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#4  Apply linear regression Model techniques to predict the data
# on any dataset.

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 = "m", marker="o" , s=30)

    y_pred = b[0] + b[1]*x

    plt.plot(x,y_pred,color ="g")

    plt.xlabel('x')
    plt.ylabel('y')

    plt.show()

def main():
      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 coefficient:\nb_0 = {} \nb_1 = {}".format(b[0],b[1]))

      plot_regression_line(x,y,b)

main()
```

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Estimated coefficient:
b_0 = 1.2363636363636363
b_1 = 1.1696969696969697
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