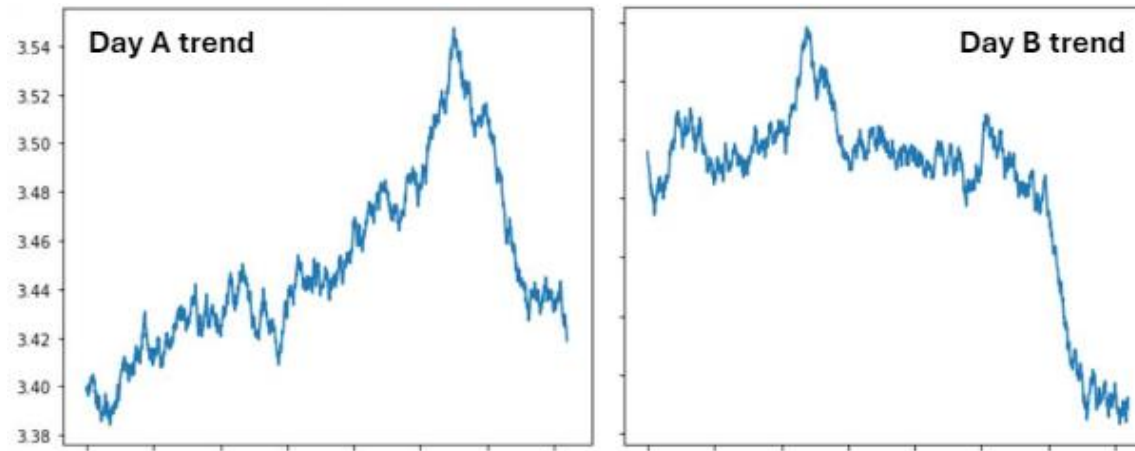


# Background

- Stock prices are generally believed to be random and cannot be predicted by themselves.
- However, a fictitious company ABC Pte. Ltd. is believed to have several distinct intraday price patterns.
- Here are 2 examples of intraday price patterns observed for ABC Pte. Ltd.
  - **Day A Trend:** Price rises initially, and suddenly drops.
  - **Day B Trend:** Price remains generally constant, and suddenly drops towards the end of the day.



- As a data scientist, your objective is to **find out if ABC Pte. Ltd indeed has distinct intraday price patterns and identify the trends if possible.**

# Objectives and Deliverables

## Objectives

- Determine if there are clusters of distinct intraday patterns. 2 examples were provided on the previous slide, but there could be more.
- If there are distinct intraday patterns, you need to estimate the number of distinct patterns.

## Deliverable checklist

- Basic EDA is carried out
- Data cleaning/pre-processing steps are clearly explained
- Description of technique(s) used to estimate the number of pattern clusters
- Provide meaningful visualization(s) to support explanations and results
- Clearly state assumptions and justification for key decisions (e.g. feature engineering)
- Conclusions on whether there are distinct intraday price patterns

# Data

- The mock data can be found in the enclosed csv file.
- Data consists of 3 columns:
  - **day**: Corresponds to the day. The data set contains 276 days of intra-day price trends.
  - **time**: Corresponds to the time of day. Each **time** corresponds to 1min of the day.
  - **price**: actual price
- Example:
  - To find the intraday trend for the  $n^{\text{th}}$ , you should plot the **time** vs **price** where **day** =  $n$

# Assessment and other matters

## **You will be assessed based on**

- The quality of your thought processes, reasoning, assumptions and explanations provided.
- How effectively you communicate your findings (e.g. choice of visualizations)
- Clarity of code

## **Admin matters**

- You may submit your code, results and explanations in a Jupyter notebook, along with any external .py files. A separate report is not required.
- Use only Python libraries.
- You are not expected to explain the inner workings of any AI/ML algorithm that you used.