

```
In [1]: 1 import pandas as pd
        2 import matplotlib.pyplot as plt
```

```
In [2]: 1 ls
        2
```

NJ9.F.csv Untitled.ipynb

```
In [4]: 1 df = pd.read_csv("NJ9.F.csv")
```

```
In [5]: 1 df
```

Out[5]:

| | Date | Open | High | Low | Close | Adj Close | Volume |
|-----|------------|--------|--------|--------|--------|------------|--------|
| 0 | 2023-10-13 | 0.0772 | 0.0772 | 0.0772 | 0.0772 | -52.236629 | 0 |
| 1 | 2023-10-16 | 0.0729 | 0.0729 | 0.0729 | 0.0729 | -49.327072 | 0 |
| 2 | 2023-10-17 | 0.0887 | 0.0887 | 0.0887 | 0.0887 | -60.017990 | 3000 |
| 3 | 2023-10-18 | 0.0828 | 0.0828 | 0.0828 | 0.0828 | -56.025814 | 0 |
| 4 | 2023-10-19 | 0.0802 | 0.0802 | 0.0802 | 0.0802 | -54.266548 | 0 |
| ... | ... | ... | ... | ... | ... | ... | ... |
| 213 | 2024-08-15 | 0.0680 | 0.0680 | 0.0680 | 0.0680 | 0.068000 | 0 |
| 214 | 2024-08-16 | 0.0680 | 0.0680 | 0.0675 | 0.0675 | 0.067500 | 0 |
| 215 | 2024-08-19 | 0.0670 | 0.0675 | 0.0670 | 0.0675 | 0.067500 | 0 |
| 216 | 2024-08-20 | 0.0670 | 0.0670 | 0.0670 | 0.0670 | 0.067000 | 0 |
| 217 | 2024-08-21 | 0.0660 | 0.0665 | 0.0660 | 0.0660 | 0.066000 | 0 |

218 rows × 7 columns

```
In [7]: 1 df1 = df['Open']
```

```
In [9]: 1 df1.isnull()
```

```
Out[9]: 0      False
        1      False
        2      False
        3      False
        4      False
        ...
        213    False
        214    False
        215    False
        216    False
        217    False
        Name: Open, Length: 218, dtype: bool
```

```

In [11]: 1 arr = df['Open']
          2 window_size = 3
          3
          4 i = 0
          5 # Initialize an empty list to store moving averages
          6 moving_averages = []
          7
          8 # Loop through the array to consider
          9 # every window of size 3
         10 while i < len(arr) - window_size + 1:
         11
         12     # Store elements from i to i+window_size
         13     # in list to get the current window
         14     window = arr[i : i + window_size]
         15
         16     # Calculate the average of current window
         17     window_average = round(sum(window) / window_size, 2)
         18
         19     # Store the average of current
         20     # window in moving average list
         21     moving_averages.append(window_average)
         22
         23     # Shift window to right by one position
         24     i += 1
         25
         26 print(moving_averages)

```

```

[0.08, 0.08, 0.08, 0.08, 0.08, 0.08, 0.08, 0.08, 0.08, 0.08, 0.08,
0.08, 0.08, 0.08, 0.08, 0.08, 0.08, 0.07, 0.07, 0.07, 0.07, 0.07,
0.07, 0.07, 0.07, 0.07, 0.07, 0.06, 0.06, 0.06, 0.06, 0.06, 0.06,
0.06, 0.06, 0.06, 0.06, 0.06, 0.06, 0.06, 0.06, 0.06, 0.07, 0.07,
0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07,
0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07,
0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07,
0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07,
0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07,
0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.08, 0.08,
0.08, 0.08, 0.08, 0.08, 0.08, 0.08, 0.07, 0.07, 0.07, 0.07, 0.07,
0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07,
0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07,
0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07,
0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.06, 0.06,
0.06, 0.06, 0.06, 0.06, 0.06, 0.06, 0.06, 0.06, 0.06, 0.06, 0.06,
0.06, 0.06, 0.06, 0.07, 0.07, 0.07, 0.06, 0.07, 0.07, 0.07, 0.07,
0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07,
0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07,
0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07]

```

```

In [12]: 1 # Buat DataFrame untuk moving averages agar lebih mudah diprose
2 ma_df = pd.DataFrame(moving_averages, columns=['Moving Average']
3
4 # Plot data asli dan moving average
5 plt.figure(figsize=(10, 6))
6
7 # Plot data asli
8 plt.plot(df.index, df['Open'], label='Open Price', marker='o',
9
10 # Plot moving average
11 plt.plot(range(window_size-1, len(df)), moving_averages, label=
12
13 # Tambahkan label dan judul
14 plt.xlabel('Index')
15 plt.ylabel('Price')
16 plt.title('Open Price and Moving Average')
17 plt.legend()
18
19 # Tampilkan plot
20 plt.grid(True)
21 plt.show()

```

