Trader Behavior Analysis Based on Market Sentiment

1. Objective
The objective of this assignment is to analyze how trader behavior changes under different market sentiment conditions, specifically Fear and Greed. By combining Bitcoin market sentiment data with historical trader execution data, the goal is to understand how profitability, leverage usage, trading volume, and risk exposure vary with sentiment, and to identify patterns that could support better trading decisions.

2. Datasets Used
Two datasets were used in this analysis: a Bitcoin Market Sentiment Dataset containing daily Fear and Greed classifications, and Historical Trader Data from Hyperliquid which includes execution price, trade size, leverage, and closed PnL. Both datasets were merged on the date field to align trading activity with sentiment.

3. Methodology
The analysis involved data cleaning, timestamp normalization, feature engineering for profitability and risk metrics, sentiment-wise aggregation, visualization of key trends, and identification of behavioral signals using Python in Google Colab.

4. Key Findings
Trades executed during Greed periods showed higher average profits, increased leverage usage, and higher trading volume. However, this also resulted in higher risk exposure. Fear periods showed relatively lower profits but more stable performance metrics.

5. Risk-Adjusted Performance
Risk-adjusted returns indicated that disciplined trading during Fear periods can provide better downside protection, while Greed-driven strategies amplify both gains and losses.

6. Conclusion
Trader behavior is strongly influenced by market sentiment. Greed encourages aggressive strategies with higher risk, while Fear offers opportunities for conservative, risk-aware trading. Incorporating sentiment analysis can lead to smarter and more balanced trading strategies.