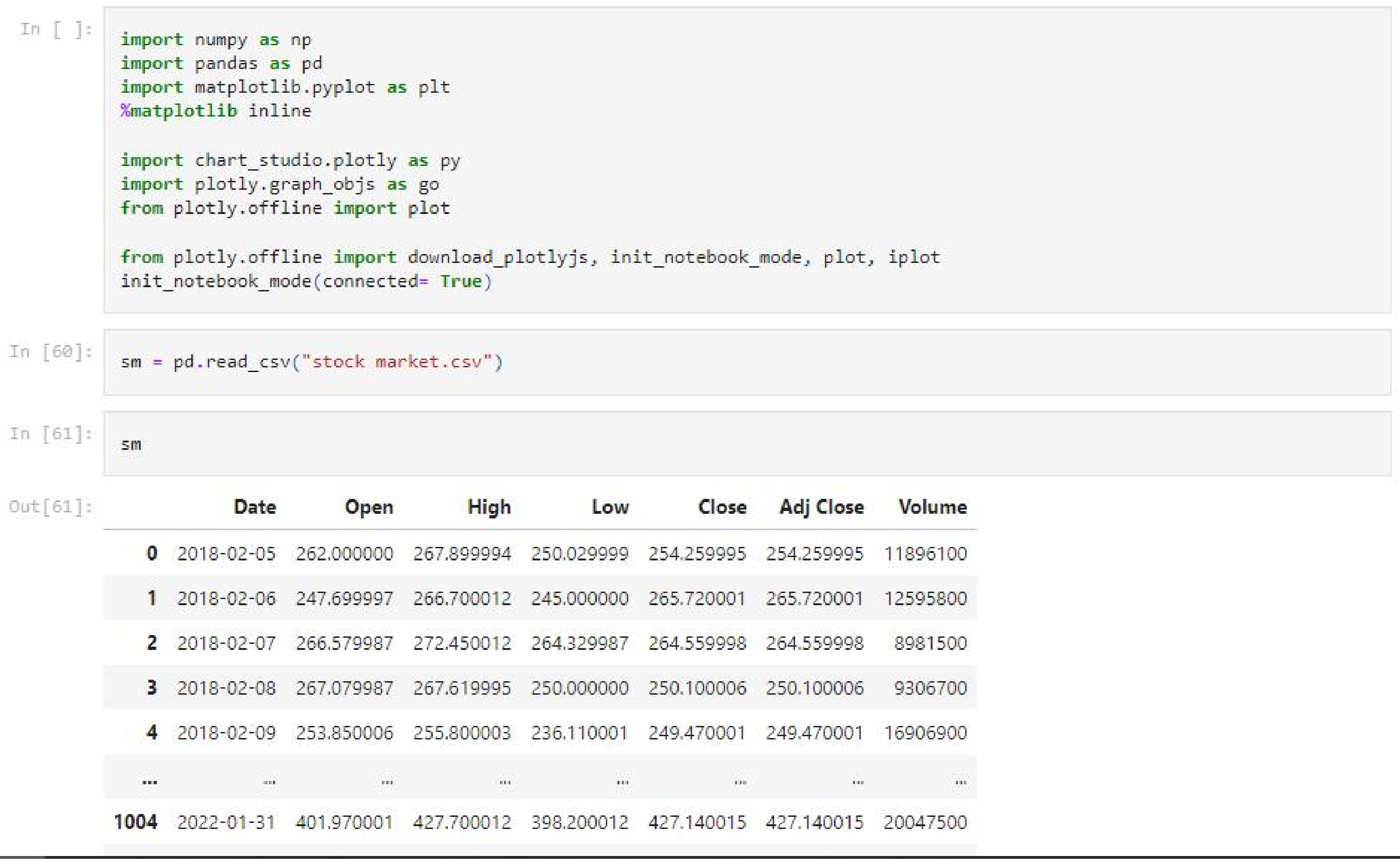


In [ ]:

```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
%matplotlib inline

import chart_studio.plotly as py
import plotly.graph_objs as go
from plotly.offline import plot

from plotly.offline import download_plotlyjs, init_notebook_mode, plot, iplot
init_notebook_mode(connected= True)
```

In [60]:

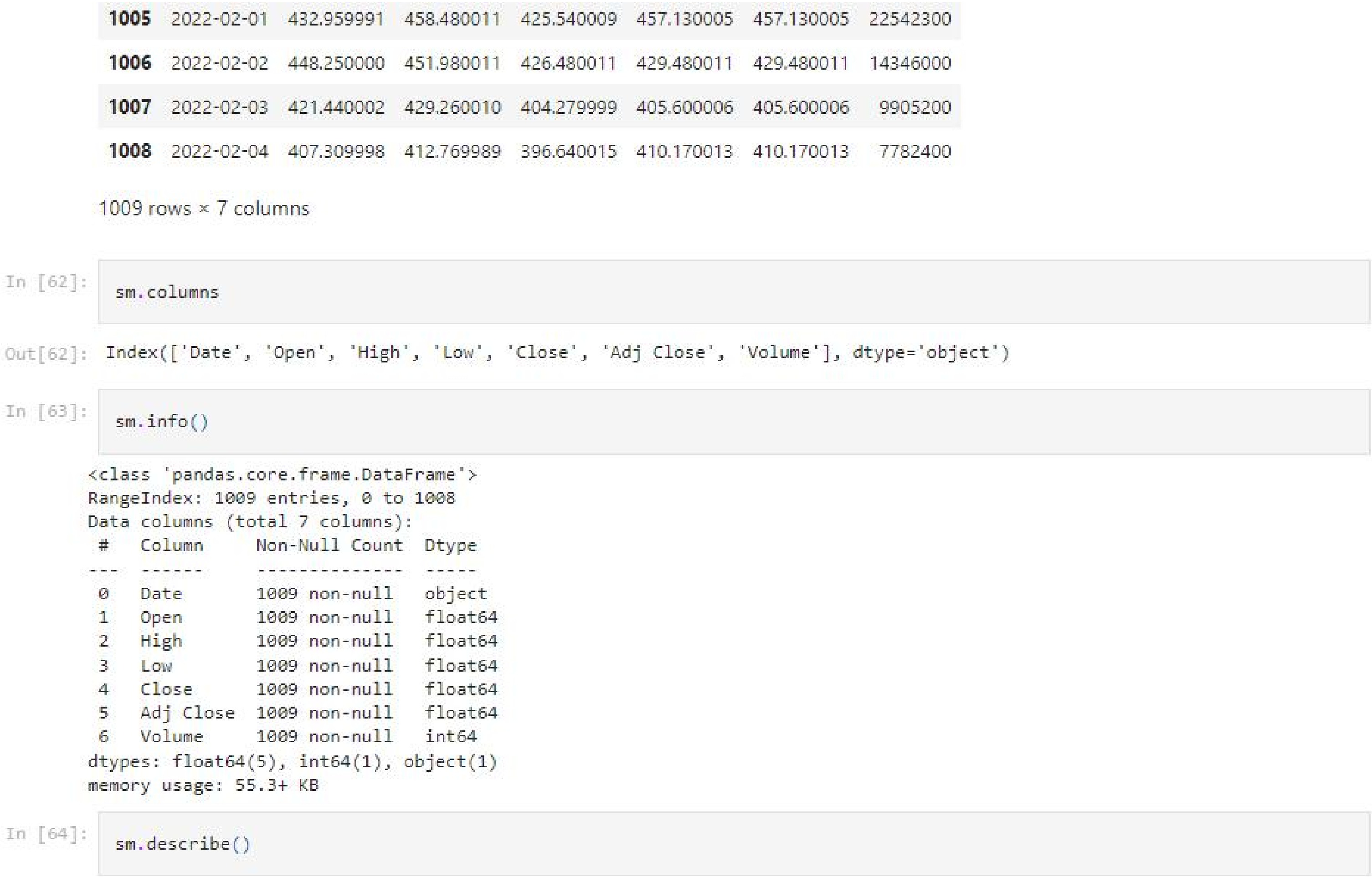
```
sm = pd.read_csv("stock market.csv")
```

In [61]:

```
sm
```

Out[61]:

	Date	Open	High	Low	Close	Adj Close	Volume
0	2018-02-05	262.000000	267.899994	250.029999	254.259995	254.259995	11896100
1	2018-02-06	247.699997	266.700012	245.000000	265.720001	265.720001	12595800
2	2018-02-07	266.579987	272.450012	264.329987	264.559998	264.559998	8981500
3	2018-02-08	267.079987	267.619995	250.000000	250.100006	250.100006	9306700
4	2018-02-09	253.850006	255.800003	236.110001	249.470001	249.470001	16906900
...	...	...	...	...	...	...	...
1004	2022-01-31	401.970001	427.700012	398.200012	427.140015	427.140015	20047500



1005	2022-02-01	432.959991	458.480011	425.540009	457.130005	457.130005	22542300
1006	2022-02-02	448.250000	451.980011	426.480011	429.480011	429.480011	14346000
1007	2022-02-03	421.440002	429.260010	404.279999	405.600006	405.600006	9905200
1008	2022-02-04	407.309998	412.769989	396.640015	410.170013	410.170013	7782400

1009 rows × 7 columns

In [62]:

```
sm.columns
```

Out[62]:

```
Index(['Date', 'Open', 'High', 'Low', 'Close', 'Adj Close', 'Volume'], dtype='object')
```

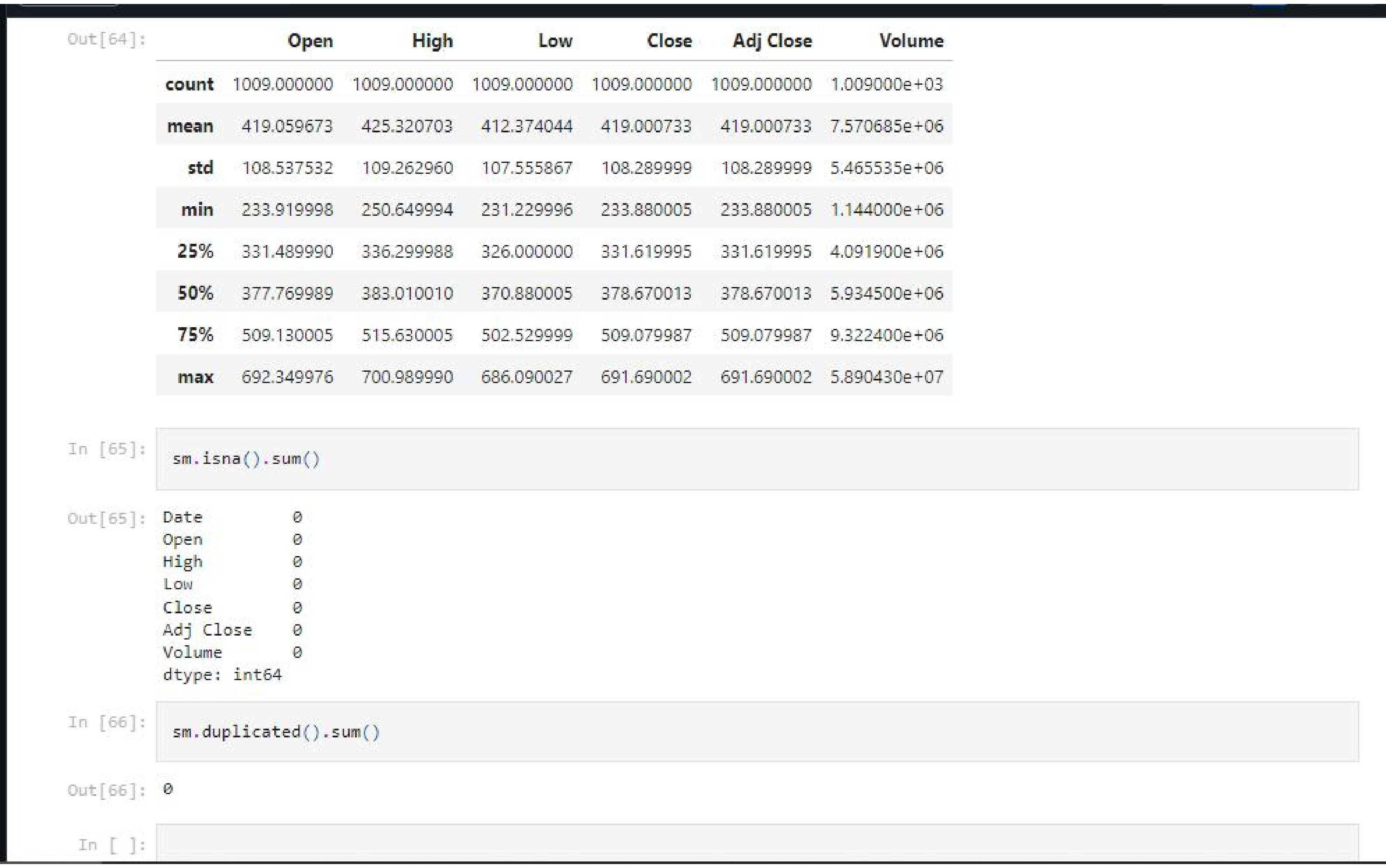
In [63]:

```
sm.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 1009 entries, 0 to 1008
Data columns (total 7 columns):
 #   Column     Non-Null Count  Dtype  
---  ------     --------------  -----  
 0   Date       1009 non-null   object 
 1   Open       1009 non-null   float64
 2   High       1009 non-null   float64
 3   Low        1009 non-null   float64
 4   Close      1009 non-null   float64
 5   Adj Close  1009 non-null   float64
 6   Volume     1009 non-null   int64  
dtypes: float64(5), int64(1), object(1)
memory usage: 55.3+ KB
```

In [64]:

```
sm.describe()
```



Out[64]:

	Open	High	Low	Close	Adj Close	Volume
count	1009.000000	1009.000000	1009.000000	1009.000000	1009.000000	1.009000e+03
mean	419.059673	425.320703	412.374044	419.000733	419.000733	7.570685e+06
std	108.537532	109.262960	107.555867	108.289999	108.289999	5.465535e+06
min	233.919998	250.649994	231.229996	233.880005	233.880005	1.144000e+06
25%	331.489990	336.299988	326.000000	331.619995	331.619995	4.091900e+06
50%	377.769989	383.010010	370.880005	378.670013	378.670013	5.934500e+06
75%	509.130005	515.630005	502.529999	509.079987	509.079987	9.322400e+06
max	692.349976	700.989990	686.090027	691.690002	691.690002	5.890430e+07

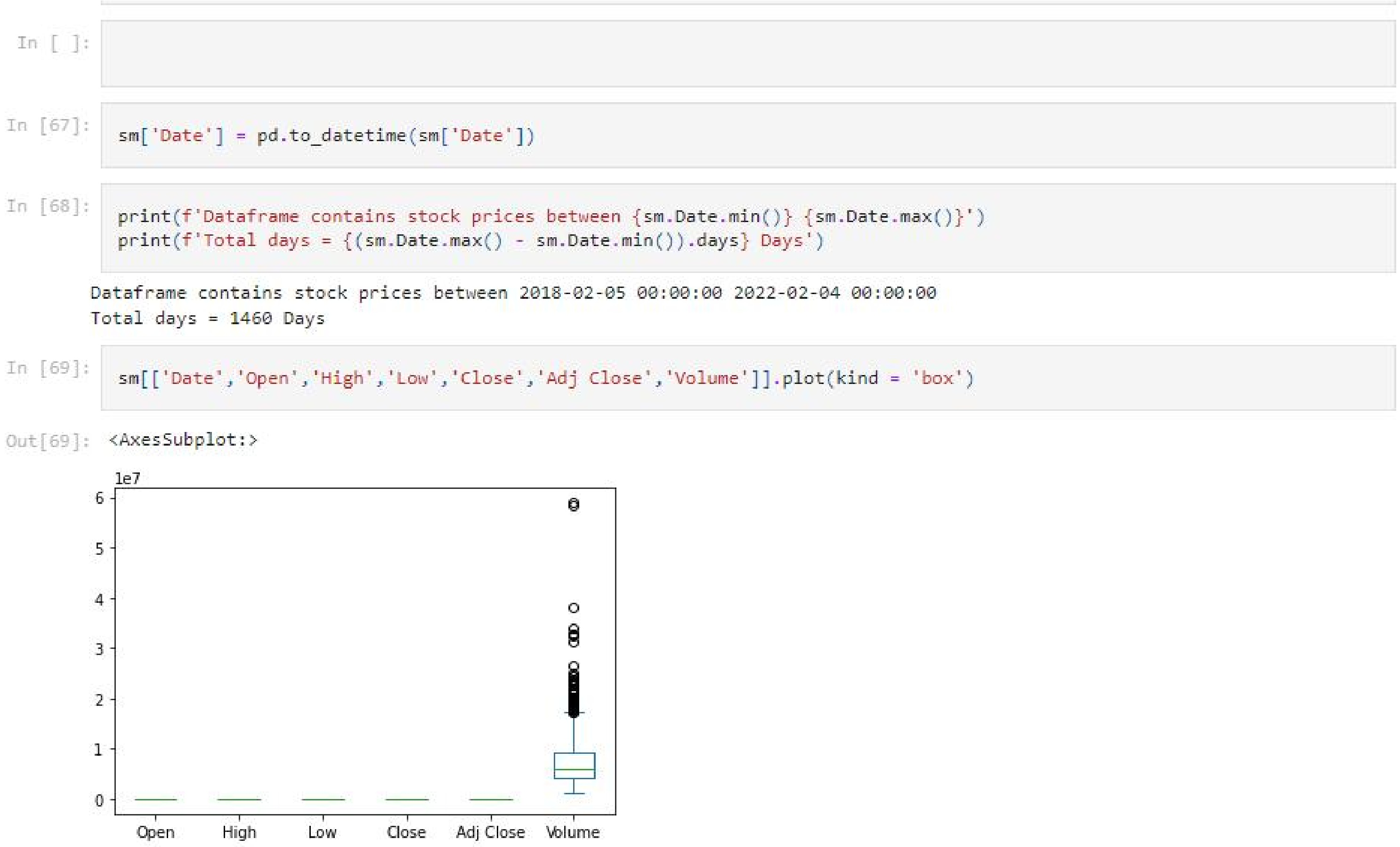
```
In [65]: sm.isna().sum()
```

```
Out[65]: Date         0
         Open         0
         High         0
         Low          0
         Close        0
         Adj Close    0
         Volume       0
         dtype: int64
```

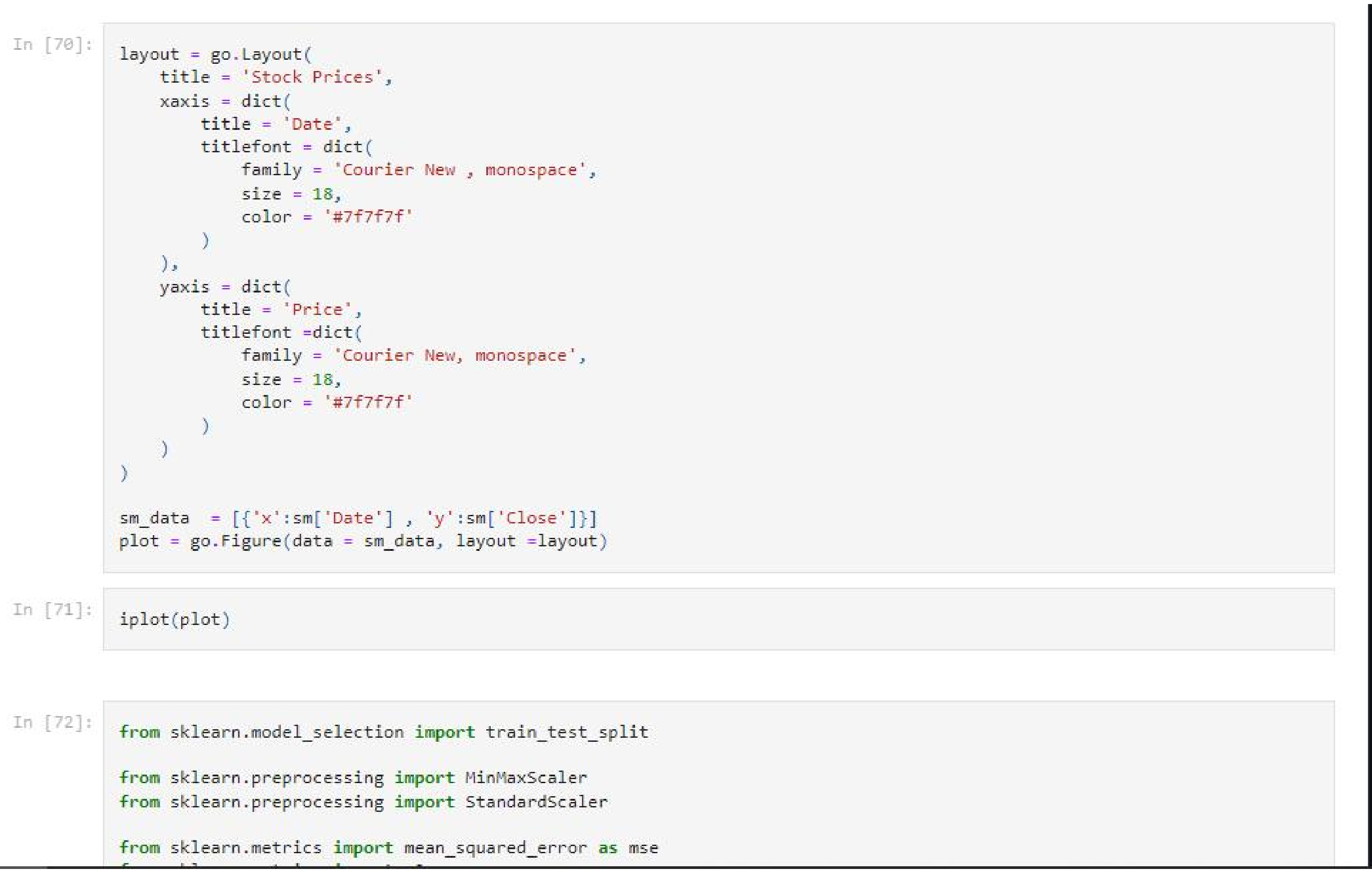
```
In [66]: sm.duplicated().sum()
```

```
Out[66]: 0
```

```
In [ ]:
```



```
In [ ]:

In [67]:  sm['Date'] = pd.to_datetime(sm['Date'])

In [68]:  print(f'Dataframe contains stock prices between {sm.Date.min()} {sm.Date.max()}')
          print(f'Total days = {(sm.Date.max() - sm.Date.min()).days} Days')

         Dataframe contains stock prices between 2018-02-05 00:00:00 2022-02-04 00:00:00
         Total days = 1460 Days

In [69]:  sm[['Date','Open','High','Low','Close','Adj Close','Volume']].plot(kind = 'box')

Out[69]:  <AxesSubplot:>
```



In [70]:

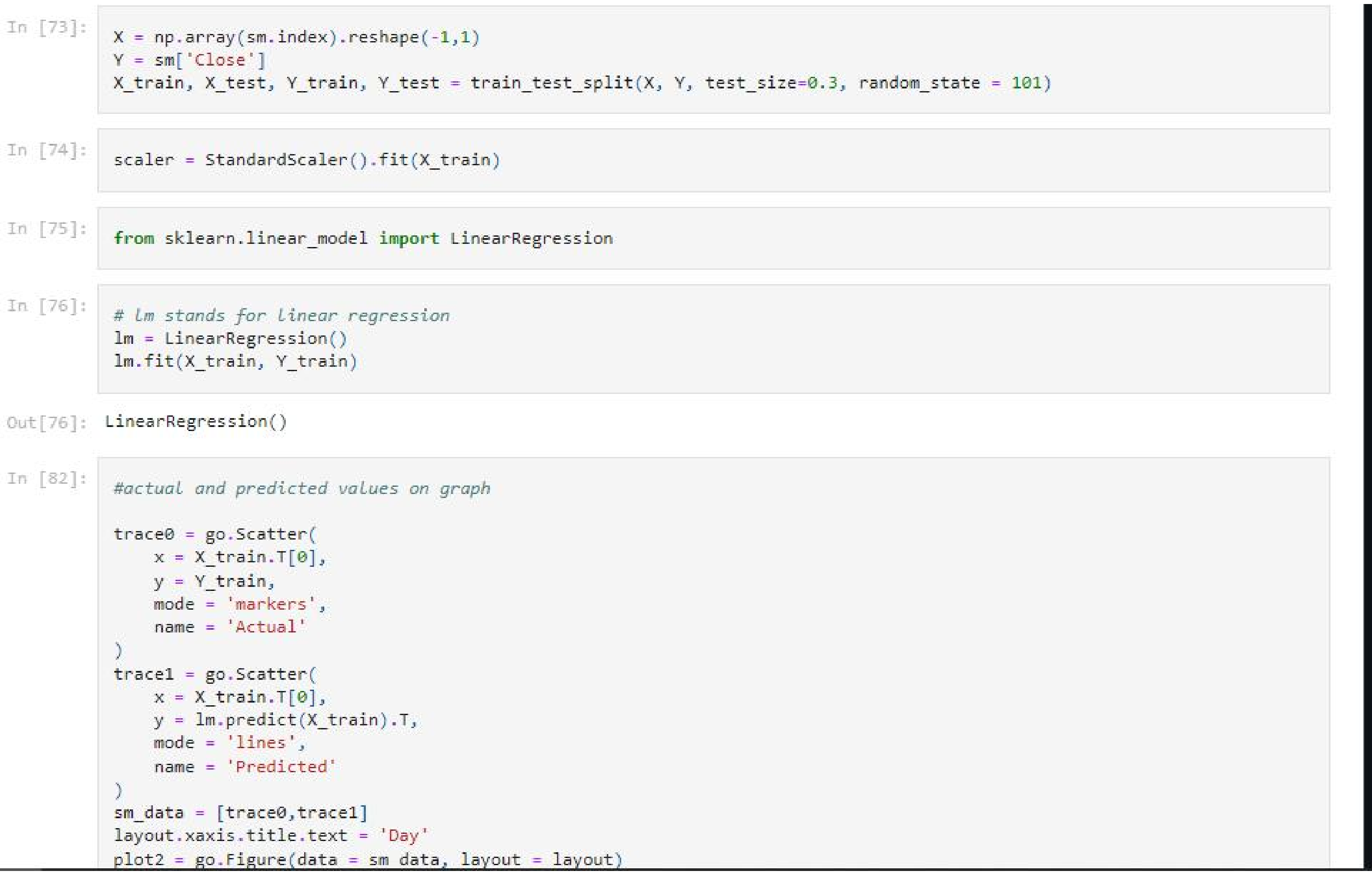
```
layout = go.Layout(
    title = 'Stock Prices',
    xaxis = dict(
        title = 'Date',
        titlefont = dict(
            family = 'Courier New , monospace',
            size = 18,
            color = '#7f7f7f'
        )
    ),
    yaxis = dict(
        title = 'Price',
        titlefont =dict(
            family = 'Courier New, monospace',
            size = 18,
            color = '#7f7f7f'
        )
    )
)

sm_data  = [{'x':sm['Date'] , 'y':sm['Close']}]
plot = go.Figure(data = sm_data, layout =layout)
```

In [71]:

```
iplot(plot)
```

In [72]:

```
from sklearn.model_selection import train_test_split

from sklearn.preprocessing import MinMaxScaler
from sklearn.preprocessing import StandardScaler

from sklearn.metrics import mean_squared_error as mse
```



In [73]:

```
X = np.array(sm.index).reshape(-1,1)
Y = sm['Close']
X_train, X_test, Y_train, Y_test = train_test_split(X, Y, test_size=0.3, random_state = 101)
```

In [74]:

```
scaler = StandardScaler().fit(X_train)
```

In [75]:

```
from sklearn.linear_model import LinearRegression
```

In [76]:

```
# lm stands for linear regression
lm = LinearRegression()
lm.fit(X_train, Y_train)
```

Out[76]:

```
LinearRegression()
```

In [82]:

```
#actual and predicted values on graph

trace0 = go.Scatter(
    x = X_train.T[0],
    y = Y_train,
    mode = 'markers',
    name = 'Actual'
)
trace1 = go.Scatter(
    x = X_train.T[0],
    y = lm.predict(X_train).T,
    mode = 'lines',
    name = 'Predicted'
)
sm_data = [trace0,trace1]
layout.xaxis.title.text = 'Day'
plot2 = go.Figure(data = sm_data, layout = layout)
```