**Dataset Link**

https://drive.google.com/file/d/1pP0Rr83ri0voscgr95-YnVCBv6BYV22w/view

**Hint:**

```
In [1]: import pandas as pd
        import numpy as np
        import matplotlib.pyplot as plt
        %matplotlib inline

In [2]: data = pd.read_csv('/Users/pradmishra/Documents/data_stocks.csv')

In [3]: data.head()
```

Out[3]:

| | DATE | SP500 | NASDAQ.AAL | NASDAQ.AAPL | NASDAQ.ADBE | NASDAQ.ADI | NASDAQ.ADP | NASDAQ.ADSK | NASDAQ.AKAM | NASD |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 1491226200 | 2363.6101 | 42.3300 | 143.6800 | 129.6300 | 82.040 | 102.2300 | 85.2200 | 59.760 | 121.52 |
| 1 | 1491226260 | 2364.1001 | 42.3600 | 143.7000 | 130.3200 | 82.080 | 102.1400 | 85.6500 | 59.840 | 121.48 |
| 2 | 1491226320 | 2362.6799 | 42.3100 | 143.6901 | 130.2250 | 82.030 | 102.2125 | 85.5100 | 59.795 | 121.93 |
| 3 | 1491226380 | 2364.3101 | 42.3700 | 143.6400 | 130.0729 | 82.000 | 102.1400 | 85.4872 | 59.620 | 121.44 |
| 4 | 1491226440 | 2364.8501 | 42.5378 | 143.6600 | 129.8800 | 82.035 | 102.0600 | 85.7001 | 59.620 | 121.60 |

5 rows × 502 columns

**Problem 1:**

There are various stocks for which we have collected a data set, which all stocks are apparently similar in performance

**Problem 2:**

How many Unique patterns that exist in the historical stock data set, based on fluctuations in price.

**Problem 3:**

Identify which all stocks are moving together and which all stocks are different from each other.