**Python Script :**

We created a Python script to help us identify the best-performing stocks across different sectors by analyzing their financial health and efficiency. Using tools like pandas and numpy for data analysis, along with APIs like yfinance and Alpha Vantage to pull real-time and historical stock data, we were able to automate the process of evaluating stocks.

For the analysis, we focused on three key financial metrics: **Debt-to-Equity Ratio**, **Interest Coverage Ratio**, and **Asset Turnover Ratio**. These were chosen because they give us a clear picture of how financially stable and efficient a company is. The Debt-to-Equity Ratio shows how much a company relies on debt compared to equity, while the Interest Coverage Ratio helps us understand if the company can easily cover its debt payments. Lastly, the Asset Turnover Ratio tells us how well the company is using its assets to generate revenue.

The script grouped stocks by sector and calculated these metrics for each one. From there, it ranked the stocks based on our criteria, prioritizing those with low debt, strong interest coverage, and efficient asset use. This allowed us to filter out weaker performers and focus on companies that are not only stable but also efficient and well-positioned for growth. This approach gave us a reliable and data-driven way to select stocks for our portfolio.

**Micro Analysis**

To choose the best stocks from each sector, a Python script can be created to analyze financial data dynamically. The script uses specific financial parameters to evaluate the stability and efficiency of companies. For **Micro Analysis**, the following parameters are used:

1. **Debt-to-Equity Ratio**
   * **Formula**: Debt-to-Equity Ratio= Total Liabilities ​/​ Shareholders’ Equity
   * **Why It’s Important**: This ratio shows how much debt a company is using compared to its equity. A lower ratio means the company relies less on debt, making it financially stable and less risky.
2. **Interest Coverage Ratio**
   * **Formula**: Interest Coverage Ratio= EBIT​ / Interest Expense
   * **Why It’s Important**: This ratio measures how easily a company can pay interest on its debt. A higher value means the company generates enough profit to cover its interest payments comfortably.
3. **Asset Turnover Ratio**
   * **Formula**: Asset Turnover Ratio= Average  Net Sales​ **/** Total Assets
   * **Why It’s Important**: This ratio shows how efficiently a company uses its assets to generate revenue. Higher values indicate that the company is effectively using its resources to make money.

Using these three ratios, the Python script calculates and ranks stocks in each sector based on their financial health and efficiency. Companies with low debt, strong interest coverage, and efficient asset usage are prioritized for selection.

**Macro Analysis**

The script also performs **Macro Analysis** by evaluating broader performance and profitability indicators. These metrics are:

1. **Price-to-Earnings (P/E) Ratio**
   * **Formula**: P/E Ratio= Market Price per Share​ **/** Earnings per Share (EPS)
   * **Why It’s Important**: This ratio shows how much investors are willing to pay for each dollar of earnings. Lower P/E values may indicate undervalued stocks, while higher values suggest growth potential.
2. **Earnings Per Share (EPS)**
   * **Formula**: EPS = Net Income−Preferred Dividends​ / Preferred DividendsWeighted Average Shares Outstanding
   * **Why It’s Important**: EPS measures a company's profitability. A higher EPS indicates that the company is generating more profit per share.
3. **Return on Investment (ROI)**
   * **Formula**: ROI=Net Profit / Net ProfitInvestment×100
   * **Why It’s Important**: ROI shows how much profit a company generates relative to the investment. Higher ROI values indicate better returns for investors.

The script uses these metrics to evaluate the overall value and profitability of stocks. By combining both micro and macro parameters, it ensures that the selected stocks are not only financially stable but also offer strong growth and return potential.

The script first categorizes stocks by sector, then computes these metrics for all available stocks. Stocks that fall within optimal threshold ranges for these parameters are shortlisted. Using filtering techniques (e.g., masking in pandas), the script dynamically updates the selection based on live data, allowing users to identify sector-leading stocks efficiently. These metrics collectively ensure that only financially sound and operationally efficient stocks are selected for further portfolio consideration, balancing both risk and return potential.