import numpy as np

data = [1,4,2,5,5,10,6,12,7,15]

data = np.array(data)

data = data.reshape(5,2)

##function

def pearsons\_correlation\_coeddicient\_and\_covariance(data):

meanx = 0

meany = 0

varx = 0

vary = 0

covxy = 0

for i in range(data.shape[0]):

meanx += float(data[i][0])

meany += float(data[i][1])

meanx = meanx/data.shape[0]

meany = meany/data.shape[0]

for i in range(data.shape[0]):

varx += (float(data[i][0])-meanx)\*\*2

vary += (float(data[i][1])-meany)\*\*2

for i in range(data.shape[0]):

covxy += (float(data[i][0])-meanx)\*(float(data[i][1])-meany)

pearsons\_correlations = covxy/((varx\*\*0.5) \* (vary\*\*0.5))

return meanx,meany,varx,vary,covxy,pearsons\_correlations

##pearsons\_correlations

meanx,meany,varx,vary,covxy,pearsons\_correlations = pearsons\_correlation\_coeddicient\_and\_covariance(data)

print(pearsons\_correlations)

####output :0.0.9910615723046898

##target data

import numpy as np

np.random.seed(1)

n=100

noise = (np.random.rand(n)-0.5)\*2

x = np.random.normal(0,1,n)

y = 5 \* x + 10 \* noise

##data in list

datalist = []

for i in range(n):

datalist.append(float(x[i]))

datalist.append(float(y[i]))

datalist = np.array(datalist)

datalist = datalist.reshape(n,2)

##pearsons\_correlations

meanx,meany,varx,vary,covxy,pearsons\_correlations = pearsons\_correlation\_coeddicient\_and\_covariance(datalist)

print(pearsons\_correlations)

####output :0.5530828259342412