VISVESVARAYA TECHNOLOGICAL UNIVERSITY

BELAGAVI – 590018, Karnataka

INTERNSHIP REPORT

ON

"STOCKPORT PREDICTIVE SENTIMENT ANALYSIS"

Submitted in partial fulfilment for the award of degree(18CSI85)
**BACHELOR OF ENGINEERING IN
INFORMATION SCIENCE
AND ENGINEERING**
Submitted by:

PRANJAL MISHRA

1JS19IS063

Varcons Technologies Pvt Ltd

JSS ACADEMY OF TECHNICAL EDUCATION
Dr. Vishnuvardhan Road, Uttarahalli – Kengari Main Road,
Bengaluru - 560060

JSS ACADEMY OF TECHNICAL EDUCATION

CERTIFICATE

This is to certify that the Internship titled **"STOCKPORT PREDICTIVE SENTIMENT ANALYSIS"** carried out by **Mr. PRANJAL MISHRA,** a bonafide student of abc Institute of Technology, in partial fulfillment for the award of **Bachelor of Engineering**, in **INFORMATION SCIENCE AND ENGINEERING** under Visvesvaraya Technological University, Belagavi, during the year 2022-2023. It is certified that all corrections/suggestions indicated have been incorporated in the report.

The project report has been approved as it satisfies the academic requirements in respect of Internship prescribed for the course Internship / Professional Practice (18CSI85)

Signature of Guide   **Signature of HOD**   **Signature of Principal**

External Viva:

Name of the Examiner   Signature with Date

1)_____

  _____

2)_____

  _____

D E C L A R A T I O N

I,**PRANJAL MISHRA**, final year student of Branch, College Name - 560 082, declare that the Internship has been successfully completed, in **Varcons Technologies Pvt Ltd** . This report is submitted in partial fulfillment of the requirements for award of Bachelor Degree in Branch name, during the academic year 2022-2023.

Date : 14th October,2022   :

Place : Bengalore

USN : 1JS19IS063

NAME : PRANJAL MISHRA

INTERNSHIP OFFER LETTER

Date: **14ᵗʰ October, 2022**

Name: **Pranjal Mishra**
USN: **1JS19IS063**

Dear Student,

We would like to congratulate you on being selected for the **Machine Learning With-Python(Research Based)** Internship position with **Varcons Technologies Pvt Ltd**, effective Start Date **14ᵗʰ October, 2022**, All of us are excited about this opportunity provided to you!

This internship is viewed as being an educational opportunity for you, rather than a part-time job. As such, your internship will include training/orientation and focus primarily on learning and developing new skills and gaining a deeper understanding of concepts of **Machine Learning With Python(Research Based)** through hands-on application of the knowledge you learn while you train with the senior developers. You will be bound to follow the rules and regulations of the company during your internship duration.

Again, congratulations and we look forward to working with you!

Sincerely,

Spoorthi H C
Director
VARCONS TECHNOLOGIES PVT LTD
213, 2ˢᵗ Floor,
18 M G Road, Ulsoor,
Bangalore-560001

A C K N O W L E D G E M E N T

This Internship is a result of accumulated guidance, direction and support of several important persons. We take this opportunity to express our gratitude to all who have helped us to complete the Internship.

We express our sincere thanks to our **Dr. BHIMASEN SORAGAON, Chairman, JSSATE, Bangalore,** for providing usadequate facilities to undertake this Internship.

We would like to thank our **Dr. Rekha P.M, Head Of Department, Information Science And Engineering, JSSATE, Bangalore,** for providing us an opportunity to carry out Internship and for his valuable guidance and support.

We would like to thank all the faculty members of our department for the support extended during the course of Internship.

We would like to thank the non-teaching members of our dept, for helping us during the Internship.

Last but not the least, we would like to thank our parents and friends without whose constant help, the completion of Internship would have not been possible.

PRANJAL MISHRA
1JS19IS063

Table of Contents

Sl no	Description	Page no
1	Company Profile	
2	About the Company	
3	Introduction	
4	System Analysis	
5	Requirement Analysis	
6	Design Analysis	
7	Implementation	
8	Snapshots	
9	Conclusion	
10	References	

CHAPTER 1

COMPANY PROFILE

1. <u>COMPANY PROFILE</u>

A Brief History of Varcons Technologies Pvt Ltd

Varcons Technologies Pvt Ltd, was incorporated with a goal "To provide high quality and optimal Technological Solutions to business requirements of our clients". Every business is a different and has a unique business model and so are the technological requirements. They understand this and hence the solutions provided to these requirements are different as well. They focus on clients requirements and provide them with tailor made technological solutions. They also understand that Reach of their Product to its targeted market or the automation of the existing process into e-client and simple process are the key features that our clients desire from Technological Solution they are looking for and these are the features that we focus on while designing the solutions for their clients.

Sarvamoola Software Services. is a Technology Organization providing solutions for all web design and development, MYSQL, PYTHON Programming, HTML, CSS, ASP.NET and LINQ. Meeting the ever increasing automation requirements, Sarvamoola Software Services. specialize in ERP, Connectivity, SEO Services, Conference Management, effective web promotion and tailor-made software products, designing solutions best suiting clients requirements.

Varcons Technologies Pvt Ltd, strive to be the front runner in creativity and innovation in software development through their well-researched expertise and establish it as an out of the box software development company in Bangalore, India. As a software development company, they translate this software development expertise into value for their customers through their professional solutions.

They understand that the best desired output can be achieved only by understanding the clients demand better. Varcons Technologies Pvt Ltd work with their clients and help them to defiine their exact solution requirement. Sometimes even they wonder that they have completely redefined their solution or new application requirement during the brainstorming session, and here they position themselves as an IT solutions consulting group comprising of high caliber consultants.

They believe that Technology when used properly can help any business to scale and achieve new heights of success. It helps Improve its efficiency, profitability, reliability; to put itin one sentence " Technology helps you to Delight your Customers" and that is what we want to achieve.

CHAPTER 2

ABOUT THE COMPANY

2. <u>ABOUT THE COMPANY</u>

Varcons Technologies Pvt Ltd is a Technology Organization providing solutions for all web design and development, MYSQL, PYTHON Programming, HTML, CSS, ASP.NET and LINQ. Meeting the ever-increasing automation requirements, Varcons Technologies Pvt Ltd specialize in ERP, Connectivity, SEO Services, Conference Management, effective web promotion and tailor-made software products, designing solutions best suiting client's requirements. The organization where they have a right mix of professionals as a stakeholder to help us serve our clients with best of our capability and with at par industry standards. They have young, enthusiastic, passionate and creative Professionals to develop technological innovations in the field of Mobile technologies, Web applications as well as Business and Enterprise solution. Motto of our organization is to "Collaborate with our clients to provide them with best Technological solution hence creating Good Present and Better Future for our client which will bring a cascading a positive effect in their business shape as well". Providing a Complete suite of technical solutions is not just our tag line, it is Our Vision for Our Clients and for Us, We strive hard to achieve it.

Products of Varcons Technologies Pvt Ltd.

Android Apps

It is the process by which new applications are created for devices running the Android operating system. Applications are usually developed in Java (and/or Kotlin; or other such option) programming language using the Android software development kit (SDK), but other development environments are also available, some such as Kotlin support the exact same Android APIs (and bytecode), while others such as Go have restricted API access.

The Android software development kit includes a comprehensive set of development tools. These include a debugger, libraries, a handset emulator based on QEMU, documentation, sample code, and tutorials. Currently supported development platforms include computers running Linux (any modern desktop Linux distribution), Mac OS X 10.5.8 or later, and Windows 7 or later. As of March 2015, the SDK is not available on Android itself, but software development is possible by using specialized Android applications.

Web Application

It is a client–server computer program in which the client (including the user interface and client- side logic) runs in a web browser. Common web applications include web mail, online

retail sales, online auctions, wikis, instant messaging services and many other functions. web applications use web documents written in a standard format such as HTML and JavaScript, which are supported by a variety of web browsers. Web applications can beconsidered as a specific variant of client–server software where the client software isdownloaded to the client machine when visiting the relevant web page, using standardprocedures such as HTTP. The Client web software updates may happen each time the web page is visited. During the session, the web browser interprets and displays the pages, andacts as the universal client for any web application. The use of web application frameworks can often reduce the number of errors in a program, both by making the code simpler, and by allowing one team to concentrate on the framework while another focuses on a specified usecase. In applications which are exposed to constant hacking attempts on the Internet, security-related problems can be caused by errors in the program.

Frameworks can also promote the use of best practices such as GET after POST. There are some who view a web application as a two-tier architecture. This can be a "smart" client that performs all the work and queries a "dumb" server, or a "dumb" client that relies on a "smart" server. The client would handle the presentation tier, the server would have the database (storage tier), and the business logic (application tier) would be on one of them or on both. While this increases the scalability of the applications and separates the display and the database, it still doesn't allow for true specialization of layers, so most applications will outgrow this model. An emerging strategy for application software companies is to provide web access to software previously distributed as local applications. Depending on the type of application, it may require the development of an entirely different browser-based interface, or merely adapting an existing application to use different presentation technology. These programs allow the user to pay a monthly or yearly fee for use of a software application without having to install it on a local hard drive. A company which follows this strategy is known as an application service provider (ASP), and ASPs are currently receiving much attention in the software industry.

Security breaches on these kinds of applications are a major concern because it can involve both enterprise information and private customer data. Protecting these assets is an important part of any web application and there are some key operational areas that must be included in the development process. This includes processes for authentication, authorization, asset handling, input, and logging and auditing. Building security into the applications from the beginning can be more effective and less disruptive in the long run.

Web design

It is encompassing many different skills and disciplines in the production and maintenance of websites. The different areas of web design include web graphic design; interface design; authoring, including standardized code and proprietary software; user experience design; and

search engine optimization. The term web design is normally used to describe the design process relating to the front-end (client side) design of a website including writing mark up. Web design partially overlaps web engineering in the broader scope of web development. Web designers are expected to have an awareness of usability and if their role involves creating markup then they are also expected to be up to date with web accessibility guidelines. Web design partially overlaps web engineering in the broader scope of web development.

Departments and services offered

Varcons Technologies Pvt Ltd plays an essential role as an institute, the level of education, development of student's skills are based on their trainers. If you do not have a good mentor then you may lag in many things from others and that is why we at Varcons Technologies Pvt Ltd gives you the facility of skilled employees so that you do not feel unsecured about the academics. Personality development and academic status are some of those things which lie on mentor's hands. If you are trained well then you can do well in your future and knowing its importance of Varcons Technologies Pvt Ltd always tries to give you the best.

They have a great team of skilled mentors who are always ready to direct their trainees in the best possible way they can and to ensure the skills of mentors we held many skill development programs as well so that each and every mentor can develop their own skills with the demands of the companies so that they can prepare a complete packaged trainee.

Services provided by Varcons Technologies Pvt Ltd.

• Core Java and Advanced Java

• Web services and development

• Dot Net Framework

• Python

• Selenium Testing

• Conference / Event Management Service

• Academic Project Guidance

• On The Job Training

• Software Training

CHAPTER 3

INTRODUCTION

3. <u>INTRODUCTION</u>

Introduction to ML

Machine learning is a subfield of artificial intelligence (AI). The goal of machine learning generally is to understand the structure of data and fit that data into models that can be understood and utilized by people.

Although machine learning is a field within computer science, it differs from traditional computational approaches. In traditional computing, algorithms are sets of explicitly programmed instructions used by computers to calculate or problem solve. Machine learning algorithms instead allow for computers to train on data inputs and use statistical analysis in order to output values that fall within a specific range. Because of this, machine learning facilitates computers in building models from sample data in order to automate decision-making processes based on data inputs.

In machine learning, tasks are generally classified into broad categories. Two of the most widely adopted machine learning methods are **supervised learning, unsupervised learning** and **Reinforcement learning**

Supervised Learning

Supervised learning is a type of machine learning method in which we provide sample labelled data to the machine learning system in order to train it, and on that basis, it predicts the output. The system creates a model using labelled data to understand the datasets and learn about each data, once the training and processing are done then we test the model by providing a sample data to check whether it is predicting the exact output or not. The goal of supervised learning is to map input data with the output data. The supervised learning is based on supervision, and it is the same as when a student learns things in the supervision of the teacher. The example of supervised learning is **spam filtering**.

Unsupervised Learning

Unsupervised learning is a learning method in which a machine learns without any supervision. The training is provided to the machine with the set of data that has not been labelled, classified, or categorized, and the algorithm needs to act on that data without any supervision. The goal of unsupervised learning is to restructure the input data into new features or a group of objects with similar patterns.

Reinforcement learning

Reinforcement learning is a feedback-based learning method, in which a learning agent gets a reward for each right action and gets a penalty for each wrong action. The agent learns automatically with these feedbacks and improves its performance. In reinforcement learning, the agent interacts with the environment and explores it. The goal of an agent is to get the most reward points, and hence, it improves its performance. The robotic dog, which automatically learns the movement of his arms, is an example of Reinforcement learning.

Problem Statement

Stock Prediction using Machine Learning works to predict upcoming worth of stocks for an organization. The Prediction is based on the values of previous and current stocks. In addition, it has a great feature of predicting stocks and giving specific output to the user based on two means, analyzing social statistics and gathering earlier data with respect to the stocks. This project focuses on several methods to predict the worth of stocks which aims to predict the future movement of the stock value of a financial exchange. Prediction model for Stock Market is done using mathematical and computational methods to develop predictive models that look into present and earlier datasets for underlying patterns and calculate the probability of an outcome. It also starts with collection of data then statistical model formulated, prediction is made and model is changed as new data becomes available

CHAPTER 4

SYSTEM ANALYSIS

4. <u>SYSTEM ANALYSIS</u>

1. Proposed System

Stock market prediction is the act of trying to determine the future values of a company stock or other financial instrument traded on an exchange. This project gives the estimation of the price of a company's stock based on the history and helps the stakeholders to either invest on the stock or to take away their stock from the company.

Time-series prediction is the concept widely used in many real-world applications such as weather forecasting and financial market prediction. Regression Analysis is a common technique used for prediction. It uses the continuous data in a period of time to predict the result in the next time unit. Many timeseries prediction algorithms have shown their effectiveness in practice. Only **Open** price is considered for processing.

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2. Objective of the System

Stock market prediction is the act of trying to determine the future values of a company stock or other financial instrument traded on an exchange. This project gives the estimation of the price of a company's stock based on the history and helps the stakeholders to either invest on the stock or to take away their stock from the company.

CHAPTER 5

REQUIREMENT ANALYSIS

5. <u>REQUIREMENT ANALYSIS</u>

Hardware Requirement Specification

• Processor: Intel core i5 processer
• Memory: 15.6 GB
• Hard Disk: 40 GB

Software Requirement Specification

This project uses the following software and Python libraries:

- [Python 3.0](#)
- [NumPy](#)
- [Pandas](#)
- [Matplotlib](#)
- [Seaborn](#)
- [Sklearn](#)
- [Jupyter Notebook](#)

CHAPTER 6

DESIGN ANALYSIS

6. <u>DESIGN & ANALYSIS</u>

I have used the machine learning algorithms of regression in this project namely:

- ## Simple Linear Regression
  Simple linear regression is used to estimate the relationship between two quantitative variables. You can use simple linear regression when you want to know:

  1.How strong the relationship is between two variables (e.g. the relationship between rainfall and soil erosion).
  2.The value of the dependent variable at a certain value of the independent variable (e.g. the amount of soil erosion at a certain level of rainfall).

  Source code use:
  ```
  X = dataset['Open'].values
  y = dataset['Close'].values
  X_train, X_test, y_train, y_test = train_test_split(X, y, train_size=0.7, test_size=0.3)
  model1 = LinearRegression()
  build1 = model1.fit(X_train.reshape(-1, 1), y_train)
  predict1 = model1.predict(X_test.reshape(-1, 1))
  print("Co-efficient: ", model1.coef_)
  print("\nIntercept: ", model1.intercept_)
  ```

- ## Support Vector Regression
  Support Vector Regression as the name suggests is a regression algorithm that supports both linear and non-linear regressions. This method works on the principle of the Support Vector Machine. SVR differs from SVM in the way that SVM is a classifier that is used for predicting discrete categorical labels while SVR is a regressor that is used for predicting continuous ordered variables.

  Source Code:
  ```
  model2 = SVR(kernel="rbf", gamma = 0.01, C=100)
  build2 = model2.fit(X_train.reshape(-1, 1), y_train)
  predict2 = model2.predict(X_test.reshape(-1, 1))
  df2 = pd.DataFrame(list(zip(y_test, predict2)), columns=["Actual Values", "Predicted Values"])
  ```

- ## Decision Tree Regression
  Decision tree builds regression or classification models in the form of a tree structure. It breaks down a dataset into smaller and smaller subsets while at the same time an associated decision tree is incrementally developed. The final result is a tree with decision nodes and leaf nodes. A decision node (e.g., Outlook) has two or more branches (e.g., Sunny, Overcast and Rainy), each representing values for the attribute tested. Leaf node (e.g., Hours Played) represents a decision on the numerical target. The topmost decision node in a tree which corresponds to the best predictor called root node. Decision trees can handle both categorical and numerical data.

Source Code:
```
model3 = DecisionTreeRegressor()
build3 = model3.fit(X_train.reshape(-1, 1), y_train)
predict3 = model3.predict(X_test.reshape(-1, 1))
df3 = pd.DataFrame(list(zip(y_test, predict3)), columns=["Actual Values", "Predicted Values"])
df3.head().style.hide_index()
```

- **Random Forest Regression.**
  Random Forest is a popular machine learning algorithm that belongs to the supervised learning technique. It can be used for both Classification and Regression problems in ML. It is based on the concept of ensemble learning, which is a process of combining multiple classifiers to solve a complex problem and to improve the performance of the model.

  Source Code:
```
model4 = RandomForestRegressor(n_estimators=100)
build4 = model4.fit(X_train.reshape(-1, 1), y_train)
predict4 = model4.predict(X_test.reshape(-1, 1))
df4 = pd.DataFrame(list(zip(y_test, predict4)), columns=["Actual Values", "Predicted Values"])
df4.head().style.hide_index()
```

The above-mentioned algorithms are used to predict stock prices using historical data. I have visualized the actual close price v/s predicted close price of the stocks for each of the model.

CHAPTER 7

IMPLEMENTATION

7. <u>IMPLEMENTATION</u>

Implementation is the stage where the theoretical design is turned into a working system. The most crucial stage in achieving a new successful system and in giving confidence on the new system for the users that it will work efficiently and effectively.

The system can be implemented only after thorough testing is done and if it is found to work according to the specification. It involves careful planning, investigation of the current system and it constraints on implementation, design of methods to achieve the change over and an evaluation of change over methods a part from planning.

Two major tasks of preparing the implementation are education and training of the users and testing of the system. The more complex the system being implemented, the more involved will be the system analysis and design effort required just for implementation.

The implementation phase comprises of several activities. The required hardware and software acquisition is carried out. The system may require some software to be developed. For this, programs are written and tested. The user then changes over to his new fully tested system and the old system is discontinued.

TESTING

The testing phase is an important part of software development. It is the Information zed system will help in automate process of finding errors and missing operations and also a complete verification to determine whether the objectives are met and the user requirements are satisfied. Software testing is carried out in three steps:

1. The first includes unit testing, where in each module is tested to provide its correctness, validity and also determine any missing operations and to verify whether the objectives have been met. Errors are noted down and corrected immediately.

2. Unit testing is the important and major part of the project. So errors are rectified easily in particular module and program clarity is increased. In this project entire system is divided into several modules and is developed individually. So unit testing is conducted to individual modules.

3. The second step includes Integration testing. It need not be the case, the software whose modules when run individually and showing perfect results, will also show perfect results when run as a whole.
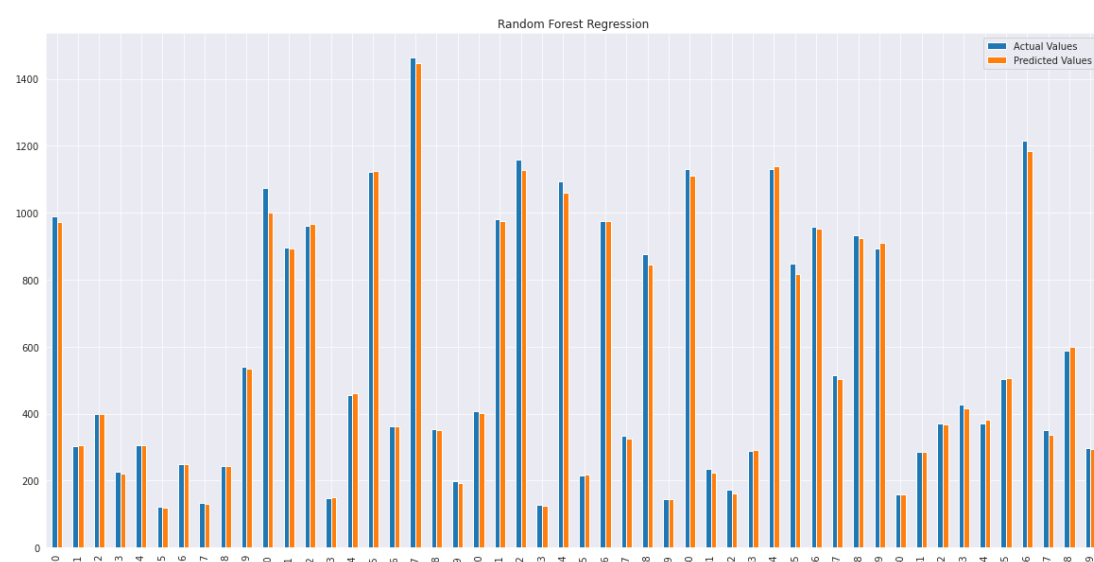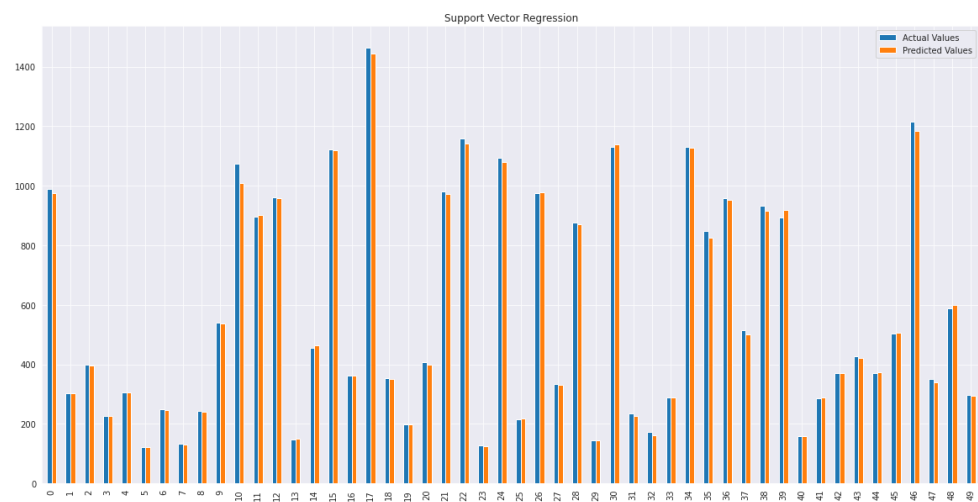
CHAPTER 8

SNAPSHOTS

8. <u>SNAPSHOTS</u>

Data Visualization:

Support Vector Regression

Random Forest Regression
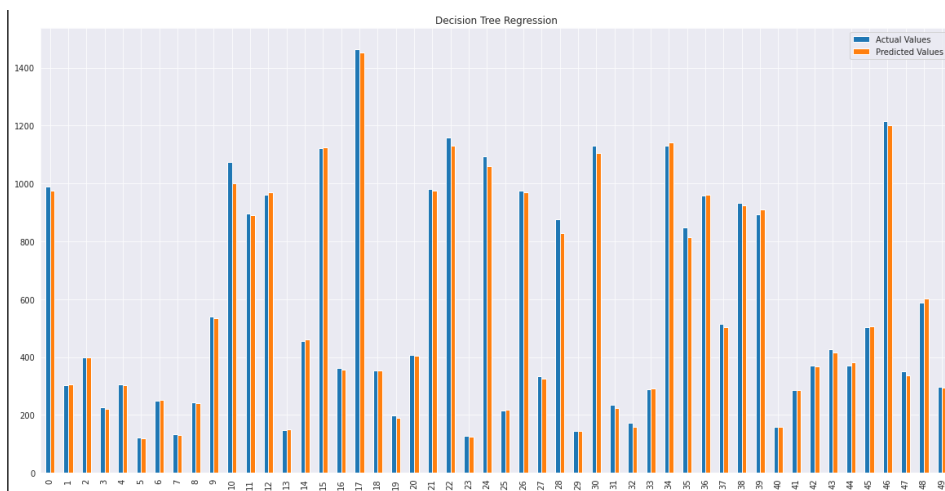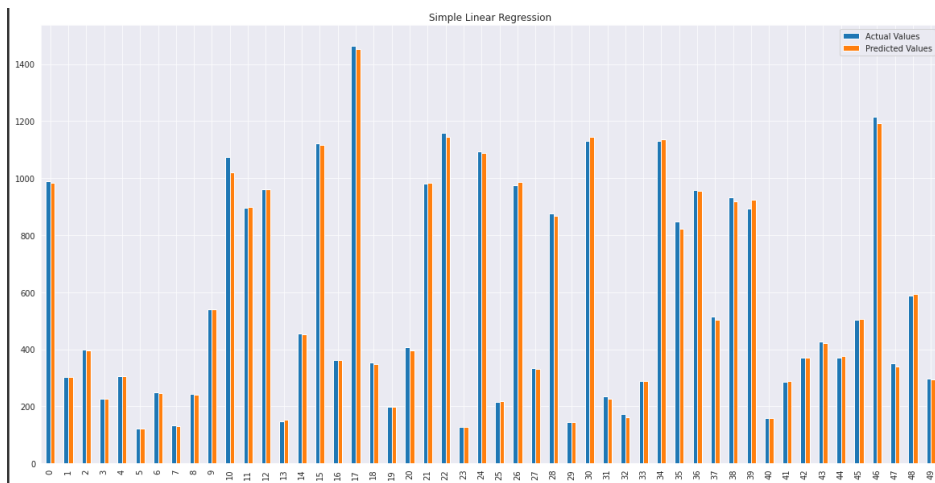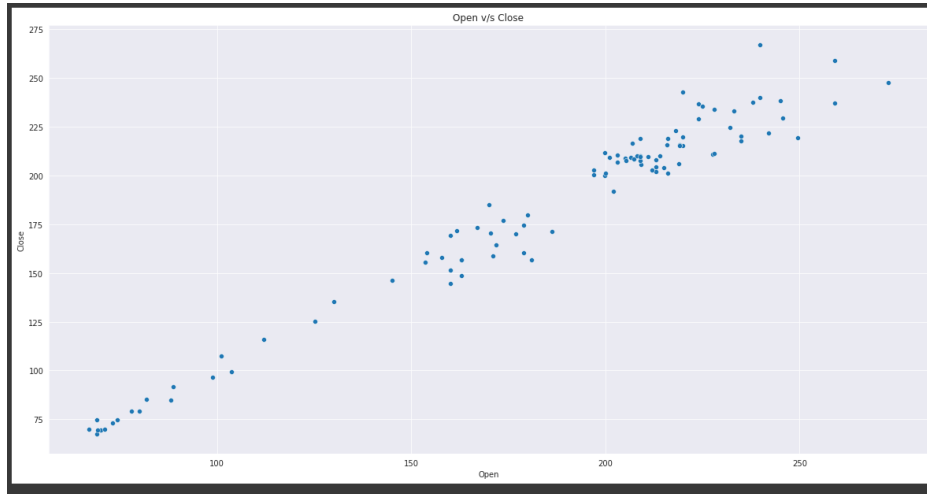
Find out the closing price of the company of that day:

Model	Accuracy
Simple Linear Regression	0.998491
Support Vector Regression	0.976087
Decision Tree Regression	0.997543
Random Forest Regression	0.998033

Predict using the highest accuracy model:

Date	Open	Predicted
11-May-22	718.000000	716.930323

CHAPTER 9
CONCLUTION

9. <u>CONCLUTION</u>

The package was designed in such a way that future modifications can be done easily. The following conclusions can be deduced from the development of the project:

❖ Automation of the entire system improves the efficiency

❖ It provides a friendly graphical user interface which proves to be better when compared to the existing system.

❖ It gives appropriate access to the authorized users depending on their permissions.

❖ It effectively overcomes the delay in communications.

❖ Updating of information becomes so easier

❖ System security, data security and reliability are the striking features.

❖ The System has adequate scope for modification in future if it is necessary.

10. <u>REFERENCE</u>

Dataset:
[ICICI bank | Kaggle](#)