import numpy as np

import pandas as pd

import matplotlib.pyplot as plt

from sklearn.model\_selection import train\_test\_split

from sklearn.linear\_model import LinearRegression

from sklearn.datasets import fetch\_california\_housing

from sklearn.metrics import mean\_squared\_error, r2\_score

# Step 1: Load the dataset

housing = fetch\_california\_housing()

X = pd.DataFrame(housing.data, columns=housing.feature\_names)

y = pd.Series(housing.target)

# Step 2: Split the dataset into training and testing sets

X\_train, X\_test, y\_train, y\_test = train\_test\_split(X, y, test\_size=0.2, random\_state=42)

# Step 3: Train the Linear Regression model

model = LinearRegression()

model.fit(X\_train, y\_train)

# Step 4: Make predictions

y\_pred = model.predict(X\_test)

# Step 5: Evaluate the model's performance

mse = mean\_squared\_error(y\_test, y\_pred)

r2 = r2\_score(y\_test, y\_pred)

print(f'Mean Squared Error: {mse:.2f}')

print(f'R^2 Score: {r2:.2f}')

plt.figure(figsize=(10, 6))

plt.scatter(y\_test, y\_pred, color='blue')

plt.plot([min(y\_test), max(y\_test)], [min(y\_test), max(y\_test)], color='red', linewidth=2)

plt.xlabel('Actual')

plt.ylabel('Predicted')

plt.title('Actual vs Predicted Housing Prices')

plt.show()

#output

