**Data-Driven Stock Analysis**

**Project Overview**

This project focuses on building a comprehensive stock performance dashboard for Nifty 50 companies. The solution extracts, cleans, and analyses stock data to generate key insights on market trends, volatility, and returns. The insights are visualized through Streamlit (for interactive dashboards) and Power BI (for visual analytics).

**Features**

* Ranking of top 10 best (green) and worst (red) stocks annually​
* Interactive market overview (average performance, sector breakdown)​
* Investment insights showing consistent growth and notable declines​
* Volatility analysis using standard deviation of daily returns with bar/line charts​
* Sector-wise performance breakdown and visualization​
* Correlation heatmaps between stock prices for trend identification​
* Monthly breakdown of top gainers and losers with dashboard-style visuals (12 charts)

**Technologies Used**

* Pandas (Data manipulation and analysis)
* Streamlit (Dashboard development)
* Matplotlib, Seaborn (Data visualization)
* PyMySQL (Database management)
* Power BI (Dashboard representation)
* Xampp (Relational database)

**Usage**

* Use Python scripts to fetch, clean, and load data into the SQL database.
* Launch the Streamlit app for interactive real-time analysis.
* Explore Power BI dashboards for in-depth visual representation.
* Analyze top/worst performing stocks, sector trends, and volatility directly from dashboards.

**Project Flow**

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| **Step** | **Tool/Component** | **Purpose** |
| Data Cleaning | Python, pandas | Preprocess and validate |
| Database Storage | MySQL/PostgreSQL | Store clean market data |
| Data Analysis | Python scripts | Compute metrics & aggregations |
| Real-Time Dashboard | Streamlit | User interaction and exploration |
| BI Dashboard | Power BI | Advanced visualization |