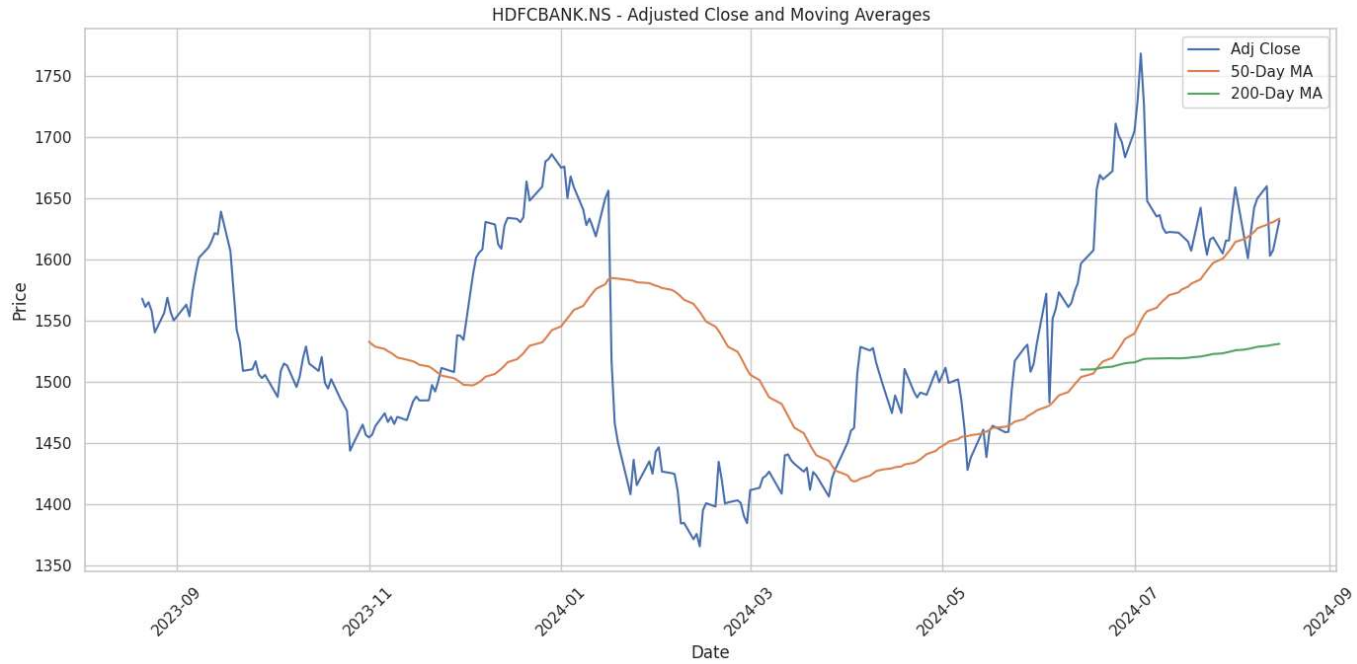
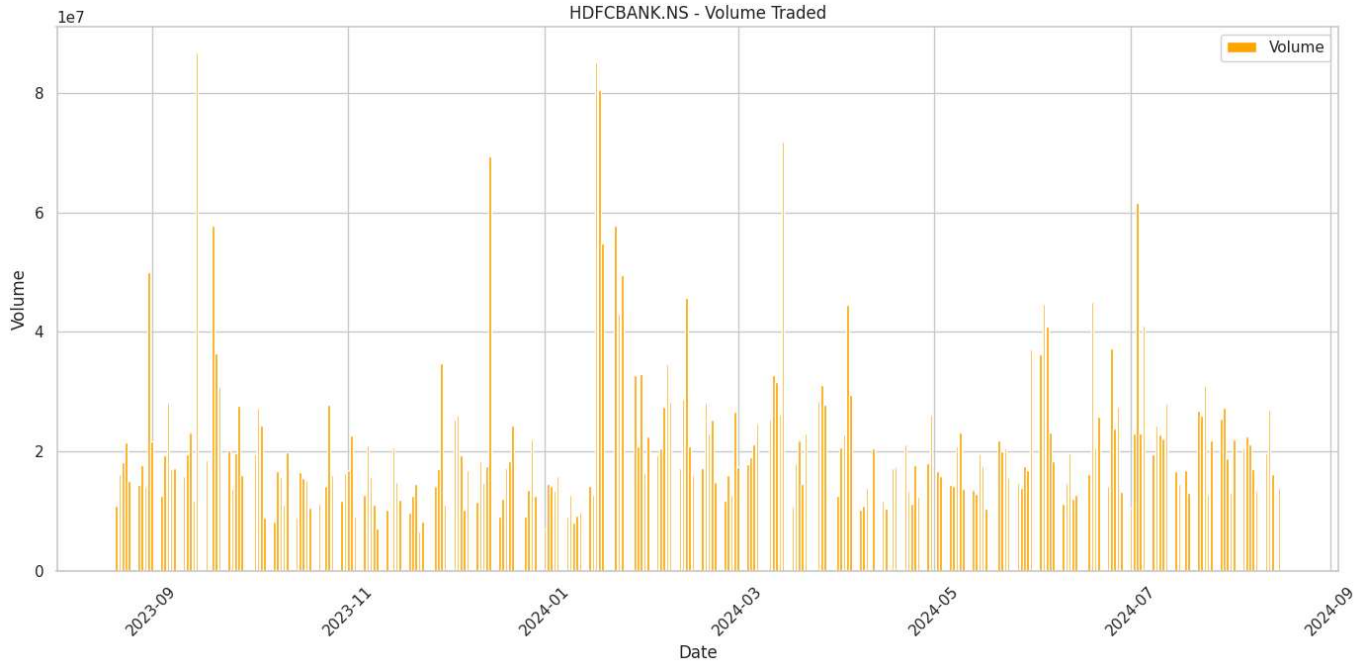
```
import pandas as pd
import yfinance as yf
from datetime import date, timedelta


# define the time period for the data
end_date = date.today().strftime("%Y-%m-%d")
start_date = (date.today() - timedelta(days=365)).strftime("%Y-%m-%d")


tickers = ['RELIANCE.NS','TCS.NS','INFY.NS','HDFCBANK.NS']


df = yf.download(tickers, start=start_date, end=end_date, progress = False)
df = df.reset_index()


melted = df.melt(id_vars=['Date'], var_name=['Attribute','Ticker'])
pivoted = melted.pivot_table(index=['Date','Ticker'], columns='Attribute',values='value',aggfunc='first')


stock= pivoted.reset_index()
print(stock.head())
```

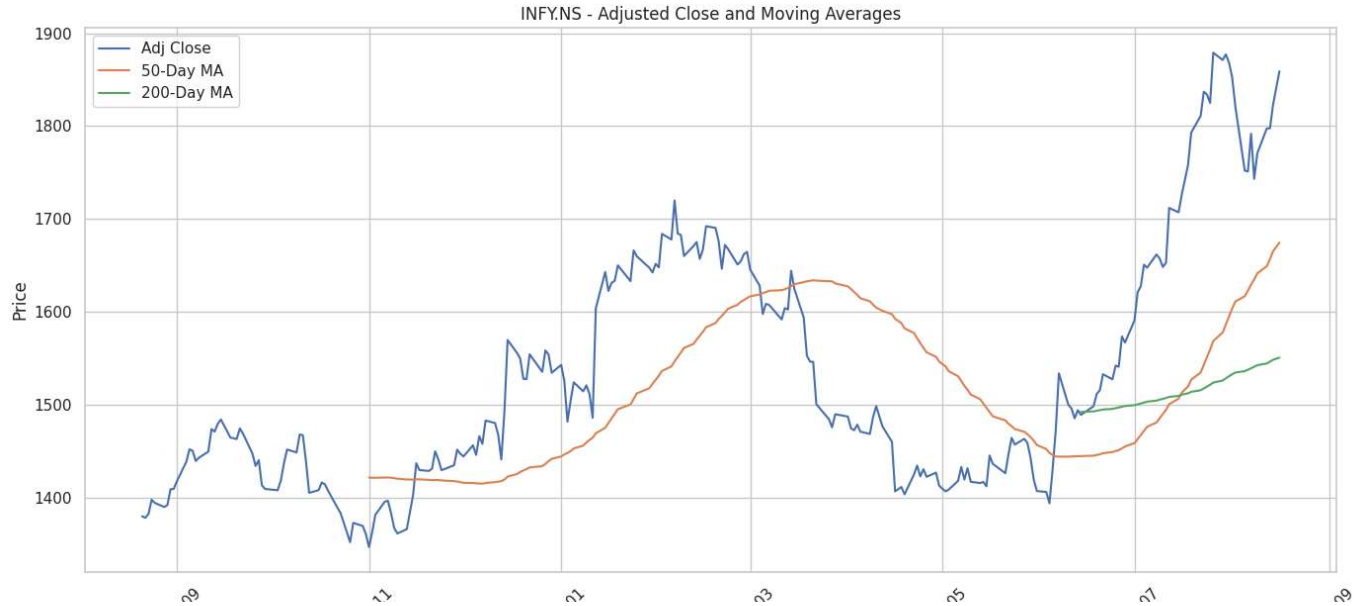
```
Attribute       Date       Ticker    Adj Close        Close         High  \
0         2023-08-21  HDFCBANK.NS  1568.087036  1589.500000  1600.500000
1         2023-08-21      INFY.NS  1379.665894  1405.400024  1407.000000
2         2023-08-21  RELIANCE.NS  2511.476074  2520.000000  2555.449951
3         2023-08-21       TCS.NS  3345.083740  3401.649902  3409.750000
4         2023-08-22  HDFCBANK.NS  1561.378662  1582.699951  1598.000000

Attribute          Low         Open      Volume
0          1587.000000  1600.500000  10918635.0
1          1387.150024  1389.750000   3032722.0
2          2515.649902  2539.949951   4610873.0
3          3372.000000  3375.000000   1375579.0
4          1580.000000  1596.349976  16136785.0
```

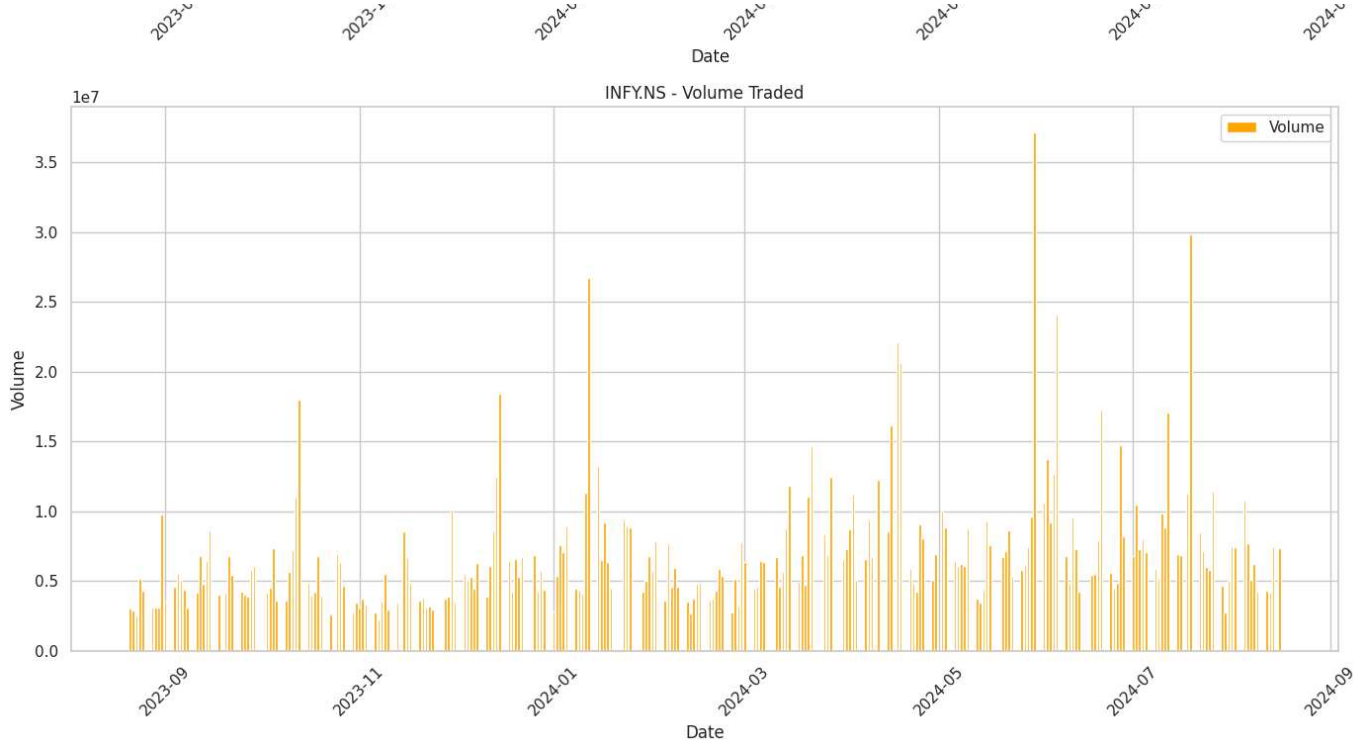
```
import matplotlib.pyplot as plt
import seaborn as sns

stock['Date'] = pd.to_datetime(stock['Date'])

stock.set_index('Date', inplace=True)
stock.reset_index(inplace=True)
plt.figure(figsize=(14, 7))
sns.set(style='whitegrid')

sns.lineplot(data=stock, x='Date', y='Adj Close', hue='Ticker', marker='o')

plt.title('Adjusted Close Price Over Time', fontsize=16)
plt.xlabel('Date', fontsize=14)
plt.ylabel('Adjusted Close Price', fontsize=14)
plt.legend(title='Ticker', title_fontsize='13', fontsize='11')
plt.grid(True)

plt.xticks(rotation=45)

plt.show()
```

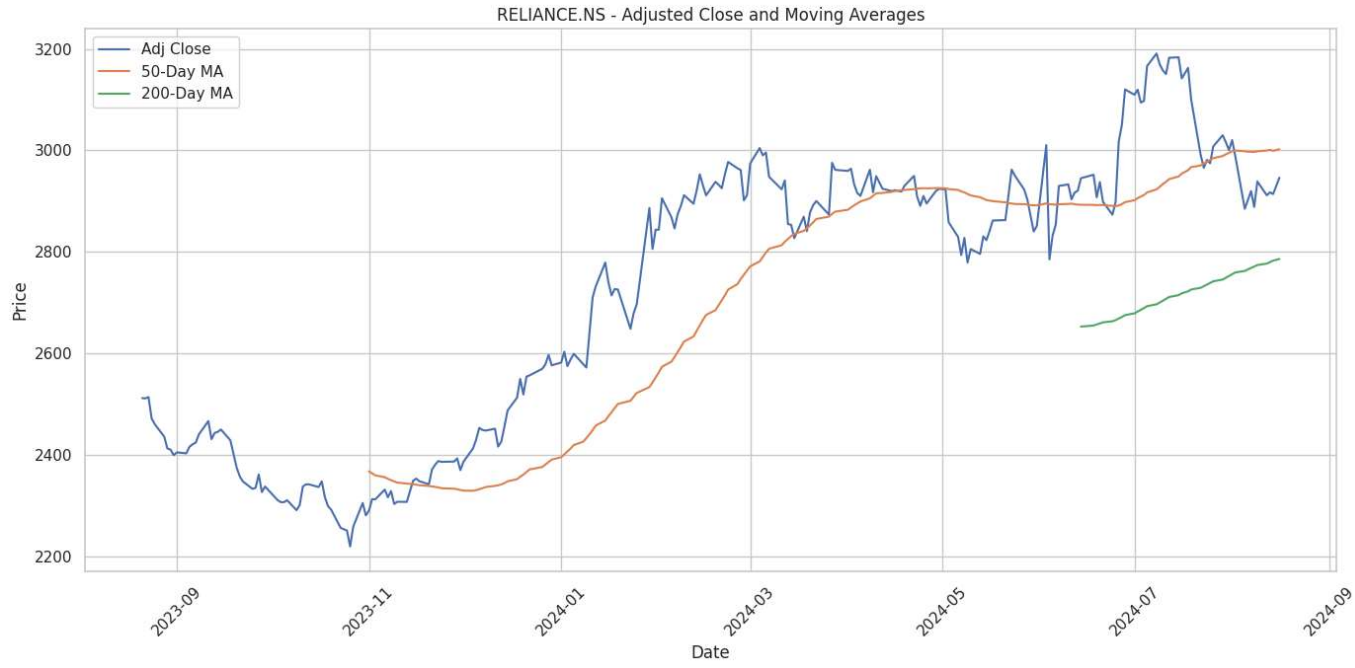

```
short_window = 50
long_window = 200

stock.set_index('Date', inplace=True)
unique_tickers = stock['Ticker'].unique()

for ticker in unique_tickers:
    ticker_data = stock[stock['Ticker'] == ticker].copy()
    ticker_data['50_MA'] = ticker_data['Adj Close'].rolling(window=short_window).mean()
    ticker_data['200_MA'] = ticker_data['Adj Close'].rolling(window=long_window).mean()

    plt.figure(figsize=(14, 7))
    plt.plot(ticker_data.index, ticker_data['Adj Close'], label='Adj Close')
    plt.plot(ticker_data.index, ticker_data['50_MA'], label='50-Day MA')
    plt.plot(ticker_data.index, ticker_data['200_MA'], label='200-Day MA')
    plt.title(f'{ticker} - Adjusted Close and Moving Averages')
    plt.xlabel('Date')
    plt.ylabel('Price')
    plt.legend()
    plt.grid(True)
    plt.xticks(rotation=45)
    plt.tight_layout()
    plt.show()

    plt.figure(figsize=(14, 7))
    plt.bar(ticker_data.index, ticker_data['Volume'], label='Volume', color='orange')
    plt.title(f'{ticker} - Volume Traded')
    plt.xlabel('Date')
    plt.ylabel('Volume')
    plt.legend()
    plt.grid(True)
    plt.xticks(rotation=45)
    plt.tight_layout()
    plt.show()
```

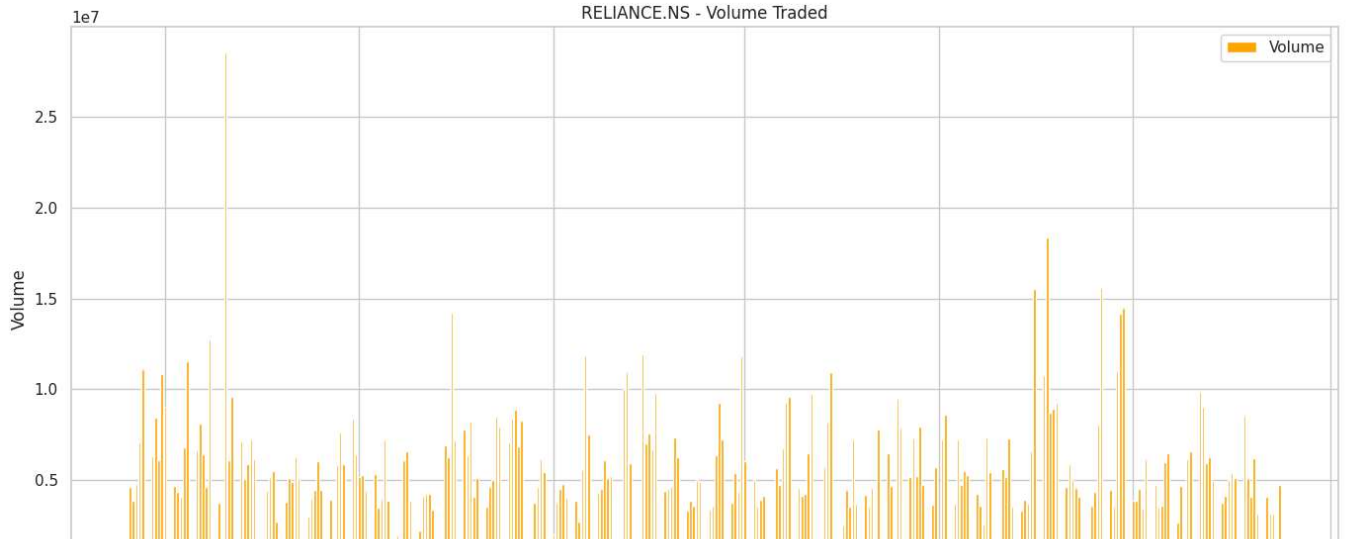

HDFCBANK.NS - Adjusted Close and Moving Averages
Adj Close
50-Day MA
200-Day MA
Price
Date

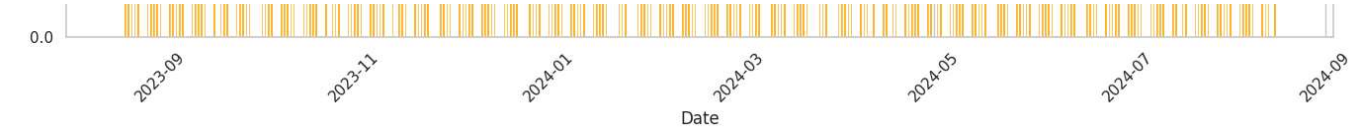

HDFCBANK.NS - Volume Traded
1e7
Volume
Volume
Date


INFY.NS - Adjusted Close and Moving Averages
Adj Close
50-Day MA
200-Day MA
Price

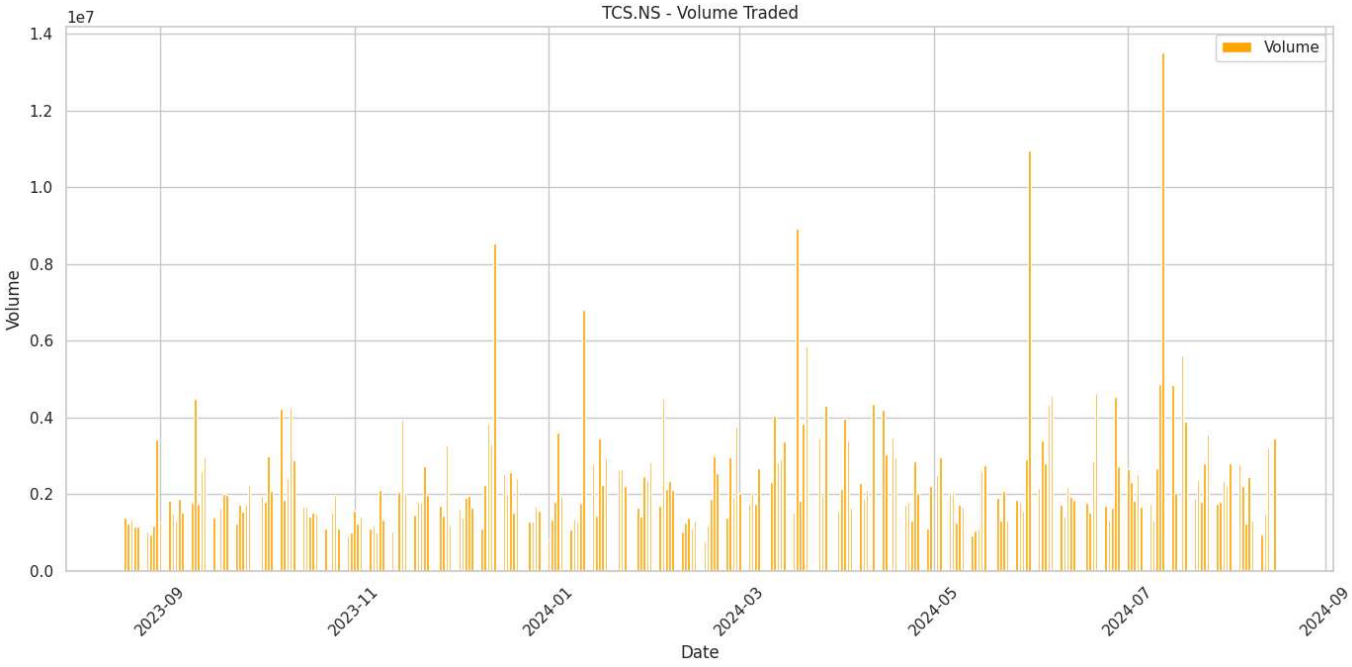

Date
INFY.NS - Volume Traded
1e7
Volume
Volume
Date


RELIANCE.NS - Adjusted Close and Moving Averages
Adj Close
50-Day MA
200-Day MA
Price
Date

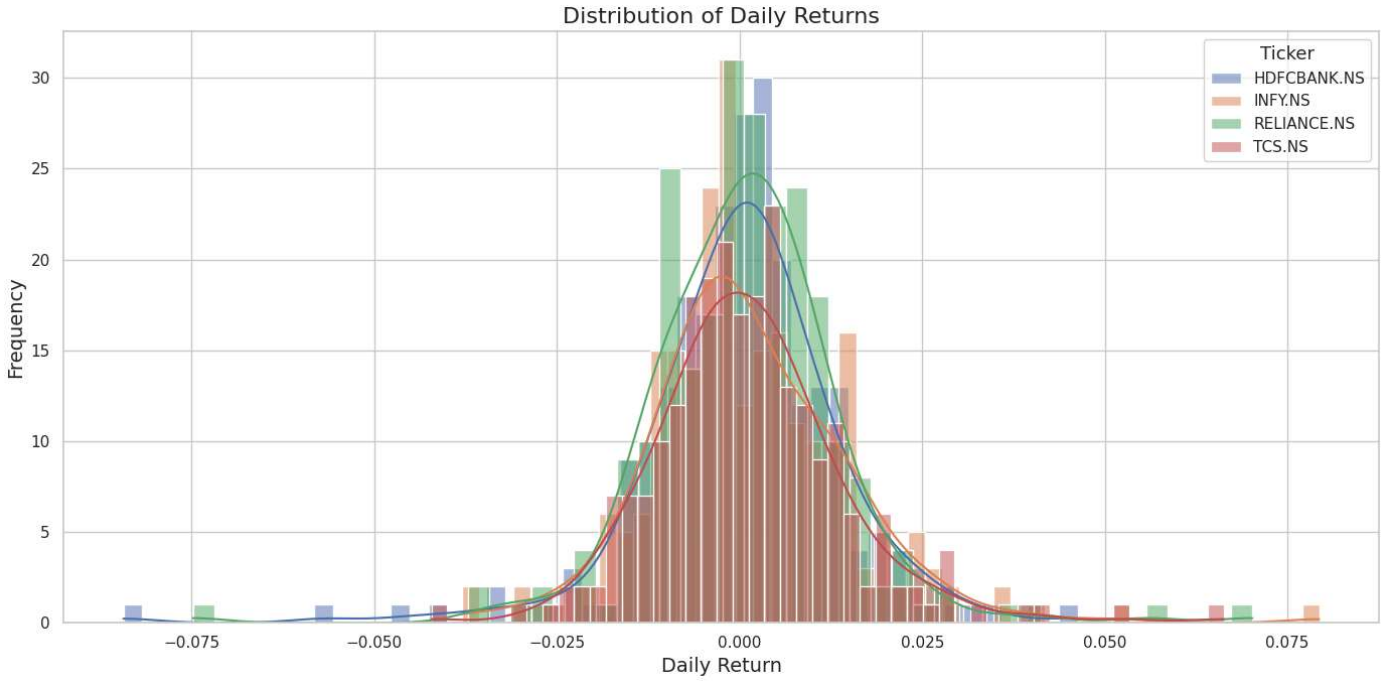

RELIANCE.NS - Volume Traded
1e7
Volume
Volume


0.0
2023-09
2023-11
2024-01
2024-03
2024-05
2024-07
2024-09
Date


TCS.NS - Adjusted Close and Moving Averages
Adj Close
50-Day MA
200-Day MA
Price
4400
4200
4000
3800
3600
3400
2023-09
2023-11
2024-01
2024-03
2024-05
2024-07
2024-09
Date


TCS.NS - Volume Traded
1e7
Volume
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
2023-09
2023-11
2024-01
2024-03
2024-05
2024-07
2024-09
Date

```
stock['Daily Return'] = stock.groupby('Ticker')['Adj Close'].pct_change()

plt.figure(figsize=(14, 7))
sns.set(style='whitegrid')

for ticker in unique_tickers:
    ticker_data = stock[stock['Ticker'] == ticker]
    sns.histplot(ticker_data['Daily Return'].dropna(), bins=50, kde=True, label=ticker, alpha=0.5)

plt.title('Distribution of Daily Returns', fontsize=16)
plt.xlabel('Daily Return', fontsize=14)
plt.ylabel('Frequency', fontsize=14)
plt.legend(title='Ticker', title_fontsize='13', fontsize='11')
plt.grid(True)
plt.tight_layout()
plt.show()
```




```
print(df.head())
```

```
Price        Date    Adj Close                                          \
Ticker             HDFCBANK.NS      INFY.NS  RELIANCE.NS       TCS.NS
0      2023-08-21  1568.087036  1379.665894  2511.476074  3345.083740
1      2023-08-22  1561.378662  1378.046021  2510.877930  3325.907715
2      2023-08-23  1565.226074  1382.169067  2513.668701  3341.740234
3      2023-08-24  1558.024536  1397.532471  2471.412109  3331.414795
4      2023-08-25  1540.464233  1394.096680  2460.000977  3325.071777

Price         Close                                               High  ...  \
Ticker  HDFCBANK.NS      INFY.NS  RELIANCE.NS       TCS.NS  HDFCBANK.NS  ...
0       1589.500000  1405.400024  2520.000000  3401.649902  1600.500000  ...
1       1582.699951  1403.750000  2519.399902  3382.149902  1598.000000  ...
2       1586.599976  1407.949951  2522.199951  3398.250000  1590.550049  ...
3       1579.300049  1423.599976  2479.800049  3387.750000  1596.199951  ...
4       1561.500000  1420.099976  2468.350098  3381.300049  1577.500000  ...

Price           Low                         Open                          \
Ticker  RELIANCE.NS       TCS.NS  HDFCBANK.NS      INFY.NS  RELIANCE.NS
0       2515.649902  3372.000000  1600.500000  1389.750000  2539.949951
1       2499.000000  3365.050049  1596.349976  1404.699951  2516.899902
2       2516.949951  3376.000000  1580.000000  1416.000000  2524.199951
3       2471.000000  3378.100098  1593.300049  1421.500000  2539.899902
4       2442.600098  3350.250000  1574.550049  1413.000000  2456.000000

Price              Volume
Ticker  TCS.NS HDFCBANK.NS  INFY.NS RELIANCE.NS   TCS.NS
0       3375.0    10918635  3032722     4610873  1375579
1       3400.0    16136785  2890714     3856522  1222012
2       3388.0    18249294  2559125     4758976  1330046
3       3408.0    21572896  5171963     7070010  1152881
4       3375.0    15034878  4307172    11111200  1158046

[5 rows x 25 columns]
```