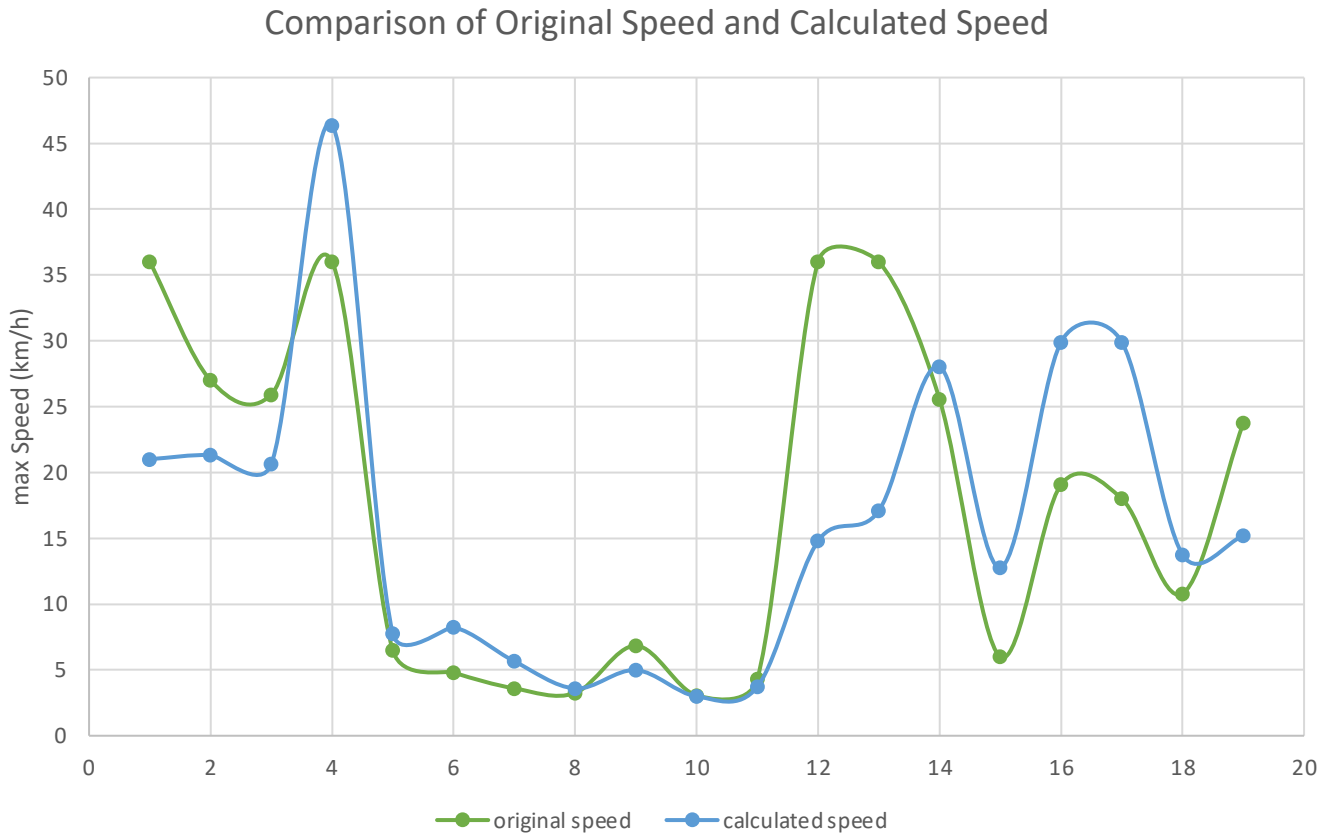
CSE 6010 HW1 - Wenyue Wang

- In the program, I first input mass and max-speed as two arrays, then traverse the array to calculate log() and save as two new arrays.
- Then based on equation, calculate terms in matrix M and b, here I use several double instead of a 2D array.
- Then calculate the inverse of M
- After that, I calculate the coefficient a and exponent c thru vector k
- And finally I write an extra test function to verify the correctness of my power law implementation, and put values into Excel for visualization

Verify results

Here I used Excel to plot a scatter figure of original speed and calculated speed, as well as use terminal show their difference. We can see the general trend is similar and difference is acceptable.

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difference of 1's velocity is: -14.990815
difference of 2's velocity is: -5.682154
difference of 3's velocity is: -5.283599
difference of 4's velocity is: 10.372396
difference of 5's velocity is: 1.270317
difference of 6's velocity is: 3.446264
difference of 7's velocity is: 2.052700
difference of 8's velocity is: 0.350022
difference of 9's velocity is: -1.855431
difference of 10's velocity is: -0.067789
difference of 11's velocity is: -0.603486
difference of 12's velocity is: -21.206976
difference of 13's velocity is: -18.909145
difference of 14's velocity is: 2.458952
difference of 15's velocity is: 6.782898
difference of 16's velocity is: 10.830012
difference of 17's velocity is: 11.910012
difference of 18's velocity is: 2.949094
difference of 19's velocity is: -8.574597
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Challenges

- To list out the math formulas and relate speed and mass with x, y, log, M, b.
- To include second function in file, and the main function would call the sub-function. I first want to use array as output, but found to be complicated, so just print out values in sub function.