AI Lab 7
Machine Learning
11762 Muhammad Kashif

Code

```
import numpy as np
import matplotlib.pyplot as plt
def estimate_coef(x,y):
    n = np.size(x)
    m_x = np.mean(x)
    m_y = np.mean(y)
    ss_xy = np.sum(y*x)-n*m_y*m_x
    ss_xx = np.sum(x*x)-n*m_x*m_x
    b_1 = ss_xy/ss_xx
    b_0 = m_y-b_1*m_x
    return (b_0,b_1)
def plot_regression_line(x,y,b):
    plt.scatter(x,y,color = "r",marker = "o",s = 30)
    y_pred =b[0]+b[1]*x
    plt.plot(x,y_pred,color="b")
    plt.xlabel('x')
    plt.ylabel('y')
    plt.show()

x = np.array([0,1,2,3,4,5,6,7,8,9])
y = np.array([1,3,2,5,7,8,8,9,10,12])
b = estimate_coef(x,y)
print("Estimated coefficients : \nb_0 = {} \nb_1 = {}".format(b[0],b[1]))
plot_regression_line(x,y,b)
```

Output

```
Estimated coefficients :
b_0 = 1.2363636363636363
b_1 = 1.1696969696969697
```