This spreadsheet is to be used to perform a single step of multiple linear regression.

DATA

x1_i (weight)	x2_i(hp)
3	1.1
2.5	0.9
4	1.5
3.5	1.2
2.8	1

Hyper-parameters

α

0.01

Current parameters

w1_0 (weight)	w2_0 (hp)
1.2	-0.8

Model Inference

x1_i (weight)	x2_i(hp)	*
3	1.1	
2.5	0.9	
4	1.5	
3.5	1.2	
2.8	1	

Gradient Descent Epoch 1

Update parameters

w_1 = 1.48 -0.69

Gradient Computation

Gradient of loss with respect to b

$\partial L/\partial b$ = -10.704

Gradient of loss with respect to m

$\partial L/\partial \mathbf{w}$ = 72.3

MPG
25
30
18
22
28

b_0

17

$\mathbf{w}^T$	=	$\mathbf{xw}^T$	+	b_0
1.2		2.12		17
-0.8		1.78		
		2.8		
		2.54		
		2		

	=	$\partial e\_i/\partial y\_hat\_i$	*	$(\partial L\_i/\partial e\_i)^T$
25.818		-1		2.35

	=	$\partial e\_i/\partial y\_hat\_i$	*	$(\partial L\_i/\partial e\_i)^T$
		-1		-2.352

w_0-α*∂L/∂**w**		b_1	=	b_0-α*∂L/∂b
		17.1		

=	y_hat_i	e_i = y_i - y_hat_i
	19.12	5.88
	18.78	11.22
	19.8	-1.8
	19.54	2.46
	19	9

*

4.49	-0.72	0.984	3.6

*

-4.49	0.72	-0.984	-3.6

$L_i = \frac{1}{n} e^2$	$\partial L_i / \partial e_i$
6.91	2.35
25.18	4.49
0.65	−0.72
1.21	0.98
16.20	3.60

_hat_i/ **w**

∂y ∂

3	1.1
2.5	0.9
4	1.5
3.5	1.2
2.8	1

∂y_hat_i/∂b

1
1
1
1
1