1. Name of your final project and a short synopsis/description (1 paragraph max).
Macroeconomic Influences on the S&P Composite 1500 Index across Industry Sectors
In this post-pandemic economy, stock market volatility, rising inflationary pressures, and fluctuating Fed Funds interest rates have created a highly unpredictable market environment. This case study's objective is to map out potential insights, trends, and anomalies that can illustrate the interplay between these economic forces.

2. What problem are you trying to solve, which question(s) are you trying to answer?
Inflation → Interest Rates/Treasury yields → Industry Sector Performance
How does inflationary pressure correlate with the Fed Funds interest rate, US Treasury yields, and stock market performance indicators?
Across different sectors and market capitalizations of publically traded companies, which are considered high or low performers in this macroeconomic environment?

3. How do you intend to collect the data and where on the web is it coming from?
STOCK DATA: Polygon.io API, (Wikipedia API List of S&P 500, S&P 400, S&P 600)
I'll be collecting US stock market exchange data from Polygon.io API.
API requests include data regarding individual tickers, pricing information, and trade volume over the past two years.
INFLATION DATA (CPI and PPI): US Bureau of Labor Statistics API, TREASURY YIELDS: FiscalData.Treasury.gov API, FED FUNDS INTEREST RATE: FRED API
These three macroeconomic factors will be considered and cross-correlated to get an understanding of leading or lagging relationships with the stock market data.

4. What type of data cleaning and/or analysis are you going to perform on the data?
For data cleaning, I'll be looking to normalize the data so that each is comparable in cross-correlational analysis. Stock markets are only open on weekdays, so weekends will need to be filtered out. Timestamps for the stock data are presented in milliseconds, which will be converted to a comparable timestamp for time series analysis. The stock data will be enriched with additional data columns for financial calculation ratios and categorical classifications such as market cap size.
For data analysis, I'll group variables into categories and use pivot tables to view aggregation data by segmenting the stock market across S&P1500 (small, mid, large market cap) and will be looking across various sectors to identify trends and anomalies. Granger causality analysis can identify if one variable reliably predicts another.

5. What kind of visualizations are you going to use to illustrate your findings?
I'll be using time series data to visualize the correlations between the different financial data sources (stocks, inflation, interest) to track the trend lines. Correlational heatmaps will highlight cross-correlational relationships amongst macroeconomic variables and stock market data. Dual Y-axis plots to overlay the directionality of the interest rates, inflation percentage point changes, and stock price volatility.