Stock Price Analysis Project For Data Analyst

Problem Statement:

In today's dynamic financial markets, investors and analysts require robust tools to understand stock price movements and their underlying trends to make informed investment decisions. The project aims to address the challenge of analyzing historical stock price data to uncover patterns, correlations, and trends among major technology companies—Apple, Amazon, Google, and Microsoft—over a significant period. Specifically, the project seeks to achieve the following objectives:

1. Data Aggregation and Visualization: Consolidate daily closing price data for the selected tech companies into a unified dataframe and visualize these prices to identify individual stock performance trends and patterns.
2. Moving Average Analysis: Calculate and plot short-term (10-day), medium-term (20-day), and long-term (50-day) moving averages to smooth out daily volatility and highlight underlying trends in stock prices.
3. Resampling Analysis: Resample the daily closing prices into monthly, quarterly, and yearly intervals to provide a broader view of stock performance and facilitate the detection of longer-term trends and seasonal effects.
4. Percentage Change Analysis: Compute daily percentage changes in closing prices to normalize the data, enabling a direct comparison of volatility and performance across different stocks.
5. Correlation and Relationship Analysis: Analyze the relationships between the percentage changes of the selected stocks using pairwise plots, correlation matrices, and visual tools like heatmaps to identify interdependencies and correlations that can inform investment strategies.

By addressing these objectives, the project aims to equip investors and financial analysts with detailed insights into stock price behavior, enhancing their ability to make strategic decisions based on empirical data and observed market trends. This comprehensive analysis seeks to mitigate the risks associated with stock investments by providing a clearer understanding of how major tech stocks perform individually and in relation to each other over time.