

LABORATORY REPORT  
**Application Development Lab**  
**(CS33002)**

**B.Tech Program in CSE**

Submitted By

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**Bhubaneswar, India**

Spring 2025-2026

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

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

2. **Code:-**

a. **multiple\_linear\_regression.py**

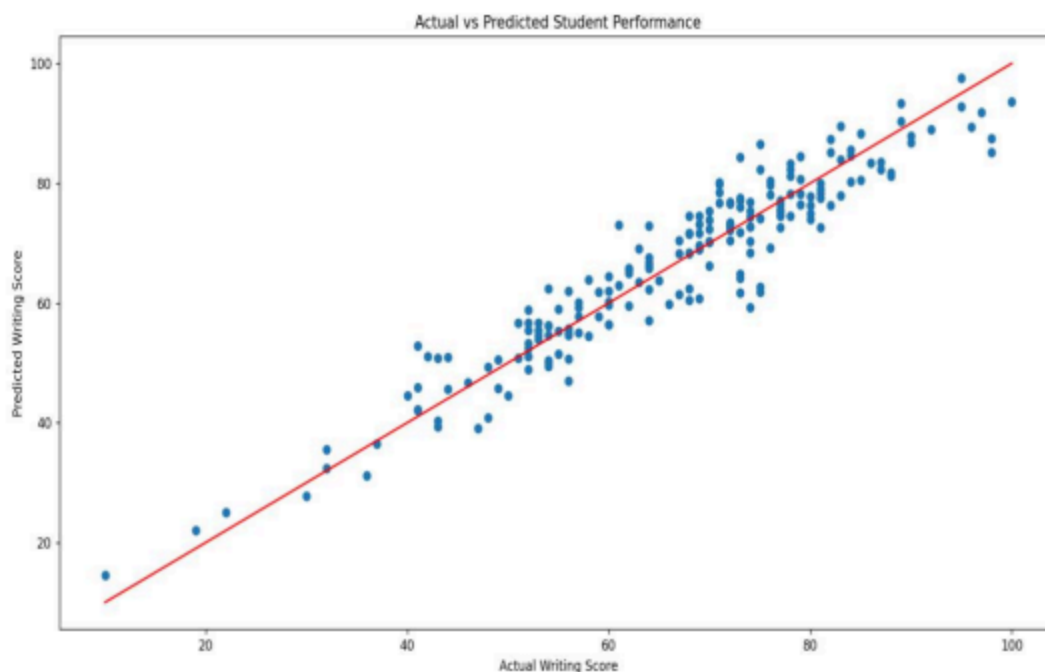
```
import pandas as pd
import matplotlib.pyplot as plt
from sklearn.model_selection import train_test_split
from sklearn.linear_model import LinearRegression
from sklearn.metrics import mean_squared_error, r2_score
df = pd.read_csv("student_performance.csv")
X = df[['math score', 'reading score']]
y = 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

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(Name of the Student)

Signature of the Lab Coordinator

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(Name of the Coordinator)