Linear Regression

(a) Use your closed form implementation to fit a model to the data in 1D-no-noise-lin.txt and

2D-noisy-lin.txt. What is the loss of the fit model in both cases? Include plots for both. Note:

for some of these datasets the y-intercept will be non-zero, make sure you handle this case!

(b) What happens when you're using the closed form solution and one of the features (columns of X)

is duplicated? Explain why. Note: you may want to test this out with your code as a useful first

step, but you should think critically about what is happening and why.

(c) Does the same thing happen if one of the training points (rows of X) is duplicated? Explain why.

(d) Does the same thing happen with Gradient Descent? Explain why.

1D-no-noise-lin.txt

Theta : [[0.5]] , Mean squared error: 0.00

Chart, scatter chart

Description automatically generated

2D-noisy-lin.txt

Theta : [[4.47467363] [1.9625976 ]] , Mean squared error: 1.20

Chart, scatter chart

Description automatically generated

1. Theta don’t change but MSE is changed
2. Yes
3. Not sure yet