**2.Linear Regression**

clc;

clear all;

close all;

x=[17 13 12 15 16 14 16 16 18 19];

y=[94 73 69 80 93 85 66 79 77 91];

xbar=mean(x)

ybar=mean(y)

xm=x-xbar

ym=y-ybar

xn=(xm).^2

yn=(ym).^2

m=xm.\*ym

num=sum(m)

xsum=sum(xn)

ysum=sum(yn)

den=(xsum\*ysum)^0.5

r=num/den

b=r\*(sum(y)/sum(x))

a=ybar-b.\*xbar

line=b.\*x+a

k=input('enter x:');

l=b\*k+a;

scatter(x,y);

hold on;

plot(x,line);

hold on;

scatter(k,l);

hold off;

OUTPUT:

xbar =

15.6000

ybar =

80.7000

xm =

1.4000 -2.6000 -3.6000 -0.6000 0.4000 -1.6000 0.4000 0.4000 2.4000 3.4000

ym =

13.3000 -7.7000 -11.7000 -0.7000 12.3000 4.3000 -14.7000 -1.7000 -3.7000 10.3000

xn =

1.9600 6.7600 12.9600 0.3600 0.1600 2.5600 0.1600 0.1600 5.7600 11.5600

yn =

176.8900 59.2900 136.8900 0.4900 151.2900 18.4900 216.0900 2.8900 13.6900 106.0900

m =

18.6200 20.0200 42.1200 0.4200 4.9200 -6.8800 -5.8800 -0.6800 -8.8800 35.0200

num =

98.8000

xsum =

42.4000

ysum =

882.1000

den =

193.3935

r =

0.5109

b =

2.6428

a =

39.4723

line =

84.3999 73.8287 71.1859 79.1143 81.7571 76.4715 81.7571 81.7571 87.0427 89.6855

enter x:14

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