**Short-Interval-Stock-Trend-Analysis**

To identify and visualize inherent short-term stock price trends in specific historical periods devoid of significant global events.

1. **Title:** Preliminary Analysis of Short-Interval Stock Price Trends During Stable Historical Periods.
2. **Introduction:**
   * Briefly introduce the concept of stock price prediction and the challenges involved (volatility, external factors).
   * State the goal of this preliminary study: to isolate and analyze inherent short-term trends by focusing on periods without major global events.
   * Importance of distinguishing noise-free trends vs. real-world impact
   * Mention the specific timeframes you'll analyze (e.g., Year 1990-1999 Q1-Q2, Year 2020-2025 Q1-Q3). Clearly define your criteria for selecting these "stable" periods.
   * Briefly introduce the chosen model (Logistic Regression or others) and the rationale for its selection in this preliminary phase.
   * Brief overview of stock market prediction and its challenges
3. **Data Acquisition and Preprocessing:**
   * Specify your data sources for historical stock prices (e.g., Yahoo Finance API, Alpha Vantage API, Kaggle datasets).
   * Data Storage (MySQL, Postgres, MSSQL server)
   * Outline the specific stock tickers you will analyze.
   * Detail the data cleaning and preprocessing steps:
     + Handling missing data.
     + Data normalization or scaling.
     + Creating relevant features for your model (e.g., previous day's price, moving averages over short windows, volatility measures).
   * Clearly define the "short intervals" you'll be working with (e.g., daily, hourly).
4. **Methodology:**
   * **Model Selection:** Here, we will need to justify our choice of model—Logistic Regression (or propose alternatives like Linear Regression, Polynomial Regression, Simple Neural Networks for regression). Explain how you will frame the prediction task (e.g., predicting the direction of price change - up or down - for Logistic Regression, or predicting the actual price for other regression models).
   * **Feature Engineering:** Elaborate on the features you will create from the historical price data.
     + Time intervals (hour, day, week)
     + Price change % (Open, Close, High, Low)
     + Moving averages, RSI, etc.
   * **Model Training and Evaluation:**
     + How will you split your data into training and testing sets for each selected period?
     + What evaluation metrics will you use to assess the model's performance (e.g., accuracy, precision, recall, F1-score for classification if using Logistic Regression for direction; Mean Squared Error, Root Mean Squared Error for direct price prediction)?
     + Will you perform any hyperparameter tuning? If so, which techniques will you use?
5. **Visualization Plan:**
   * Describe how you will visualize the historical price trends within the selected stable periods.
   * Tools for Visualization (Power BI, Advanced Excel, Tableau).
   * Explain how you will visualize the model's predictions against the actual prices.
   * Consider visualizations that highlight any patterns or predictability the model captures (or fails to capture). Examples: line plots of actual vs. predicted prices, scatter plots, residual plots.
   * Show confidence intervals, trend lines
6. **Expected Outcomes and Limitations:**
   * State what you expect to learn from this preliminary analysis. Will you be able to identify any consistent short-term patterns?
   * Acknowledge the limitations of this phase, particularly the exclusion of major events and the use of a potentially simpler model.
7. **Timeline and Resources:**
   * Provide an estimated timeline for each stage of the project.
   * List the software and libraries you plan to use (e.g., Python, Pandas, NumPy, Scikit-learn, Matplotlib, Seaborn, MySQL).
8. **Timeline breakdown**
   * **Weeks 1–3**: Introduction and Literature review
   * **Weeks 4–6**: Data Acquisition and Pre-processing
   * **Weeks 7–10**: Methodology
   * **Weeks 11 - 13**: Visualization Plan
   * **Weeks 14 -15**: Expected Outcomes and Limitations
   * **Weeks 16 – 18:** Timeline and Resource documentation