Import Libraries

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

unzip the file

```
!unzip '/content/archive.zip'
```

```
     Archive:  /content/archive.zip
       inflating: Crude Oil Prices Daily.xlsx
```

Load the dataset

```
Data = pd.read_excel('/content/Crude Oil Prices Daily.xlsx')
Data
```

	Date	Closing Value
0	1986-01-02	25.56
1	1986-01-03	26.00
2	1986-01-06	26.53
3	1986-01-07	25.85
4	1986-01-08	25.87
...	...	...
8218	2018-07-03	74.19
8219	2018-07-04	NaN
8220	2018-07-05	73.05
8221	2018-07-06	73.78
8222	2018-07-09	73.93

8223 rows × 2 columns

Handling Missing Data

```
Data.isnull().any()
```

```
     Date             False
     Closing Value     True
     dtype: bool
```

```
Data.isnull().sum()
```

```
     Date             0
     Closing Value    7
     dtype: int64
```

```
Data.dropna(axis=0,inplace=True)
Data.isnull().sum()
```

```
     Date             0
     Closing Value    0
     dtype: int64
```

```
data_oil=Data.reset_index()['Closing Value']
data_oil
```

```
     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
```

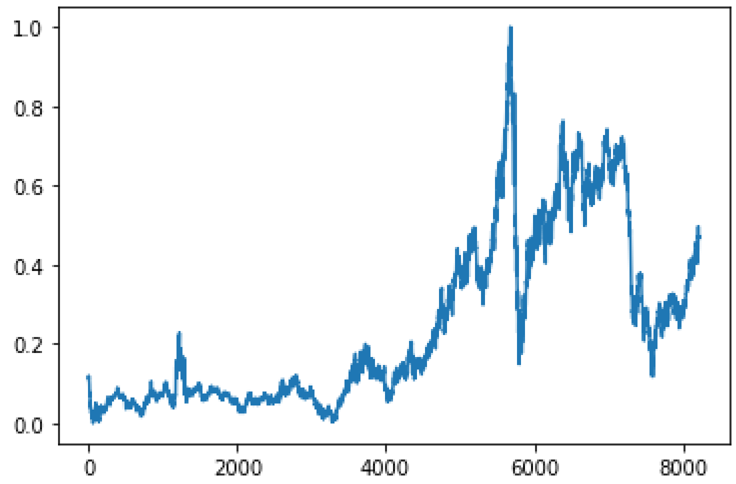
Feature Scaling

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

Data Visualization

```
plt.plot(data_oil)
```

```
[<matplotlib.lines.Line2D at 0x7ff4ebc4cd90>]
```



Splitting Data into Train and Test

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

```
training_size,test_size
```

```
(5340, 2876)
```

```
train_data.shape
```

```
(5340, 1)
```

creating a dataset with sliding windows

```
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)
```

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

```
print(X_train.shape), print(y_train.shape)
```

```
(5329, 10)
(5329,)
(None, None)
```

```
print(X_test.shape), print(ytest.shape)
```

```
(2865, 10)
(2865,)
(None, None)
```

```
X_train
```

```
     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]])
```

```
X_train = X_train.reshape(X_train.shape[0],X_train.shape[1], 1)
X_test = X_test.reshape(X_test.shape[0],X_test.shape[1], 1)
```