**ASSIGNMENT-3**

**FUNDAMENTAL OF MACHINE LEARNING**

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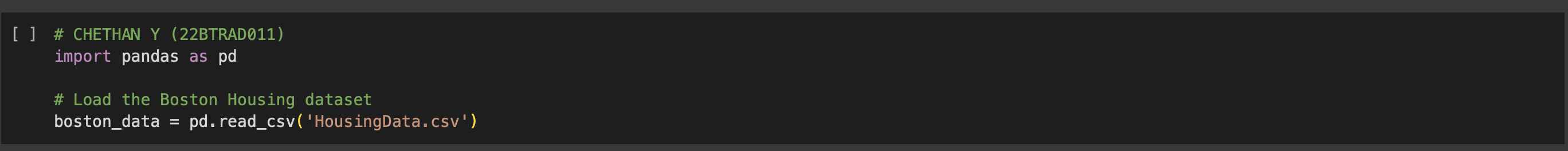
**QUES.** Load a dataset with (features of different scales) Boston Housing Dataset.

CODE:

import pandas as pd

# Load the Boston Housing dataset

boston\_data = pd.read\_csv('HousingData.csv')



**QUES.** Apply Min-Max scaling to dataset

CODE:

from sklearn.preprocessing import MinMaxScaler

# Create the MinMaxScaler object

scaler = MinMaxScaler()

# Fit the scaler on the features

scaler.fit(boston\_data[['CRIM', 'ZN', 'CHAS', 'NOX', 'INDUS', 'PTRATIO',

'MEDV', 'LSTAT', 'RAD', 'AGE']])

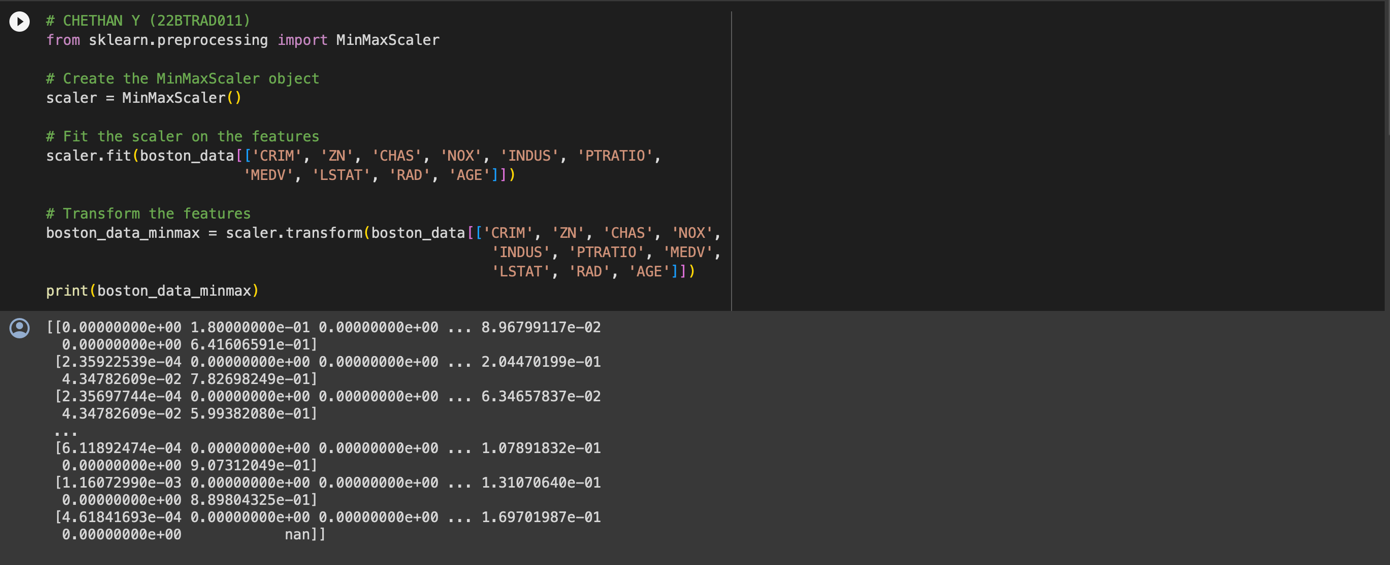
# Transform the features

boston\_data\_minmax = scaler.transform(boston\_data[['CRIM', 'ZN', 'CHAS', 'NOX',

'INDUS', 'PTRATIO', 'MEDV',

'LSTAT', 'RAD', 'AGE']])

print(boston\_data\_minmax)



**QUES.** Apply Standardization to dataset.

CODE:

from sklearn.preprocessing import StandardScaler

# Create the StandardScaler object

scaler = StandardScaler()

# Fit the scaler on the features

scaler.fit(boston\_data[['CRIM', 'ZN', 'CHAS', 'NOX', 'INDUS', 'PTRATIO',

'MEDV', 'LSTAT', 'RAD', 'AGE']])

# Transform the features

boston\_data\_std = scaler.transform(boston\_data[['CRIM', 'ZN', 'CHAS', 'NOX',

'INDUS', 'PTRATIO', 'MEDV',

'LSTAT', 'RAD', 'AGE']])

print(boston\_data\_std)

A screenshot of a computer

Description automatically generated

**QUES.** Apply Robust scaling to the dataset.

CODE:

from sklearn.preprocessing import RobustScaler

# Create the RobustScaler object

scaler = RobustScaler()

# Fit the scaler on the features

scaler.fit(boston\_data[['CRIM', 'ZN', 'CHAS', 'NOX', 'INDUS', 'PTRATIO',

'MEDV', 'LSTAT', 'RAD', 'AGE']])

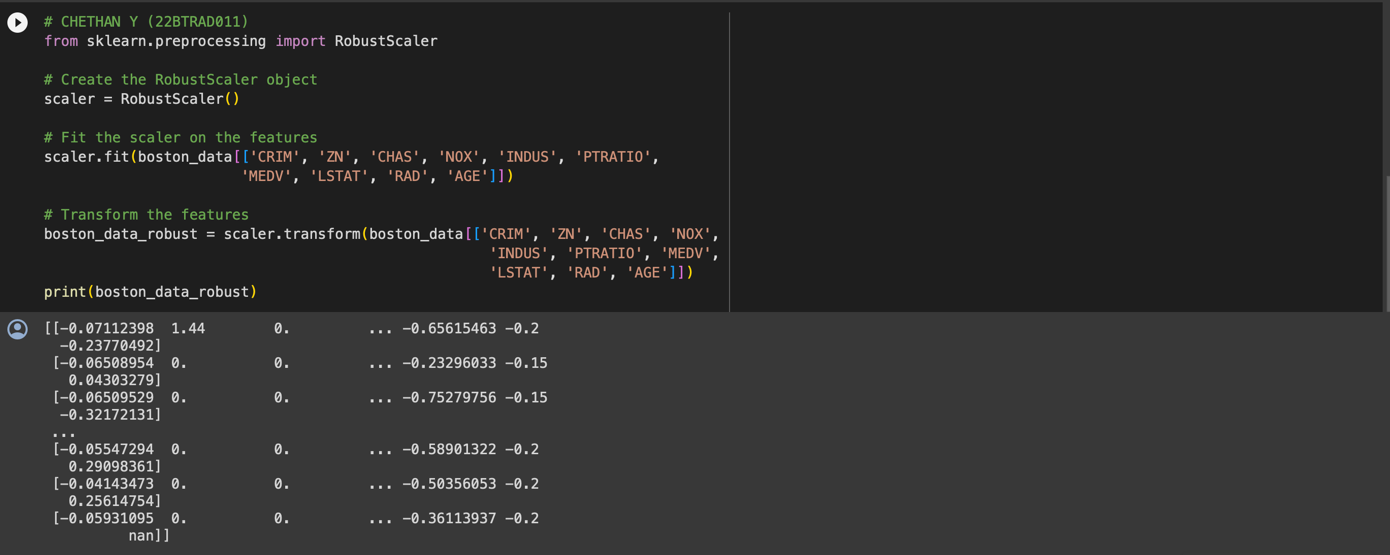
# Transform the features

boston\_data\_robust = scaler.transform(boston\_data[['CRIM', 'ZN', 'CHAS', 'NOX',

'INDUS', 'PTRATIO', 'MEDV',

'LSTAT', 'RAD', 'AGE']])

print(boston\_data\_robust)



**QUES.** Assess the impact of scaling on the dataset.

CODE:

print('Statistical measures before scaling:')

print(boston\_data.describe())

# Statistical measures after Min-Max scaling

print('Statistical measures after Min-Max scaling:')

print(pd.DataFrame(boston\_data\_minmax).describe())

# Statistical measures after standardization

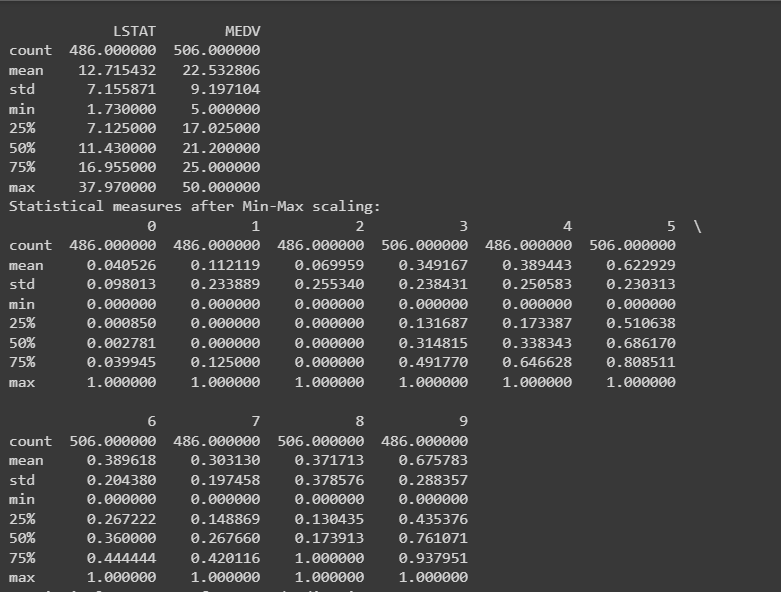
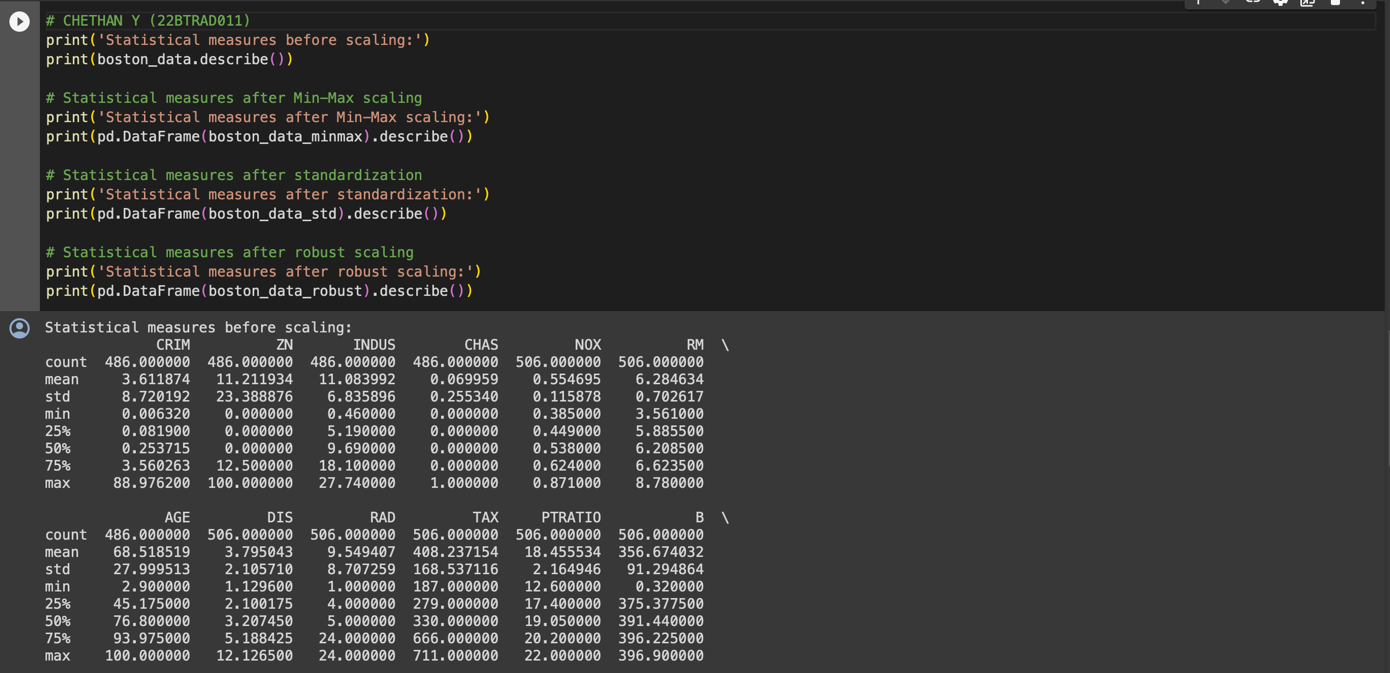
print('Statistical measures after standardization:')

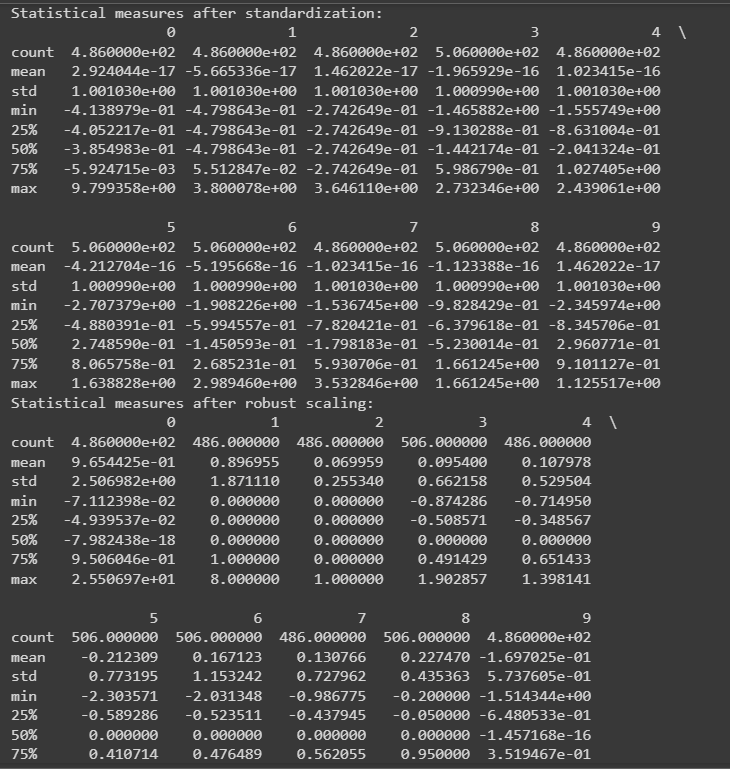
print(pd.DataFrame(boston\_data\_std).describe())

# Statistical measures after robust scaling

print('Statistical measures after robust scaling:')

print(pd.DataFrame(boston\_data\_robust).describe())





GITHUB:

https://github.com/CHETHAN /MACHINE-LEARNING