**STREET-SMART**

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1. Project Vision and Objectives:
   1. Project Scope and Vision

Our aim is to create software that analyses previous stock data of certain companies, with help of certain parameters that affect stock value. We are going to implement these values in data mining algorithms. This will also help us to determine the values that particular stock will have in near future. We will determine the Month’s High and Low with help of data mining algorithms.

Stock Market Analysis of stocks using data mining will be useful for new investors to invest in stock market based on the various factors considered by the software.

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

* 1. Project Goals and Objectives

Analysis of stocks using data mining will be useful for new investors to invest in stock market based on the various factors considered by the software.  
Stock market includes daily activities like Sensex calculation, exchange of shares. The exchange provides an efficient and transparent market for trading in equity, debt instruments and derivatives.  
Our software will be analysing Sensex based on company’s stock value.

We will be trying to answer the following questions:

* What was the change in price of the stock over time?
* What was the daily return of the stock on average?
* What was the moving average of the various stocks?
* What was the correlation between different stocks' closing prices?
* What was the correlation between different stocks' daily returns?
* How much value do we put at risk by investing in a particular stock?
* How can we attempt to predict future stock behaviour?

# **Project Planning**

## Project Lifecycle

The team will use an agile approach. Our team will gather requirements and create a high-level development plan at the onset of the project and then implement the gathered requirements over three iterations. The team will follow a SCRUM-like approach with an emphasis on frequent meetings and collaboration.

## Project Setup

|  |  |
| --- | --- |
| **#** | **Decision Description** |
| 1 | mac OS X, Python 3 |
| 2 | Knowledge about working with stocks |

## Stakeholders

|  |  |
| --- | --- |
| **Stakeholder** | **Role** |
| Dr. Anurag Goswami | Sponsor |
| Dr. Kuldeep | Mentor |
| Dr. Tanveer | Instructor |
| Panav Tyagi | Team member |
| Siddhant Singh | Team member |
| Pratinav Verma | Team member |

## Project Resources

|  |  |  |
| --- | --- | --- |
| **Resource** | **Resource Description** | **Quantity** |
| Python plugins | python plugins and imports are required for computation and graphical representation. | 7-9 |
| Street-smart Team | Our team of students who will be the primary developers of the project. | 3 |
| dataset | Data set of stock prices for testing and running the software. | 1 |
| Jupyter notebook | An OS X workstation with Jupyter notebook for developing the OS X version of the software. | 1 |

1. Requirements (User Stories)

## Overall Description

Stock Market Analysis and Prediction is the project related to Exploratory data analysis(EDA), Data visualization and Predictive analysis using data, provided by [The Investors Exchange (IEX)](https://iextrading.com/apps/stocks/). We are using real-time financial data from the stock market and python libraries to get stock information, visualize different aspects of it. We are working out a few ways for analysing the risk of a stock, based on its previous performance history. We also plan on using statistical methods like Monte Carlo Method to predict future stock prices.

## Users and Roles

|  |  |
| --- | --- |
| **User** | **Description** |
| Developer | A street-smart team member tasked with managing the test data, creating initial machine learning models, and ultimately generating a firm process for applying these techniques to future user data. This is used for sub-stories and task needed to fulfill the true end user use cases. |
| Researcher | The street-smart who will be making design decisions based on the data analysis and making further plans regarding the future of the software |
| User | An end user of the street-smart stock market data analysis who will be reaping huge benefits from the data produced by the software |

## Use Case Diagram

A close up of text on a white background

Description automatically generated

## User Stories (Requirements)

Estimated User Story Points: 13

Actual Completed User Story Points: 13

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **ID** | **Added** | **Description** | **Status** | **Story Points** | **Actual Equivalent Story Points** | | **% Completed** |
| 300 | Onset | **As an** investor,  **I want** to calculate the rate of risk at which I am investing in a particular stock,  **so that** I can decide in which stock to invest with my money at minimum risk. | **C** | **8** | **8** | | **60%** |
| 100 | Onset | **As a** user,  **I want the** program to display high, low, open, close and volume of a particular stock traded **so that** I can analyze them. | **C** | **5** | **5** | | **100%** |
| **Acceptance Criteria** | | | **Verification** | | | | |
| **310** | The user must be able to see historical view of the closing price of a stock each day over the past 1 year. | | **Create test cases to verify stock results and plot them.** | | | | |
| **311** | The user shall be able to see the plot of the total volume of stock being traded each day over the past 5 years. | | **Create test cases to verify stock values and then plotting of historical graphs** | | | | |
| **ID** | **Tasks** | | | | | **Resource** | |
| 1 | Building the functionality to find and calculate the IEX finance data and setting as a data frame. | | | | | **Panav Tyagi** | |
| 2 | Plotting and testing of graphs. | | | | | **Siddhant Singh** | |
| 3 | Creating front end for all the functionalities stated above. | | | | | **Pratinav Verma** | |

**SPRINT 2**

**Estimated User Story Points:** 13

**Actual Completed User Story Points:** 13

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **ID** | **Added** | **Description** | **Status** | **Story Points** | | **Actual Equivalent Story Points** | **% Completed** |
| 250 | onset | ***As an*** *investor*  ***I want*** *the program to display the*  *Moving average of all the tech stocks throughout the day*  ***So that*** *I can have a better idea of the stocks past performance and eliminate the noise.* | **C** | **5** | | **5** | **100%** |
| 200 | Onset | ***As a****n investor*  ***I want*** *the program to display the correlation between the average daily return of various tech stocks*  **so that** i can pick the best stock to invest in. | **C** | **8** | | **8** | **100%** |
| **Acceptance Criteria** | | | **Verification** | | | | |
| 210 | Empty fields (nan values) shall be removed from the matrix and graphs | | **Create a test case using dropna( ) to verify elimination of empty fields.** | | | | |
| 211 | The user must be able to see correlation between daily closing prices of various tech firms simultaneously. | | **Create test case to using sns.PairGrid() for full control of the figure, including what kind of plots go in the diagonal, the upper triangle, and the lower triangle.** | | | | |
| **ID** | **Tasks** | | | | **Resource** | | |
| 1 | Creating front end for all the functionalities stated above. | | | | Panav Tyagi | | |
| 2 | Building the functionality to find and calculate the IEX finance data and setting as a data frame. | | | | Siddhanth Singh | | |
| 3 | *none* | | | | Pratinav verma | | |