Linear Regression

Datasets	Mean square error	Mean absolute error	R square score	R square by sklearn
Data1	2.078525401777327	1.2805559784291463	0.9579571905586357	0.96
Data2	0.0764334270435197	0.2349883528902574	0.9904038522690993	0.99
Data3	0.16173044143088558	0.2946779330131036	0.3136973226728079	0.31
Data4	34.620480829243355	5.155505630378932	0.9841749058943147	0.98

Data 1 :

Comparison for weight:

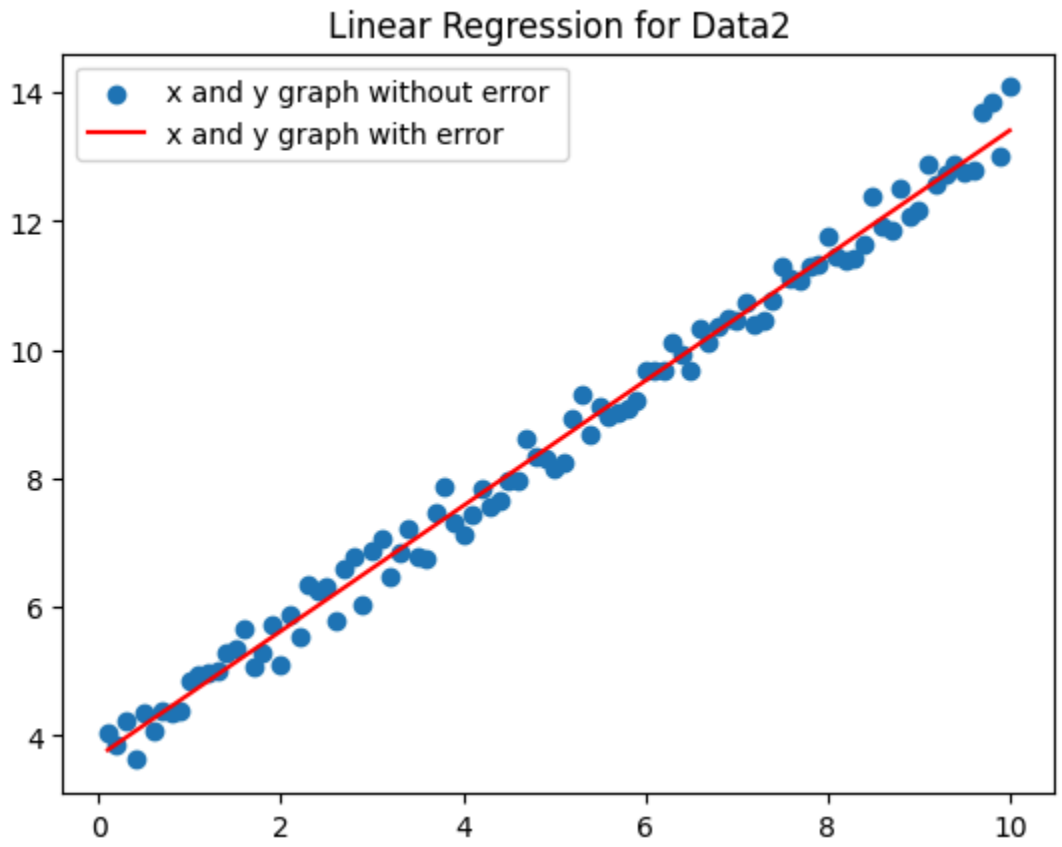
Weight by Numerical Method : [5.68078713 2.38406007]

Weight by Gradient Descent Method : [5.68078713 2.38406007]

Inference:

Here errors are very less which shows that our accuracy is high. R square calculated by both my modal and sklearn matches and close to 1. Which indicates that linear regression is given a best fit hyperplane.

Data 2:



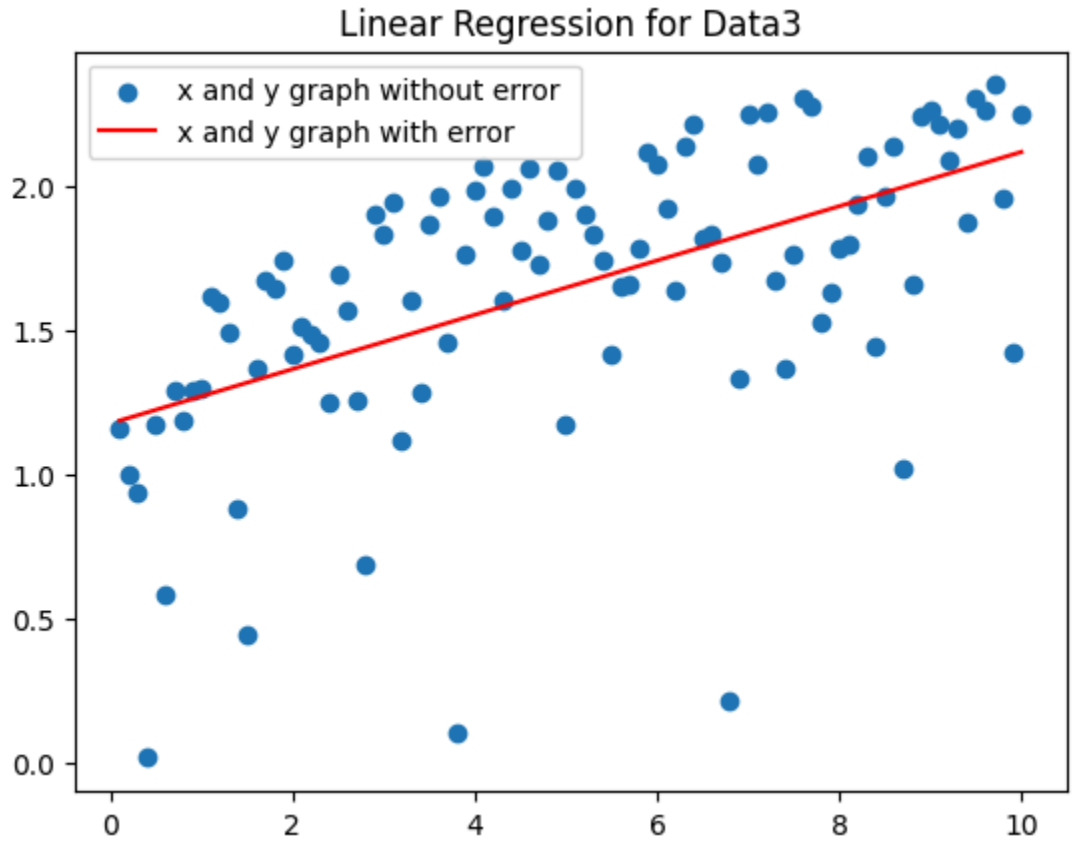
Comparison for weight:

Weight by Numerical Method : [3.68212267 0.97299745]

Weight by Gradient Descent Method : [3.68212267 0.97299745]

Inference:
Data requires linear transformation as it was a non-linear graph and error was too much.
After that errors are very less which shows that our accuracy is high. R square calculated by both my modal and sklearn matches and close to 1. Which indicates that linear regression is given a best fit hyperplane.

Data 3:



Comparison for weight:

Weight by Numerical Method : [1.17706208 0.09419021]
Weight by Gradient Descent Method : [1.17706208 0.09419021]

Inference:

Here errors are too much which shows that our accuracy is too low. R square calculated by both my modal and sklearn matches but close to 0, Which indicates that linear regression can not be used for finding a best fit hyperplane.

Data 4:

Our data has multiple features, which means there are many weights to find.

Comparison for weight:

Weight by Numerical Method : [13.23947782 6.13243763 2.39226554 7.74681038]

Weight by Gradient Descent Method : [13.23947579 6.13243433 2.3922683 7.74681094]

Inference:

Here errors are very less which shows that our accuracy is high. R square calculated by both my modal and sklearn matches and close to 1. Which indicates that multivariate linear regression is given a best fit hyperplane.

Overall conclusion:

Dataset1 : Standard Linear Regression is applicable
Dataset 2 : Standard Linear Regression is applicable after applying non-linear transformation.
Dataset 3 ; Standard Linear Regression is not applicable.
Dataset 4 : Standard Linear Regression is applicable