

NIFTY 50 DATA ANALYSIS

Project Overview

This script analyzes NIFTY 50 stock market data to calculate 5-year returns over different periods. It processes historical stock data, identifies key yearly trends, and computes percentage returns to understand market performance over time.

Steps:

1. Reads stock data from a CSV file.
2. Extracts the earliest trading date for each year.
3. Gets the closing price on those dates.
4. Calculates percentage change in price over 5-year gaps.
5. Simulates a ₹50,000 investment and calculates returns.
6. Prints the total profit/loss over time.
7. Visualize the returns using a line graph.

Purpose of the Project

1. Analyze NIFTY 50 data to track market performance.
2. Find 5-year returns to see how the market grows over time.
3. Compare different time periods to identify trends.
4. Show results in a graph for easy understanding.
5. Help investors make better decisions based on past trends.

Dataset Description: NIFTY_50_Data.csv

This dataset contains historical stock market data for the NIFTY 50 index. It includes the following columns:

1. **Date** – Trading date of the stock market.
2. **Open** – Opening price of NIFTY 50 on that day.
3. **High** – The highest price reached on that day.

4. **Low** – The lowest price reached on that day.
5. **Close** – The closing price of NIFTY 50 on that day.

Date	Open	High	Low	Close
09-Sep-22	17923.35	17925.95	17786	17833.35
08-Sep-22	17748.15	17807.65	17691.95	17798.75
07-Sep-22	17519.4	17650.75	17484.3	17624.4
06-Sep-22	17695.7	17764.65	17587.65	17655.6
05-Sep-22	17546.45	17683.15	17540.35	17665.8
02-Sep-22	17598.4	17643.85	17476.45	17539.45
01-Sep-22	17485.7	17695.6	17468.45	17542.8
30-Aug-22	17414.95	17777.65	17401.5	17759.3
29-Aug-22	17188.65	17380.15	17166.2	17312.9
26-Aug-22	17619.3	17685.85	17519.35	17558.9
25-Aug-22	17670	17726.5	17487.45	17522.45

Tools and Libraries Used

Libraries:

1. **Pandas** – To read, process, and analyze stock market data.
2. **Matplotlib** – To create graphs for visualizing 5-year returns.

Tools:

1. **Python** – Programming language used for analysis.
2. **VS Code** – Recommended for running the code

Methodology

1. Data Preprocessing

- (i) Load the NIFTY 50 data from a file.
- (ii) Change the "Date" column into the correct format.
- (iii) Find the first trading day of each year.

2. Calculation

- (i) Get the closing price for each year's first trading day.
- (ii) Calculate how much the market changes every 5 years.
- (iii) Convert the percentage returns into money (₹50,000 investment).

3. Analysis

- (i) Arrange the data in the correct order.
- (ii) Show the 5-year returns for different time periods.
- (iii) Draw a graph to easily see market trends.

Problems Encountered & Solutions

1. Data Collection Issues

Problem: Some data might be missing or incorrect.

Solution: Used a trusted CSV file and checked for missing values.

2. Challenges Faced

Problem: Some years didn't have data for the first trading day.

Solution: Picked the earliest available trading day for each year.

3. Data Cleaning Issues

Problem: Missing or incorrect values in the dataset, especially in the Date and Close columns.

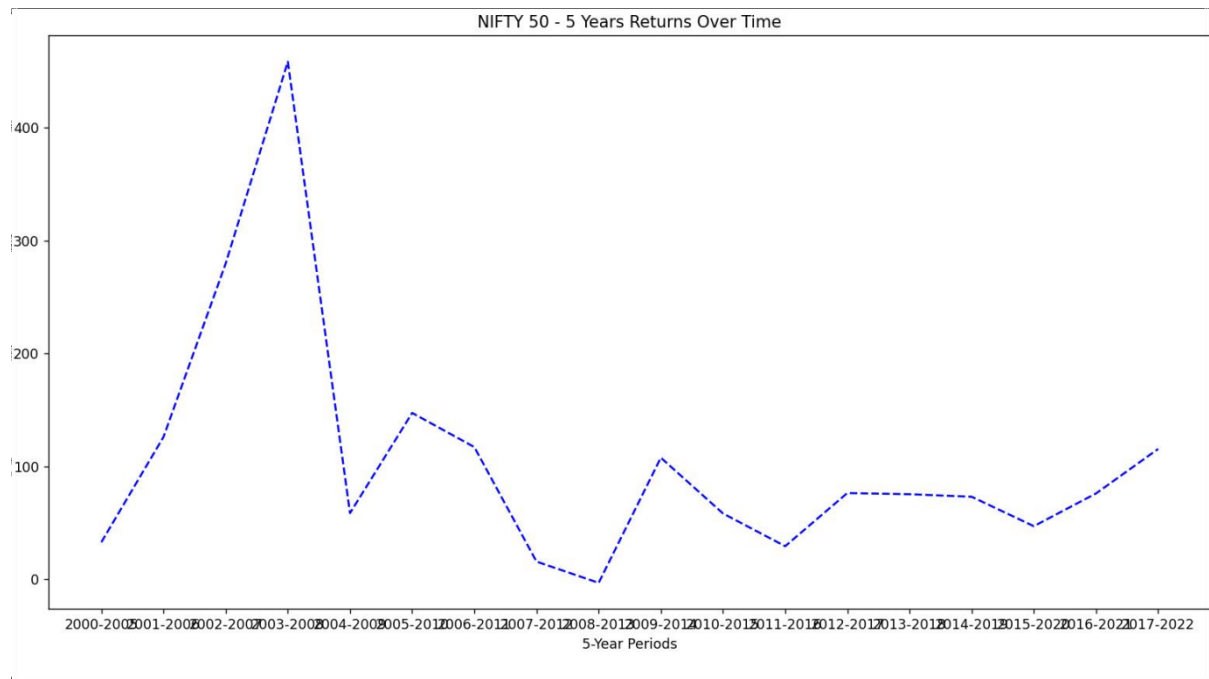
Solution:

- (i) Converted "Date" to the correct datetime format.
- (ii) Removed missing or incorrect data.
- (iii) Used `.dropna()` to clean the dataset.

Result

- 1. Calculated 5-year returns for NIFTY 50.
- 2. Showed how the market changed over time.
- 3. Created a graph to see trends easily.
- 4. Found the total return if ₹50,000 was invested.
- 5. Helps understand market trends for better investment decisions.

```
2000 - 2005 --- 32.835070970983544 === 16417.53548549177
2001 - 2006 --- 126.09423582874912 === 63047.11791437456
2002 - 2007 --- 279.7403581919834 === 139870.17909599168
2003 - 2008 --- 458.5219525497683 === 229260.97627488416
2004 - 2009 --- 58.63403409685179 === 29317.0170484259
2005 - 2010 --- 147.3853427895981 === 73692.67139479905
2006 - 2011 --- 117.13036425826017 === 58565.18212913009
2007 - 2012 --- 15.703448620052896 === 7851.724310026449
2008 - 2013 --- -3.149260290024901 === -1574.6301450124506
2009 - 2014 --- 107.74048922001715 === 53870.24461000858
2010 - 2015 --- 58.3272810672375 === 29163.64053361875
2011 - 2016 --- 29.3231129011303 === 14661.55645056515
2012 - 2017 --- 76.40779002307676 === 38203.89501153838
2013 - 2018 --- 75.36381662969683 === 37681.90831484841
2014 - 2019 --- 73.13222038847277 === 36566.11019423639
2015 - 2020 --- 47.06059874456784 === 23530.29937228392
2016 - 2021 --- 76.04103877838055 === 38020.519389190275
2017 - 2022 --- 115.48627666727795 === 57743.13833363897
Total : 945889.0857180402
```



Conclusion & Storytelling

1. The Story of NIFTY 50 Growth

Imagine you put ₹50,000 into the NIFTY 50 index and waited for 5 years. How much would it grow? This project helps us find out!

We first collected and cleaned the data to make sure it was correct. Then, we calculated 5-year returns and created a graph to see the market trend.

- (i) Some years had high returns, showing market growth.
- (ii) Some years had low returns, showing slowdowns.
- (iii) But over time, the market kept growing.

2. What We Learned:

The stock market goes up and down, but if you stay invested for a long time, you can earn good returns.

3. The key lesson: Be patient, and let your investments grow!

Reference

Google – Used for research and market trends.

Suhani Pancholi – Developed this project.