

LABORATORY REPORT

Application Development Lab

(CS33002)

B.Tech Program in CSE

Submitted By

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(Deemed to be University)
Bhubaneswar, India**

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| | |
|---------------------------|-----------------------------------|
| Experiment Number | 5 |
| Experiment Title | Multiple Linear Regression |
| Date of Experiment | 21-01-2026 |
| Date of Submission | 28-01-2026 |

1. Objective:- Extend regression analysis to handle multiple predictors.

2. Code:-

a. multiple_linear_regression.py

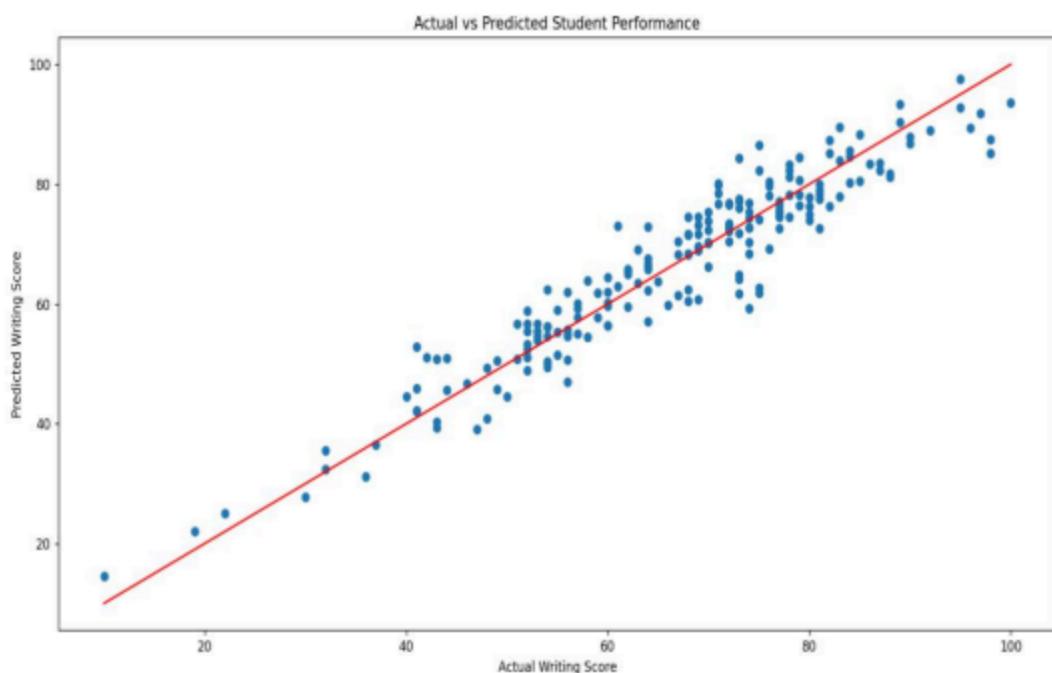
```
import pandas as pd
import matplotlib.pyplot as plt
from sklearn.model_selection import train_test_split
from sklearn.linear_model import LinearRegression
from sklearn.metrics import mean_squared_error, r2_score
df = pd.read_csv("student_performance.csv")
X = df[['math score', 'reading score']]
y = df['writing score']
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)
r2 = r2_score(y_test, y_pred)
print("Mean Squared Error (MSE):", mse)
print("R2 Score:", r2)
plt.scatter(y_test, y_pred)
plt.xlabel("Actual Writing Score")
plt.ylabel("Predicted Writing Score")
plt.title("Actual vs Predicted Student Performance")
plt.plot([y_test.min(), y_test.max()],
          [y_test.min(), y_test.max()],
          color='red')
plt.show()
```

b. student_performance.csv

3. Results/Output:-

```
Mean Squared Error (MSE): 23.665243336391313  
R2 Score: 0.9018108855760416
```

```
plt.scatter(y_test, y_pred)  
plt.xlabel("Actual Writing Score")  
plt.ylabel("Predicted Writing Score")  
plt.title("Actual vs Predicted Student Performance")  
plt.plot([y_test.min(), y_test.max()],  
         [y_test.min(), y_test.max()],  
         color='red')  
plt.show()
```



Roll number: 2305941

Signature of the Student

(Name of the Student)

Signature of the Lab Coordinator

(Name of the Coordinator)