PART B

LAB 6

6) LINEAR REGRESSION

# Import necessary libraries

import numpy as np

import matplotlib.pyplot as plt

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

from sklearn.linear\_model import LinearRegression

from sklearn.metrics import mean\_squared\_error

from sklearn import datasets

import pandas as pd

# Load the Iris dataset

iris = datasets.load\_iris()

data=pd.DataFrame(data=np.c\_[iris['data'],iris['target']], columns=iris['feature\_names']+['target'])

X = iris.data # Selecting the first feature (sepal length)

y = iris.target # Selecting the target variable (species)

# Split the data into training and testing sets

X\_train, X\_test, y\_train, y\_test = train\_test\_split(X, y, test\_size=0.2, random\_state=0)

# Create a Linear Regression model

model = LinearRegression()

# Train the model

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

# Make predictions on the test set

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

# Evaluate the model

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

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

# Plot the results

plt.scatter(X\_train, y\_train , label='Train Data')

plt.scatter(X\_test, y\_test, label='Test Data')

plt.plot(X\_test, y\_pred, color='red', label='Regression Line')

plt.xlabel('Sepal Length')

plt.ylabel('Species')

plt.legend()

plt.show()