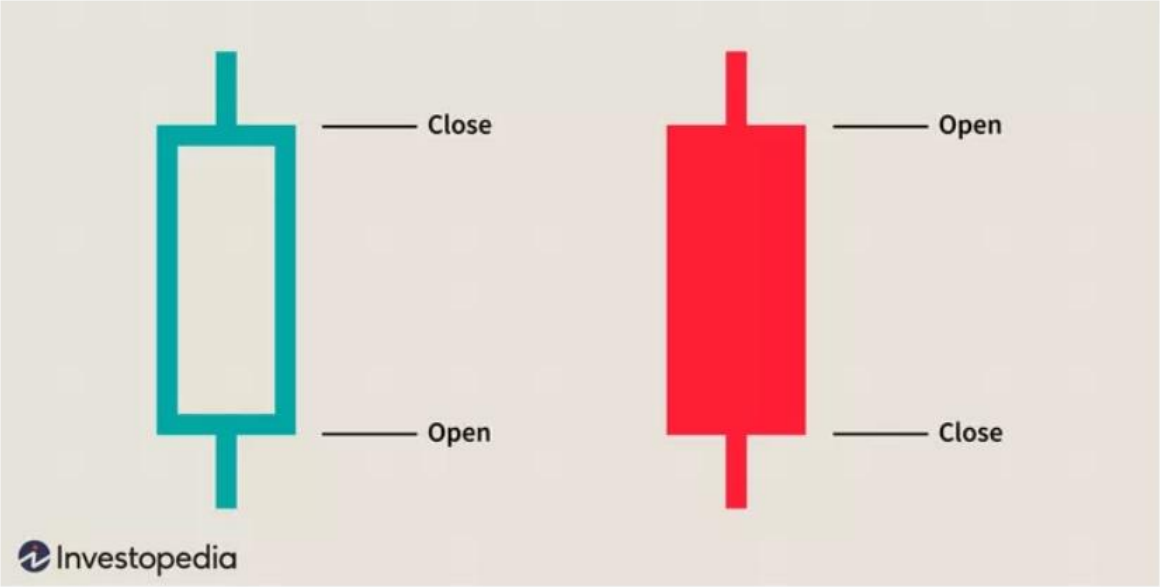
Objective: Find a channel formation in a given dataset

Overview:

A candlestick is a type of price chart that encompasses more information than a line chart would. A candlestick is composed of a body and a wick. The body shows the opening and the closing price, whereas the wick represents the high and the low point of the said interval.



A channel forms when price oscillates between two parallel trend lines. It could be horizontal or sloping upwards/downwards. Below figure illustrates a channel pattern.

While looking for support and resistance trendlines, make sure your trendlines ideally connect (two or more data points) the lows and highs of the candles (on the wick). At times, you can use the open/close of the candle (candle body). But that would be the case when the wick length is small compared to the body. A smaller wick length indicates market is generally confident of the price trend, whereas a long wick indicates indecisiveness. You are also allowed to let the candle wicks (but not the body) cross the trendlines by a small amount (can be set as a variable in the code) -> this might happen if some intermediate candle breaches the channel (the red candle wick at 2 in the graph below)

Input: Your code should read the inputs from a text file and fetch data from Gate IO API. Make sure you obtain the prices versus USDT, for ex: BTCUSDT, ETHUSDT etc. Gate IO API documentation can be obtained here

The inputs in the txt file should read as below example

2 (number of test cases)
25 (threshold for channel length, i.e, number of candlesticks in the channel)
ETH, 4h, 12/31/2020, 12/31/2021 (Coin name, interval, start date, end date)
LUNA, 1d, 5/15/2021, 9/15/2021 (Coin name, interval, start date, end date)

Interval can be 1h, 4h, 1d, 1w

Note: ETH and LUNA are for illustration purpose only

Output: Your code should output in the below format:

ETH:3
<time1> <time2>
<time1><time2>

<time1><time2>
LUNA:0

Your code should plot graphs of such channels formed (either multiple graphs showing a channel each or multiple channels on the same graph)

Brownie points if you can indicate fake breakouts, such as the period from 1 to 4 in the graph above, where price seemed to have broken out of the channel, but eventually entered back into the range. You can output this in the text file too

Programming Language: You can use Python/C++ or both

Evaluation: The assignment would evaluate your problem-solving skills, code quality and overall aptitude. Think of this as real-life challenge in deploying the code into production and being responsible for the strategy