Scaling

- 범위(Scale)가 다른 변수의 범위(Scale)를 비슷하게 맞추기 위한 목적

```
import warnings
warnings.filterwarnings('ignore')
```

I. 실습 데이터

1) seaborn 'mpg' Data Set

```
import seaborn as sns

DF = sns.load_dataset('mpg')
```

- 자동차 연비(mpg) 데이터
  - mpg : miles per gallon
  - 1 mile : 1.6 Km
  - 1 gallon : 3.78 Liter

```
DF.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 398 entries, 0 to 397
Data columns (total 9 columns):
 #   Column        Non-Null Count  Dtype  
---  ------        --------------  -----  
 0   mpg           398 non-null    float64
 1   cylinders     398 non-null    int64  
 2   displacement  398 non-null    float64
 3   horsepower    392 non-null    float64
 4   weight        398 non-null    int64  
 5   acceleration  398 non-null    float64
 6   model_year    398 non-null    int64  
 7   origin        398 non-null    object 
 8   name          398 non-null    object 
dtypes: float64(4), int64(3), object(2)
memory usage: 28.1+ KB
```

```
DF.head()
```

	mpg	cylinders	displacement	horsepower	weight	acceleration	model_year	ori
0	18.0	8	307.0	130.0	3504	12.0	70	
1	15.0	8	350.0	165.0	3693	11.5	70	
2	18.0	8	318.0	150.0	3436	11.0	70	

- X, y Data

```
X = DF[['weight']]
y = DF['mpg']
```

2) Without Scaling

- X값 확인

```
X[:5]
```

	weight
0	3504
1	3693
2	3436
3	3433
4	3449

```
import matplotlib.pyplot as plt

fig = plt.figure(figsize = (9, 6))
sns.regplot(x = X, y = y)
plt.xlabel('weight_Without_Scaling')
plt.show()
```

3) With Normalization

- sklearn Package

```
from sklearn.preprocessing import MinMaxScaler

scaler1 = MinMaxScaler()
X_Norm = scaler1.fit_transform(X)
```

- 정규화된 X값 확인

```
X_Norm[:5]
```

```
array([[0.5361497 ],
       [0.58973632],
       [0.51686986],
       [0.51601928],
       [0.52055571]])
```

- 정규화된 X값 모델생성

```
fig = plt.figure(figsize = (9, 6))
sns.regplot(x = X_Norm, y = y)
plt.xlabel('weight_With_Normalization')
plt.show()
```

4) With Standardization

- sklearn Package

```
from sklearn.preprocessing import StandardScaler

scaler2 = StandardScaler()
X_Stan = scaler2.fit_transform(X)
```

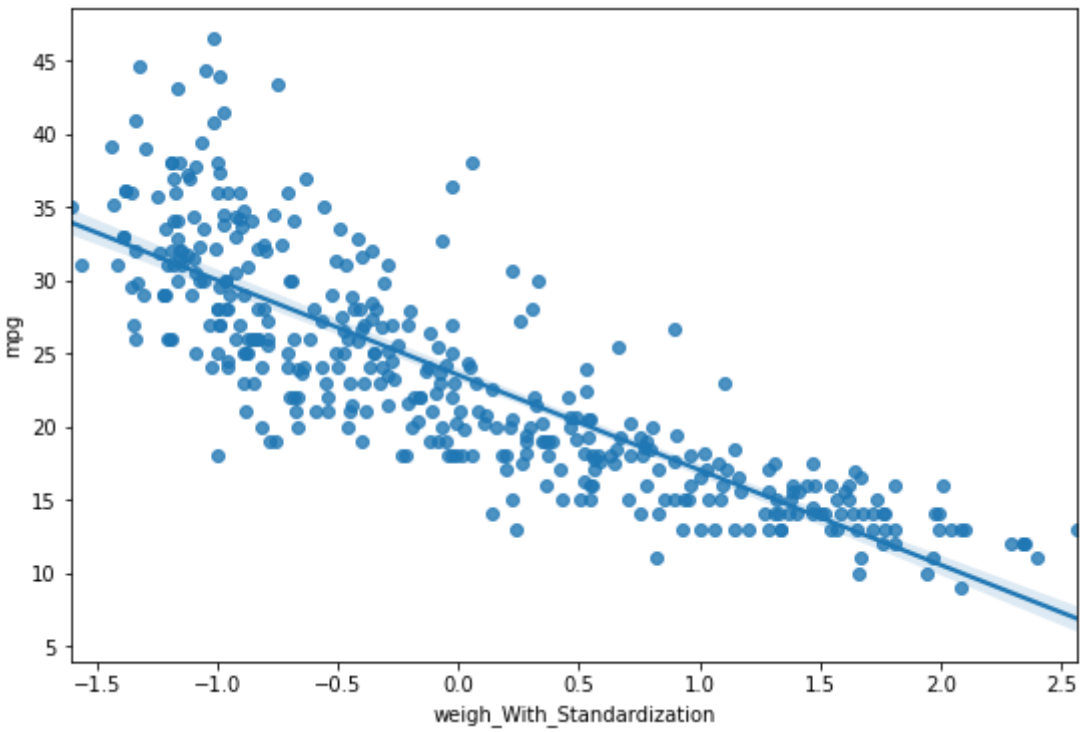
- 표준화된 X값 확인

```
X_Stan[:5]
```

```
array([[0.63086987],
       [0.85433297],
       [0.55047045],
       [0.54692342],
       [0.56584093]])
```

- 표준화된 X값 모델생성

```
fig = plt.figure(figsize = (9, 6))
sns.regplot(x = X_Stan, y = y)
plt.xlabel('weigh_With_Standardization')
plt.show()
```



#

#

#

The End

#

#

#