

STOCK ANALYSIS AND PREDICTION

Abstract—This report analyzes a subset of Indian equity stocks through technical and fundamental methods, creating a virtual portfolio of 15-17 stocks using the moneycontrol platform. Stocks were selected based on financial health, growth potential, and market trends. The portfolio's performance was monitored over a month, focusing on profitability and risk-adjusted returns. Key insights demonstrate the effectiveness of data-driven investment strategies in the Indian equity market.

I. INTRODUCTION

This report presents a comprehensive analysis of a subset of Indian equity stocks through a combination of technical and fundamental methodologies. The objective was to construct a virtual portfolio comprising 15-17 carefully selected stocks, aligning with diverse sectors and investment strategies. Using the Moneycontrol platform, the portfolio was simulated to track real-time market dynamics, and stocks were purchased accordingly based on informed decision-making. Fundamental analysis evaluated financial health, growth potential, and market valuation, while technical analysis identified optimal entry and exit points. Over a one-month period, the portfolio's performance was monitored and evaluated based on profitability, risk-adjusted returns, and adherence to analytical rigor. Insights from this evaluation provide actionable recommendations for enhancing portfolio management strategies and demonstrate the efficacy of a disciplined, data-driven investment approach in the Indian equity market.

II. DATA SOURCES

Yahoo Finance (yfinance): I have taken historical price data and fundamental metrics (P/E Ratio, P/B Ratio, Dividend Yield, EPS Growth) were extracted using the yfinance API.

- NSE/BSE: Ticker symbols for the selected stocks were sourced from the National Stock Exchange (NSE) and Bombay Stock Exchange (BSE).

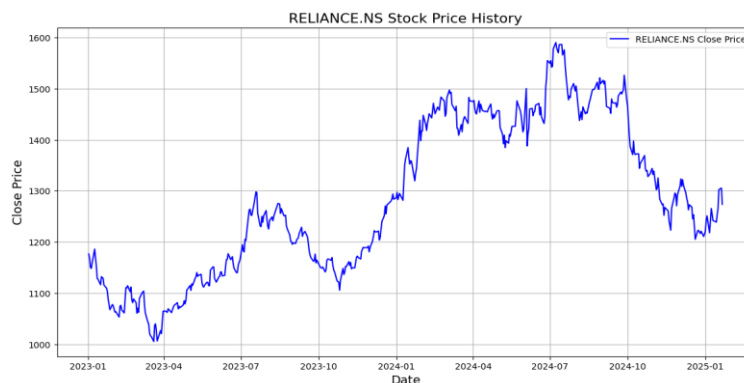
III. ANALYSIS METHODOLOGY

The ARIMA model is used in time series forecasting to analyze historical closing prices, capturing trends, seasonality, and residuals to predict future price movements. Technical analysis incorporates indicators like moving averages for trend identification, RSI to measure momentum, and Bollinger Bands to assess volatility, helping to identify short-term trading signals and potential price reversals. Fundamental analysis evaluates the financial health of stocks using metrics such as the P/E ratio for valuation, dividend yield for income potential, and earnings growth for profitability, with data sourced from financial statements.

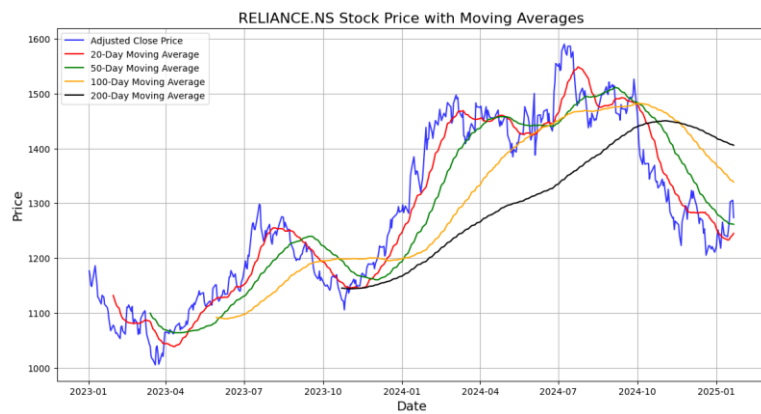
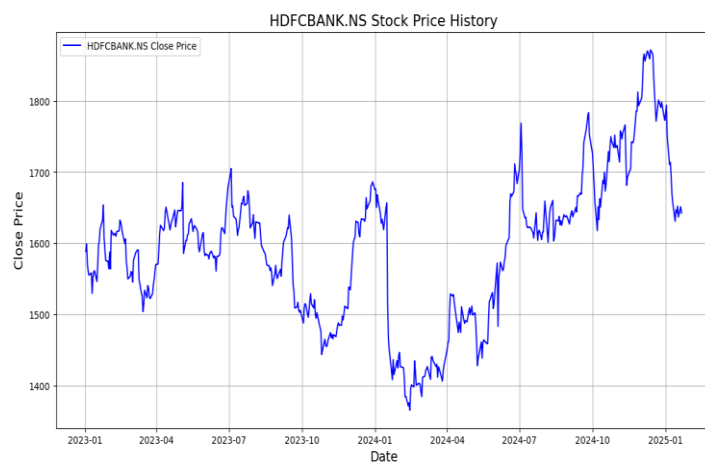
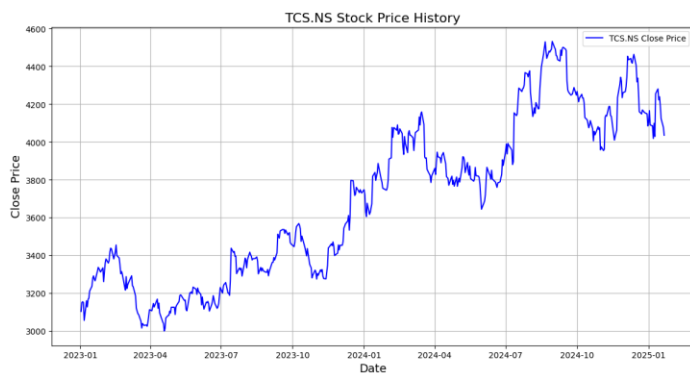
IV. TECHNICAL ANALYSIS

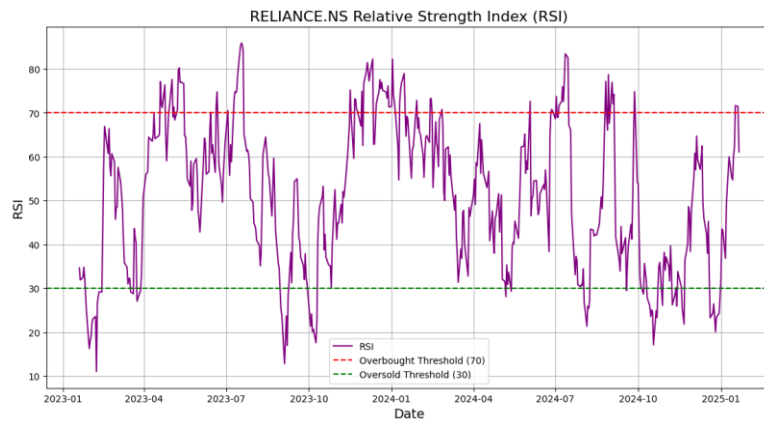
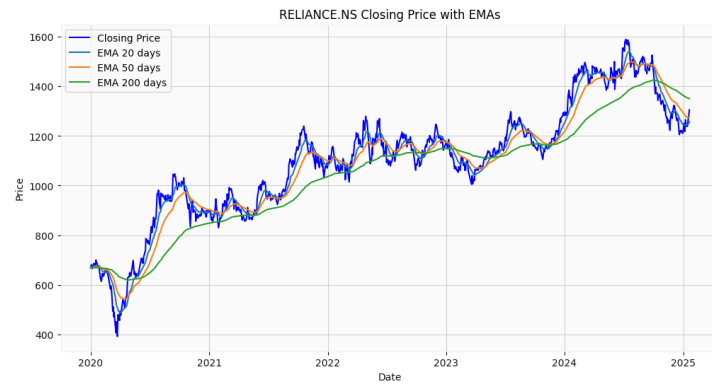
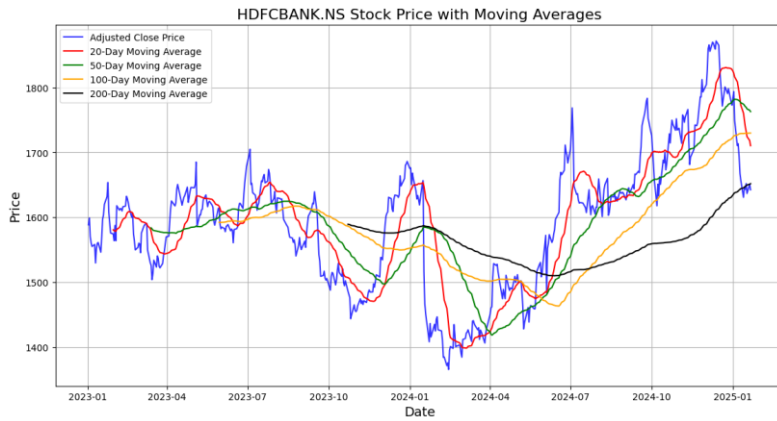
- Candlestick Charts: Used to visualize price movements and identify trends (bullish/bearish).
- Moving Averages (SMA): Used to smooth out price data and identify trends.
- Relative Strength Index (RSI): Measures overbought/oversold conditions.
- MACD (Moving Average Convergence Divergence): Confirms trend momentum.

VISUALIZATIONS OF TECHNICAL AND FUNDAMENTAL ANALYSIS



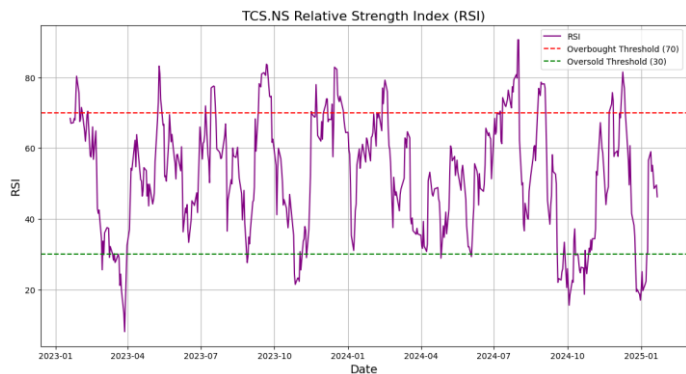
The code computes the Relative Strength Index (RSI) for NIFTY50 tickers based on price data. It identifies overbought stocks ($RSI > 70$) and oversold stocks ($RSI < 30$), categorizing the tickers accordingly. Additionally, it visualizes the RSI along with threshold levels for each stock, providing insights into market conditions and potential trend reversals.



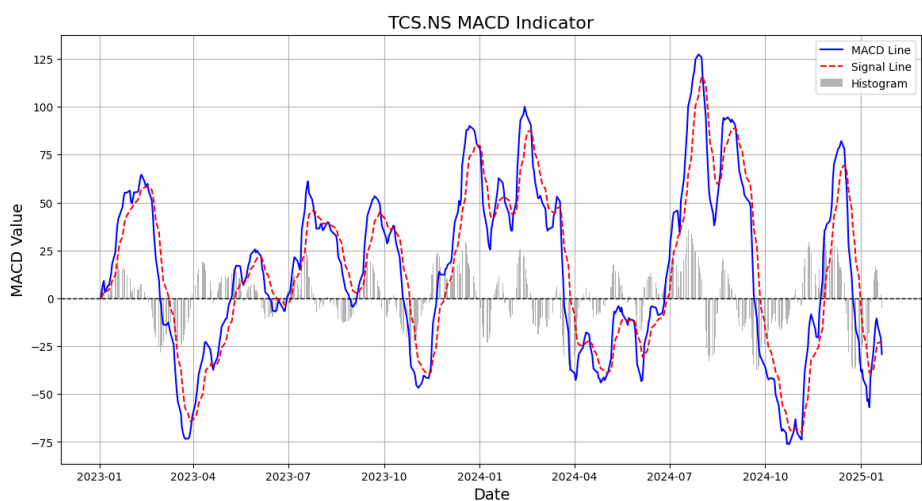
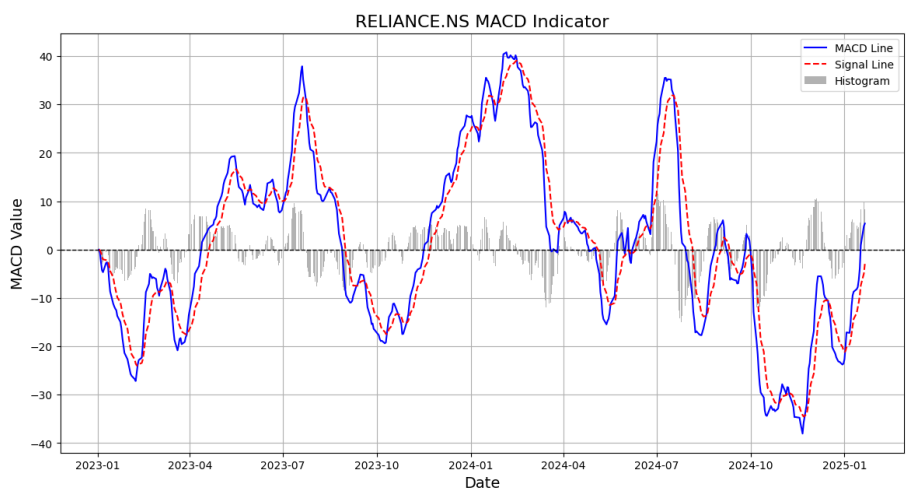
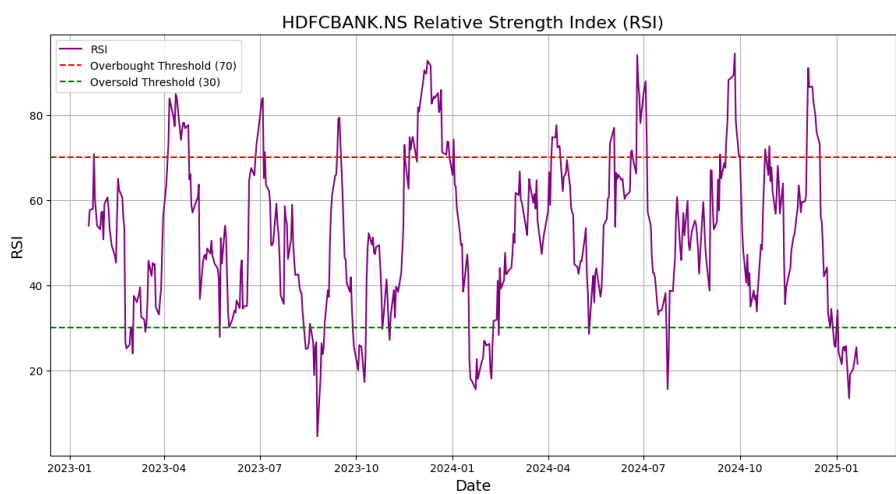


Overbought Stocks (RSI > 70): ['TATACONSUM.NS'] Oversold Stocks (RSI < 30): ['HDFCBANK.NS', 'ICICIBANK.NS', 'AXISBANK.NS', 'DRREDDY.NS', 'SUNPHARMA.NS']

MACD (MOVING AVERAGE CONVERGENCE DIVERGENCE) IS A MOMENTUM INDICATOR THAT SHOWS THE RELATIONSHIP BETWEEN TWO EMAS (TYPICALLY 12-DAY AND 26-DAY). IT CONSISTS OF THE MACD LINE (DIFFERENCE OF EMAS), SIGNAL LINE (9-DAY EMA OF MACD), AND HISTOGRAM. MACD HELPS IDENTIFY TRENDS, CROSSOVERS, AND



POTENTIAL BUY/SELL SIGNALS.



SBIN.NS - Candlestick Chart

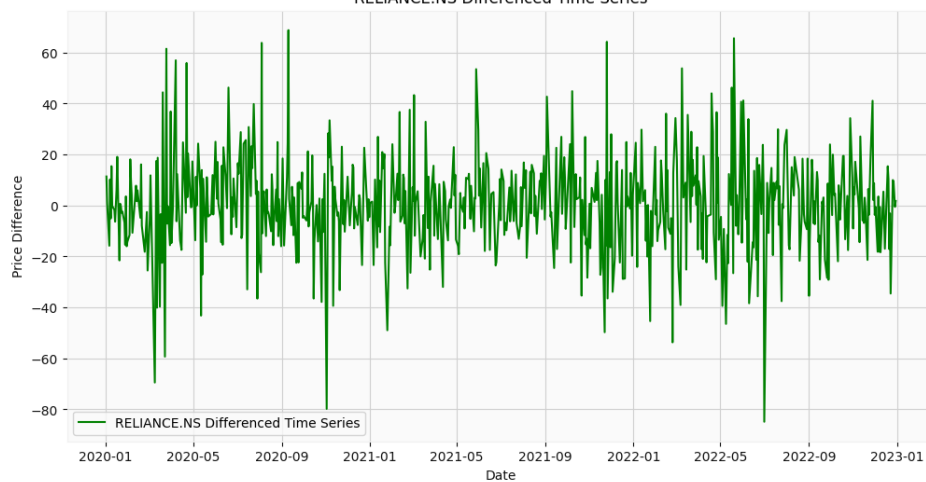


The code analyzes SBIN.NS by fetching historical price data, plotting its candlestick chart, and comparing its closing prices with other stocks in the tickers list. It calculates the correlation of SBIN's closing prices with each stock and stores the results. Finally, it prints the candlestick charts and all correlation values for further analysis.

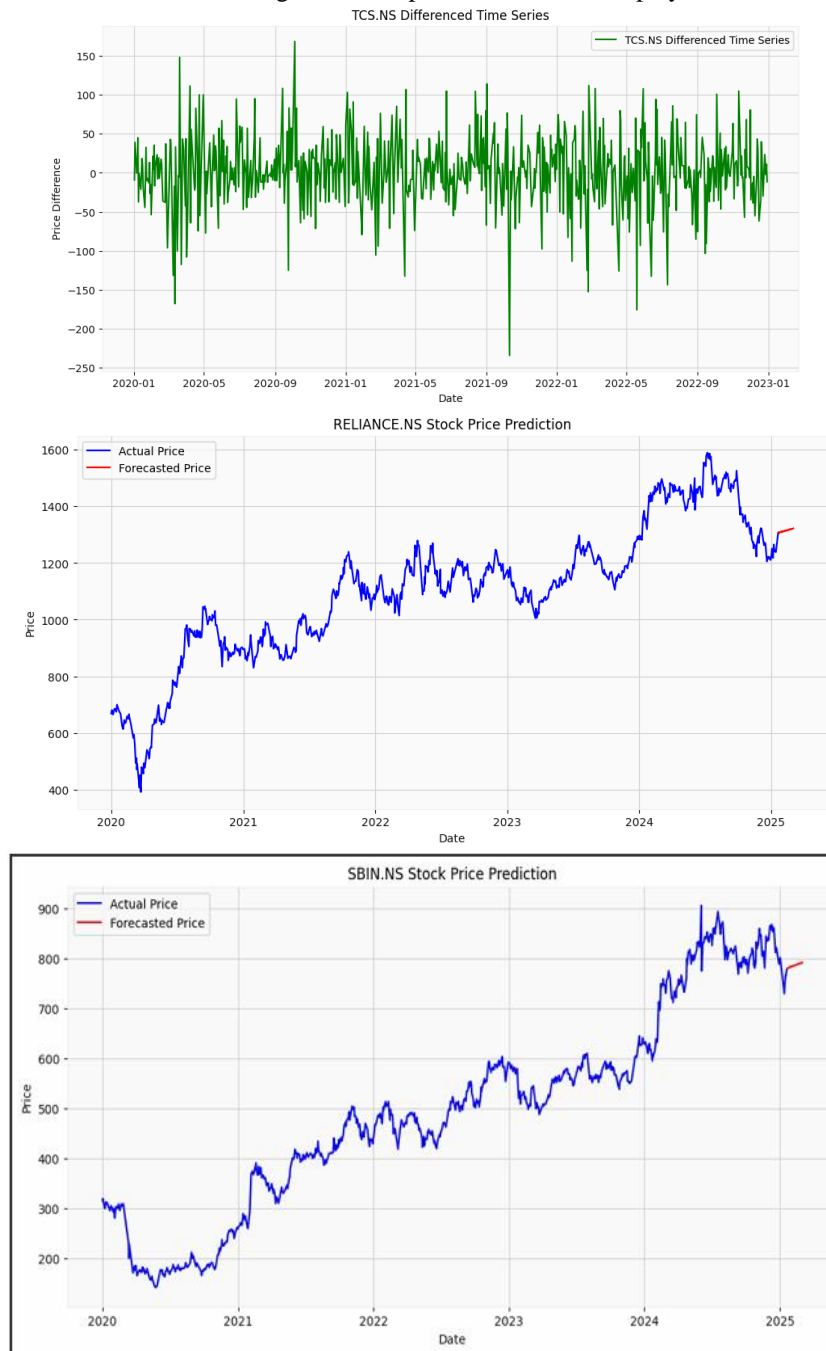
RELIANCE.NS - Candlestick Chart



RELIANCE.NS Differenced Time Series



The code fetches stock data for each ticker, focusing on the closing prices. It performs differencing to make the time series stationary and checks its stationarity using the Augmented Dickey-Fuller (ADF) test. The differenced series is plotted to visualize the changes in stock price, with results displayed for each ticker.



Detailed explanation of portfolio creation rationale.:Following Observations have been concluded above and after obtaining different values we obtained the rationale of different observations obtained in the graphs.

Prediction logic and outcome for Stock A.- My Stock A is SBI's stock which shows the prediction of increase in the future.

Stock Name	Live Price Change	Day's Gain % Change	Quantity Per Unit Cost	Investment Cost Weight(%)	Latest Value Weight(%)	Unrealized Gain % Change	Realized Profit/Loss
<div>► Nippon</div> <div>TAX Add Sell </div>	642.90 ▼ -16.95	-847.5 ▼ -2.57%	50 643.57	32,178.25 0.9%	32,145.00 0.9%	-33 ▼ -0.1%	-
<div>► Page Industries</div> <div>TAX Add Sell </div>	46,073.35 ▲ 97.50	4,875 ▲ 0.21%	50 46,121.01	23,06,050.65 62.6%	23,03,667.50 62.6%	-2,383 ▼ -0.1%	-
<div>► Piramal Pharma</div> <div>TAX Add Sell </div>	242.30 ▲ 1.40	67.2 ▲ 0.58%	48 242.56	11,642.93 0.3%	11,630.40 0.3%	-13 ▼ -0.11%	-
<div>► SBI Nifty50 ET</div> <div>TAX Add Sell </div>	244.89 ▲ 1.14	57 ▲ 0.47%	50 245.14	12,257.15 0.3%	12,244.50 0.3%	-13 ▼ -0.1%	-
<div>► Sun Pharma</div> <div>TAX Add Sell </div>	1,798.95 ▲ 36.25	1,776.25 ▲ 2.06%	49 1,800.85	88,241.60 2.4%	88,148.55 2.4%	-93 ▼ -0.11%	-
<div>► TCS</div> <div>TAX Add Sell </div>	4,156.60 ▲ 120.75	12,075 ▲ 2.99%	100 4,160.90	4,16,090.00 11.3%	4,15,660.00 11.3%	-430 ▼ -0.1%	-
<div>► Zomato</div> <div>TAX Add Sell </div>	216.45 ▲ 1.90	152 ▲ 0.89%	80 216.67	17,333.92 0.5%	17,316.00 0.5%	-18 ▼ -0.1%	-
Total		23,089.70 ▲ 0.63%		36,84,723	36,80,910	-3,812 ▼ -0.10%	0

Stock Name	Live Price Change	Day's Gain % Change	Quantity Per Unit Cost	Investment Cost Weight(%)	Latest Value Weight(%)	Unrealized Gain % Change	Realized Profit/Loss
<div>► Bharti Airtel</div> <div>TAX Add Sell </div>	1,631.75 ▲ 5.60	560 ▲ 0.34%	100 1,633.44	1,63,343.80 4.4%	1,63,175.00 4.4%	-169 ▼ -0.1%	-
<div>► Britannia</div> <div>TAX Add Sell </div>	4,956.70 ▲ 52.85	3,118.15 ▲ 1.08%	59 4,961.83	2,92,747.85 7.9%	2,92,445.30 7.9%	-303 ▼ -0.1%	-
<div>► Canara Bank</div> <div>TAX Add Sell </div>	97.82 ▼ -1.65	-79.2 ▼ -1.66%	48 97.93	4,700.40 0.1%	4,695.36 0.1%	-5 ▼ -0.11%	-
<div>► DLF</div> <div>TAX Add Sell </div>	713.80 ▼ -24.10	-1,205 ▼ -3.27%	50 714.54	35,726.90 1.0%	35,690.00 1.0%	-37 ▼ -0.1%	-
<div>► HDFC Bank</div> <div>TAX Add Sell </div>	1,666.05 ▲ 23.65	1,182.5 ▲ 1.44%	50 1,667.77	83,388.70 2.3%	83,302.50 2.3%	-86 ▼ -0.1%	-
<div>► Kotak Mahindra</div> <div>TAX Add Sell </div>	1,917.50 ▲ 24.20	1,185.8 ▲ 1.28%	49 1,919.52	94,056.68 2.6%	93,957.50 2.6%	-99 ▼ -0.11%	-
<div>► Mahindra Holida</div> <div>TAX Add Sell </div>	328.85 ▼ -7.90	-395 ▼ -2.35%	50 329.19	16,459.50 0.4%	16,442.50 0.4%	-17 ▼ -0.1%	-
<div>► Nestle</div> <div>TAX Add Sell </div>	2,207.80 ▲ 11.35	567.5 ▲ 0.52%	50 2,210.08	1,10,504.20 3.0%	1,10,390.00 3.0%	-114 ▼ -0.1%	-