import numpy as np

import pandas as pd

import matplotlib.pyplot as plt

from sklearn.linear\_model import LogisticRegression

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

from sklearn.metrics import classification\_report, confusion\_matrix

data = {

'Hours': [1, 2, 3, 4, 5, 6, 7, 8, 9, 10],

'Pass': [0, 0, 0, 0, 1, 1, 1, 1, 1, 1]

}

# Create DataFrame

df = pd.DataFrame(data)

X = df[['Hours']] # Independent variable

y = df['Pass'] # Dependent (target) variable

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

model = LogisticRegression()

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

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

print("Confusion Matrix:")

print(confusion\_matrix(y\_test, y\_pred))

print("\nClassification Report:")

print(classification\_report(y\_test, y\_pred))

X\_range = np.linspace(0, 11, 100).reshape(-1, 1)

y\_prob = model.predict\_proba(X\_range)[:, 1]

plt.scatter(X, y, color='blue', label='Actual Data')

plt.plot(X\_range, y\_prob, color='red', label='Logistic Curve')

plt.xlabel('Hours Studied')

plt.ylabel('Probability of Passing')

plt.title('Logistic Regression - Pass Prediction')

plt.legend()

plt.grid(True)

plt.show()