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COS30018

### Task B3: Weekly Report

#### Candlestick

For this task, I must write 2 functions. The first one is to display stock market financial data using candlestick chart. At first, I am using the website that the task provides to learn how to write the code and I also watch a YouTube clip from Sunny Solanki.

The first candlestick.py files are my first attempts on drawing the chart by code using “matplotlib.pyplot”.

After research and read more about candlestick model, I found that using mplfinance is a better way to present the volume of trading stocks during the day. So, I decided to write another function using mplfinance.

```
import pandas as pd
import mplfinance as mpf
import matplotlib.pyplot as plt

def plot_candlestick_chart(data, n=1):
    """
    Plots a candlestick chart for the given stock market data.
    Each candlestick can represent the data for 'n' trading days.

    Parameters:
    - data: DataFrame containing 'Date', 'Open', 'High', 'Low', 'Close'
    columns.
    - n: Number of trading days to aggregate per candlestick (default is 1).
    """

    #Converting the Date column in the data.csv to a datetime format to allow
    time-based operations
    data['Date'] = pd.to_datetime(data['Date'])
    data.set_index('Date', inplace=True)

    #If n>1, aggregate data over 'n' trading days
    if n > 1:
        data = data.resample(f'{n}D').agg({
            'Open': 'first',
            'High': 'max',
```

```

        'Low': 'min',
        'Close': 'last',
        'Volume': 'sum'
    }).dropna()

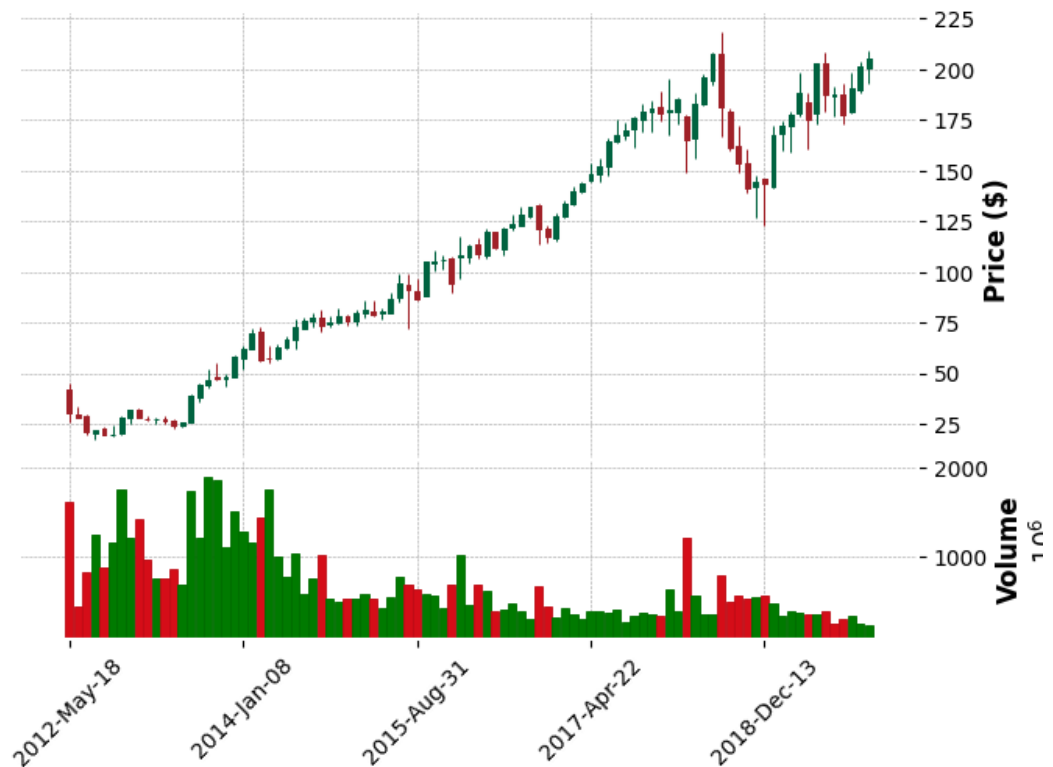
#Generate and display the candlestick chart
mpf.plot(
    data,
    type='candle',
    style='charles',
    volume=True,
    title=f'Candlestick Chart ({n}-day)',
    ylabel='Price ($) ',
    ylabel_lower='Volume')

#Reading the data from the data.csv locally
df = pd.read_csv("data.csv")
plot_candlestick_chart(df, n=30)

```

Result:

**Candlestick Chart (30-day)**



Here is the function that I wrote before knowing mplfinance exist:

```
import matplotlib
import pandas as pd
import matplotlib.pyplot as plt

data_df = pd.read_csv("data.csv", index_col=0, parse_dates=True)
data_df = data_df.reset_index()

data_df=data_df[-30:]

green_df = data_df[data_df.Close > data_df.Open].copy()
green_df["Height"] = green_df["Close"] - green_df["Open"]

red_df = data_df[data_df.Close < data_df.Open].copy()
red_df["Height"] = red_df["Open"] - red_df["Close"]

fig = plt.figure(figsize=(15,7))

plt.style.use("fivethirtyeight")

#Grey Lines
plt.vlines(x=green_df["Date"], ymin=green_df["Low"],
ymax=green_df["High"],color="green")
plt.vlines(x=red_df["Date"], ymin=red_df["Low"],
ymax=red_df["High"],color="orangered")

#Green Candles
plt.bar(x=green_df["Date"], height=green_df["Height"], bottom=green_df["Open"],
color="green")

#Red Candles
plt.bar(x=red_df["Date"], height=red_df["Height"], bottom=red_df["Close"],
color="orangered")

plt.yticks(range(180,230,10), [{"{} {}".format(v) for v in range(180,230,10)}])

plt.xlabel("Date")
plt.ylabel("Price ($)")
plt.title("META Stock Prices")

plt.show()
```

Result:

