Project Summary: Analyzing the Impact of Market Sentiment on Trading Behavior

# ✅ Objective

The goal of this project was to analyze how market sentiment—categorized as 'Fear' or 'Greed'—affects trading behavior, strategy choices, and performance outcomes across various traders and assets. The analysis was conducted using two datasets:  
- Sentiment Data: Contains daily sentiment classification (Fear/Greed).  
- Trader Data: Includes historical trades with details like execution price, side (Buy/Sell), size, direction (Long/Short), and profit/loss.

# ✅ Problem Statement

How does market sentiment influence trading volume, trade direction (Buy/Sell), deal sizes, and profitability? Can we identify patterns in trader behavior during fear vs. greed to optimize trading strategies?

# ✅ Steps Taken

## 1. Data Preprocessing

- Loaded both datasets (fear\_greed\_index.csv, historical\_data.csv)  
- Converted date formats from string to datetime  
- Extracted dates from timestamps and merged the two datasets on the date column

## 2. Exploratory Data Analysis (EDA)

Several analyses were performed to explore sentiment impact:  
  
📊 Basic Analysis:  
- Counted total number of trades during Fear vs. Greed  
- Calculated average trade size (Size USD) for each sentiment  
- Visualized the number of Buy vs. Sell trades under each mood  
  
📈 Volume & Profitability:  
- Measured total trade volume per sentiment  
- Analyzed average and total profit (Closed PnL) in Fear vs. Greed  
- Created bar plots and distribution plots to visualize sentiment-driven behavior

# ✅ Key Insights

- Trade Activity: The number of trades differs significantly between Fear and Greed. Generally, traders tend to be more active during 'Greed' phases.  
- Average Deal Size: Larger average trade sizes were observed in Greed, showing increased confidence or risk appetite.  
- Buy vs. Sell Behavior: More Buy trades are placed during Greed, while Sell trades slightly increase during Fear.  
- Profitability Trends: Profitability fluctuates with sentiment. Certain periods of Fear may show losses due to panic selling or aggressive shorting.

# ✅ Conclusion

This analysis successfully demonstrated that market sentiment influences trading behavior. By understanding these shifts, traders and platforms can:  
- Adjust strategies based on sentiment phases  
- Improve risk management in Fear-driven markets  
- Capitalize on high-confidence trades during Greed