	email and username	
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<b>T_ID:</b> 2			<b>TC_Designers:</b> All Members		
<b>TC_Name:</b> Login			<b>Tester:</b> Habiba		
<b>UC ID</b>	<b>TC Description</b>	<b>Test Data / Input</b>	<b>Expected Outcome</b>	<b>Actual Outcome</b>	<b>Status</b>
UC_login	System “shall” allow user to login himself in order to access the System.	User enter his/her Correct Username and Password.	System should display Success message User login in Successfully.	System should display Success message User login in Successfully.	pass
	In Case when User enter Incorrect or Wrong Username or Password.		System should display Error message Invalid Credentials.	System should display Error message Invalid Credentials.	Pass
	User can also login with Social Media Account. In order to login with “Facebook” user click on the Facebook Login button.		User successfully redirect to home page with success message “Successfully sign in as username”	User successfully redirect to home page with success message “Successfully sign in as username”	Pass

	User can also login with Social Media Account. In order to login with “Facebook” user click on the Facebook Login button.	User successfully redirect to google accounts page to select which particular google account you want to login in case if you have multiple accounts with success message “Successfully sign in as username”	User successfully redirect to google accounts page to select which particular google account you want to login in case if you have multiple accounts with success message “Successfully sign in as username”	Pass
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<b>T_ID:</b> 3			<b>TC_Designers:</b> All Members		
<b>TC_Name:</b> Customize Prices			<b>Tester:</b> Dilawar Hussain		
UC ID	TC Description	Test Data / Inputs	Expected Outcome	Actual Outcome	Status
		User can select any specific time interval fields like minutes, days, weeks and months to see the trading prices and volume.	User can see the results after the selection of the particular time interval with graphs and charts which represent the information according to the time duration which is selected by the user.	User can see the results after the selection of the particular time interval with graphs and charts which represent the information according to the time duration which is selected by the user.	Pass
		User select the minutes	User can be able to see the graphs and charts which represent the minutes by minutes	User can be able to see the graphs and charts which represent the minutes by minutes	Pass

		interval to see the trading prices and volume.	the minutes by minutes information of prices and trading volume.	information of prices and trading volume.	
UC_customize_prices	System “shall” allow user to customize as well as see the stock and bitcoin prices over a specific time frame.	User select the hours interval to see the trading prices and volume.	User can be able to see the graphs and charts which represent the by information of prices and trading volume after hourly time interval.	User can be able to see the graphs and charts which represent the by information of prices and trading volume after hourly time interval.	Pass
		User select the week interval to see the trading prices and volume.	User can be able to see the graphs and charts which represent the by information of prices and trading volume after weekly time interval.	User can be able to see the graphs and charts which represent the by information of prices and trading volume after weekly time interval.	
		User select the months interval to see the trading prices and volume.	User can be able to see the graphs and charts which represent the by information of after monthly time interval.	User can be able to see the graphs shows the by information of after monthly time interval	

<b>T_ID:</b> 4			<b>TC_Designers:</b> All Members		
<b>TC_Name:</b> Stock Prediction			<b>Tester:</b> Dilawar		
<b>UC ID</b>	<b>TC Description</b>	<b>Test Data/Inputs</b>	<b>Expected Outcome</b>	<b>Actual Outcome</b>	<b>Status</b>
UC_Stock_Prediction	System “shall” predict stock prices	User search for stock market company symbol or ticker in the search box.	System should provide the relevant stock symbols or ticker information to the user.	System should provide the relevant or related symbol on the search page.	Pass
		User select the company in order to see the result of prediction.	After selection, various components of the page and graph are loaded successfully.	After selection, various components of the page and graph are loaded successfully	Pass
		User can select any specific time interval fields to check the result of prediction.	System should provide the results after the selection of the particular time interval with graph	System should provide the results after the selection of the particular time interval with graph	Pass

	User hover over the graph line or graph with the mouse.	The graph or line should show the price of that respective day. Moreover, the system should provide the result of next four month.	The graph or line should show the price of that respective day. Moreover, the system should provide the result of next four month	Pass	
	The prediction algorithms will be tested using previous historical data using alpha vantage or Yahoo Finance API	System should provide the 87 % accuracy of the prediction algorithm.	System should provide the 87 % accuracy of the prediction algorithm	Pass	
<b>T_ID:</b> 5		<b>TC_Designers:</b> All Members			
<b>TC_Name:</b> Bitcoin Prediction		<b>Tester:</b> Dilawar			
<b>UC ID</b>	<b>TC Description</b>	<b>Test Data/Inputs</b>	<b>Expected Outcome</b>	<b>Actual Outcome</b>	<b>Status</b>
		User search for cryptocurrency symbol or ticker from the search box .	System should provide the relevant cryptocurrency symbols or ticker	System should provide the relevant cryptocurrency symbols or ticker	Pass

		information to the user.	information to the user.	
UC_Bitcoin_Prediction	User select the any cryptocurrency in order to see the result of prediction.	After selection, various components of the page and graph are loaded successfully.	After selection, various components of the page and graph are loaded successfully	Pass
	User can select any specific time interval fields to check the result of prediction.	System should provide the results after the selection of the particular time interval with graph	System should provide the results after the selection of the particular time interval with graph	Pass
	User hover over the graph line or graph with the mouse.	The graph or line should show the price of that respective day. Moreover, the system should provide the result	The graph or line should show the price of that respective day. Moreover, the system should provide the	Pass

		of next four month.	result of next four month	
	The prediction algorithms will be tested using previous historical data using alpha vantage or Yahoo Finance API	System should provide the 87 % accuracy of the prediction algorithm.	System should provide the 88 % accuracy of the prediction algorithm	Pass

T_ID: 6			TC_Designers: All Members		
TC_Name: Graphical Representation of Prices and trading Volume			Tester: Habiba		
UC ID	TC Description	Test Data	Expected Outcome	Actual Outcome	Status
UC_display_visualization	Graphical Representation of Prices and trading Volume	User search for cryptocurrency and stock market symbol on ticker from the search box	System provide the graphs and charts which represent the information of prices and trading volume of the selected ticker.	System provide the graphs and charts which represent the information of prices and trading volume of the selected ticker.	pass
		User Select any Graphs and chart given in the	System provide the graphs and charts according to the graph or	System provide the graphs and charts according to the graph or	Pass

	dropdown menu.	chart selected by the user.	chart selected by the user.	

<b>T_ID:</b> 7		<b>TC_Designers:</b> All Members		
<b>TC_Name:</b> Comparison Result		<b>Tester:</b> Dilawar		
UC ID	TC Description	Test Data	Expected Outcome	Actual Outcome
UC_evaluate_performance	User Click on the Compare Icon given at the header bar of the graph area.	A new modal with the Compare and Add Symbol along with search box appear.	A new modal with the Compare and Add Symbol along with search box appear.	Pass
	User Enter any Stock or Bitcoin Currency Symbol or ticker in Search box for comparison	System provide the list of related symbols or company names according to the symbol or ticker entered by the user	System provide the list of related symbols or company names according to the symbol or ticker entered by the user	Pass
	User Select any symbol or ticker for Comparison	System show the Price Line and the name of the company ticker selected by the user on the same graph.	System show the Price Line and the name of the company ticker selected by the user on the same graph.	Pass

	User change the settings of the comparison ticker just click on the name of the company and click on the more or setting icon.	System Provide New modal from where user can select the various graphs and chart option and also change the color of the Price Line with ease.	System Provide New modal from where user can select the various graphs and chart option and also change the color of the Price Line with ease.	Pass	
	User remove the comparison ticker just by click on the remove icon provided along with Company name.	System remove the company name along with the Price line .	System remove the company name along with the Price line .	Pass	
<b>T_ID:</b> 8		<b>TC_Designers:</b> All Members			
<b>TC_Name:</b> Stock Trend Indicators		<b>Tester:</b> Dilawar			
UC ID	TC Description	Test Data	Expected Outcome	Actual Outcome	Status

UC_identify_stock_bitcoin_trends	System “shall” provide facility to identify certain trends with different stock Indicators	User Click on the “Indicator” Icon given at the header bar of the graph area.	A new modal with the Compare and Add Symbol along with search box appear.	A new modal with the IndicatorSymbol along with search box appear.	Pass
	User Enter any Indicator name in Search box .	System provide the list of relevant Indicator entered by the user	System provide the list of relevant Indicator entered by the user	System provide the list of relevant Indicator entered by the user	Pass
	User Select any Indicator	System show the Price Line and the name of the Indicator selected by the user on the same graph.	System show the Price Line and the name of the Indicator selected by the user on the same graph.	System show the Price Line and the name of the Indicator selected by the user on the same graph.	Pass
	User change the settings of the Indicator just click on the name of the indicator and click on the more or setting icon.	System Provide New modal from where user can select the various graphs and chart option and also change the color of the Price Line with ease.	System Provide New modal from where user can select the various graphs and chart option and also change the color of the Price Line with ease.	System Provide New modal from where user can select the various graphs and chart option and also change the color of the Price Line with ease.	Pass
	User remove the indicator	System remove the company	System remove the company	System remove the company	Pass

		just by click on the remove icon provided along with Company name.	name along with the Price line .	name along with the Price line .	

T_ID: 9			TC_Designers: All Members		
TC_Name: Fundamental Analysis			Tester: Dilawar		
UC ID	TC Description	Test Data / Input	Expected Outcome	Actual Outcome	Status
UC_Fundamental_Analysis	System “shall” provide graphical representation of fundamental analysis with the help of Balance Sheet, Income Statement and Cash Flow.	User select Balance Sheet, Income Statement or Cash Flow from the dropdown menu.	System should display the Annual and Quarterly report with the help of graph of particular company selected by the user.	System should display the Annual and Quarterly report with the help of graph of particular company selected by the user.	Pass
		User can select Annual or Quarterly Report option after the selection of the	System provide the graphical representation of the Balance sheet , Income Statement or Cash Flow	System provide the graphical representation of the Balance sheet , Income Statement or Cash Flow	Pass

	from the dropdown menu	selected by the user.	selected by the user.	
	User can see more details by click on the “More Financials” Tag.	System show new modal which provide the Stock Market Company name, Overview, Income statement, Balance Sheet, cash flow and statistics option or component to the user.	System show new modal which provide the Stock Market Company name, Overview, Income statement, Balance Sheet, cash flow and statistics option or component to the user.	Pass
	User can select Overview, Income statement, Balance Sheet, cash flow and statistics option or component to the user.	System should display the detail information of the particular option selected by the user	System should display the detail information of the particular option selected by the user	Pass

<b>T_ID:</b> 10			<b>TC_Designers:</b> All Members		
<b>TC_Name:</b> Live market data			<b>Tester:</b> Dilawar		
UC ID	TC Description	Test Data	Expected Outcome	Actual Outcome	Status

UC_live_updates	System “shall” provide live market data.	User search for stock market or Cryptocurrency symbol or ticker in the search box.	System should provide the live Market Open Price and key Stats like live Volume, Average Volume, Market Capitalization, Dividends Yields ,Price of Earning details etc.	System should provide the live Market Open Price and key Stats like live Volume, Average Volume, Market Capitalization, Dividends Yields ,Price of Earning details etc.	pass
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<b>T_ID:</b> 11			<b>TC_Designers:</b> All Members		
<b>TC_Name:</b> Live market data			<b>Tester:</b> Dilawar		
UC ID	TC Description	Test Data	Expected Outcome	Actual Outcome	Status
UC_convert_currency	System “shall” allow user to convert currency bitcoin.	User select the any currency given in the dropdown menu.	System should display the bitcoin price against the selected Currency.	System should display the bitcoin price against the selected Currency.	Pass
		User can Enter amount in the input box.	System should display the bitcoin price against the inserted amount.	System should display the bitcoin price against the inserted amount	Pass

<b>T_ID:</b> 12	<b>TC_Designers:</b> All Members
-----------------	----------------------------------

<b>TC Name:</b> Change / Reset Password			<b>Tester:</b> Dilawar		
<b>UC ID</b>	<b>TC Description</b>	<b>Test Data / Input</b>	<b>Expected Outcome</b>	<b>Actual Outcome</b>	<b>Status</b>
UC_change_password	System “shall” provide facility to change password.	User Click on the Forget Password link which is provide in the login page of the Website.	System redirect the user to the reset password page which provide a form for allowing a user to change their password.	System redirect the user to the reset password page which provide a form for allowing a user to change their password.	Pass
	User must enter the same Email Address which he/she provided during the registration form.	User must enter the same Email Address which he/she provided during the registration form.	System redirect the user to the Pssword_Reset_Sent page with success message of “Message is successfully delivered. Please, check your mail”	System redirect the user to the Pssword_Reset_Sent page with success message of “Message is successfully delivered. Please, check your mail”	Pass
	User Open the email and click on the link provide in the Password Reset Request Email.	User Open the email and click on the link provide in the Password Reset Request Email.	System provide the new form that lets a user change their password without entering the old passwords.	System provide the new form that lets a user change their password without entering the old passwords.	Pass
	User leaves the fields empty and	User leaves the fields empty and	System display Error, all fields are	System display Error, all fields are	Pass

		click on submit			
		User enter different values in password and Conform Password Fields	Error, both passwords must be same.	Error, both passwords must be same.	Pass
		User enter same values in password and Conform Password Fields.	System redirect user to another page with success message "Your Password Has been Set" along with login button	System redirect user to another page with success message "Your Password has been set" along with login button	Pass
		User Click on the "Login" button.	System redirect user to login page in order to Login the System.	System redirect user to login page in order to Login the System.	Pass
		User enter Invalid username or password	Error message, invalid credentials	Error message, invalid credentials	Pass

## 5.5. Test Procedure Specification

### 5.5.1. Purpose

The following test procedure specification describes the steps that a tester would take to execute a series of test cases. This often entails reviewing the device to determine the functionality that should be tested.

### 5.5.2. Outline

A test procedure specification shall have the following structure:

- Test procedure specification identifier
- Purpose
- Special requirements
- Procedure steps

Details on the content of each section are contained in the following sub clauses.

#### **5.5.2.1. Test Procedure Specification Identifier**

The unique identifier for test procedure specification is TPS – 1.

#### **5.5.2.2. Purpose**

The purpose of this module is to describe how the testing of the system is carried out. The procedure is carried out to execute the following test cases: TC\_1 up-to TC\_12. All of the 12 test cases are conducted manually within specified time constraint.

#### **5.5.2.3. Special Requirements**

There are no special requirement in terms of skills; however, to carry out the testing, the following must be there:

- Access of internet
- Python 3.8 or later installed
- Django installed
- Alpha Vantage Api
- Yahoo Finance Api
- Deep Learning Libraries like TensorFlow etc.

#### **5.5.2.4. Procedure Setups**

##### **5.5.2.4..1. Setup**

Testers system has access to the good internet speed

- Python 3.8 or later installed
- Django installed
- Alpha Vantage Api
- Yahoo Finance Api
- Deep Learning Libraries like TensorFlow etc.

##### **5.5.2.4.2. Start**

Register and then login to the system, then continue further.

##### **5.5.2.4.3. Proceed**

Execute the tests in chronological order as specified from TC\_1 that lead up-to TC\_12.

##### **5.5.2.4.4. Measure**

Since the experiments are done by hand, the real performance would be compared to the predicted output and, of course, to human observation. Our single module, on the other

hand, includes stock and bitcoin forecasting. This module's calculation methodology is focused on real-world observation, and it has an accuracy of 88 percent and 89 percent.

#### **5.5.2.4.5. Shutdown**

Once all tests are carried out, the tester can logout of the system and put the server offline.

#### **5.5.2.4.6. Restart**

Connect to the internet then login again to start testing again or using the system.

#### **5.5.2.4.7. Stop**

Once all tests are carried out logout of the system to stop its working.

#### **5.5.2.4.8. Wrap Up**

Make sure output of each test case is recorded in the test log.

### **5.6. Test Item Transmittal Report**

#### **5.6.1. Purpose**

The purpose behind this Test Item Transmittal report is to identify the items transmitted for testing. It identifies the items given to the tester for testing out.

#### **5.6.2. Outline**

A test item transmittal report shall have the following structure:

- Transmittal report identifier
- Transmitted items
- Location
- Status
- Approvals

Details on the content of each section are contained in the following sub clauses.

##### **5.6.2.1. Transmittal Report Identifier**

Unique identifier for this transmittal report is TTR – 1

##### **5.6.2.2. Transmittal items**

System is transmitted to the essential person for carrying out testing in a reasonable manner and each member is responsible for it.

##### **5.6.2.3. Location**

Our system is a web app, to use it tester must go to it and login.

##### **5.6.2.4. Status**

The status of all test items transmitted is pass and all item are functioning properly as the actual output match the expected out meaning that the test plan has worked successfully.

### **5.6.2.5. Approvals**

Name	Title	Signature
Dr. Ansar Siddique	Project Supervisor	

Table 5.19 - Test Item Transmittal Report Approvals

## **5.7. Test Log**

### **5.7.1. Purpose**

The aim of the test log is to keep track of all relevant information about the test cases that have been run, including the output that has been obtained for each test case. The log is a record of the system's observed effects during the tests.

### **5.7.2. Outline**

A test log shall have the following structure:

- a. Test log identifier;
- b. Description;
- c. Activity and event entries.

Details on the content of each section are contained in the following sub clauses.

#### **5.7.2.1. Test Identifier**

The unique test log identifier is TLI – 1.

#### **5.7.2.2. Description**

The items testes are already identified in the above section *5.2.2.3 Test Items*. However, the testing is done manually and therefore the results are manually record by the tester. All of the environmental needs that helped in carrying out the test successfully are listed under the section *5.2.2.11 Environmental Needs*.

#### **5.7.2.3. Activity and Event Entries**

Everything is already briefly elaborated under the section *5.4.2.1 Test Case Specification Identifier*.

## **5.8. Test Incident Report**

### **5.8.1. Purpose**

The purpose of this incident report is to record whether an unexpected incident occurred. If it did, then all necessary details about it are to be recorded.

### **5.8.2. outline**

A test incident report shall have the following structure:

- Test incident report identifier
- Summary
- Incident description
- Impact

Details on the content of each section are contained in the following sub clauses.

#### **5.8.2.1. Test Incident Report Identifier**

The unique identifier for Test incident report is TIR – 1.

#### **5.8.2.2. Summary**

No expected incident occurred as the errors are proactively handled beforehand through error messages.

#### **5.8.2.3. Incident Description**

No incidents occurred.

### **5.9. Test Summary Report**

#### **5.9.1. Purpose**

The purpose of this test review report is to summarize all of the device function testing that was done. It summarizes the results obtained against the features tested and explains the various activities carried out during the testing process.

#### **5.9.2. Outline**

A test summary report shall have the following:

#### **5.9.2.1. Test Summary Report Identidier**

The unique identifier of this test summary report is TSR - 1.

#### **5.9.2.2. Summary**

Test items identified against the features stated under **5.2.2.4. Features to be tested. Environment needs to carry out tests successfully is stated under 5.2.2.11 Environmental Needs Sections 5.2, 5.3, 5.4, 5.5, 5.6 & 5.8** can be referred to for checking Test Plan, Test Design specification, Test Case Specification, Test Procedure Specification, Test Transmittal Report and Test logs.

#### **5.9.2.3. Variances**

No variances.

#### **5.9.2.4. Comprehensiveness Assessment**

The tests were carried out just as they were described in the test plan. All features the tests are conducted against are also described under the test plan.

#### **5.9.2.5. Summary of Results**

A total of fifteen test cases were created to be carried out during the testing process. All of them were completed successfully, and the actual results obtained matched the predicted results, so they were all given a pass.

#### **5.9.2.6. Evaluation**

The research procedure was straightforward, and the findings were just what we had hoped for. The conclusion we reached after testing our system is that if the user follows the user manual given, they will be able to navigate the system without encountering any problems.

#### **5.9.2.7. Summary of Activities**

The items listed under **5.2.2.3 Test Items** tested against the features listed under **5.2.2.4. Features to be tested**. The duration spent on the testing activities are given below.

Activities	Time Spent
Test Planning and Specification	16 days
Perform Testing	4 days
Test Report	4 days
Test Delivery	4 days

Table 5.20 - Summary of Activities

#### **5.9.2.8. Approval**

Name	Title	Signature
Dr. Ansar Siddique	Project Supervisor	

Table 5.21 - Test Summary Report Approvals

## **Chapter 6: User Technical**

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## **6.1 General Information**

### **6.1.1 System Overview**

The purpose of this project is to develop a system which provide accurate prediction of Specific stock market companies and bitcoin cryptocurrency along with latest news of stocks and CryptoCurrency.

- Website is based on the python, Django , JavaScript and Machine Learning Libraries.
- System allow users to get future prediction of particular stock and bitcoin Prices.
- System allow user to get graphical representation of the stock and bitcoin prices data with the help of different graphs and charts.
- System provide latest news about stock and bitcoin to the user.
- System should provide proper authentication facilities to users to ensure system security and data integrity
- System category:
  - ✓ Accomplishes well-defined functions for which there is a voluntarily identifiable security attention and need
  - ✓ General system offers general ADP or network support for a variety of users and applications
- Operational status:
  - Partially Operational
  - Under development

## **6.2 System Summary:**

The web based smart predictor consists of several user-friendly interfaces some of them which are available to the user before logging in like “Home and About Us Pages” and others are accessible to the user after the login. System provide facility to user to login with their Social media accounts such as “Facebook” and “Google”. Before login to the system the user can get Home Page and About Us page. The home page include some Images Sliders which highlight information about the system. This page also contain calculator some project key feature which the system is going to provide to the users and also the graph about the bitcoin. The About Us section contain some objectives of the project. After logging in a user can access all the pages of the website. All pages highlights some specific information about the system. For example, Bitcoin Pages section provide the information about the cryptocurrency and stock section about the stock market related information. Both Bitcoin and Stock market section contain the same information as latest news, data visualization with graphs, charts but in their respective domains.

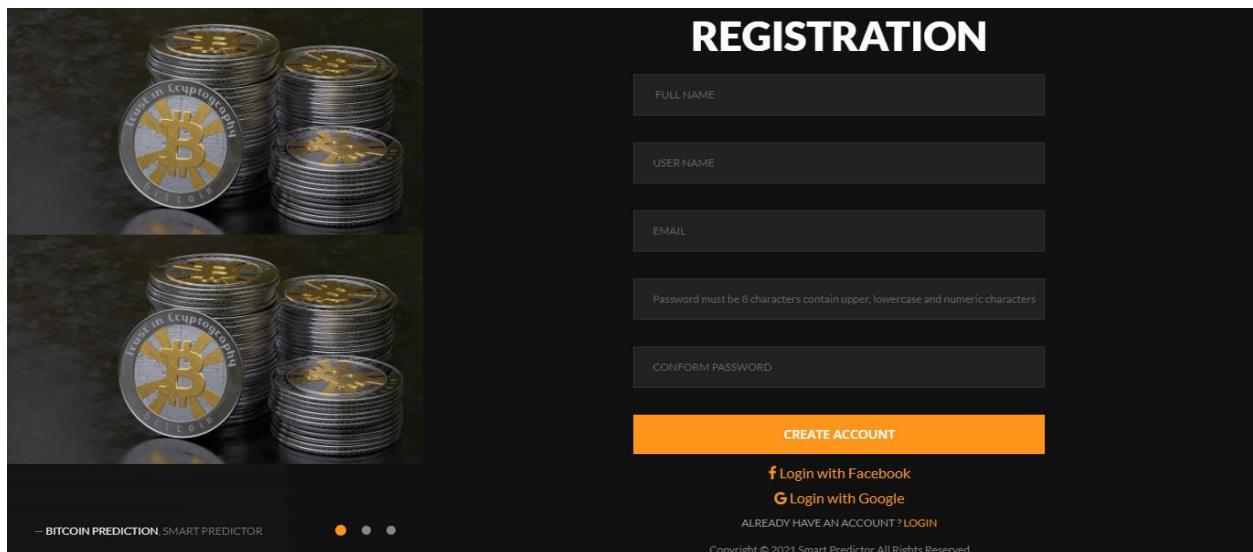
### **6.2.1 Home**

When user access the website the user automatically navigate to the home page. Home page provide the system overview. This page contain system menu or navigation bar through user can navigate through the system after the logging in without logging in user can only access home and about page.

The screenshot shows the homepage of a website dedicated to Bitcoin and stock market predictions. At the top, there's a navigation bar with links for HOME, ABOUT US, BITCOIN, STOCK, BLOG, and CONTACT. It also features a live price feed for Bitcoin at \$56721.27 and buttons for SIGN IN and REGISTER. Below the header, a banner displays the title "BITCOIN & STOCK PREDICTION YOU CAN TRUST" over a background image of Bitcoin coins. A "PREDICTION" button is visible. The main content area is titled "ABOUT US" and describes the site as a commercial website providing news and live prices for the stock market and Bitcoin. It highlights its role as a predictor for stock and crypto-currency prices. A graphic of a network graph with a central Bitcoin symbol is shown. To the left, a quote from Marc Smith, CEO, is displayed: "Bitcoin is one of the most important inventions in all of human history. For the first time ever, anyone can send or receive any amount of money with anyone else, anywhere on the planet, conveniently and without restriction. It's the dawn of a better, more free world." Below the quote is a photo of Marc Smith. To the right, a large chart shows the price of Bitcoin (BTC/USD) from December to May, starting around \$20,000 and rising to approximately \$56,505.61. Key statistics for the market cap, high, low, supply, and blocks are also provided. The footer contains links for OUR COMPANY, HELP & SUPPORT, CONTACT US, and various metrics like \$198.76B in market cap and 243K daily transactions.

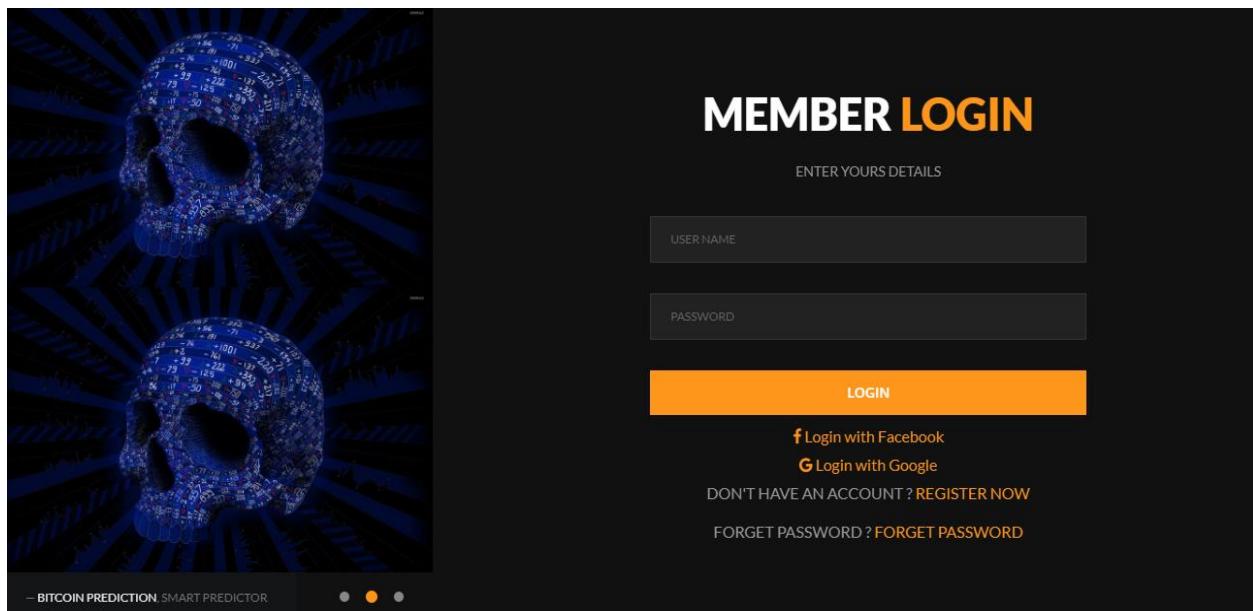
### 6.2.2 Registration

The user have to click on signup button given in the right corner of the home page in order to register himself/herself into the website. Full Name, Username, Email, Password and Conform Password is required in order to registration. In case of successful registration, the system will navigate into login. User can also login with social media such as “Facebook” and “Google” directly without going into the registration Process.



### 6.2.3 Login

The user have to click on registration button given in the right corner of the home page in order to register himself/herself into the website Username and Password is required in order to login which user has been set during the registration process. User can also his/her social media accounts for the login purpose.

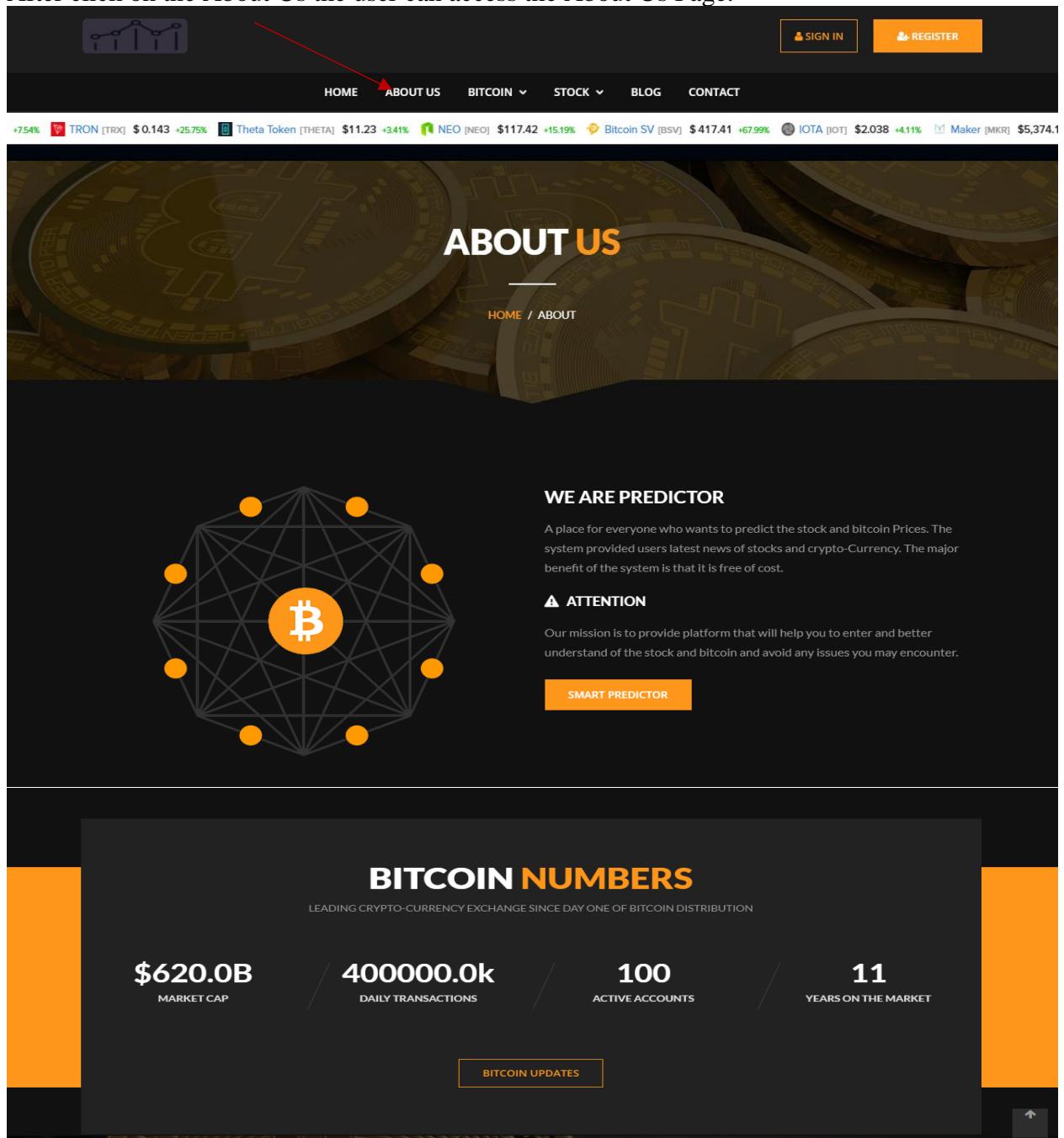


### 6.3 System Menu

After logging in the user can access the following pages from the website.

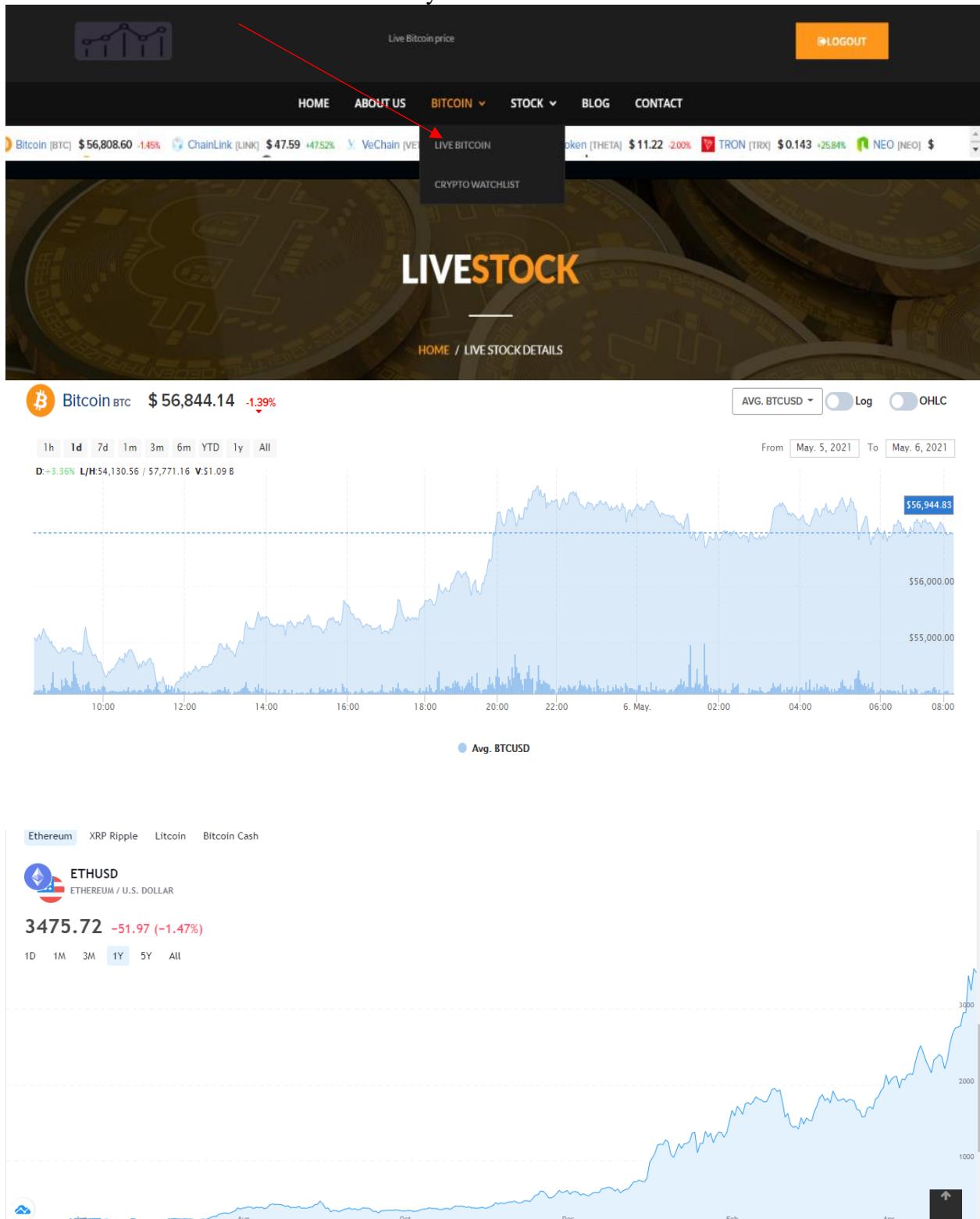
### 6.3.1 About Us

After click on the About Us the user can access the About Us Page.



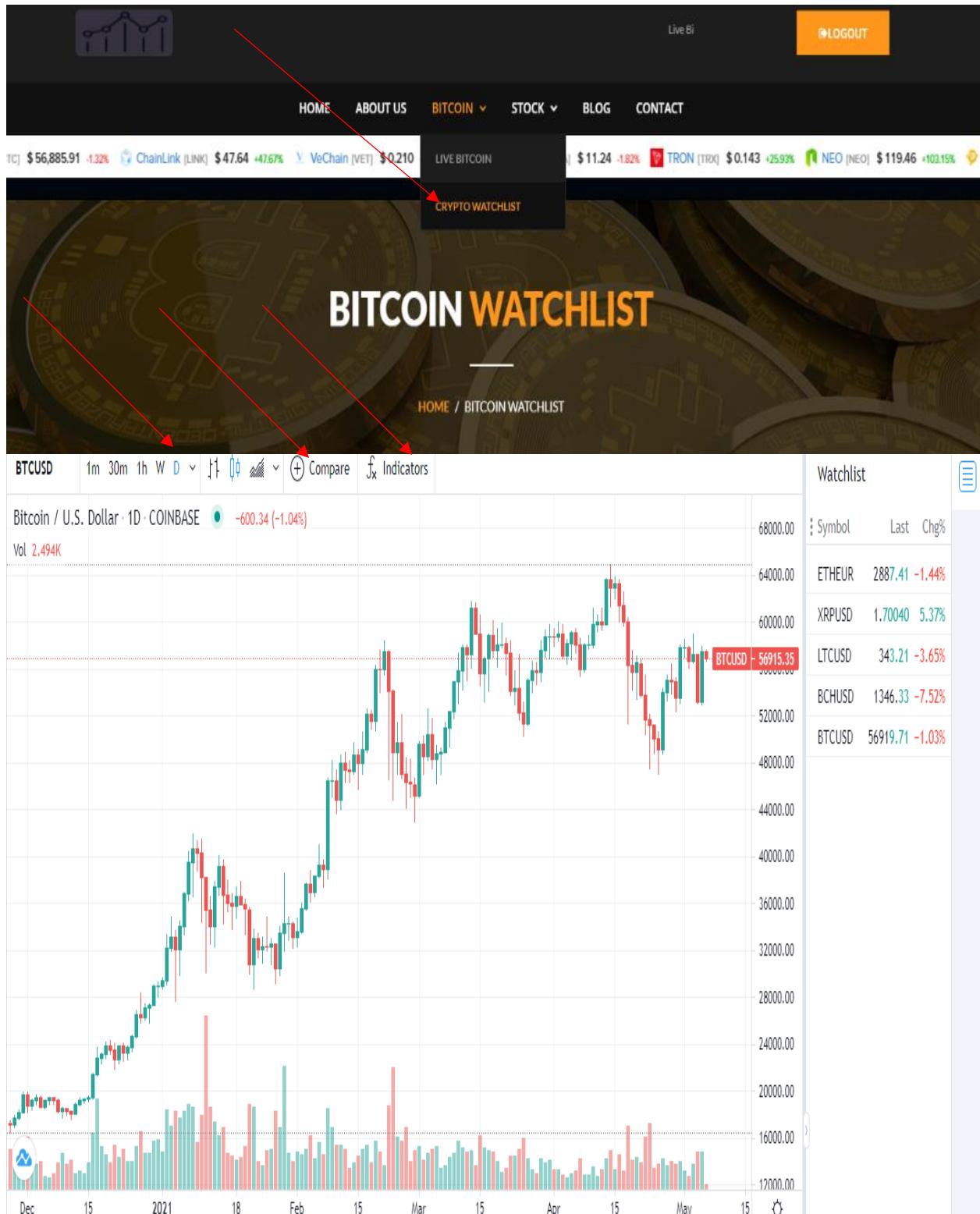
### 6.3.2 Live Bitcoin

By clicking on the Live Bitcoin, the user navigate to the Live Bitcoin page and take latest news and details about the bitcoin currency.



### 6.3.3 Crypto Watchlist

By clicking on the Crypto Watchlist, the user navigate to the Crypto Watchlist page.



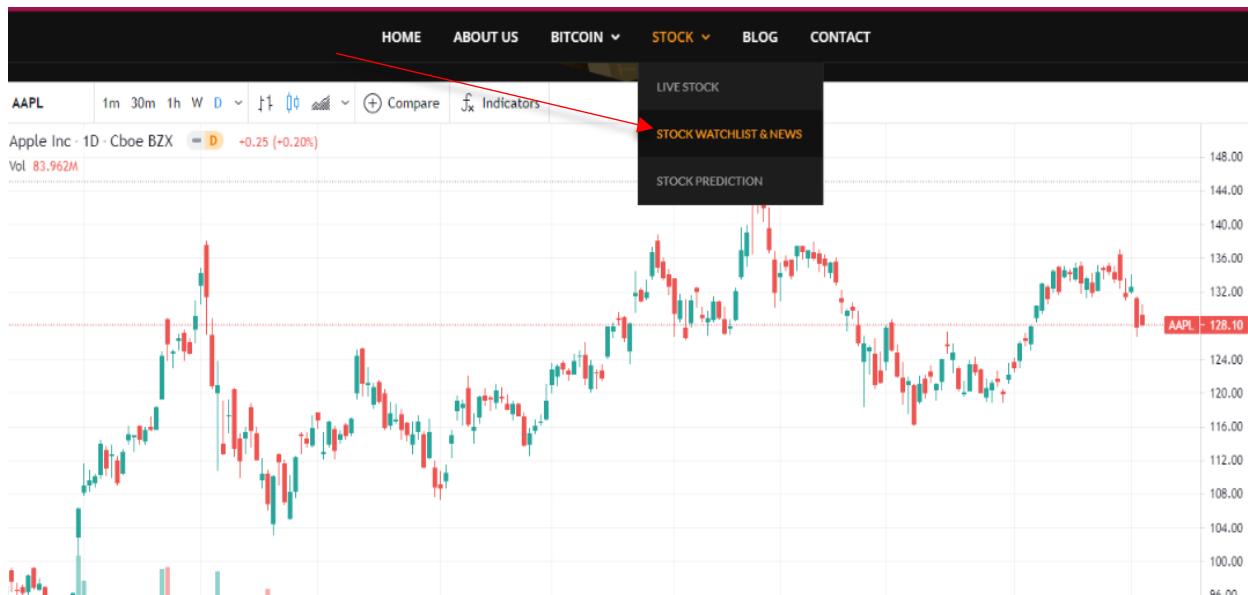
### 6.3.4 Live Stock Market

By clicking on the Live Stock, the user navigate to the Live Stock page and saw latest news and details about the stock market such as see graphs with different time intervals, compare stock with other stock companies and see the result of different indicators.



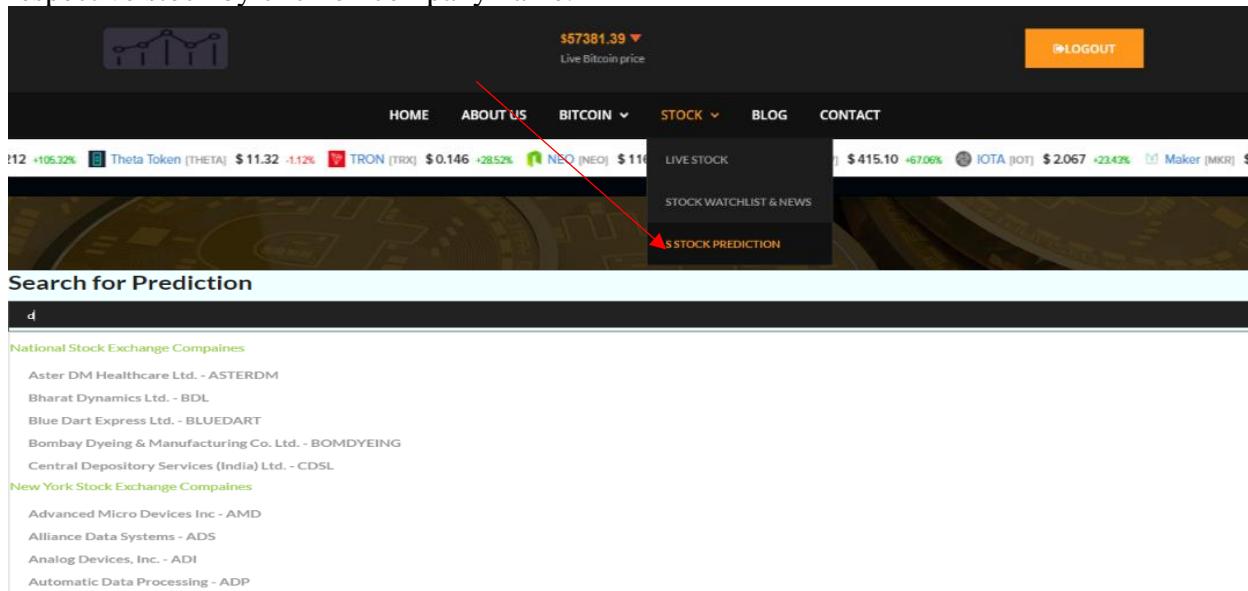
### 6.3.5 Stock Watchlist & News

By clicking on the Stock Watchlist and news page the user navigate to the Stock Watchlist and take care of the website features such as Various graphs and charts , compare stock with other stocks and impact of various indicators of the system.

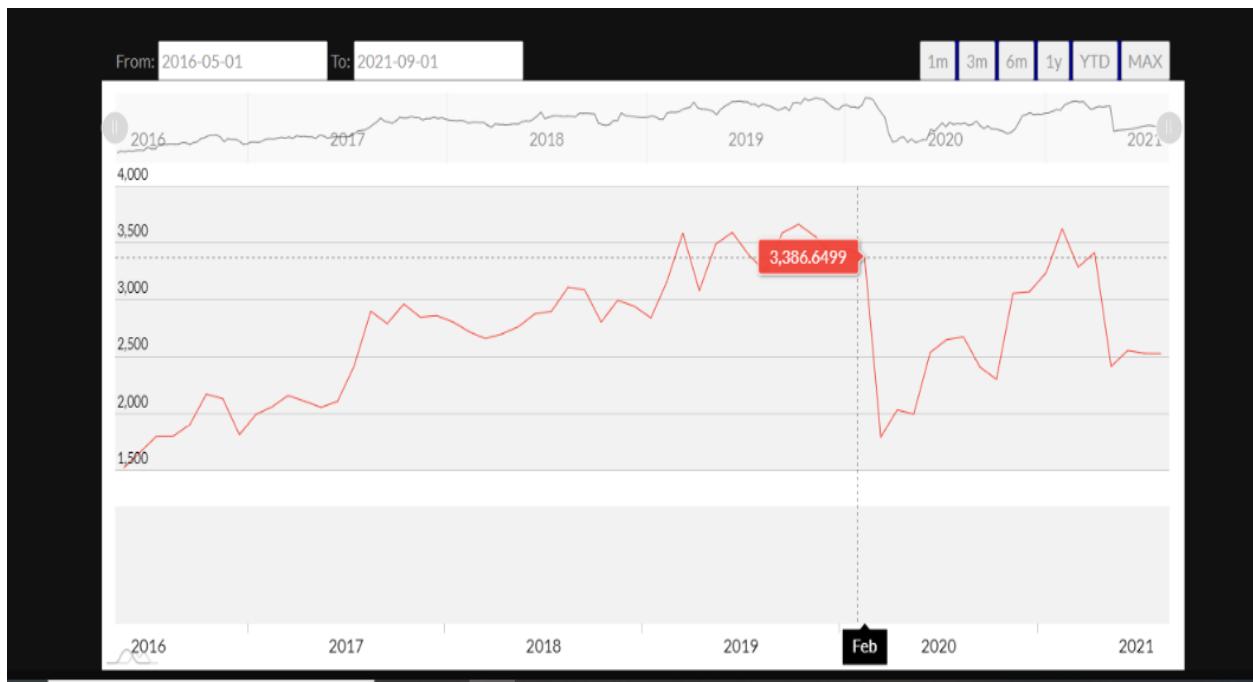


### 6.3.6 Stock Prediction

By clicking on the Stock Prediction page the user navigate to the stock prediction page with the search box where user insert the Stock ticker or name into the search box and select the respective stock by click on company name.



After the stock selection the system will show the stock prediction result.



### 6.3.7 Blog

The blog section provide latest news or achievements about the system to the end-users. This page provide the latest news about the system.

Cryptocurrency - Who Are Involved With It? Words about members



Lorem ipsum dolor sit amet, consectetur adipiscing elit

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**ARCHIVES**

### 6.3.8 Contact

The contact page provide visitors detail to contact with the individuals providing the website. If user have any query about the website the contact page provide contact form through which user can submit their quires about the website.

**FEEL FREE TO DROP US A MESSAGE**

Need to speak to us? Do you have any queries or suggestions? Please contact us about all enquiries including volunteer work using the form below.

MESSAGE

SEND MESSAGE

**ADDRESS**

University of Gujarat, Pakistan

**PHONE NUMBERS**

+92 0320 4567 890  
+92 0320 3421 453

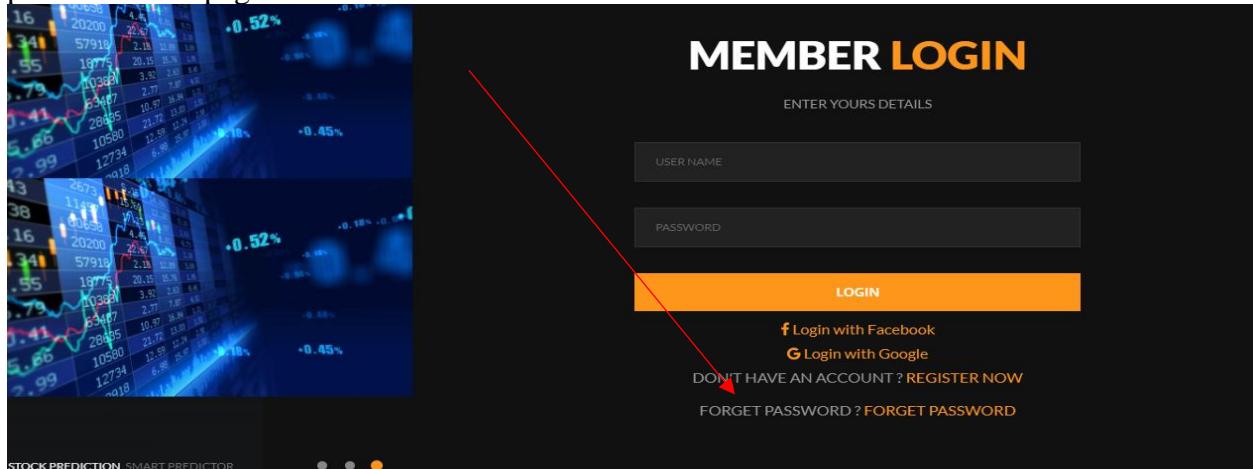
**EMAIL ADDRESSES**

17221598-127@uog.edu.pk  
17221598-129@uog.edu.pk  
17221598-148@uog.edu.pk

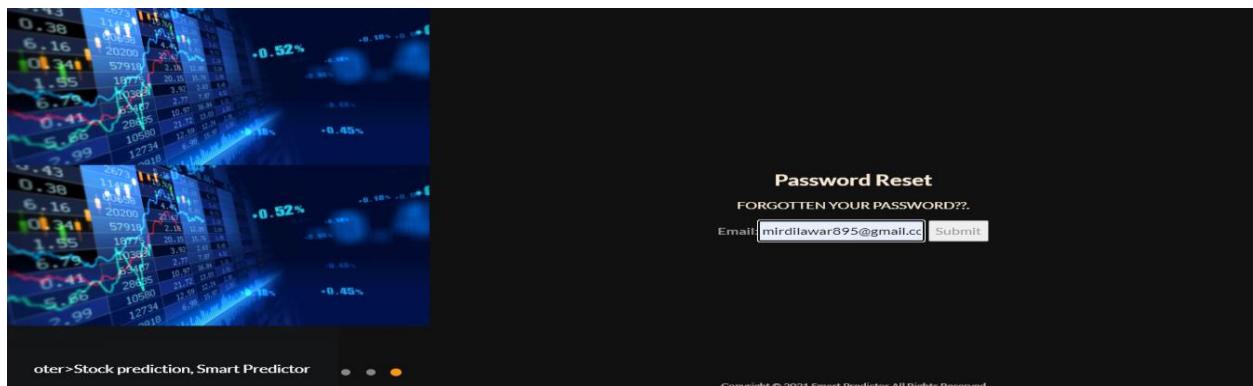
**SOCIAL PROFILES**

### 6.3.8 Forget Password

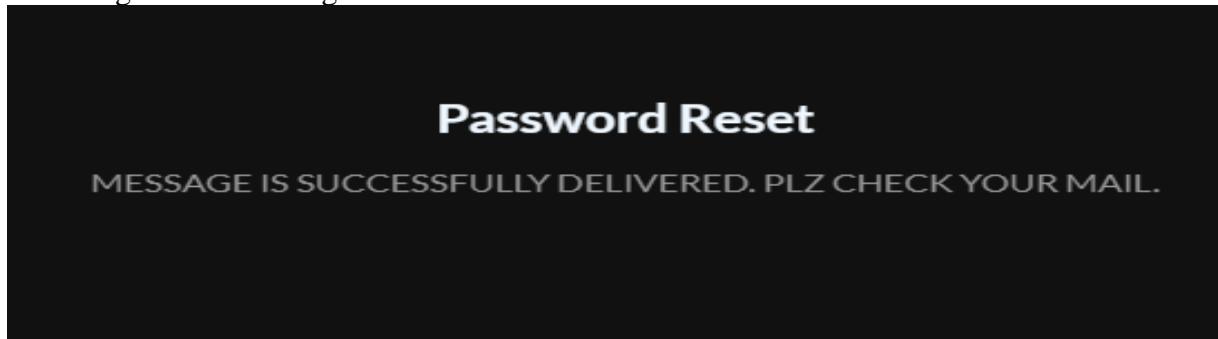
By clicking on the forget password link given in the login page user will navigate into password reset page.



At the password reset page user has to insert the email id which he/she uses during the registration else it will not show the username when the system send password change link to the user email inbox

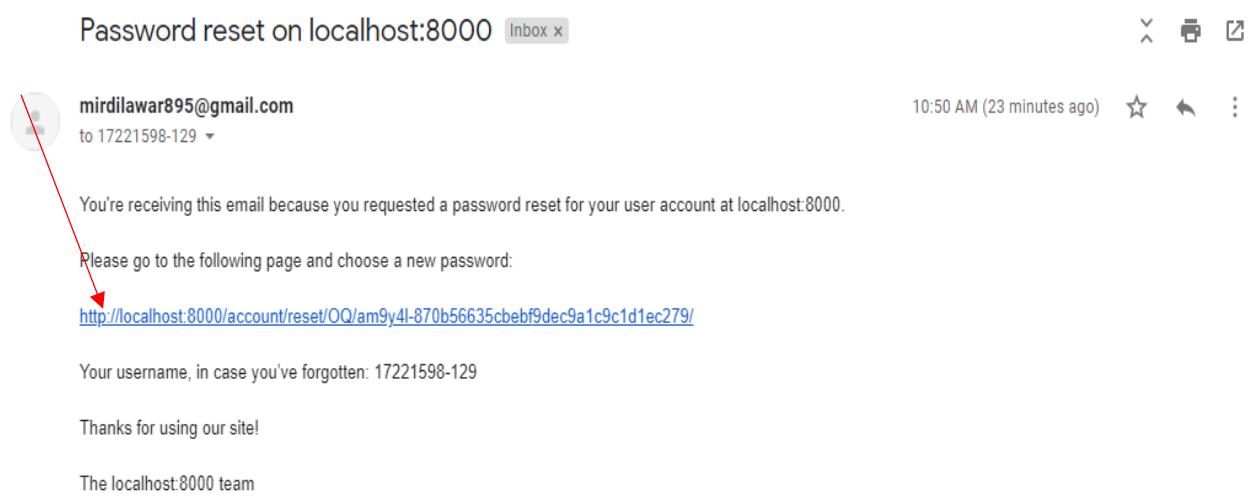


After click on the Submit button the system send the Password reset link to the user with the following success message.

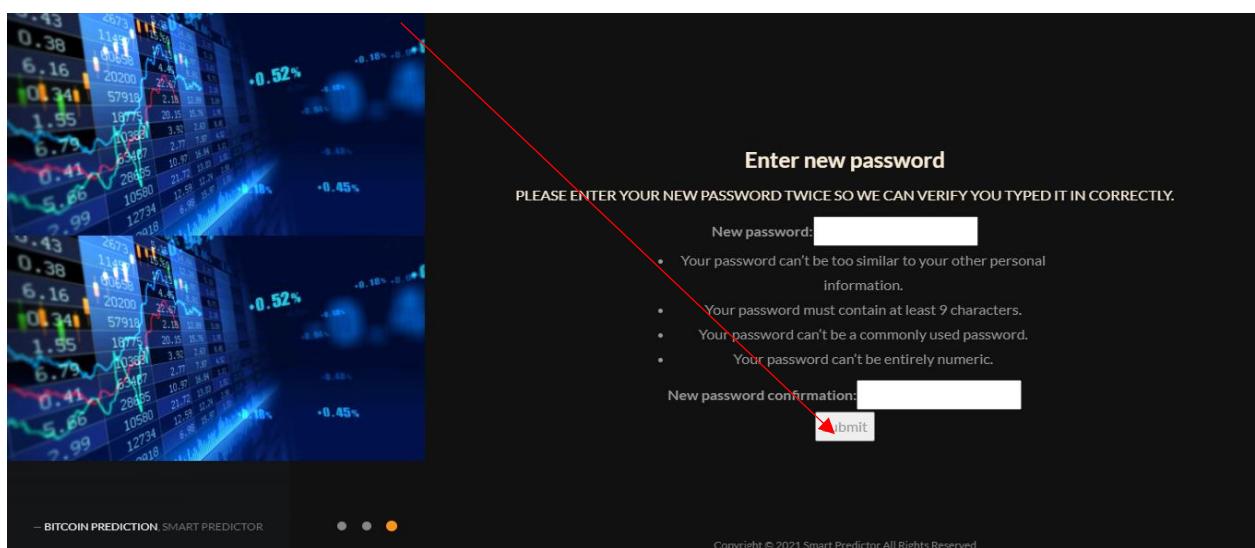


### 6.3.9 Password Set

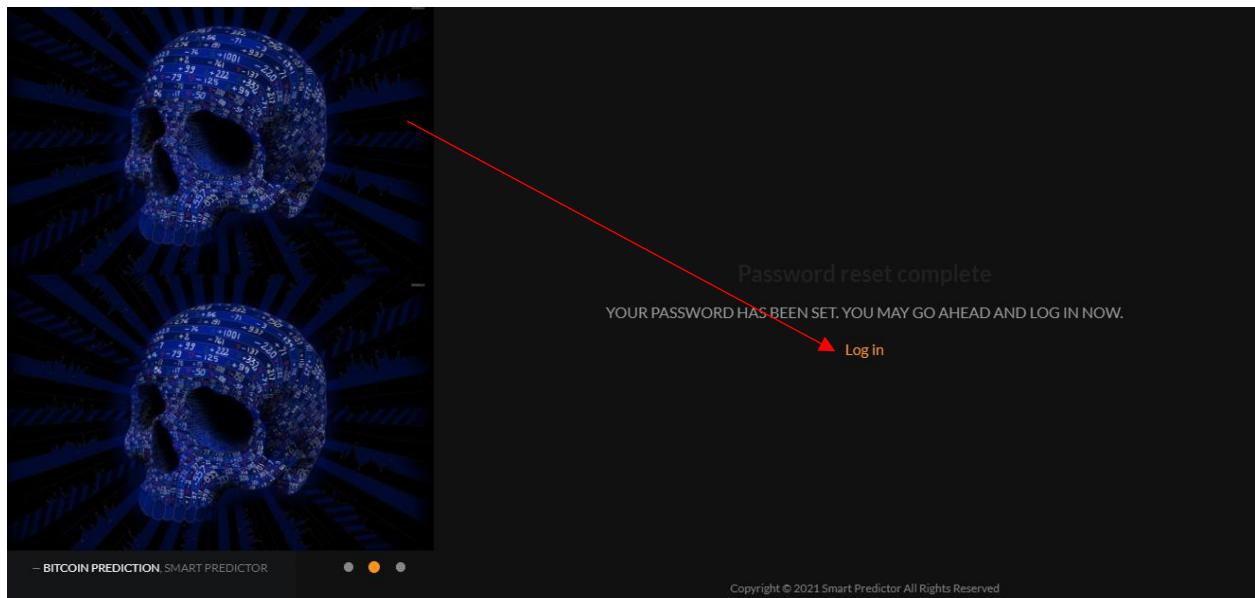
After clicking on the Password Set Email link the user navigate into password set page and insert new password.



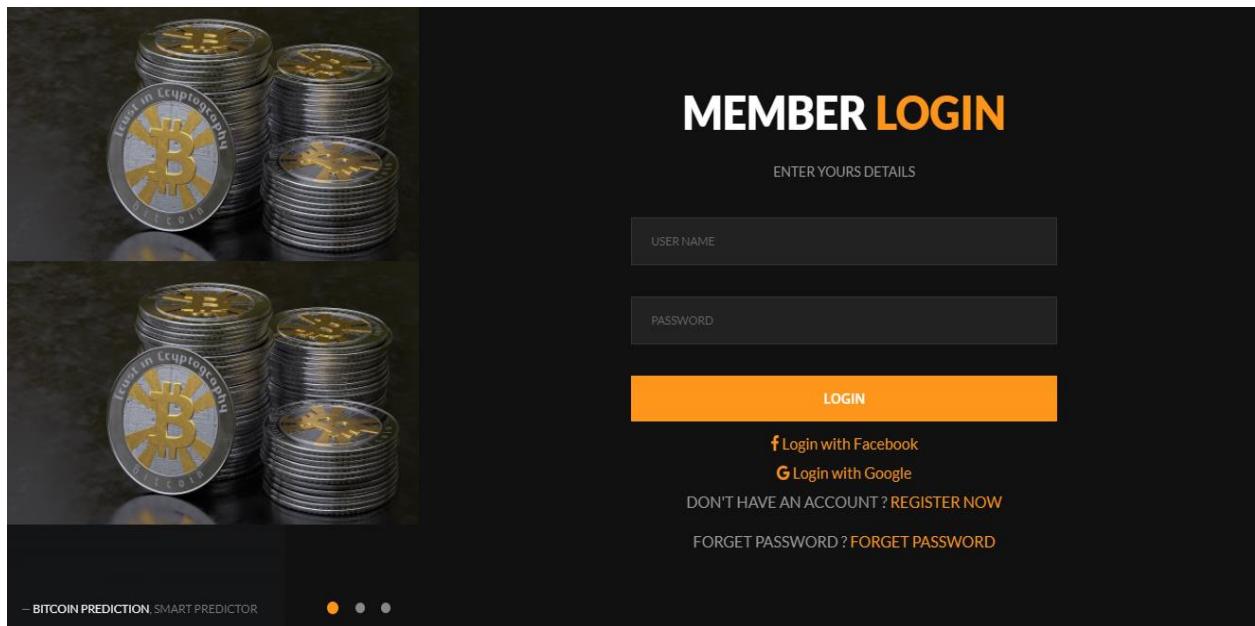
After click on the link the system redirect to the following page where user can enter new password.



After entered new password according to the given instruction and click on the submit button the system will redirect the user to the new page. Where system provide the login link and user has to click on the login button which redirect the user to the login page of the website.

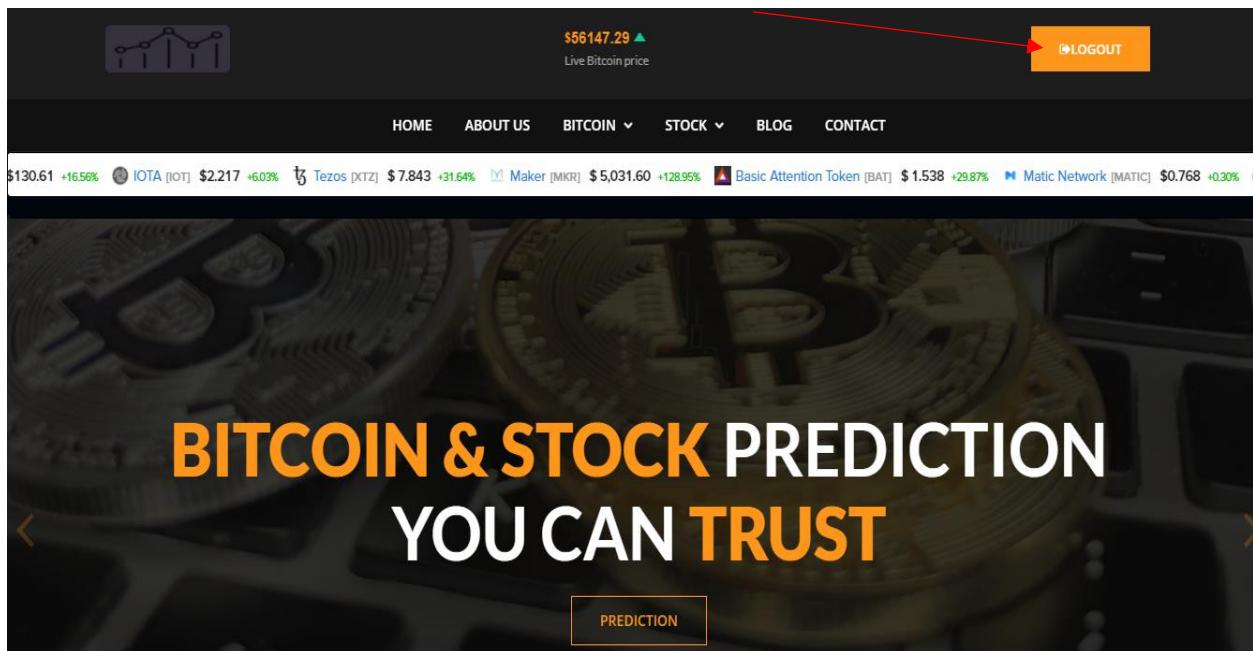


After click on the login button the login page will appear and user can login with the username and new password



### 6.3.10 Exit System

After click on the Logout Button the user exit the system and again redirect to the home page where he/she has to login again to access the features of the system.



## ***6.4 Using the System***

### **6.4.1 [system function name]**

#### **6.4.1.1 [register]**

This function allows the System to create a new user account and store user information such as username, email address, password, etc. right into a database to authenticate the user before giving a user access to the system functionalities.

#### **6.4.1.2 [login]**

This function matches the username and password entered by the user. If the username and password match with the record of the user in the database which the user provided during the registration, then the system provides access to the system functionalities to the user.

#### **6.4.1.3 [bitcoin]**

This function provides the latest live market updates of bitcoin to a user with the help of graphs and charts.

#### **6.4.1.4 [watchlist]**

This particular function provides the user to customize and see the bitcoin prices with various time intervals, with various graphs, and also able the user to compare the bitcoin with another cryptocurrency. Moreover, user can also use watchlist facility to the user.

#### **6.4.1.5 [stock market]**

This function provides the latest live market updates of various stock markets to a user with the help of graphs and charts. This feature also allows users to customize the stock prices with various time intervals, with graphs, charts, and with different indicators.

#### **6.4.1.6 [stock news]**

This particular function provides the user to customize and see the stock prices with various time intervals, with various graphs, and also able the user to compare the stock with another stock ticker. Moreover, user can also use watchlist facility to the user.

#### **6.4.1.7 [stock prediction]**

This function allows user to the get the future price or result of particular stock with the help of charts.

#### **6.4.1.8 [contact]**

This function helps user to send their quires related to the system via contact from to the system administrator present in the contact us page.

#### **6.4.1.9 [reset password]**

This function allow user to change password and get the new one.

#### **6.4.1.10 [logout]**

This function allow the user to quit the system in order to access the system user have to login in again.

### ***6.5 Special Instructions for Error Correction***

In case of any error, the system highlights the error message to the user. For example, in the case of registration if the username already exists in the database the system will not register the user and show the error message the username already exists, try with another username. After few seconds, the error message will vanish and allow a user to do the same procedure again. But sometime due to the unavailability of internet the system will not work because our system get livestock markets and cryptocurrency data from various API and in case of internet issue the data will come to us but in case of internet issue resolve the system will operate properly.