**TASK 1**

clc

clear all;

close all;

%

%Define the data :

x= [1,2,3,4,5,6,7];

y= [.5,2.5,2.0,4,3.5,6,5.5];

%Data to test linear log:

%Define the data :

x= [1,2,3,4,5];

y= [.5,1.7,3.4,5.7,8];

%Implementing simple least square Linear Regression:

[a1,a0]= linear\_regression(x,y);

%implement the linearize version

[a,b1]=linear\_regression\_using\_log(x,y);

%Find the approximate values for the data points

% for i = 1: 0.1:20

% c= a0+a1\*i;

% c=b1\*(i^a);

% Y=[Y C];

% end

%For Loop Different Approach

s= 1: 0.1:20;

Y= a0+a1.\*s;

%Y = b1\*(s.^a);

%y = contains true function points

%Y= contains approximated function points using the regarding line

plot(s,Y,x,y,'\*');

legend('Regression line','Data Point');

**TASK 2**

clc

clear all;

close all;

%Data to test linear log :

x= [1,2,3,4,5];

y= [.5,1.7,3.4,5.7,8];

%implement the linearize version

[a,b1]=linear\_regression\_using\_log(x,y);

%Find the approximate values for the data points

s= 1: 0.1:5/20; X ER LIMIT

Y = b1\*(s.^a);

%y = contains true function points

%Y= contains approximated function points using the regarding line

plot(s,Y,x,y,'\*');

legend('Regression line','Data Point');

TASK 3

clc

clear all;

close all;

%Data to test linear log :

x= [0,1,2,3,4,5];

y= [2.1,7.7,13.6,27.2,40.9,61.1];

[a0,a1,a2]=second\_order\_regression(x,y);

s= 0: 0.1:07;

Y= a0+a1.\*s +a2.\*s.\*s ;

[A1,A0]=linear\_regression(x,y);

Y1=A0+A1.\*s;

%plot the results

plot(s,Y,s,Y1,x,y,'\*');

legend('Second order regression','Linear regression line ','Data Points');

title('Comparison between second order regression and Linear Regression');