**Ex-4(b) Implementation of Correlation Analysis of Iris and Boston Housing Datasets**

**Aim:**

to perform correlation analysis on the Iris dataset and the Boston Housing dataset. It calculates the correlation matrix for each dataset and determines the pairwise correlation between two specific features in the Boston Housing dataset.

**Algorithm:**

1. Import the necessary libraries
2. Load the Iris dataset using function from sklearn.datasets.
3. Convert the Iris data to a pandas DataFrame.
4. Calculate the correlation matrix for the Iris dataset.
5. Print the correlation matrix for the Iris dataset.
6. Load the Boston Housing dataset using function from sklearn.datasets.
7. Convert the Boston Housing data to a pandas DataFrame.
8. Calculate the correlation matrix for the Boston Housing dataset.
9. Print the correlation matrix for the Boston Housing dataset.
10. Calculate the pairwise correlation between the selected features in the Boston Housing dataset using the correlation function on the respective columns.
11. Print the calculated correlation value.

**Program:**

import numpy as np

import pandas as pd

from sklearn.datasets import load\_iris, load\_boston

# Load the Iris dataset

iris = load\_iris()

iris\_data = iris.data

iris\_feature\_names = iris.feature\_names

# Convert Iris data to a pandas DataFrame

iris\_df = pd.DataFrame(iris\_data, columns=iris\_feature\_names)

# Calculate correlation matrix for Iris dataset

iris\_corr\_matrix = iris\_df.corr()

# Print correlation matrix for Iris dataset

print("Correlation Matrix for Iris dataset:")

print(iris\_corr\_matrix)

print()

# Load the Boston Housing dataset

boston = load\_boston()

boston\_data = boston.data

boston\_feature\_names = boston.feature\_names

# Convert Boston Housing data to a pandas DataFrame

boston\_df = pd.DataFrame(boston\_data, columns=boston\_feature\_names)

# Calculate correlation matrix for Boston Housing dataset

boston\_corr\_matrix = boston\_df.corr()

# Print correlation matrix for Boston Housing dataset

print("Correlation Matrix for Boston Housing dataset:")

print(boston\_corr\_matrix)

print()

# Calculate pairwise correlation between two features in the Boston Housing dataset

crim\_corr = boston\_df['CRIM'].corr(boston\_df['TAX'])

print("Correlation between 'CRIM' and 'TAX' in Boston Housing dataset:", crim\_corr)

**Result:**

Thus the correlation matrix of both Iris and Boston Housing Datasets are calculated using the correlation functions.