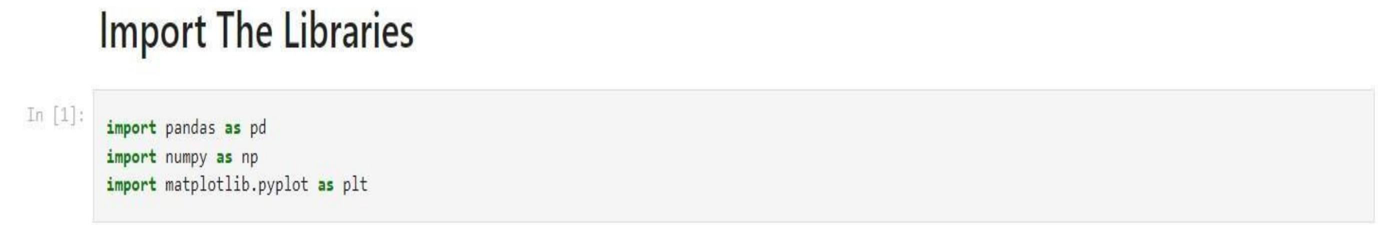
DATA PREPROCESSING

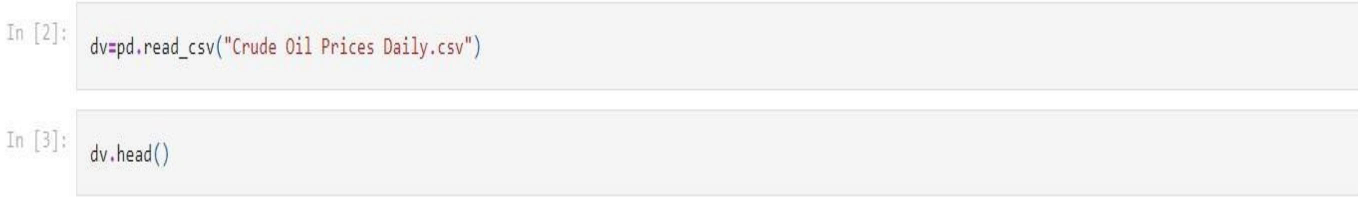
Team ID	PNT2022TMID48733
Project Name	Crude Oil Price Prediction



Import The Libraries

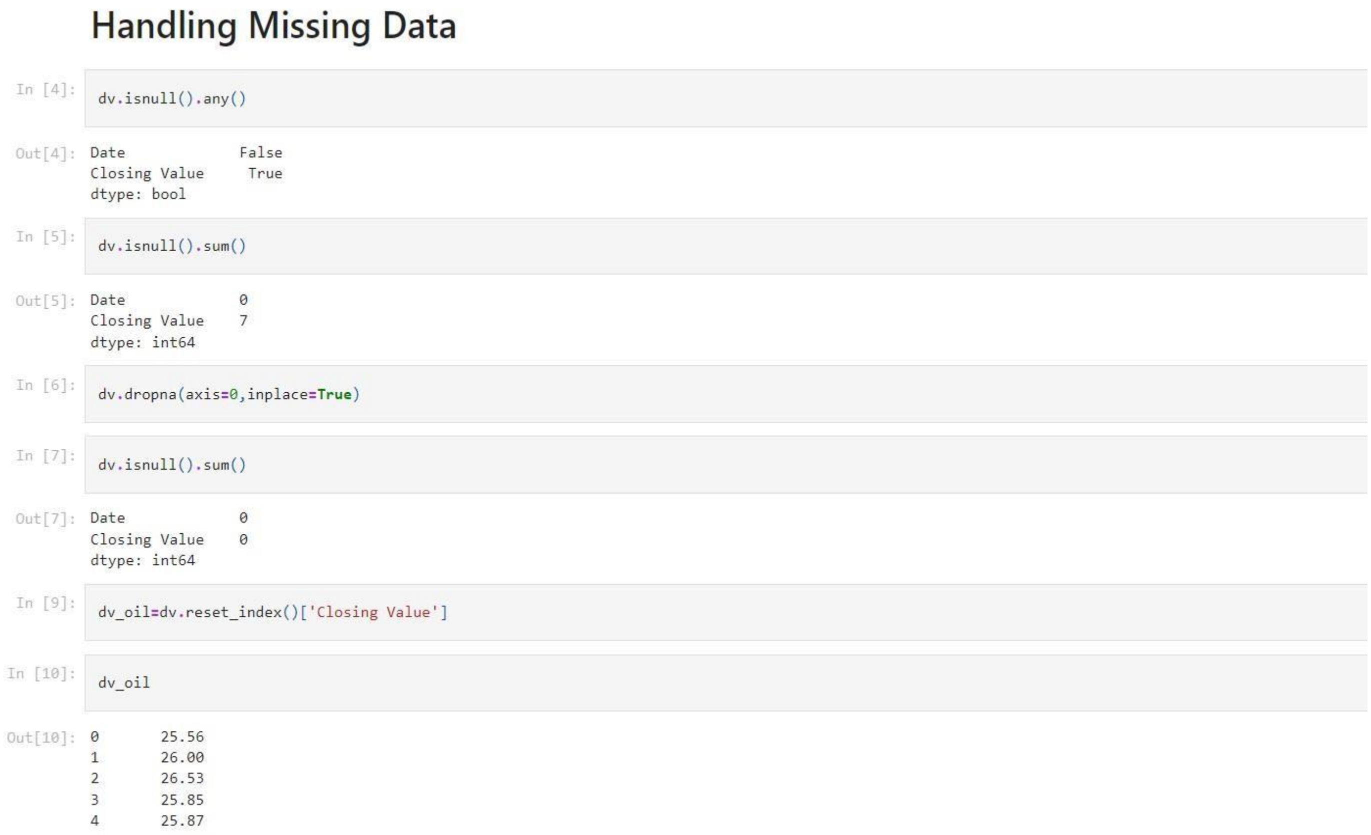
```
In [1]:
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
```

Importing the dataset



```
In [2]: dv=pd.read_csv("Crude Oil Prices Daily.csv")

In [3]: dv.head()
```



Handling Missing Data

```
In [4]: dv.isnull().any()

Out[4]: Date              False
        Closing Value      True
        dtype: bool

In [5]: dv.isnull().sum()

Out[5]: Date             0
        Closing Value    7
        dtype: int64

In [6]: dv.dropna(axis=0,inplace=True)

In [7]: dv.isnull().sum()

Out[7]: Date             0
        Closing Value    0
        dtype: int64

In [9]: dv_oil=dv.reset_index()['Closing Value']

In [10]: dv_oil

Out[10]: 0        25.56
         1        26.00
         2        26.53
         3        25.85
         4        25.87
        ...
8211    73.89
8212    74.19
8213    73.05
8214    73.78
8215    73.93
Name: Closing Value, Length: 8216, dtype: float64
```

Feature Scaling

In [13]:

```
from sklearn.preprocessing import MinMaxScaler
scaler=MinMaxScaler(feature_range=(0,1))
dv_oil=scaler.fit_transform(np.array(dv_oil).reshape(-1,1))
```

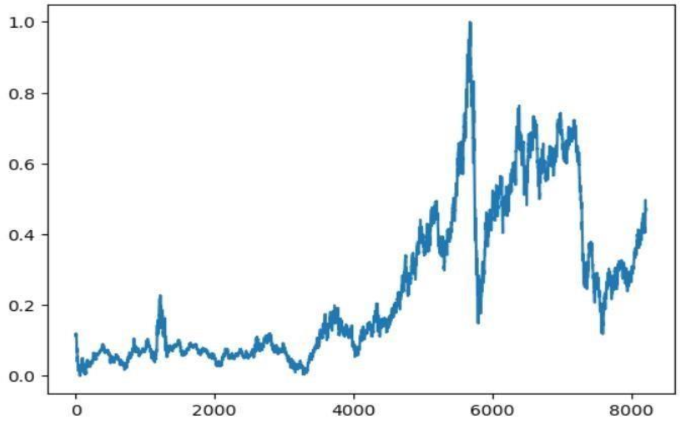
Data Visualization

In [14]:

```
plt.plot(dv_oil)
```

Out[14]:

```
[]
```



Splitting Data Into Train And Test

In [15]:

```
training_size=int(len(dv_oil)*0.65)
test_size=len(dv_oil)-training_size
train_data,test_data=dv_oil[0:training_size,:],dv_oil[training_size:len(dv_oil),:1]
```

In [16]:

```
training_size,test_size
```

Out[16]:

```
(5340, 2876)
```

In [17]:

```
train_data.shape
```

Out[17]:

```
(5340, 1)
```

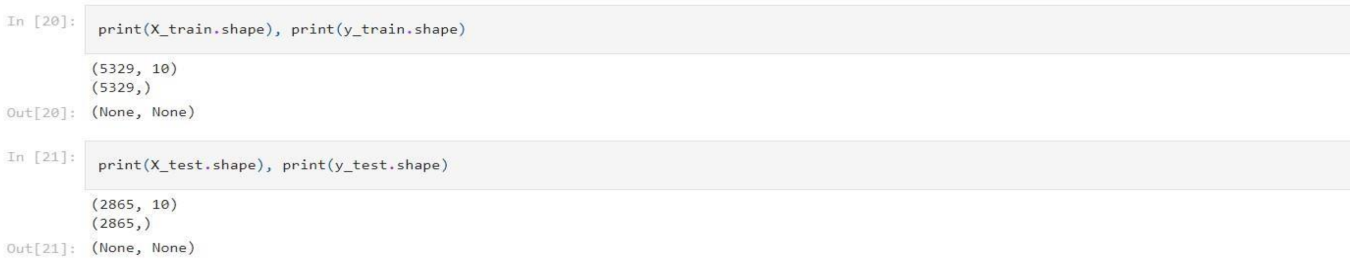
Creating A Dataset With Sliding Windows

In [18]:

```
def create_dataset(dataset, time_step=1):
    dataX, dataY = [], []
    for i in range(len(dataset)-time_step-1):
        a = dataset[i:(i+time_step),0]
        dataX.append(a)
        dataY.append(dataset[i + time_step,0])
    return np.array(dataX), np.array(dataY)
```

In [19]:

```
time_step = 10
X_train, y_train = create_dataset(train_data, time_step)
X_test, y_test = create_dataset(test_data, time_step)
```

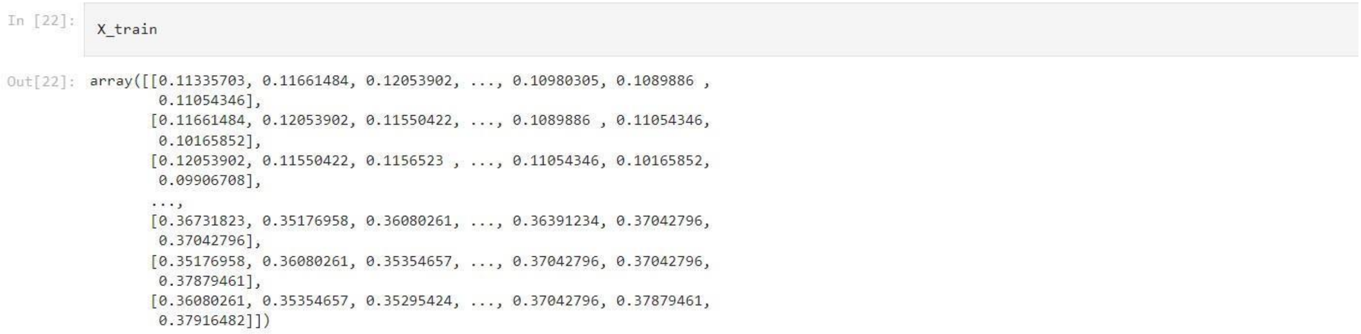


```
In [20]:  print(X_train.shape), print(y_train.shape)

          (5329, 10)
          (5329,)
Out[20]:  (None, None)

In [21]:  print(X_test.shape), print(y_test.shape)

          (2865, 10)
          (2865,)
Out[21]:  (None, None)
```



```
In [22]:  X_train

Out[22]: array([[0.11335703, 0.11661484, 0.12053902, ..., 0.10980305, 0.1089886 ,
                 0.11054346],
                [0.11661484, 0.12053902, 0.11550422, ..., 0.1089886 , 0.11054346,
                 0.10165852],
                [0.12053902, 0.11550422, 0.1156523 , ..., 0.11054346, 0.10165852,
                 0.09906708],
                ...,
                [0.36731823, 0.35176958, 0.36080261, ..., 0.36391234, 0.37042796,
                 0.37042796],
                [0.35176958, 0.36080261, 0.35354657, ..., 0.37042796, 0.37042796,
                 0.37879461],
                [0.36080261, 0.35354657, 0.35295424, ..., 0.37042796, 0.37879461,
                 0.37916482]])
```