Problem statement

Given x (len n) y (len n) find best linear relationship between x and y such that it reduces the loss function

Let parameters be m and b

$$guess_i = mx_i + b$$

$$loss = \sum_i^n (y_i - guess_i)^2$$

$$= \sum_i^n (mx_i + b - guess_i)^2$$

$$= \sum_i^n (error_i)^2$$

$$dL/de_i = 2 * error_i$$

$$de_i/dm = x_i$$

$$de_i/db = 1$$

$$dL/dm = \sum_i^n dl/de_i * de_i/dm = \sum_i^n 2 * x_i * error_i$$

$$dL/db = \sum_i^n db/de_i * de_i/db = \sum_i^n 2 * error_i$$