ALGORITHMIC TRADING USING PYTHON

- Algorithmic Trading means using algorithms in buying and selling decisions in the financial market. In an algorithmic trading strategy, a set of predefined rules are used to determine when to buy a financial instrument and when to sell it.
- In simple words, Algorithmic Trading is a way of buying and selling automatically and efficiently, which is always better than trading manually.

MOMENTUM STRATEGY

- Momentum investing is a trading strategy in which investors buy securities that are rising and sell them when they look to have peaked.
- The goal is to work with volatility by finding buying opportunities in short-term uptrends and then sell when the securities start to lose momentum.
- Then, the investor takes the cash and looks for the next short-term uptrend, or buying opportunity, and repeats the process.
- Skilled traders understand when to enter into a position, how long to hold it for, and when to exit; they can also react to short-term, news-driven spikes or selloffs.
- Risks of momentum trading include moving into a position too early, closing out too late, and getting distracted and missing key trends and technical deviations.

In [1]:

```python
import pandas as pd
import yfinance as yf
import plotly.graph_objs as go
from plotly.subplots import make_subplots
import plotly.express as px
```

In [2]:

```python
stock = yf.Ticker("SBIN.NS")
data=stock.history(period="1y")
data.head()
```

Out[2]:

Date	Open	High	Low	Close	Volume	Dividends	Stock Splits
2022-09-05 00:00:00+05:30	526.763636	530.491187	526.076967	528.627441	7819994	0.0	0.0
2022-09-06 00:00:00+05:30	527.744600	532.355021	523.918919	527.548401	8657868	0.0	0.0
2022-09-07 00:00:00+05:30	524.213251	527.205099	521.417542	522.692749	8445359	0.0	0.0
2022-09-08 00:00:00+05:30	525.782686	535.886334	525.292217	534.267822	12240707	0.0	0.0
2022-09-09 00:00:00+05:30	539.172519	546.382388	537.553947	542.801941	18587927	0.0	0.0

CALCULATION OF MOMENTUM

In [3]:

```python
data["momentum"] = data["Close"].pct_change()
```

In [4]:

```python
# creating sub plots
```

In [5]:

```python
figure = make_subplots(rows=2, cols=1)
figure.add_trace(go.Scatter(x=data.index,
                            y=data['Close'],
                            name='Close Price'))
figure.add_trace(go.Scatter(x=data.index,
                            y=data['momentum'],
                            name='Momentum',
                            yaxis='y2'))

figure.add_trace(go.Scatter(x=data.loc[data['momentum'] > 0].index,
                            y=data.loc[data['momentum'] > 0]['Close'],
                            mode='markers', name='Buy',
                            marker=dict(color='green', symbol='triangle-up')))

figure.add_trace(go.Scatter(x=data.loc[data['momentum'] < 0].index,
                            y=data.loc[data['momentum'] < 0]['Close'],
                            mode='markers', name='Sell',
                            marker=dict(color='red', symbol='triangle-down')))

figure.update_layout(title='Algorithmic Trading using Momentum Strategy',
                     xaxis_title='Date',
                     yaxis_title='Price')
figure.update_yaxes(title="Momentum", secondary_y=True)
figure.show()

```

. . .
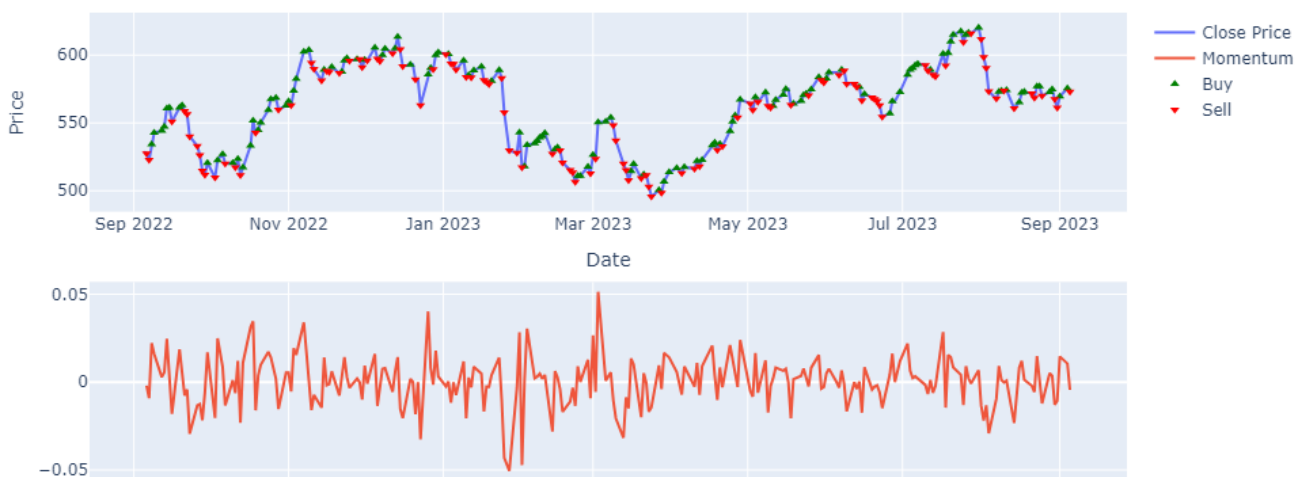
1 - In the above graph, the buy and sell signals are indicated by green triangle-up
   and red triangle-down markers respectively.

SUMMARY

- Algorithmic Trading means using algorithms in buying and selling decisions in the financial market. In an algorithmic trading strategy, a set of predefined rules are used to determine when to buy a financial instrument and when to sell it.