Task Division section wise

Table of Contents add page numbers here  
1. Introduction (Abdul)  
1.1. Problem statement and research motivation  
1.2. The data set  
1.3. Research question  
1.4. Null hypothesis and alternative hypothesis (H0/H1)

2. Background research (Lewis)  
2.1. Research papers (at least 3 relevant to your topic / DS)  
2.2. Why RQ is of interest (research gap and future directions according to the  
literature)

3. Visualisation (Arshad)  
3.1. Appropriate plot for the RQ output of an R script (NOT a screenshot)  
3.2. Additional information relating to understanding the data (optional)  
3.3. Useful information for the data understanding

4. Analysis (Hariharan)  
4.1. Statistical test used to test the hypotheses and output  
4.2. The null hypothesis is rejected /not rejected based on the p-value

5. Evaluation – group’s experience at 7COM1079 (Vishua)  
5.1. What went well  
5.2. Points for improvement  
5.3. Group’s time management  
5.4. Project’s overall judgement  
5.5. Comment on GitHub log output

6. Conclusions (Abdul)  
6.1. Results explained.  
6.2. Interpretation of the results  
6.3. Reasons and/or implications for future work, limitations of your study

7. Reference list  
Harvard (author, date) format.

8. Appendices  
A. R code used for analysis and visualisation.  
B. GitHub log output.

# Introduction

1.1. Problem statement and research motivation

Investor behavior in financial markets is often shaped by different market conditions, and one of the significant factors is the time of year. By analysing the trading volume patterns each month, we can spot trends that show how investor activity changes throughout the year. This study investigates the potential correlation between specific months and average trading volume, aiming to provide insights into market behavior and investor psychology.

Understanding seasonal patterns in trading volume is crucial for several reasons, including market liquidity, price movements, investment strategies, and market efficiency (Bryman, 2008). As Campbell and Shiller (1988) note, changes in trading volume can significantly impact stock prices and returns.

This research motivation is to find patterns that could help improve trading strategies, manage risks better, and give us a clearer understanding of how the market works.

1.2. The data set

The dataset comprises trading volume data collected over a specified period, including:

* Date (Month): The independent variable, representing each month of the year, classified as interval data.
* Volume: The dependent variable, representing the trading volume for each corresponding month, is also classified as interval data.

This dataset is useful for understanding how investors behave by looking at how trading volume changes over different months. It could reveal patterns in the market that happen at certain times of the year and show how these patterns affect trading strategies and market trends.

1.3. Research question

Is there a correlation between months and average trading volume?

The research question aims to explore the seasonal patterns in trading activity and their implications on investor behavior and market trends.

To answer this question, we will conduct a statistical analysis of the dataset, examining the relationship between months and trading volumes. We will use correlation techniques to determine if there are significant patterns or trends in trading volume across different months.

1.4. Null hypothesis and alternative hypothesis (H0/H1)

Null hypothesis (H0): There is no correlation between Average Trading Volume and Months in a year.

This hypothesis suggests that average trading volume does not significantly differ across months, and any observed variations are due to random chance rather than consistent seasonal patterns.

Alternative hypothesis (H1): There is a correlation between Average Trading Volume and Months in a year.

This hypothesis proposes a statistically significant relationship between months and average trading volume, indicating the presence of seasonal patterns in trading activity. By testing these hypotheses using appropriate statistical methods, we aim to determine whether there is sufficient evidence to reject the null hypothesis in favor of the alternative hypothesis, suggesting a meaningful correlation between months and average trading volume.

# References

Bryman, A. (2008) Social research methods. 3rd edn. Oxford: Oxford University Press.

Campbell, J.Y. and Shiller, R.J. (1988a) 'The dividend-price ratio and expectations of future dividends and discount factors', Review of Financial Studies, 1(3), pp. 195-228.

Campbell, J.Y. and Shiller, R.J. (1988b) 'Stock prices, earnings, and expected dividends', The Journal of Finance, 43(3), pp. 661-76.