In [14]:

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

In [15]:

```
data = pd.read_excel(r'C:\Users\dasgu\Desktop\Stock_Price.xlsx')
```

In [16]:

```
data.head()
```

Out[16]:

	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

In [17]:

```
data.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   datetime64[ns]
 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: datetime64[ns](1), float64(5), int64(1)
memory usage: 55.3 KB
```

In [18]:

```
data['Date'] = pd.to_datetime(data['Date'])
```

In [19]:

```
print(f'Dataframe contains stock prices between {data.Date.min()}{data.Date.ma
print(f'Total days = {(data.Date.max() - data.Date.min()).days}days')
```

```
Dataframe contains stock prices between 2018-02-05 00:00:002022-02-04 00:00:
00
Total days = 1460days
```

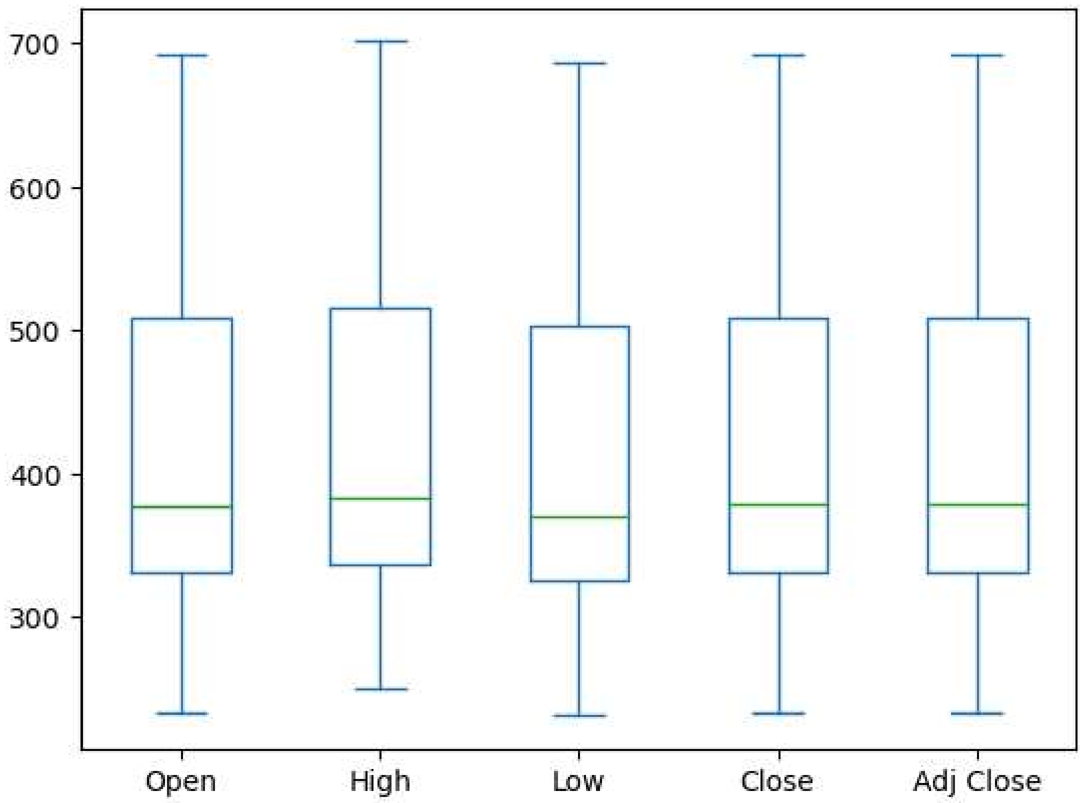
In [20]:
```
data.describe()
```

Out[20]:

	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 [21]:
```
data[['Open','High','Low','Close','Adj Close']].plot(kind='box')
```

Out[21]:
```
<Axes: >
```



In [22]:
```
import plotly.graph_objs as go
```

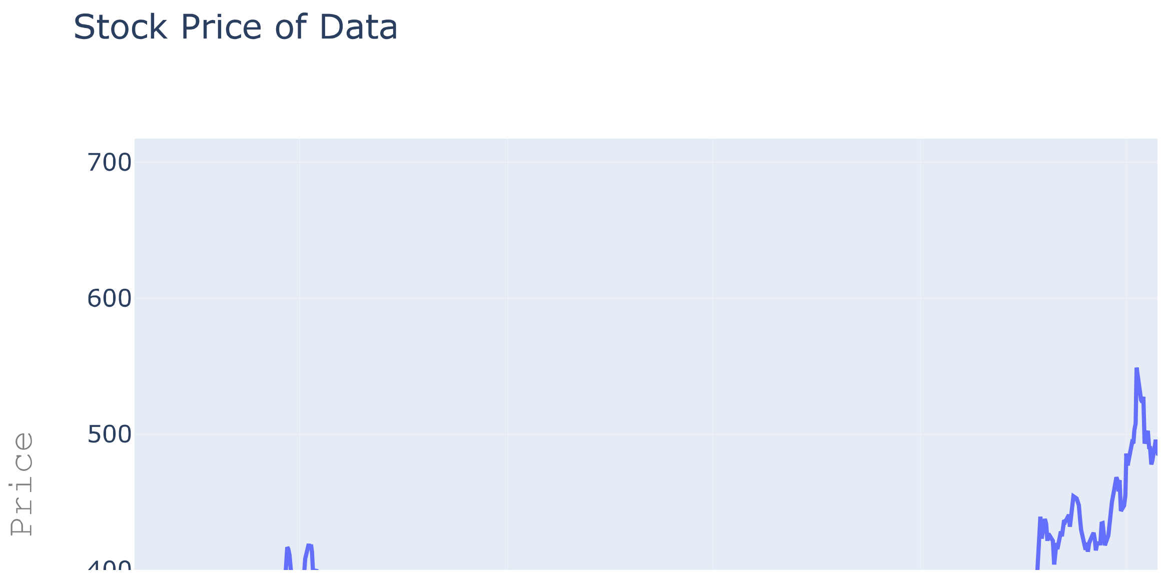
In [23]:

```
import plotly.graph_objs as go

layout = go.Layout(
    title='Stock Price of Data',
    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'
        )
    )
)

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

In [11]:
```
plot.show()
```



In [24]:
```
from sklearn.model_selection import train_test_split
#preprocessing
from sklearn.preprocessing import MinMaxScaler
from sklearn.preprocessing import StandardScaler
#model evaluation
from sklearn.metrics import mean_squared_error as mse
from sklearn.metrics import r2_score
```

In [25]:
```
#split the data into train and test sets
X = np.array(data.index).reshape(-1,1)
Y = data['Close']
X_train,X_test,Y_train,Y_test = train_test_split(X,Y,test_size=0.3,random_stat
```

In [26]:
```
#feature scaling
scaler = StandardScaler().fit(X_train)
```

In [27]:

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

In [28]:

```
lm = LinearRegression()
lm.fit(X_train, Y_train)
```

Out[28]:

```
▾ LinearRegression

LinearRegression()
```

In [29]:

```
import plotly.graph_objs as go

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'
)

data_data = [trace0, trace1]

layout = go.Layout(
    xaxis=dict(title='Day'),  # Specify the x-axis title
)

plot2 = go.Figure(data=data_data, layout=layout)
```

In [ ]:

```
plot2.show()
```

In [38]:

```
#calculate score for model evaluation
scores = f'''
{'Metric'.ljust(10)}{'Train'.center(20)}{'Test'.center(20)}
{'r2_score'.ljust(10)}{r2_score(Y_train,lm.predict(X_train))}\t{r2_score(Y_tes
{'MSE'.ljust(10)}{mse(Y_train,lm.predict(X_train))}\t{mse(Y_test,lm.predict(X_
'''
```

In [39]:

```
print(scores)
```

```
Metric           Train                Test
r2_score  0.6992669032944175    0.7261648669848495
MSE       3403.003880002517     3460.988580958064
```

In [ ]: