Project Report: NSE Data Analysis

# Introduction

This project focuses on analyzing stock data from the National Stock Exchange (NSE) of India. The analysis involves fetching historical stock data for a selection of top companies, examining their performance, and evaluating various trading metrics.

# Objectives

* To retrieve historical stock data for the top 20 stocks by market capitalization from the NSE.
* To display key financial details for these stocks, including their recent closing prices.
* To conduct a detailed analysis of a specific stock (e.g., TCS.NS) by presenting its historical trading data.
* To calculate and visualize important trading performance metrics.

# Methodology

* Data Collection\*\*  
  Historical data for the top 20 stocks listed on the NSE (as identified by market capitalization) were fetched for the period spanning from January 1, 2019, to January 1, 2024. The list of stocks included:  
  RELIANCE.NS, TCS.NS, HDFCBANK.NS, ICICIBANK.NS, INFY.NS, KOTAKBANK.NS, HINDUNILVR.NS, SBIN.NS, BHARTIARTL.NS, HCLTECH.NS, ITC.NS, BAJFINANCE.NS, LTI.NS, MARUTI.NS, NTPC.NS, TATAMOTORS.NS, ONGC.NS, SUNPHARMA.NS, ULTRACEMCO.NS, ADANIENT.NS, AXISBANK.NS  
    
  (Note: There was an error fetching data for 'LTI.NS', indicating it might be delisted or have no timezone information.)
* Data Processing and Analysis\*\*  
  - Stock Details Overview: A DataFrame was created to store and display the stock symbols and their recent closing prices. Market capitalization was noted as a placeholder, requiring external sourcing.  
  - Individual Stock Analysis: Detailed historical data (Open, High, Low, Close, Adj Close, Volume) for a selected stock (TCS.NS) was downloaded and presented in a tabular format for a five-year period (2019–2024).  
  - Performance Metrics Calculation:  
   - Total Trade Scripts: 21  
   - Total Trade: 357  
   - PNL (Profit and Loss): 1067201.11  
   - Winners: 158  
   - Losers: 199  
   - Win Ratio: 44.26%  
   - Total Profit: 1645855.9  
   - Total Loss: -578654.79  
   - Average Loss per Trade: -2907.81  
   - Average Profit per Trade: 10416.81  
   - Average PNL Per Trade: 2989.36  
   - Risk Reward: 1:3.58
* Visualization\*\*  
  The project includes functionality to plot comparisons of key financial metrics such as Total Returns, Annualized Returns, Maximum Drawdown, Sharpe Ratio, and Win/Loss Ratio. These visualizations are crucial for a clear understanding of stock performance.

# Results

The analysis successfully fetched and presented historical data for prominent NSE stocks. The calculated trading metrics provide a comprehensive overview of the trading strategy's effectiveness, indicating profitability and risk-reward characteristics. The visualization component allows for easy comparison of various performance indicators.

# Conclusion

This project demonstrates a robust approach to analyzing NSE stock data, from fetching raw historical prices to deriving actionable trading insights. The metrics and visualizations provide a solid foundation for evaluating stock performance and can be extended for more sophisticated quantitative analysis or strategy backtesting.

# Future Enhancements

* Implementing live market capitalization fetching to eliminate placeholders.
* Integrating more advanced technical indicators for deeper analysis.
* Developing interactive dashboards for dynamic data exploration.
* Expanding the backtesting framework to evaluate different trading strategies.