MODEL BUILDING-CONFIGURE THE LEARING PROCESS

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Project Name	Crude Oil Price Prediction

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

In [2]:
```
data=pd.read_excel("/content/Crude Oil Prices Daily.xlsx")
```

In [3]:
```
data.isnull().any()
```

Out[3]:
```
Date             False
Closing Value     True
dtype: bool
```

In [4]:
```
data.isnull().sum()
```

Out[4]:
```
Date             0
Closing Value    7
dtype: int64
```

In [5]:
```
data.dropna(axis=0,inplace=True)
```

In [6]:
```
data.isnull().sum()
```

Out[6]:
```
Date             0
Closing Value    0
dtype: int64
```

In [7]:
```
data_oil=data.reset_index()['Closing Value']
data_oil
```

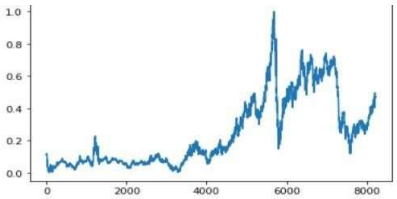
Out[7]:
```
0       25.56
1       26.00
2       26.53
3       25.85

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
```

In [8]:
```
from sklearn.preprocessing import MinMaxScaler
scaler=MinMaxScaler(feature_range=(0,1))
data_oil=scaler.fit_transform(np.array(data_oil).reshape(-1,1))
```

In [9]:
```
data_oil
```

Out[9]:
```
array([[0.11335703],
       [0.11661484],
       [0.12053902],
       ...,
       [0.46497853],
       [0.47038353],
       [0.47149415]])
```

In [10]:
```
plt.plot(data_oil)
```



In [11]:
```
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]
```

In [12]:
```
training_size,test_size
```

Out[12]: (5340, 2876)

In [13]:
```
train_data.shape
```

Out[13]: (5340, 1)

In [14]:
```
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 [15]:
```
time_step=10
x_train,y_train=create_dataset(train_data,time_step)
x_test,y_test=create_dataset(test_data,time_step)
```

In [16]:
```
print(x_train.shape),print(y_train.shape)
```

```
(5329, 10)
(5329,)
```

Out[16]: (None, None)

In [17]:
```
print(x_test.shape),print(y_test.shape)
```

```
(2865, 10)
(2865,)
```

Out[17]: (None, None)

In [18]:
```
x_train
```

Out[18]:
```
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]])
```

In [19]:
```
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)
```

```
model.add(LSTM(50,return_sequences=True))
```

```
model . add (Dense tJ } )
```

```
model.summary()
```

```
_________________________________________________________________
lstm (LSTM)                  (None, 10, 50)            10400
lstm_2 (LSTM)                (None, 50)                20200
```