Assignment - 6A

Price	Sqft - living
221900	1180
538000	2570
180000	770
604000	1960

Sample set 1 / Batch 1

Price (Y)	Sq-ft living (x)
221900	1180
538000	2570

Sample set 2 / Batch 2

Price (Y)	Sqft living
180000	770
604000	1960

1) $\eta = 0.1$, epochs = 1, $m = 1$ and $C = 1$, $n = 2$

2) Set iteration = 1

3) Set batch = 1

4) $\frac{\partial E}{\partial m} = (0.5)\left[(221900 - 1 * 1180 + 1) * 1180 + [538000 - 1 * 2570 + 1] * 2570\right]$

$= -(0.5)(1636508450)$

$= -818254225$

$\frac{\partial E}{\partial C} = -(0.5)\left[(221900 - 1 * 1180 + 1) + (538000 - 1 * 2570 + 1)\right]$

$= -(0.5)(756152)$

$= -378076$

5) step length $\Delta m = -(0.1)(-818254225)$

$= 818254225$

$\Delta c = -(0.1)(-378076)$

$= 37807.6$

6) Update $m = 1 + 818254225$ and $c = -1 + 37807.6$

$m = 818254235$ and $c = 37806.6$

7) Set batch1 $= 1+1 = 2$ and $i = 2$

Repeat 4: $\frac{\partial E}{\partial m} = -(0.5)[180000 - 818254235 * 700 - 37806.6) * 700 + (604000 - 818254235 * 1960 - 37806.6) * 1960]$

$= -(0.5)[-3.105320936^{14}]$

$= 1.55266047e^{14}$

$\frac{\partial E}{\partial c} = -(0.5)[180000 - 818254235 * 700 - 37806.6) + (604000 - 818254235 * 1960 - 37806.6)]$

$= -(0.5)(-1.666798986^{11}) = 8.333994896^{10}$

Repeat 5; step length $\Delta m = -(0.1)(1.55266047e^{14})$

$= -1.55266047e^{13}$

$\Delta c = -(0.1)(8.333994896^{10})$

$= -5.333994896^{9}$

Repeat 6: $m = 818254235 - 1.55266047^{13}$

$m = -1.552652296^{13}$

$c = 37806.6 - 8.333994896^{9}$

$c = -8.333957086^{9}$