**moneBot: Trade Bot and Stock Price Predictor**

Monte Carlo Simulation for stock price prediction

**Monte Carlo methods, or Monte Carlo experiments, are a broad class of computational algorithms that rely on repeated random sampling to obtain numerical results. The underlying concept is to use randomness to solve problems that might be deterministic in principle. They are often used in physical and mathematical problems and are most useful when it is difficult or impossible to use other approaches. Monte Carlo methods are mainly used in three problem classes:**

**optimization, numerical integration, and generating draws from a probability distribution.**

**It basically generates simulations in thousands to come close to the actual value.**

import pandas\_datareader.data as web  
import pandas as pd  
import datetime as dt  
import numpy as np  
import matplotlib.pyplot as plt  
from matplotlib import style  
  
style.use(**'ggplot'**)  
  
start = dt.datetime(2020, 1, 15)  
end = dt.datetime(2020, 9, 17)  
  
prices = web.DataReader(**'AAPL'**, **'yahoo'**, start, end)[**'Close'**]  
returns = prices.pct\_change()  
  
last\_price = prices[-1]  
  
*# Number of Simulations*num\_simulations = 1000  
num\_days = 252  
  
simulation\_df = pd.DataFrame()  
  
for x in range(num\_simulations):  
 count = 0  
 daily\_vol = returns.std()  
  
 price\_series = []  
  
 price = last\_price \* (1 + np.random.normal(0, daily\_vol))  
 price\_series.append(price)  
  
 for y in range(num\_days):  
 if count == 251:  
 break  
 price = price\_series[count] \* (1 + np.random.normal(0, daily\_vol))  
 price\_series.append(price)  
 count += 1  
  
 simulation\_df[x] = price\_series  
  
fig = plt.figure()  
fig.suptitle(**'Monte Carlo Simulation: AAPL'**)  
plt.plot(simulation\_df)  
plt.axhline(y=last\_price, color=**'r'**, linestyle=**'-'**)  
plt.xlabel(**'Day'**)  
plt.ylabel(**'Price'**)  
plt.show()

We have taken stock price of Apple from the source yahoo daily reader.

Using pandas\_datareader library we read the data from web.

We used datetime library to set start and end date.

Using matplotlib library we were able to show the output in form of graph.

Output of this Python program results in a graph containing one thousand simulations of the upcoming 250 days by taking data from January till September.

