import pandas as pd

import numpy as np

import matplotlib.pyplot as plt

import yfinance as yf

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

from sklearn.linear\_model import LinearRegression

from sklearn.metrics import mean\_squared\_error

ticker = 'AAPL'

stock\_data = yf.download(ticker, start='2020-01-01', end='2023-01-01')

print(stock\_data.head())

stock\_data = stock\_data[['Close']]

stock\_data['Future\_Close'] = stock\_data['Close'].shift(-1)

stock\_data = stock\_data[:-1]

X = stock\_data[['Close']]

y = stock\_data['Future\_Close']

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

model = LinearRegression()

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

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

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

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

plt.figure(figsize=(12, 6))

plt.plot(y\_test.values, label='Actual Prices')

plt.plot(y\_pred, label='Predicted Prices')

plt.legend()

plt.xlabel('Time')

plt.ylabel('Stock Price')

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

plt.show()