Moving Average Technical Indicator in Finance

A

Project Report

Submitted in partial fulfillment of the

requirements for the award of the degree of

BACHELOR OF TECHNOLOGY

in

COMPUTER SCIENCE & ENGINEERING

By

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Branch: CSE-BAO	Branch: CSE-BAO	Branch: CSE-BAO

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UPES
UNIVERSITY WITH A PURPOSE

School of Computer Science

Department of Systemics

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

Bidholi, Via Prem Nagar, Dehradun, Uttarakhand

2020-21

CANDIDATE′S DECLARATION

I/We hereby certify that the project work entitled **"*Moving Average Technical Indicator in Finance*"** in partial fulfillment of the requirements for the award of the Degree of Bachelor of Technology in ***Computer Science and Engineering with specialization in Business Analytics & Optimization*** and submitted to the School of Computer Science Department of Systemics, University of Petroleum & Energy Studies, Dehradun, is an authentic record of my/ our work carried out during a period from ***Jan, 2021 to May,2021*** under the supervision of ***Ms. Aradhana Kumari Singh, Assistant Professor, Dept. of Informatics.***

The matter presented in this project has not been submitted by me/ us for the award of any other degree of this or any other University.

Akshat Srivastava	**Shubham Verma**	**Manish Kumar**
R103218178	R103218152	R103218182

This is to certify that the above statement made by the candidate is correct to the best of my knowledge.

Date: 1ˢᵗ May 2021   **Ms. Aradhana Kumari Singh**
                                                                                          Project Guide

Dr. Thipendra Pal Sing
Head Department of Informatics
School of Computer Science
University of Petroleum & Energy Studies
Dehradun – 248 001 (Uttarakhand)

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ABSTRACT

We present a detailed study of the performance of a trading rule that uses moving average of past returns to predict future returns on stock indexes. Our main goal is to link performance and the stochastic process of the traded asset. Stock market prediction is the act of trying to determine the future value of a company stock or other financial instrument traded on an exchange. The successful prediction of a stock's future price could yield significant profit. NMA stands for Normal Moving Average. As per name suggested Moving average that means Average that is moving. Our key interest is in stock market and here we are working on Technical analysis side. While doing Technical analysis of stock/share we need a tool called Technical Indicator. MA is one of them, In Stock Market, during analysis after analyzation of past data, behavior and trend of stock. Stock Market is same thing here we are predicting estimated high and low of a stock/share. These technical analysis tools help us to generate the buy/sell signal after calculating their behavior. People say that Stock Market is gamble but I don't think so. If one has past data and their behavior. He or She can say something after analyzing and calculating data with some % of accuracy.NMA will helps us to find estimated entry and exit point. An early entry and right time exit make us good profit. These tools are introduced to remove the stain on stock market.

Keywords: NMA, Momentum, Trend Following, Regimes, Cycles, Technical Indicator, Predicting, Stain.

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INTRODUCTION

The Economic impact of the 2020 coronavirus pandemic in India has been largely disruptive. India's growth in the fourth quarter of the fiscal year 2020 went down to 3.1% according to the Ministry of Statistics.

The revised **Gross Domestic Product (GDP)** estimates for India downwards by 0.2 % points for the fiscal year 2020 to 4.8 % and by 0.5 % for the fiscal year 2021 to 6 %.

The Indian economy was expected to lose over ₹32,000 crore (US$4.5 billion) every day during the first 21-days of complete Lockdown.

While the country is facing an economic slowdown, India's Market industry is showing hardly any signs of retreat. Many are chasing the stock market by day trading in the pandemic which ended badly.

During the COVID-19 pandemic and the related economic fallout, the market is set to touch a staggering $9 billion market size by 2025, bolstered by an influx of traders. the response of the stock markets has raised concerns as well as questions.

==

Effects & Overcome

Financial institutions across the world are monitoring and dealing with the effects of the COVID-19 pandemic. They are working to understand the immediate challenges to society and economies, and the long-term impact on the interconnected financial system.

To overcome such, we gotta Identify the Problems, create a Budget, Set Financial Priorities, Address the problems, Develop a plan & Track Progress.

They will be Interested in services and products to help them stay safe and healthy even at extra money

What's Gonna Effect?

Since Due to Pandemic major of the Industries or Companies are in Deprivation.
From healthcare to education, every market segment is witnessing the impacts of technological Disruption.
Therefore, All the commodities sector prices increase, Medicals needs increase pay-out with increase in demand, Bonds & debt Market's "junk", Oil prices and so daily needs.

==

Problem Statement

These are hard times for travellers. They are also pretty tough for those just beginning with a view to getting started in the travel industry.

Why go to your local agency to ask about investing tips when NMA can answer all those for you?

Why rely on a third-party agency when you can, through the NMA, find the accommodation or service that you're looking for and trade directly?

Any why remain loyal to a particular agent when there is something (with no fees) at your fingertips?

~   Figuring out "Moving Average Algorithm" which is going to help in taking decision when to invest and take profit. Hence, the need for a Moving average algorithm which will compute an optimal decision and enhance improved decision making.
~   However, Nowadays Traders aren't naïve when it comes to pricing but always thinking of secure. They're sensible enough to shop around and find the best deal, and they certainly won't be fooled into paying over the odds when they know how many potential options there are available for them.
~   With more Banks offers people entice of investing in it, even though they know that the return will be like button. By swindling customers along with a host of small agencies and big hitters buying the attention of potential traders, loyalty is a rare thing in today's market.

==

Aim :

The main purpose of the project is to eliminate short-term fluctuations in the market which helps customers to Trade confidently & carefully in Java programming language.

OBJECTIVES

- The project is used for determining seasonal, cyclic and irregular variations beside the trend values.
- Our portal will be used to forecast future trends and allow traders to identify the overall trend of the market.
- To determine the direction of the trend (Output the Technical Signal whether to "Buy", "Sell" or "Wait").

Sub objectives:

The System should be able to:

- By emphasizing recent action, NMAs reduce lag in the time data and avoid distortions from information that may no longer be relevant.
- To determine support and resistance levels.
- Using multiple moving averages for long- and short-term market trends.

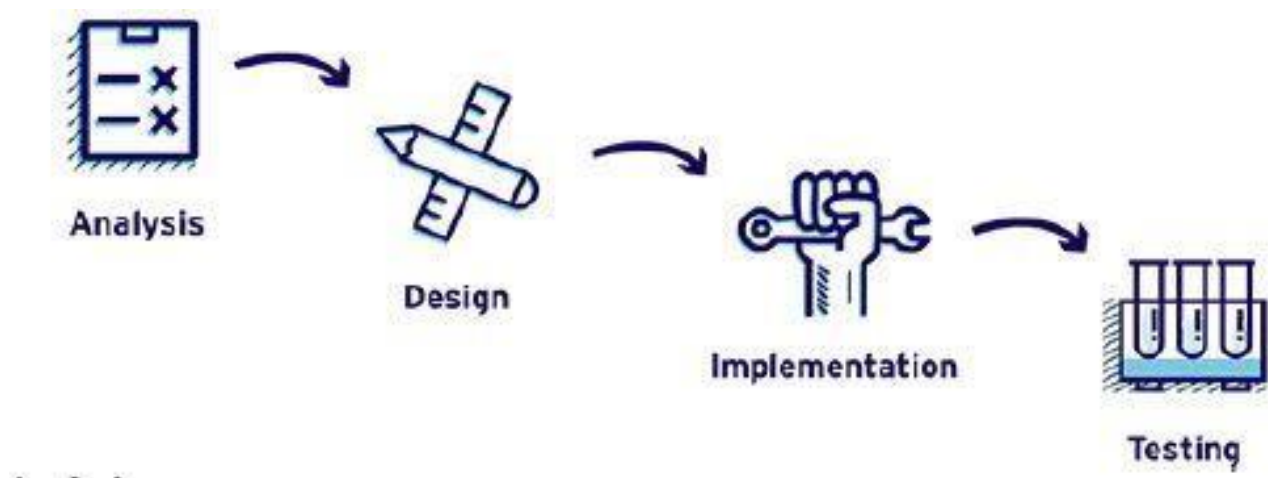===

METHODOLOGY

Figure 1: Waterfall Model

1. **Analysis:**

i)   For this project we have searched various research papers to find the focus on finding the most effective trade.

ii)   For this we have searched various books on economics and finance as well as various articles on stock market. And the reviews we received from the traders they face.
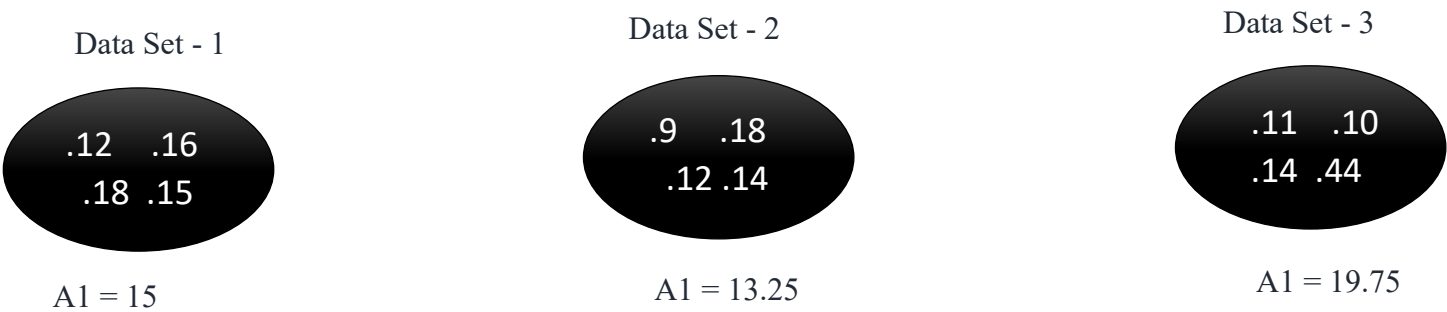
2. **Design:**

   This phase includes designing of DFD, Use case diagram.

3. **Testing:**

   This Indicator will be tested in technical analysis against SMA & EMA test cases. NMA has the more accuracy than the other tools is why we are using NMA for the better result.

In Statistics, a Normal Moving Average is a Calculation which is used to analyse data points by creating a series of averages of different subset of full data set.

Data Set - 1

.12   .16
.18 .15

A1 = 15

Data Set - 2

.9   .18
.12 .14

A1 = 13.25

Data Set - 3

.11   .10
.14 .44

A1 = 19.75

```
For example, A period of 5 NMA would be calculated as follows:

NMA = (A1 + A2 + A3 - - - + An)/N
Where:
A1 = Average of Data Set – 1.
A2 = Average of Data Set – 2.
 .
 .
An = Average of Data Set – n.
N = Time Period / Duration that we are taking to find MA.
```


Price

Date

15   16   17   18   19   20   21
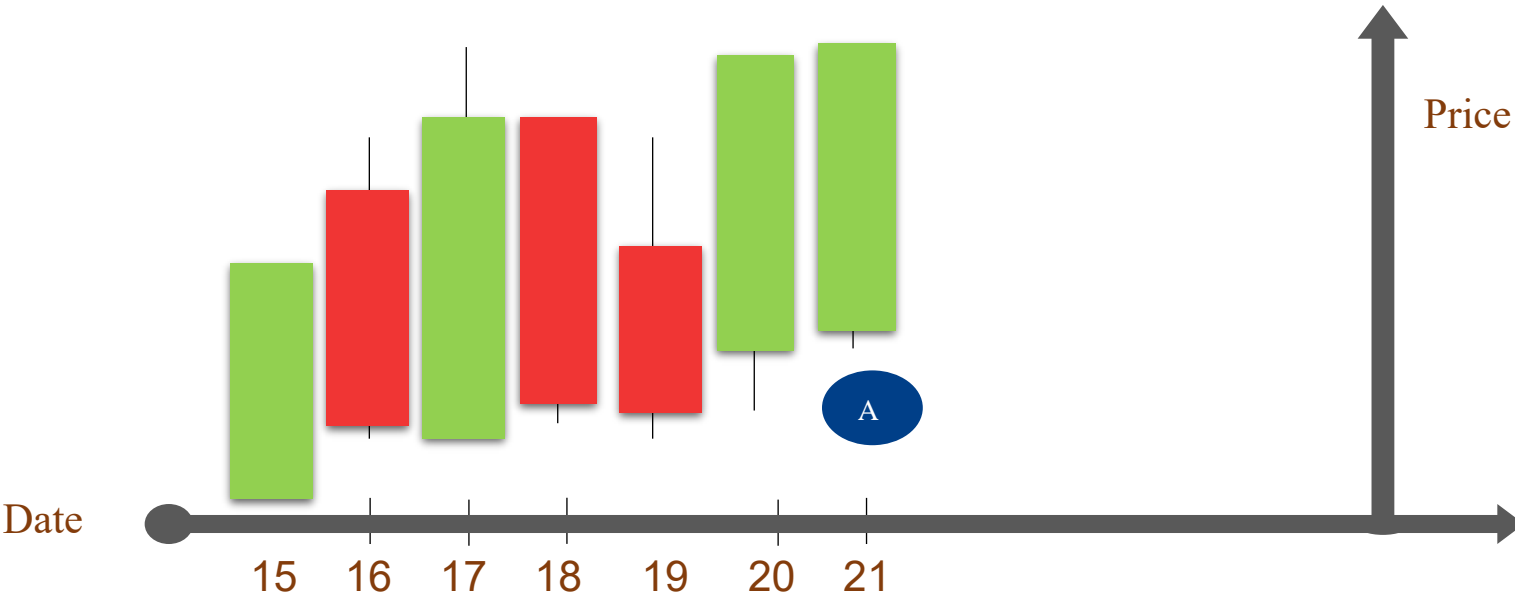
Step 1- Identifying the Open, High, Low, Close Price.

~ So for the given chart, we fetch the data from containing Open, High, Low, Close price of a particular stock and store them in excel.

Step 2 – After Arranging into Excel, the data is been extracted into compiler and it calculate the Average of the particular rows.

~ The Program ask user for input timestamp like for how many days he's interested; we fetch the data from excel till input rows and calculate the average of each rows.

Set	Date	Open	High	Close	Low	Avg. Point
A1	17th	20	30	26	12	22
A2	18th	24	38	22	18	25.5
A3	19th	18	28	27	17	22.5
A4	20th	19	26	16	13	18.5
A5	21st	23	42	38	18	30.25

Figure 1: Chart to Excel.

Step 3 – Lastly it calculates the NMA of the averages, display the NMA Price, the Current Price, The chart & The Technical Indicator Signal.

```
NMA = (A1 + A2 + A3 - - - An) / N

Here, we are finding 5 Days NMA;

∴ N = 5.

A17 = 22
A18 = 25.5
A19 = 22.5
A20 = 18.5
A21 = 30.25

5 Day NMA = (22 + 25.5 + 22.5 +18.5 + 30.25) / 5

          = 129 / 5    = > 25.8
```

Now, If Next Day Price is Going:

Above 25.8 Then Technical Indicator Indicates the BUY Signal.

Below 25.8 Then Technical Indicator Indicates the SELL Signal.

Moving Around 25.8 Then it Indicates the WAIT Signal which means Market is Neutral

Figure 3: Final Decision

===

ALGORITHM

Step 1: Start.

Step 2: Firstly, created a Java class as JavaApplication1 which inherit the application class and   implement start method of class.

Step 3: main() directly called static launch() method which automatically invoke start() method   of the Application class and passed command line arguments as (args) .

Step 4: We have implemented some javafx features to make a chart for predications.

Step 5: System will import the .xls file of opted companies and take a data for specific time interval (both default and user specific).

Step 6: calculation of Normal Moving Average (NMA).

Step 6.1: Calculated average value of each day.

Step 6.2: Finding average value of calculated avg by dividing time period.

Step 7: We have made comparison of NMA with current price to generate signal.

7.1: If [NMA> current price] then system will generate buy signal .

7.2: Else if [NMA< current price] then system will genera sell signal

7.3: If [NMA=current price] then system will generate hold signal.

Step 8: End.

===

PSEUDOCODE

Step 1: class **JavaApplication1**

{

Step 1.1.class **JavaApplication1** extend **extends javafx Application**

Step 2: Step 2. Function **main()**

Step 2.1. Function **launch()**

Step 2.1.1 Function **start** (automatically invoke by **launch()**) throws Exception {

Catch Exception(default)}

Step 3: -import **javafx**

Step 3.1. some default function of **javafx** is called to draw chart, some are: -

3.1.1 Function **Linechart**()sample to set title of scene

3.1.2. Function **set.Title()** will set title for line chart.

3.1.3. Function **scene.chart()** will create line chart

Step 4: Ask the user to enter **choice** for sector

1.Automobile Sector
2.Banking Sector
3.medical Sector
4.Energy and Engineering sector

Step 5: Switch (**choice**)

Step 5.1. Case '1': "Automobile Sector"

Step 5.2 While(true)

5.3. Ask the user to enter company **choice**

5.4 Switch(**choice**)

5.5. Case '1'to 10

5.5.1. Import case 1 historical data and current price .xls file

5.5.2. Generate workbook

5.5.3. Generate series

5.5.4. Generate sheet

Step 6: function my()

Step 6.1. : - ask the user to choose NMA calculation strategy

If (choice ==1)

{ Ask the user to enter time stamp

   series.getData() generate graph by considering timestamp.

}

Else

{

System will consider time period automatically

}

Step 6.2. :Calculate the day wise moving average and stored in arrr[n].

Take variable sum and initialize it as 0

set i=1

for(i<=time) {

set j=1

```
            for(j<5)

                {

        sum = sum + arr[i][j];

                }

        arrr[i] = (sum)/4;

        initialize sum to 0}
```

Calculated NMA is stored in check variable.

NMA is shown to user (according to timestamp)

return variable check

END function my()

Step 7: Function get()

Step 7.1: Current price is shown to user
Step 7.2: Use Function my()return value check to generate signal

Step 7.3: Fetch curr1 value from .xls file

if (check > (curr1 + 1))

    {Print Buy signal}

else if (check < (curr1) - 1)

    {print Sell signal}

Else {Print Hold signal}

End function get

Step 8: Stage.show() display graph

Exit inner switch
Exit while loop
Exit;
Step 9: Case '2': "Banking Sector", Case "3" "Medical Sector" & Case "4"
"Energy & Engineering Sector" follow previous step 5

Exit outer switch

End function start()

End function launch()

End function main()

===

DESIGNING PHASE

Data Flow Diagram

DFD Level 0

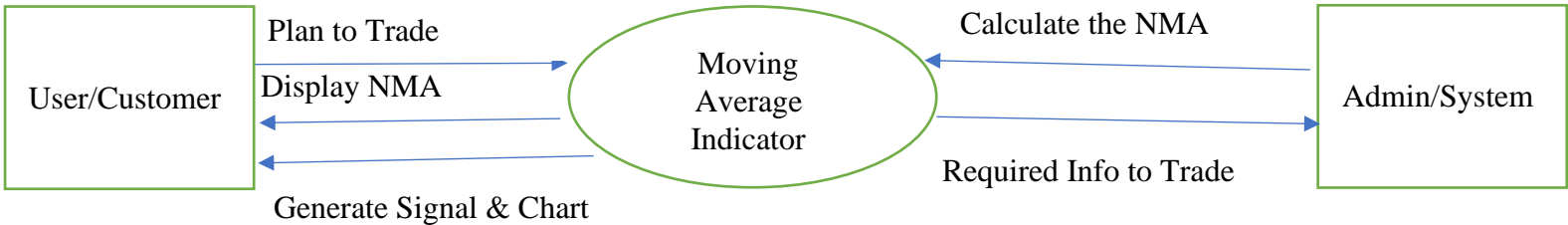*Figure 4: DFD Level 0*

Figure 4 represents the DFD level 0 which shows the basics steps involved in our project.

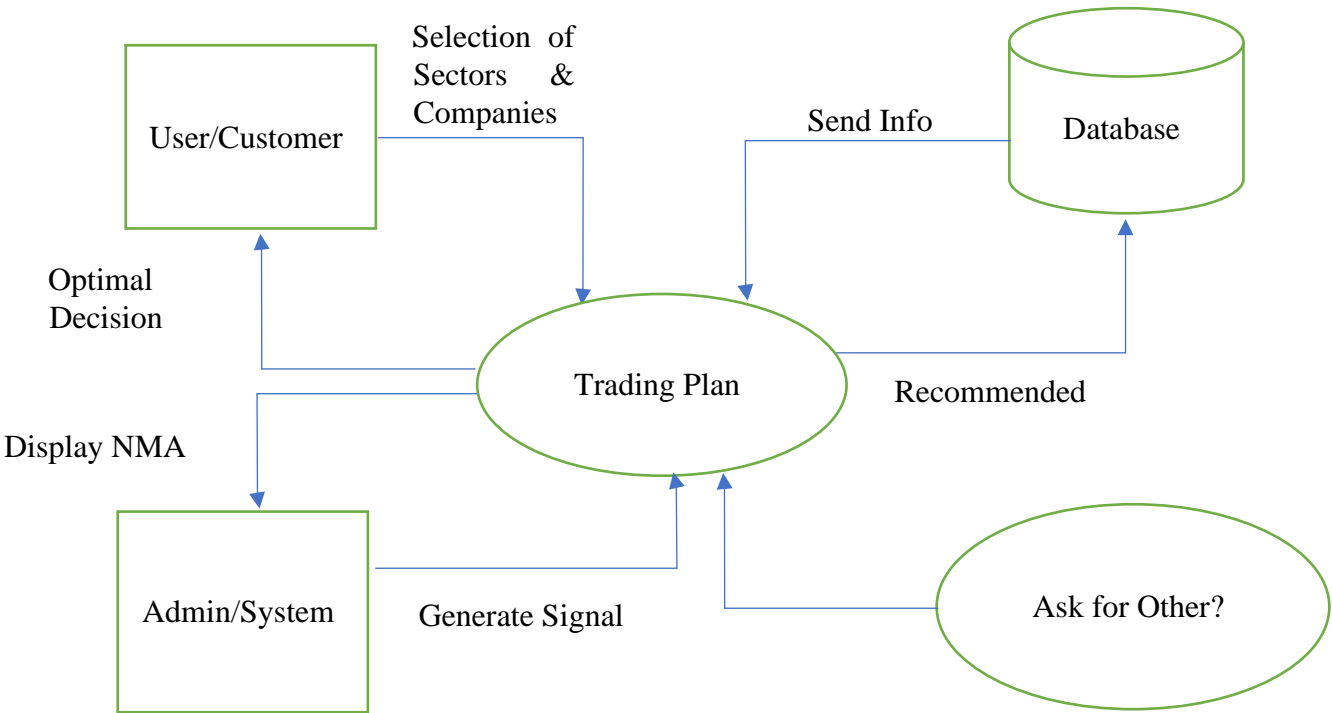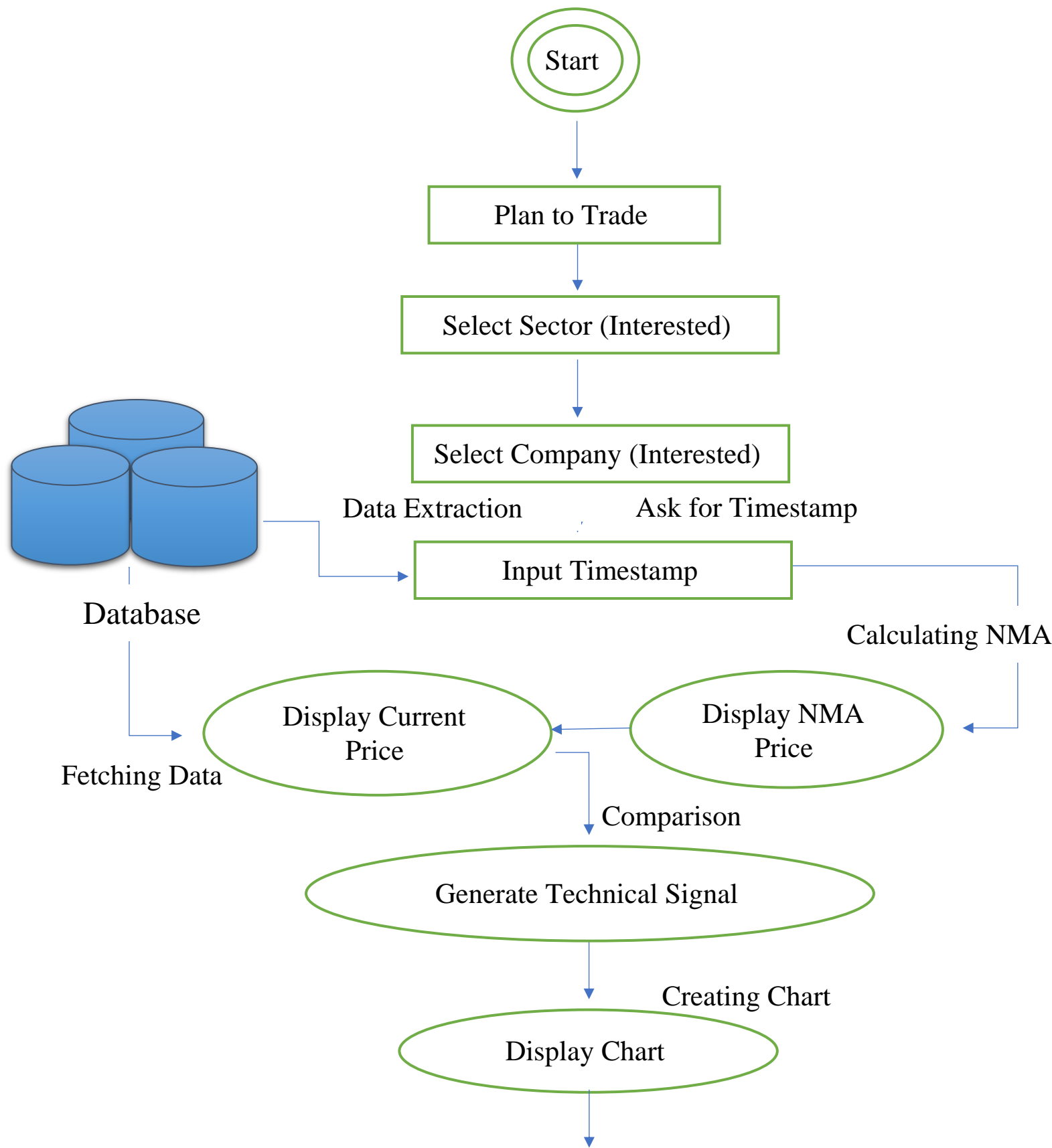===

DFD Level 1

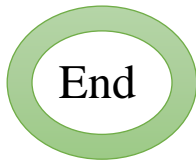Figure 5 represents the DFD level 1, which shows the steps involved in the backend of the system.

==

FLOWCHART

Start

Plan to Trade

Select Sector (Interested)

Select Company (Interested)

Data Extraction   Ask for Timestamp

Input Timestamp

Database

Calculating NMA

Display Current Price

Display NMA Price

Fetching Data

Comparison

Generate Technical Signal

Creating Chart

Display Chart

Figure 6: Flow Diagram

===

Use Case Diagram
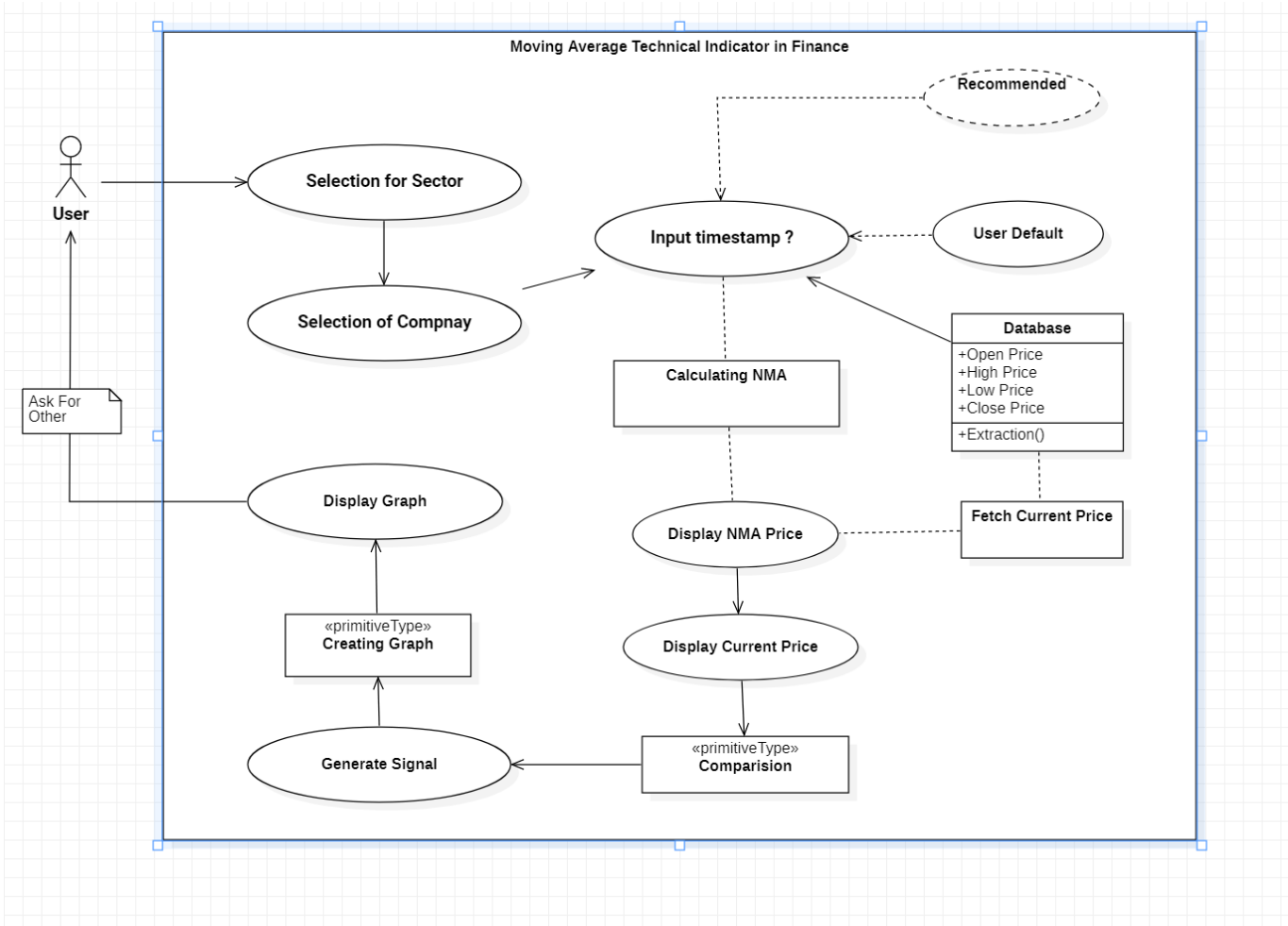
Figure 7: Use case Diagram

===

<u>OUTPUTS</u>

***** MOVING AVERAGE TECHNICAL INDICATR IN FINNACE *****

" The Goal of a Successful Trader is to make the Best Trades. Money is secondary. "

Enter Your Keen Sector
Choose from following Sector
1.Automobile Sector
2.Banking Sector
3.Medical Sector
4.Energy & Engineering Sector

Input Here ! :
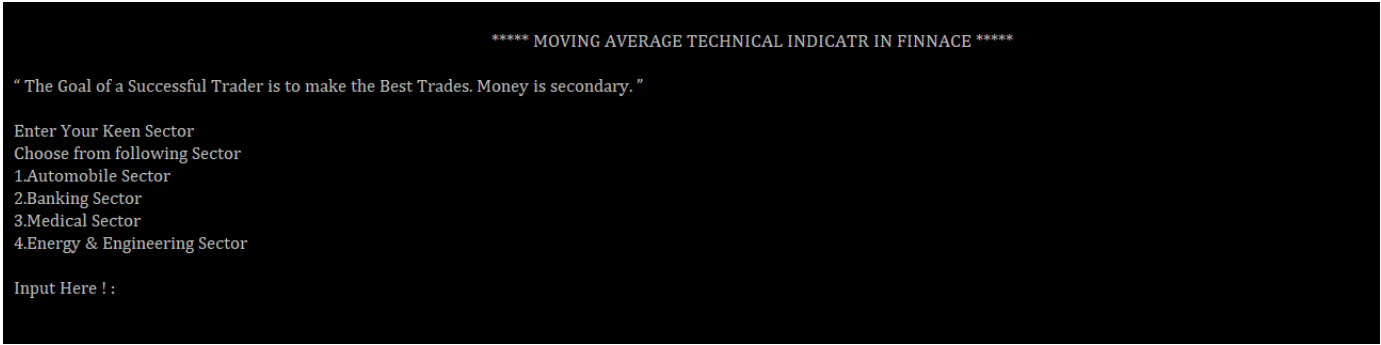
Figure 8: In the above figure we have shown how portal is asking user to choose a sector.

Input Here ! :   1

Kindly Choose From Companies:-

1.Tata Motors
2.Ashok Leyland
3.Eicher Motors
4.Maruti Suzuki
5.Bajaj Auto
6.Apollo Tyres
7.MRF
8.Bharat Forge
9.TVS Motors
10.Exide Indutries

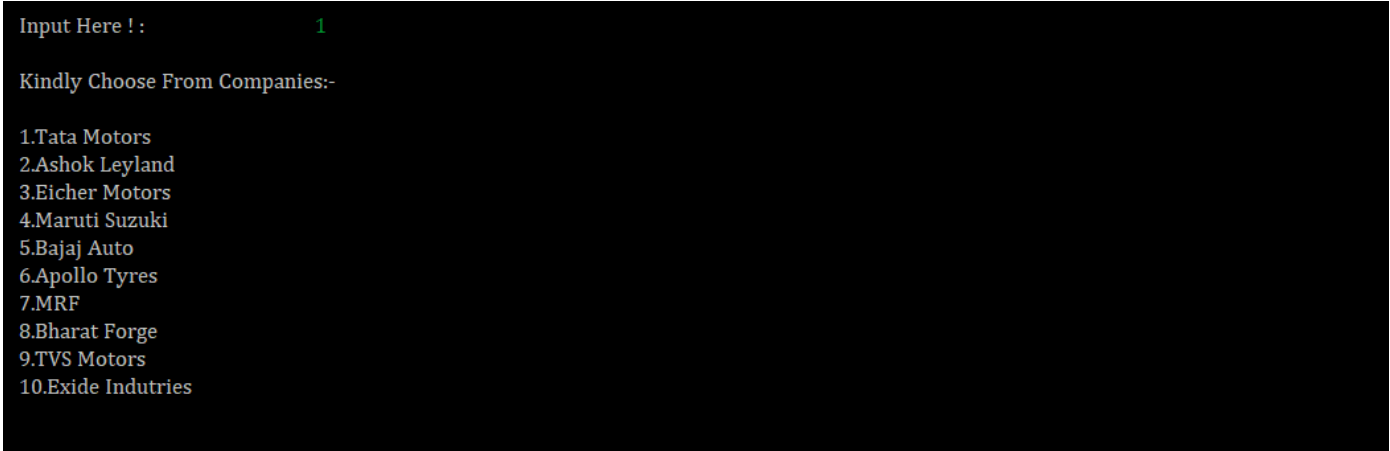*Figure 9: Here, System will ask the user to enter a choice from the listed companies based on the sectors.*

1

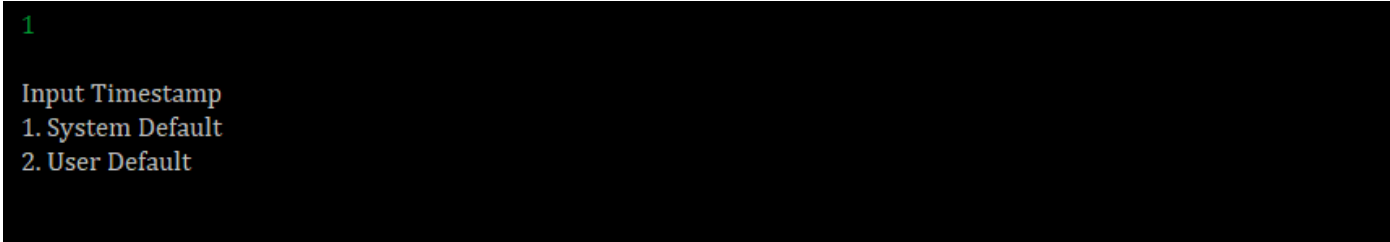Input Timestamp
1. System Default
2. User Default

Figure 10: In the above fig. we have shown how system will further ask the user to enter a timestamp (Time Interval) to predict Normal Moving Average of that particular stock.
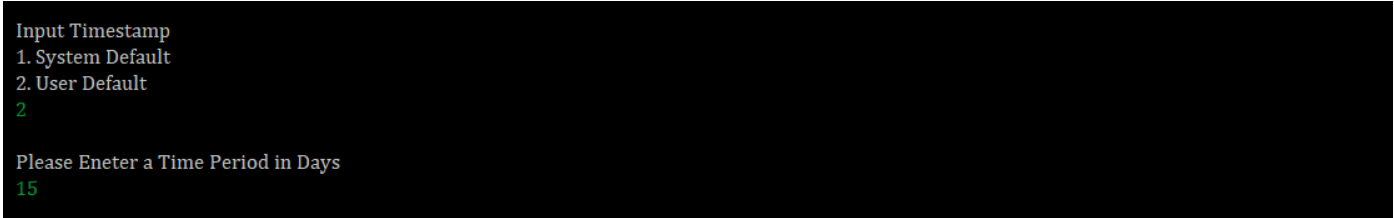

Input Timestamp
1. System Default
2. User Default
2

Please Eneter a Time Period in Days
15

Figure 11:Here we have shown if the user will choose User default, then system will ask to enter a time period in Days or else if user choose system default then system will consider time period of 10 Days automatically.

NMA Price

The Normal Moving Average is 303.22

Current Price : 298.05-3.35 (-1.11%)
Technical Indication :   --> Buy

The best trading strategy in the world won't do you any good if you allow emotions to trump logic.
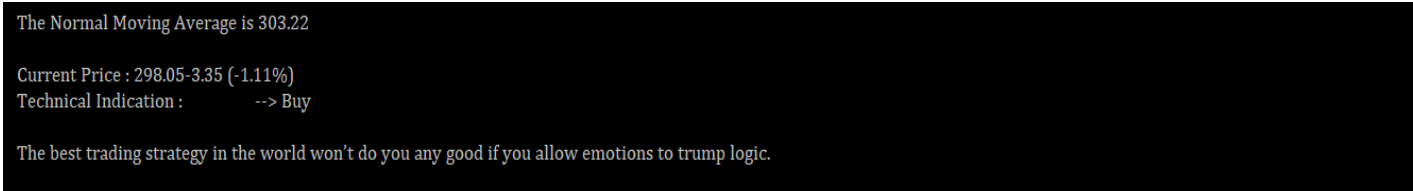
Figure 12: In this fig. we have shown how system will display Normal Moving Average, Current price based on user input, based on NMA & Current Price system will generate a signal to BUY, SELL or HOLD.
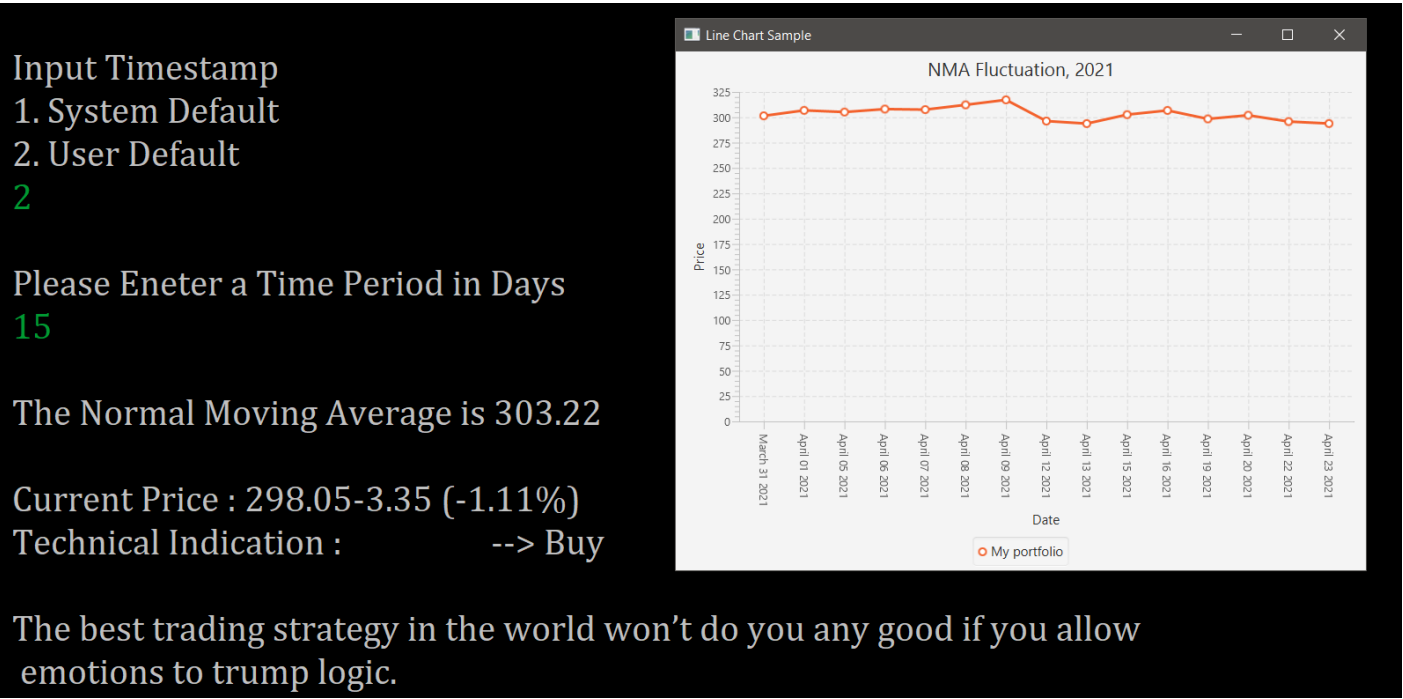
User default Timestamp

Figure 13: In this fig. Here we are showing how system will generate the chart which can be used to help and identify price trends or identify potential support and resistance level while trading.
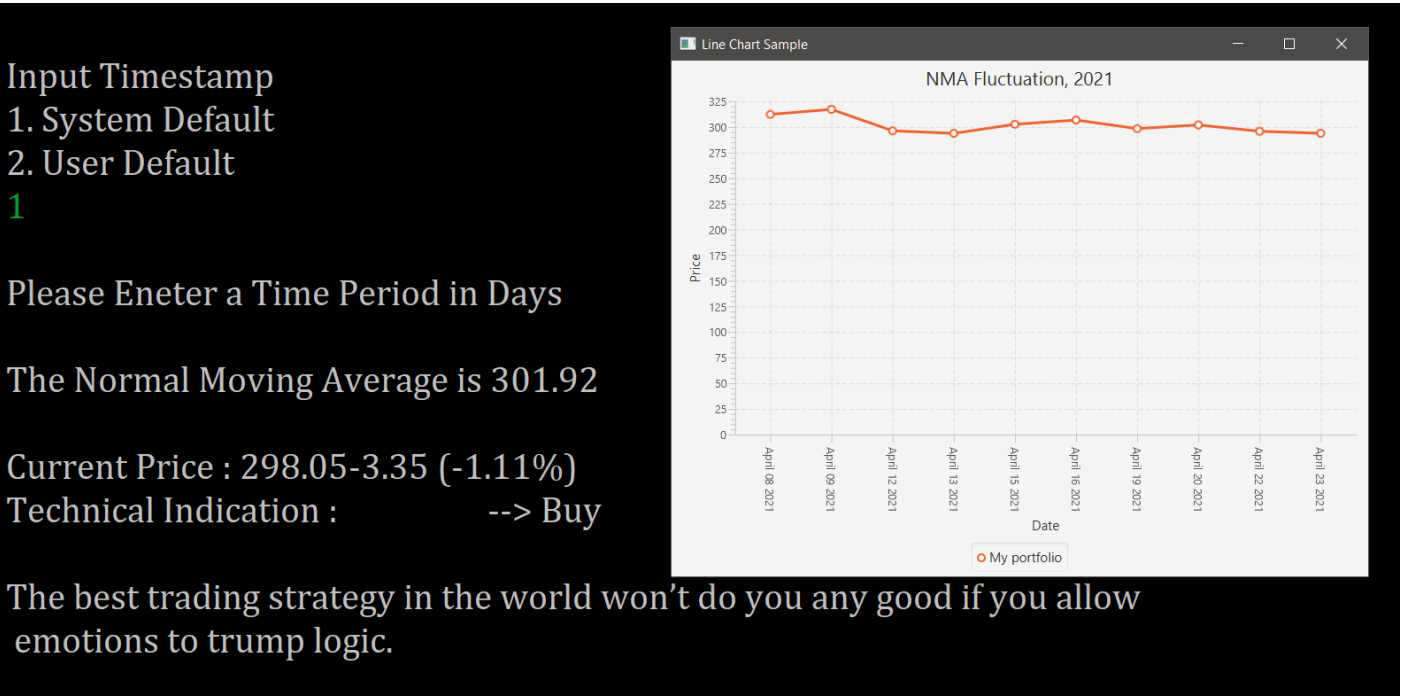
System Default Timestamp

Figure 14: Same Scenario for System Default Timestamp.

===

Conclusion

~ We all know that Traders are always looking for a signal to Buy, Sell or Hold. So, this project is just an endeavour to ease the traders by analysing the price movements and securities.

~ Our project works best in trend following systems. When used appropriately, they provide easy insight into a trend's direction, its magnitude, and its rate of change.
~ Our Project help to smooth the price data in a chart which can be used to help and identify price trends or identify potential support and resistance level while trading.
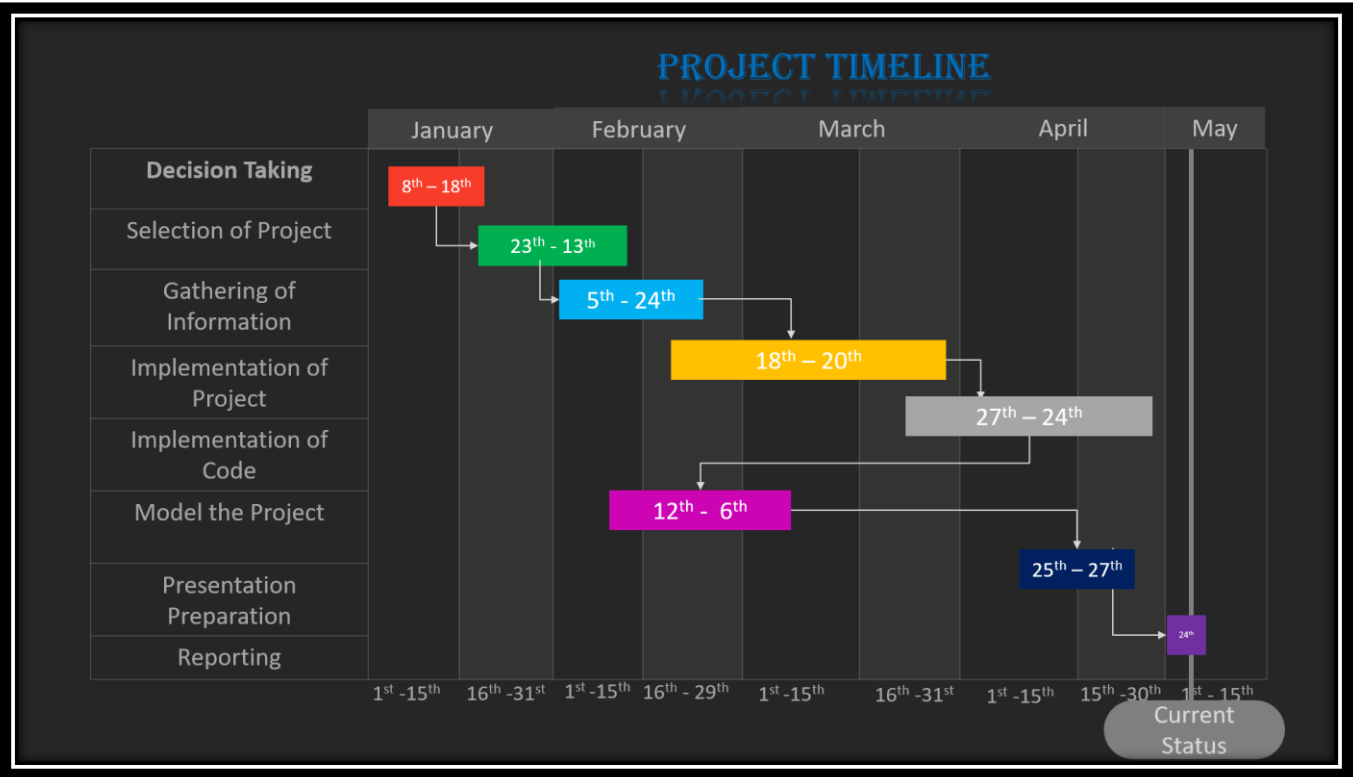
==

Project Timeline

Figure 13:Gantt Chart

==

Appendix Code
(Shown only 1st Case)

===

```java
import javafx.application.Application;
import javafx.scene.Scene;
import javafx.scene.chart.CategoryAxis;
import javafx.scene.chart.LineChart;
import javafx.scene.chart.NumberAxis;
import javafx.scene.chart.XYChart;
import javafx.stage.Stage;
import java.util.*;
import java.io.File;
import java.io.IOException;
import static java.util.Date.parse;
import jxl.Cell;
import jxl.Sheet;
import jxl.Workbook;
import jxl.read.biff.BiffException;

public class JavaApplication1 extends Application {
    @Override public void start(Stage stage) throws Exception{
        stage.setTitle("Line Chart Sample");
        final CategoryAxis xAxis = new CategoryAxis();
        final NumberAxis yAxis = new NumberAxis();
        xAxis.setLabel("Date");
        yAxis.setLabel("Price");
        final LineChart<String,Number> lineChart;
        lineChart = new LineChart<String,Number>(xAxis,yAxis);
        lineChart.setTitle("NMA Fluctuation, 2021");
        XYChart.Series series = new XYChart.Series();
        series.setName("My portfolio");

String date[] = new String[100];
double[][] arr = new double[100][100];
double[] arrr = new double[100];
double check = 0,curr1 = 0,sum = 0,sum1 = 0,avg1 = 0;
String currr,curr,avg;
Scanner sc = new Scanner(System.in);
        System.out.println("\n\t\t\t\t***** MOVING AVERAGE TECHNICAL INDICATR IN FINNACE
*****");
        System.out.println("\n " The Goal of a Successful Trader is to make the Best Trades.
Money is secondary.  " \n");
        System.out.println("Enter Your Keen Sector");
        System.out.println("Choose from following Sector");
        System.out.println("1.Automobile Sector");
        System.out.println("2.Banking Sector");
        System.out.println("3.Medical Sector");
        System.out.println("4.Energy & Engineering Sector");
        System.out.print("\nInput Here ! :\t");
        int v = sc.nextInt();
        int choice = v;
        switch(choice)
        {
            case 1: while(true){
```

```java
System.out.println("\nKindly Choose From Companies:-\n");
System.out.println("1.Tata Motors");
System.out.println("2.Ashok Leyland ");
System.out.println("3.Eicher Motors");
System.out.println("4.Maruti Suzuki");
System.out.println("5.Bajaj Auto");
System.out.println("6.Apollo Tyres");
System.out.println("7.MRF");
System.out.println("8.Bharat Forge");
System.out.println("9.TVS Motors");
System.out.println("10.Exide Indutries");
int m=sc.nextInt();
choice=m;
switch(choice)
{
    case 1:File f1 = new File("C:\\Users\\shubh\\Downloads\\Auto\\XLS\\TataMotors.xls");
    Workbook wb = Workbook.getWorkbook (f1);Sheet s = wb.getSheet(0);
    check =
my("C:\\Users\\shubh\\Downloads\\Auto\\XLS\\TataMotors.xls",wb,s,date,arrr,series);
    File ff1 = new
File("C:\\Users\\shubh\\OneDrive\\Desktop\\Current\\Auto\\TataMotors.xls");
    Workbook wbb = Workbook.getWorkbook (ff1);Sheet ss = wbb.getSheet(0);
    get("C:\\Users\\shubh\\OneDrive\\Desktop\\Current\\Auto\\TataMotors.xls",wbb,check,ss);
    Scene scene  = new Scene(lineChart,800,600);
    lineChart.getData().add(series);
    stage.setScene(scene);
    stage.show();break;

    case 2:File f2 = new File("C:\\Users\\shubh\\Downloads\\Auto\\XLS\\Ashok.xls");
    wb = Workbook.getWorkbook (f2);s = wb.getSheet(0);
    check = my("C:\\Users\\shubh\\Downloads\\Auto\\XLS\\Ashok.xls",wb,s,date,arrr,series);
    File ff2 = new File("C:\\Users\\shubh\\OneDrive\\Desktop\\Current\\Auto\\Ashok.xls");
    wbb = Workbook.getWorkbook (ff2);ss = wbb.getSheet(0);
    get("C:\\Users\\shubh\\OneDrive\\Desktop\\Current\\Auto\\Ashok.xls",wbb,check,ss);
    scene  = new Scene(lineChart,800,600);
    lineChart.getData().add(series);
    stage.setScene(scene);
    stage.show();break;

    case 3:File f3 = new File("C:\\Users\\shubh\\Downloads\\Auto\\XLS\\Eicher.xls");
    wb = Workbook.getWorkbook (f3);s = wb.getSheet(0);
    check = my("C:\\Users\\shubh\\Downloads\\Auto\\XLS\\Eicher.xls",wb,s,date,arrr,series);
    File ff3 = new File("C:\\Users\\shubh\\OneDrive\\Desktop\\Current\\Auto\\Eicher.xls");
    wbb = Workbook.getWorkbook (ff3);ss = wbb.getSheet(0);
    get("C:\\Users\\shubh\\OneDrive\\Desktop\\Current\\Auto\\Eicher.xls",wbb,check,ss);
    scene  = new Scene(lineChart,800,600);
    lineChart.getData().add(series);
    stage.setScene(scene);
    stage.show();break;

    case 4:File f4 = new File("C:\\Users\\shubh\\Downloads\\Auto\\XLS\\Maruti.xls");
    wb = Workbook.getWorkbook (f4);s = wb.getSheet(0);
    check = my("C:\\Users\\shubh\\Downloads\\Auto\\XLS\\Maruti.xls",wb,s,date,arrr,series);
    File ff4 = new File("C:\\Users\\shubh\\OneDrive\\Desktop\\Current\\Auto\\Maruti.xls");
    wbb = Workbook.getWorkbook (ff4);ss = wbb.getSheet(0);
    get("C:\\Users\\shubh\\OneDrive\\Desktop\\Current\\Auto\\Maruti.xls",wbb,check,ss);
    scene  = new Scene(lineChart,800,600);
    lineChart.getData().add(series);
    stage.setScene(scene);
    stage.show();break;
```

```
case 5:File f5 = new File("C:\\Users\\shubh\\Downloads\\Auto\\XLS\\Bajaj.xls");
wb = Workbook.getWorkbook (f5);s = wb.getSheet(0);
check = my("C:\\Users\\shubh\\Downloads\\Auto\\XLS\\Bajaj.xls",wb,s,date,arrr,series);
File ff5 = new File("C:\\Users\\shubh\\OneDrive\\Desktop\\Current\\Auto\\Bajaj.xls");
wbb = Workbook.getWorkbook (ff5);ss = wbb.getSheet(0);
get("C:\\Users\\shubh\\OneDrive\\Desktop\\Current\\Auto\\Bajaj.xls",wbb,check,ss);
scene  = new Scene(lineChart,800,600);
lineChart.getData().add(series);
stage.setScene(scene);
stage.show();break;

case 6:File f6 = new File("C:\\Users\\shubh\\Downloads\\Auto\\XLS\\Apollo.xls");
wb = Workbook.getWorkbook (f6);s = wb.getSheet(0);
check = my("C:\\Users\\shubh\\Downloads\\Auto\\XLS\\Apollo.xls",wb,s,date,arrr,series);
File ff6 = new File("C:\\Users\\shubh\\OneDrive\\Desktop\\Current\\Auto\\Apollo.xls");
wbb = Workbook.getWorkbook (ff6);ss = wbb.getSheet(0);
get("C:\\Users\\shubh\\OneDrive\\Desktop\\Current\\Auto\\Apollo.xls",wbb,check,ss);
scene  = new Scene(lineChart,800,600);
lineChart.getData().add(series);
stage.setScene(scene);
stage.show();break;

case 7:File f7 = new File("C:\\Users\\shubh\\Downloads\\Auto\\XLS\\MRF.xls");
wb = Workbook.getWorkbook (f7);s = wb.getSheet(0);
check = my("C:\\Users\\shubh\\Downloads\\Auto\\XLS\\MRF.xls",wb,s,date,arrr,series);
File ff7 = new File("C:\\Users\\shubh\\OneDrive\\Desktop\\Current\\Auto\\MRF.xls");
wbb = Workbook.getWorkbook (ff7);ss = wbb.getSheet(0);
get("C:\\Users\\shubh\\OneDrive\\Desktop\\Current\\Auto\\Eicher.xls",wbb,check,ss);
scene  = new Scene(lineChart,800,600);
lineChart.getData().add(series);
stage.setScene(scene);
stage.show();break;

case 8:File f8 = new File("C:\\Users\\shubh\\Downloads\\Auto\\XLS\\Bharat Forge.xls");
wb = Workbook.getWorkbook (f8);s = wb.getSheet(0);
check = my("C:\\Users\\shubh\\Downloads\\Auto\\XLS\\Bharat
Forge.xls",wb,s,date,arrr,series);
File ff8 = new File("C:\\Users\\shubh\\OneDrive\\Desktop\\Current\\Auto\\Bharat
Forge.xls");
wbb = Workbook.getWorkbook (ff8);ss = wbb.getSheet(0);
get("C:\\Users\\shubh\\OneDrive\\Desktop\\Current\\Auto\\Bharat Forge.xls",wbb,check,ss);
scene  = new Scene(lineChart,800,600);
lineChart.getData().add(series);
stage.setScene(scene);
stage.show();break;

case 9:File f9 = new File("C:\\Users\\shubh\\Downloads\\Auto\\XLS\\TVS Motors.xls");
wb = Workbook.getWorkbook (f9);s = wb.getSheet(0);
check = my("C:\\Users\\shubh\\Downloads\\Auto\\XLS\\TVS
Motors.xls",wb,s,date,arrr,series);
File ff9 = new File("C:\\Users\\shubh\\OneDrive\\Desktop\\Current\\Auto\\TVS
Motors.xls");
wbb = Workbook.getWorkbook (ff9);ss = wbb.getSheet(0);
get("C:\\Users\\shubh\\OneDrive\\Desktop\\Current\\Auto\\TVS Motors.xls",wbb,check,ss);
scene  = new Scene(lineChart,800,600);
lineChart.getData().add(series);
stage.setScene(scene);
stage.show();break;
```

```java
case 10:File f10 = new File("C:\\Users\\shubh\\Downloads\\Auto\\XLS\\Exidein.xls");
wb = Workbook.getWorkbook (f10);s = wb.getSheet(0);
check = my("C:\\Users\\shubh\\Downloads\\Auto\\XLS\\Exidein.xls",wb,s,date,arrr,series);
File ff10 = new File("C:\\Users\\shubh\\OneDrive\\Desktop\\Current\\Auto\\Exidein.xls");
wbb = Workbook.getWorkbook (ff10);ss = wbb.getSheet(0);
get("C:\\Users\\shubh\\OneDrive\\Desktop\\Current\\Auto\\Exidein.xls",wbb,check,ss);
scene  = new Scene(lineChart,800,600);
lineChart.getData().add(series);
stage.setScene(scene);
stage.show();
break;

default:
    System.out.println("Invalid Entry");
    System.out.println("Enetr Valid Choice :
\n==============================");continue;
}break;}break;
default:
    System.out.println("Invalid Input");
    System.exit(0);
    } }


void get(String strr,Workbook wbb,double check,Sheet ss){

    File ff = new File(strr);
    int row=ss.getRows();
    int col=ss.getColumns();
    String curr,currr;
    double curr1 = 0;

    for(int i = 0;i <43 ;i++){
        for(int j=0;j<1;j++){
            if(i == 42 && j == 0){
                Cell c=ss.getCell(j,i);
                System.out.print("Current Price : " + c.getContents()+"\t\t");
                curr = c.getContents();
                curr = curr.replaceAll("[,+%-]","");
                currr = curr.substring(0,6);
                curr1 = Double.parseDouble(currr);
            }}System.out.print("");}
    if(check > (curr1 + 1))
    {
        System.out.println("\nTechnical Indication :\t--> Buy");
    }
    else if(check < (curr1) - 1)
    {
        System.out.println("\nTechnical Indication :\t--> SeLL");
    }
    else{
        System.out.println("\nTechnical Indication :\t--> Hold");
    }
    System.out.println("\nThe best trading strategy in the world won't do you any good
if you allow\n emotions to trump logic.");}


double my(String str,Workbook wb,Sheet s,String date[],double arrr[],XYChart.Series
series){

    File f = new File(str);
    int row=s.getRows();
    int col=s.getColumns();
```

```java
System.out.println("Input Timestamp");
System.out.println("1. System Default");
System.out.println("2. User Default");
Scanner sc = new Scanner(System.in);

int time = sc.nextInt();
System.out.println("\nPlease Eneter a Time Period in Days");
int choose = time;
switch(choose)
{
    case 1:
        time = 10;
        break;
    case 2:
        time = sc.nextInt();
        break;
}
double[][] arr = new double[100][100];
String avg;
double check = 0,curr1 = 0,sum = 0,sum1 = 0,avg1 = 0;

for(int i = 1;i <=time ;i++){
    for(int j=0;j<1;j++){
            Cell c=s.getCell(j,i);
            date[i] = c.getContents();
            date[i] = date[i].replaceAll("[,+%-]","");}
    System.out.print("");}

for(int i = 1;i <= time;i++){
    for(int j=1;j<5;j++){
            Cell c=s.getCell(j,i);
            avg = c.getContents();
            avg = avg.replaceAll("[,+%-]","");
            avg1 = Double.parseDouble(avg);
            arr[i][j] = avg1;}
    System.out.print("");}
sum = 0;

for(int i=1;i<=time;i++){
    for(int j=1;j<5;j++)
    { sum = sum + arr[i][j]; }
    arrr[i] = (sum)/4;
    sum = 0;}
sum1 = 0;
for(int i=1;i<=time;i++)
{ sum1 = sum1 + arrr[i];}
check = sum1/time;
System.out.printf("\nThe Normal Moving Average is %.2f\n",check);

for(int x=time;x>=1;x--)
{
    series.getData().add(new XYChart.Data(date[x].substring(4), arrr[x]));
}
return check;}

public static void main(String[] args) {
    launch(args);
}
}
}
```

===

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