Assignment 3: Algorithmic Trading Winter Camp

Finance and Analytics Club

Objective

Analyze daily price data for Reliance Industries Limited (`RELIANCE.NS`) using Python and libraries such as `numpy`, `pandas`, `matplotlib`, and `yfinance`. The data to be used for the assignment has to be the daily data for the past 2 years.

Deadline

The assignment is due by **22nd December 8:00 PM**.

Tasks

1. **Identify Significant Price Changes:**
   Find the five highest single-day percentage price changes in the stock's history. Annotate these points on the daily closing price chart.

2. **Simple Moving Averages (SMA):**
   Plot the daily closing price data. Overlay the chart with the 50-day and 200-day simple moving averages (SMA).

3. **Candlestick Chart:**
   Using `yfinance`, fetch daily stock price data for the last two years. Plot the Open, High, Low, and Close (OHLC) values as a candlestick chart.

4. **Gap Up and Gap Down Days:**
   Write a program to identify all "gap up" and "gap down" days in the stock's daily price data. Label these points on the closing price chart.

5. **Intraday VWAP Calculation:**
   Fetch intraday price and volume data for the stock. Compute the Volume Weighted Average Price (VWAP) and overlay it on the intraday price chart.

6. **Return Analysis:**
   Compute the absolute values of daily stock returns. Visualize the distribution of these returns.