EXPERIMENT 7

Linear Regression

Aim:

To understand the importance of linear regression.

Algorithm:

1. Import the required libraries — numpy, pandas, sklearn, and pickle.

2. Load the salary dataset using pd.read\_csv().

3. Separate the dataset into features (Years of Experience) and target (Salary) variables.

4. Split the data into training and testing sets using train\_test\_split().

5. Create a Linear Regression model and train it on the training data.

6. Evaluate the model using R² scores, and display the slope and intercept.

7. Save the trained model using the pickle module and reload it.

8. Predict the estimated salary for a given number of years of experience and display the result.

Program:

import numpy as np

import pandas as pd

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

from sklearn.linear\_model import LinearRegression

import pickle

df = pd.read\_csv("C:\Salary\_data.csv")

X = df.iloc[:, [0]].values

y = df.iloc[:, [1]].values

x\_train, x\_test, y\_train, y\_test = train\_test\_split(X, y, test\_size=0.2)

model = LinearRegression()

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

print("Training Score (R²):", model.score(x\_train, y\_train))

print("Testing Score (R²):", model.score(x\_test, y\_test))

print("Coefficient (Slope):", model.coef\_)

print("Intercept:", model.intercept\_)

pickle.dump(model, open("SalaryPred.model", "wb"))

model = pickle.load(open("SalaryPred.model", "rb"))

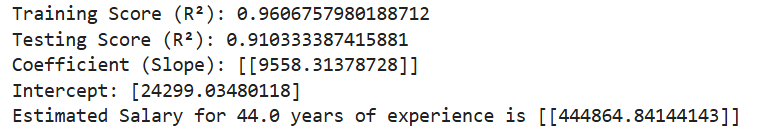
yr\_of\_exp = 44.0

salary = model.predict(np.array([[yr\_of\_exp]]))

print("Estimated Salary for {} years of experience is {}"

.format(yr\_of\_exp, salary))

Output:



Result:

Hence a python program for linear regression is written and executed successfully.