

# IMPORTING MODEL BUILDING LIBRARIES

```
import numpy as np
from keras.models import Sequential
from keras.layers import LSTM
from keras.layers import Dropout
from keras.layers import Dense
import pandas as pd
from matplotlib import pyplot as plt
from sklearn.preprocessing import StandardScaler
from sklearn.metrics import mean_absolute_error as mae
from sklearn.metrics import mean_squared_error as mse
from sklearn.metrics import r2_score as r2s
from google.colab import files
from math import sqrt
```

## INITIALIZING THE MODEL

```
def plotCurve(x,y,xlable,ylabel,clabel):
    fig, ax = plt.subplots(figsize=(5, 3))
    fig.subplots_adjust(bottom=0.15, left=0.2)
    ax.plot(x,y,label=clabel)
    ax.set_xlabel(xlable)
    ax.set_ylabel(ylabel)
    plt.grid()
    ax.legend()
    plt.show()

def plotTwoCurves(x1,x2,y1,y2,xlable,ylabel,clabel1,clabel2):
    fig, ax = plt.subplots(figsize=(5, 3))
    fig.subplots_adjust(bottom=0.15, left=0.2)
    ax.plot(x1,y1,color='blue',label=clabel1)
    ax.plot(x2,y2,color='red',label=clabel2)
    ax.set_xlabel(xlable)
    ax.set_ylabel(ylabel)
    plt.legend()
    plt.show()
```

In [25]:

```
ds=pd.read_csv('Crude_Oil_Prices.csv')
ds=ds.set_index(ds['Date'])
ds=ds.dropna()
print(ds)
ds['Date']=pd.to_datetime(ds['Date'])
print(ds['Value'].head())
index1=ds['Date']
```

In [26]:

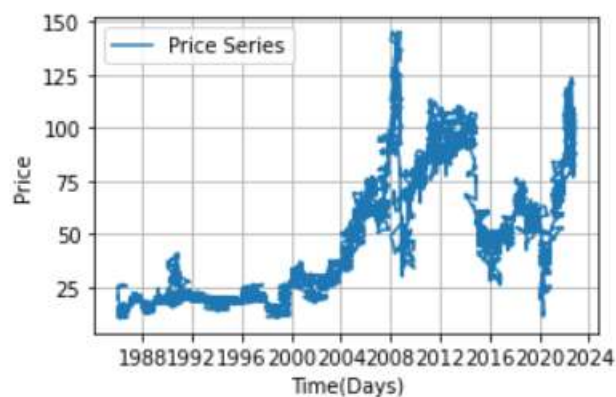
	Date	Value
Date		
02-01-1986	02-01-1986	25.56
03-01-1986	03-01-1986	26.00
06-01-1986	06-01-1986	26.53
07-01-1986	07-01-1986	25.85
08-01-1986	08-01-1986	25.87
...	...	...
20-10-2022	20-10-2022	85.98
21-10-2022	21-10-2022	85.05
24-10-2022	24-10-2022	84.92
25-10-2022	25-10-2022	84.79
26-10-2022	26-10-2022	88.05

[9294 rows x 2 columns]

Date	
02-01-1986	25.56
03-01-1986	26.00
06-01-1986	26.53
07-01-1986	25.85
08-01-1986	25.87

Name: Value, dtype: float64

```
plotCurve(index1,ds['Value'],'Time(Days)','Price','Price Series')
```



```
ds_price=ds['Value'].astype(float)
scaler=StandardScaler()
scaler=scaler.fit(ds_price.values.reshape(-1, 1))
ds_price_scaled=scaler.transform(ds_price.values.reshape(-1, 1))
ds_price_scaled
array([[ -0.68979433],
       [ -0.67488539],
       [ -0.65692689],
       ...,
       [  1.32155776],
       [  1.31715284],
       [  1.42761456]])
```

```
plotTwoCurves(index1,index1,ds['Value'],ds_price_scaled,'Time(Days)','Price
','Price Series','Scaled Price')
```

