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%Lab:-5
%Title:- To fit a straight line to the given data set using Least Square method.
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%Date:- 2024/12/20
%------Three Critical statements------------
close all;
clear variables;
clc;

%----------User Input Sections-------------
x=input('enter the value for x[]=');
y=input('enter the value for y[]=');
while(length(x)~=length(y))
    clc;
    disp('x and y must have same dimension.');
    x=input('enter the value for x[]=');
    y=input('enter the value for y[]=');
end
out=[x;y];
disp(out);

%--------------calculation section-----------
sx=0;
sy=0;
sxy=0;
sxx=0;
disp('_____________________________________________');
disp('      x         y         xy        x^2');
disp('_____________________________________________');
n= length(x);
for(i=1:n)
    out = [x(i),y(i),x(i)*y(i),x(i)*x(i)];
    disp(out);
    sx=sx+x(i);
    sy=sy+y(i);
    sxy=sxy+(x(i)*y(i));
    sxx=sxx+(x(i)*x(i));
end
disp('_____________________________________________');
sum =[sx,sy,sxy,sxx];
disp(sum);
disp('_____________________________________________');


b=(n*sxy-sx*sy)/(n*sxx-sx*sx);
a=(sy-b*sx)/n;

%-------------Output section-------------------
result = strcat('The required st. line top be the given data set using Least Square Method
fitted is y=',num2str(a),'+',num2str(b),'*x');
disp(result);
```