Experiment :3

Problem statement:

Implement linear regression using python

Aim: to **Implement linear regression using python**

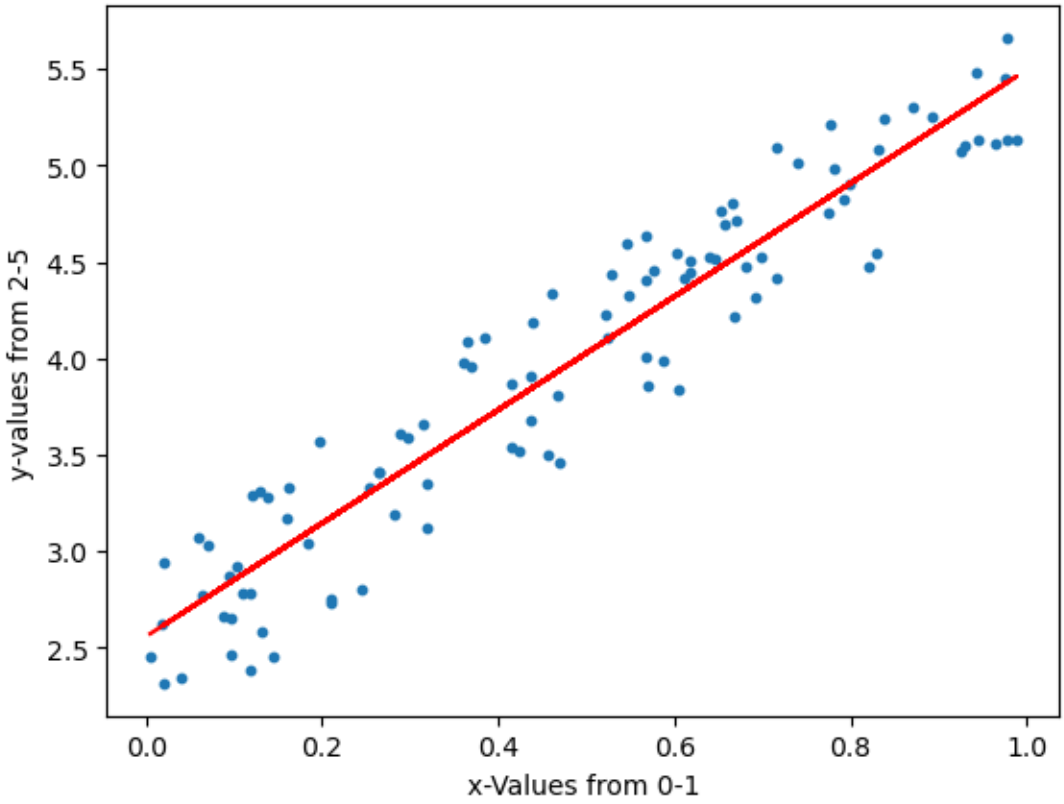
ALGORITHM:

Step 1: Create Database for Linear Regression
Step 2:Finding Hypothesis of Linear Regression
Step 3:Training a Linear Regression model
Step 4:Evaluating the model
Step 5: Scikit-learn implementation
Step 6: End

PROGRAM:

```
import numpy as np
import matplotlib.pyplot as plt
from sklearn.linear_model import LinearRegression
from sklearn.metrics import mean_squared_error, r2_score
# generate random data-set
np.random.seed(0)
x = np.random.rand(100, 1) #Generate a 2-D array with 100 rows, each row containing 1 random numbers:
y = 2 + 3 * x + np.random.rand(100, 1)
regression_model = LinearRegression() # Model initialization
regression_model.fit(x, y) # Fit the data(train the model)
y_predicted = regression_model.predict(x) # Predict
# model evaluation
rmse = mean_squared_error(y, y_predicted)
r2 = r2_score(y, y_predicted)
# printing values
print('Slope:' ,regression_model.coef_)
print('Intercept:', regression_model.intercept_)
print('Root mean squared error: ', rmse)
print('R2 score: ', r2)
# plotting values # data points
plt.scatter(x, y, s=10)
plt.xlabel('x-Values from 0-1')
plt.ylabel('y-values from 2-5')
# predicted values
plt.plot(x, y_predicted, color='r')
plt.show()
```

OUTPUT:



Result: The program has been executed successfully and Linear regression is implemented.