ssignment-tanviredu2018-gmail-com

November 10, 2023

1 Question 1

1.0.1 Question : Calculate the mean value of the 'Value' column for the month of January 2023.

[1]:
```
import numpy  as np
import pandas as pd
import matplotlib.pyplot as plt
```

[4]:
```
daterng = pd.date_range(start='2023-01-01', end='2023-01-31', freq='D')
data = np.random.rand(len(daterng)) # Random data for demonstration
df = pd.DataFrame({'Date': daterng, 'Value': data})
df.set_index('Date', inplace=True)
```

[ ]:
```

```

[18]:
```
january_2023_mean = df['2023-01-01':'2023-01-31']['Value'].mean()
print("MEAN VALUE OF JANUARY 2023 IS : {}".format(january_2023_mean))
```

```
MEAN VALUE OF JANUARY 2023 IS : 0.5663769835898832
```

[ ]:
```

```

2 Question 2

2.1 Extract and display data for the week of January 15, 2023, to January 21, 2023.

[38]:
```
data = df.loc['2023-01-15':'2023-01-21','Value']
data
```

[38]:
```
Date
2023-01-15    0.974845
2023-01-16    0.860513
2023-01-17    0.334616
2023-01-18    0.650460
2023-01-19    0.168233
```

```
2023-01-20    0.667443
2023-01-21    0.918449
Name: Value, dtype: float64
```

[ ]:

3 Question 3

3.1 Calculate the rolling 7-day average of the 'Value' column and create a new DataFrame with the original data and the rolling average.

[32]:
```
rolling_7_avg = df['Value'].rolling(window = 7).mean()
df_with_rolling_avg = pd.DataFrame({
    'Value':df['Value'],
    'Rolling_Avg':rolling_7_avg
})
```

[33]:
```
df_with_rolling_avg
```

[33]:

Date	Value	Rolling_Avg
2023-01-01	0.520757	NaN
2023-01-02	0.547889	NaN
2023-01-03	0.390987	NaN
2023-01-04	0.913702	NaN
2023-01-05	0.133816	NaN
2023-01-06	0.700204	NaN
2023-01-07	0.496847	0.529172
2023-01-08	0.906140	0.584226
2023-01-09	0.010282	0.507425
2023-01-10	0.323413	0.497772
2023-01-11	0.834974	0.486525
2023-01-12	0.643652	0.559359
2023-01-13	0.519744	0.533579
2023-01-14	0.544587	0.540399
2023-01-15	0.974845	0.550214
2023-01-16	0.860513	0.671675
2023-01-17	0.334616	0.673276
2023-01-18	0.650460	0.646917
2023-01-19	0.168233	0.579000
2023-01-20	0.667443	0.600100
2023-01-21	0.918449	0.653509
2023-01-22	0.753524	0.621891
2023-01-23	0.276842	0.538510
2023-01-24	0.483763	0.559816
2023-01-25	0.585131	0.550484

```
2023-01-26  0.324929      0.572869
2023-01-27  0.955078      0.613959
2023-01-28  0.990099      0.624195
2023-01-29  0.471954      0.583971
2023-01-30  0.129095      0.562864
2023-01-31  0.525719      0.568858
```

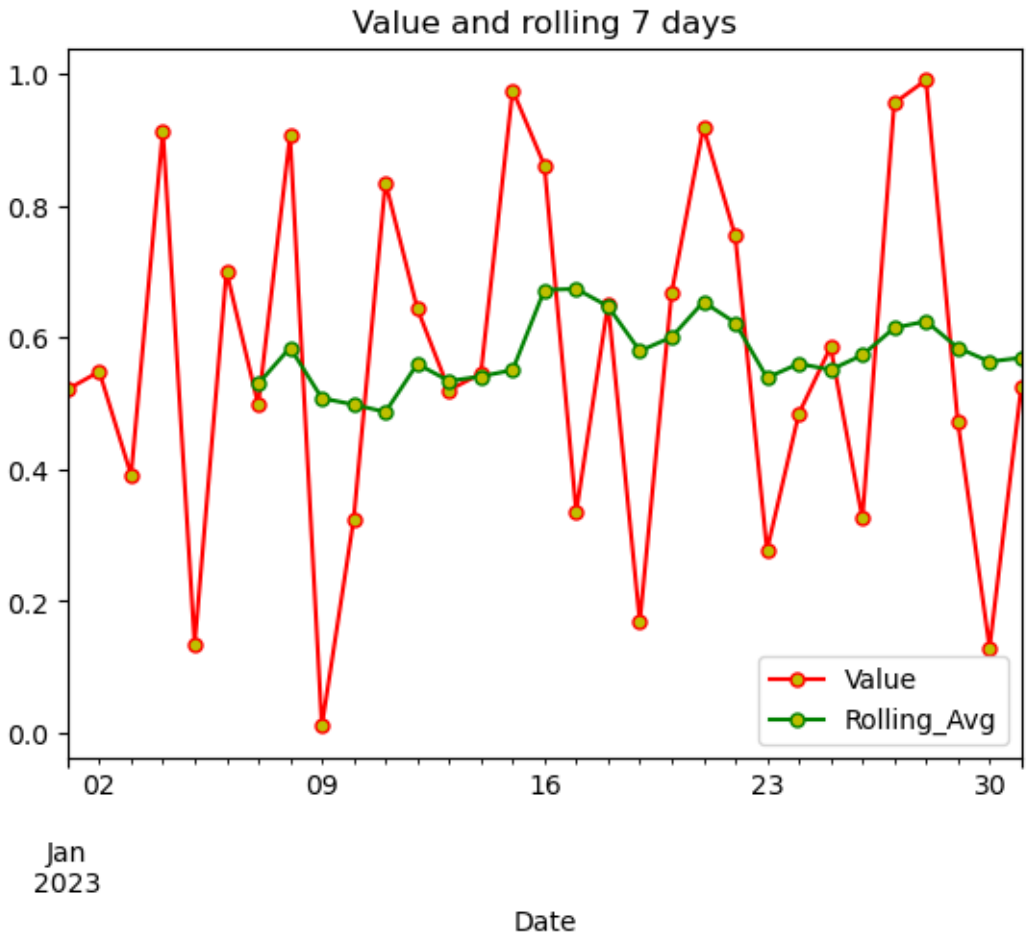
[ ]:

4 Question 4

4.1 Create a line plot to visualize the 'Value' column and the rolling 7-day average together.

[37]:
```
df_with_rolling_avg.plot(kind='line',title="Value and rolling 7 days",style='.
↪-',color=['r','g'],mfc='y',ms=10)
```

[37]: <AxesSubplot:title={'center':'Value and rolling 7 days'}, xlabel='Date'>



[ ]: