ALGORITHMIC TRADING IN THE STOCK MARKET

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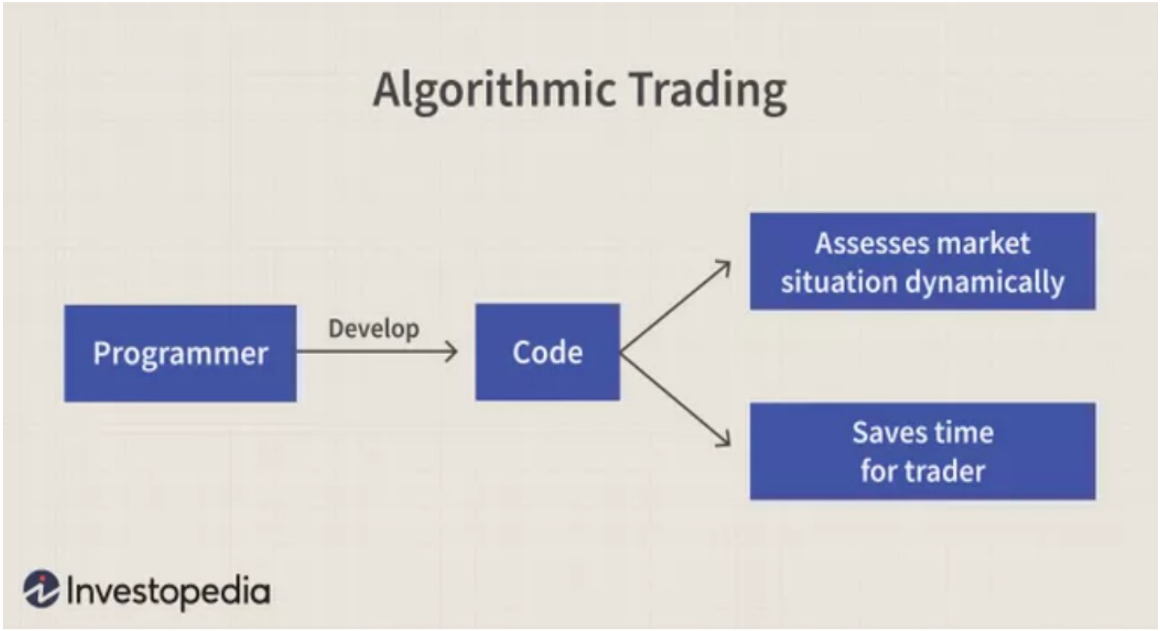
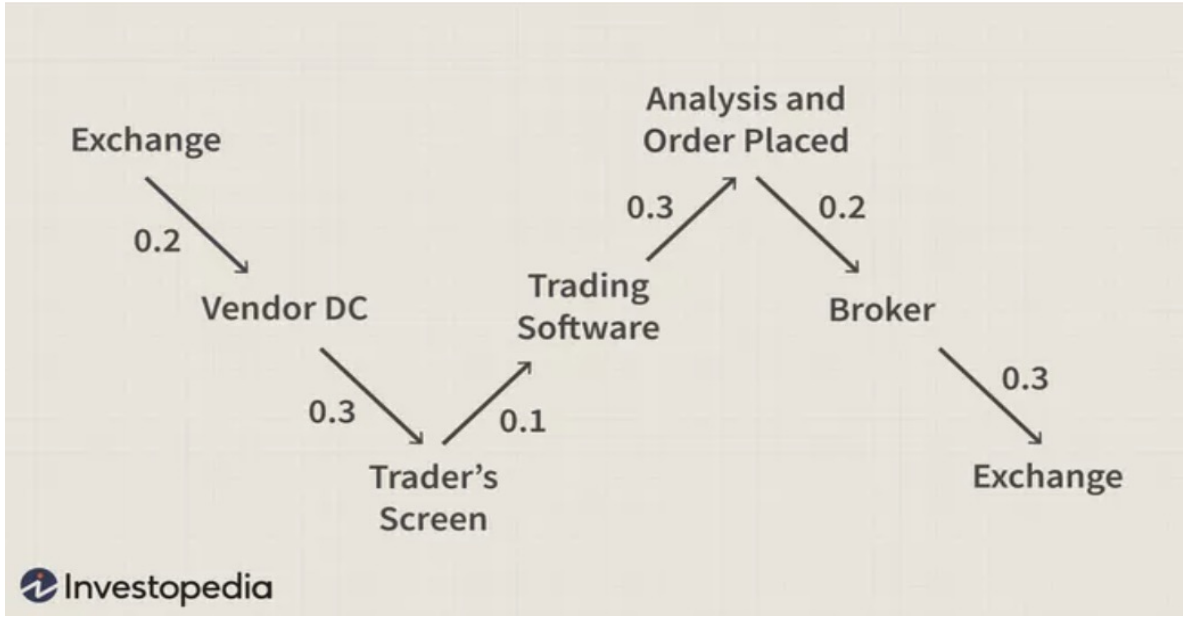
What is Algorithmic Trading?

- The use of pre-programmed code to execute automated asset trading
- Unmatched speed and volume compared to human capabilities
- Algo-trading coming to dominate the financial markets



Processes of Implementation

- Latency is critical
- Most commonly developed in Python and R



Visualizing Algo-trading

- Example of algo-trading script using a for-loop:
  - Establish [stocks] list
  - Loop through [stocks]
    - Initiate your buy signal and sell signal as variables
    - Using conditions, execute trades whenever one or more of the pre-programmed conditions are true

```
import quantopian.algorithm as algo
from quantopian.pipeline import Pipeline
from quantopian.pipeline.data.builtin import USEquityPricing
from quantopian.pipeline.filters import QTradableStocksUS
import talib as ta
```

```
def trading(context, data):
    context.stocks = [sid(39840), sid(2190), sid(24), sid(8554)]

    for stock in context.stocks:
        # Closing prices for each stock
        close = data.history(stock, "close", 400, "1d")

        # Moving Averages for each stock
        MA_50  = ta.MA(close, timeperiod=50, matype=0)
        MA_200 = ta.MA(close, timeperiod=200, matype=0)

        # Crossing Moving Averages
        bullish_cross = MA_50[-1]>MA_200[-1] and MA_50[-2]<MA_200[-2]
        bearish_cross = MA_50[-1]<MA_200[-1] and MA_50[-2]>MA_200[-2]

        # Checking leverage
        open_lev = len(get_open_orders()) < (len(context.stocks) - len(context.portfolio.positions))

        # Opening a position in each stock
        if open_lev:
            if bullish_cross:
                order_target_percent(stock, 0.25)
                log.info("Opening long position {}.".format(stock))
            elif bearish_cross:
                order_target_percent(stock, -0.25)
                log.info("Opening short position {}.".format(stock))
```

Source: https://medium.com/swlh/coding-your-way-to-wall-street-bf21a500376f

Work Cited

- https://www.investopedia.com/terms/a/algorithmictrading.asp
- https://www.investopedia.com/articles/active-trading/101014/basics-algorithmic-trading-concepts-and-examples.asp
- https://www.datacamp.com/community/tutorials/finance-python-trading#a-simple-trading-strategy
- https://www.nasdaq.com/articles/advantages-algorithmic-trading-2019-06-07
- https://medium.com/swlh/coding-your-way-to-wall-street-bf21a500376f