```
import statistics as stats
from pandas import *
from pandas_datareader import data
from matplotlib.pyplot import *
set_option ("display.max_rows", 20000)
set_option ("display.max_columns", 1000)
set_option ("display.width", 1000)

start_date = "2014-01-01"
end_date = "2020-02-22"
google_data = data.DataReader( "GOOG", "yahoo", start_date, end_date )

num_period_fast = 10
K_fast = 2 / (num_period_fast + 1)
ema_fast = 0

num_period_slow = 40
K_slow = 2 / (num_period_slow + 1)
ema_slow = 0

ema_fast_values = []
ema_slow_values = []
apo_values = []

for close_price in google_data ["Adj Close"]:
    if ema_fast == 0:
        ema_fast = close_price
        ema_slow = close_price
    else:
        ema_fast = (close_price - ema_fast) * K_fast + ema_fast
        ema_slow = (close_price - ema_slow) * K_slow + ema_slow

    ema_fast_values.append(ema_fast)
    ema_slow_values.append(ema_slow)
    apo_values.append(ema_fast - ema_slow)

google_data = google_data.assign (FastExponential10DayMovingAverage= Series
(ema_fast_values, index=google_data.index)).ffill (axis=0)
google_data = google_data.assign (SlowExponential40DayMovingAverage= Series
(ema_slow_values, index=google_data.index)).ffill (axis=0)
google_data = google_data.assign (AbsolutePriceOscillator= Series (apo_values,
index=google_data.index)).ffill (axis=0)

ema_f = google_data ["FastExponential10DayMovingAverage"]
ema_s = google_data ["SlowExponential40DayMovingAverage"]
apo = google_data ["AbsolutePriceOscillator"]

print (ema_s, ema_f, apo_values)

fig = figure ()
```

```
ax1 = fig.add_subplot (211, ylabel="Google price in $")
google_data ["Adj Close"].plot (ax=ax1, color="g", lw=2., legend=True)
ema_f.plot (ax=ax1, color="b", lw=2., legend=True)
ema_s.plot (ax=ax1, color="r", lw=2., legend=True)
ax2 = fig.add_subplot (212, ylabel= "APO")
apo.plot (ax=ax2, color= "black", lw=2., legend=True)
legend ()
show ()
```