Objective

To test a trading strategy on a financial dataset and evaluate its success rate.

Dataset

We have fetched the data from yahoo finance using the web scraper of yahoo finance called yfinance.
yfinance provides a simple and convenient way to download historical market data from Yahoo Finance.
The data consists of over 500 different stocks for a period of over 123 years, this is the possible available data than can be downloaded.
We will only be interested in the close price of each stocks and calculate ROC for each day.

What is Momentum ?

- Momentum in trading refers to the tendency of financial assets to continue their recent trend. In other words, if a stock has been rising in price over the last few weeks, the momentum strategy assumes that it will continue to rise in price over the next few weeks, and vice versa if it has been falling.
- Investors can use momentum as a trading technique that seeks to profit off the herding behavior of market psychology. Rather than "buy low, sell high", momentum trading follows a strategy of "buy high, sell higher". Once a momentum trader sees acceleration in a stock's price, earnings or revenues, the trader will often take a long or short position in the stock in the hope that its momentum will continue in either an upward or downward direction. This strategy relies on short-term movements in a stock's price rather than fundamental value.

What is ROC ?

- ROC stands for Rate of Change, and it is a technical indicator that is commonly used in analyzing stock data. ROC is used to measure the percentage change in price between the current price and a previous price point.
- In stock data analysis, ROC is often used to identify trends and potential buy or sell signals. A high ROC value indicates that the stock is increasing in price at a faster rate, while a low ROC value indicates that the stock is increasing in price at a slower rate.

Functions used in the code

- fetch_data - It fetches historical stock price data for a given index from Yahoo Finance and computes the rate of change (ROC) for each stock.
- getting_inputs: gets user inputs for the reference date and holding period.
- winner: selects the winners based on the top performers over the specified period.
- next_day_ROC_winner: selects the winner for the next holding period based on the next day's ROC.
- loser: selects the losers based on the bottom performers over the specified period.
- next_day_ROC_loser: selects the loser for the next holding period based on the next day's ROC.

- score: evaluates the success of the strategy based on the number of winners and losers that perform better than the previous day's ROC.
- perform_momentum_backtesting: runs the momentum backtesting strategy. It takes user inputs, selects winners and losers, holds them for the specified holding period, and evaluates the strategy's success based on the next day's ROC.

Winner portfolio

- In order to find out winner's portfolio we have

created a function called winner, it will pull only the stocks that gives

positive rate of change based on a particular holding period. The function then ranks all of these stocks from 1 to n, 1 being the

top rank.

- We then compare the ROC of each of these stocks with the next day

ROC of that particular stock, if it is positive the prices are going up

and it is a good sign to invest in that stock.

Loser Portfolio

- Loser Portfolio- In order to find out loser's portfolio we have created a function called loser, it will pull only the stocks that gives negative rate of change based on a holding period.
- The function then ranks all of these stocks from 1-n, 1 being the worst performing stock.
- We then compare the ROC of each of these stocks with the next day ROC of that particular stock, if it is negative, the prices are going down continuously and it is accordance with how we expected the stocks to perform.

perform_momentum_backtesting()

The **perform_momentum_backtesting()** function is a part of a momentum-based
trading strategy. It performs backtesting on a stock's historical data to evaluate the effectiveness of the momentum trading strategy. It takes the inputs of a reference date ,a holding period, and the historical data of a stock.
It then iterates through all the dates
from the reference date until the earliest available data to perform the backtesting.
For each iteration, it calculates the score of the momentum trading strategy on that date.
It then aggregates the scores over all iterations and calculates the success ratio of
the momentum trading strategy. Finally, it prints the score and the success ratio.