	x_i^a	y_i^a
Batch 1	1180	221900
	2570	538000.
Batch 2.	770	160000
	1960	604000.

Step-1:- (x_i^a, y_i^a), $\eta = 0.01$, epochs=1, $m=-1$, $c=-1$

iter=1, batch=1.

Calculating gradient w.r.t m, c.

$$\frac{\partial E}{\partial m} = \frac{-1}{bs} \sum_{i=1}^{bs} \left[(y_i^a - mx_i^a - c)(x_i^a) \right]$$

$$= \frac{-1}{2} \sum_{i=1}^{2} \left[(y_i^a - mx_i^a - c)(x_i^a) \right]$$

$$= \frac{-1}{2} \left[[221900 - (-1)(1180) - (-1)](1180) \right.$$
$$\left. + [538000 - (-1)(2570) - (-1)](2570) \right]$$

$$= \frac{-1}{2} \left[(221900 + 1180 + 1)(1180) \right.$$
$$\left. + (538000 + 2570 + 1)(2570) \right]$$

$$= \frac{-1}{2} \left[223081(1180) + 540571(2570) \right]$$

$$= \frac{-1}{2}\left[2632355580 + 1389267470\right]$$

$$= \frac{-1}{2}(1652503050)$$

$$= -826251525.$$

$$\frac{\partial E}{\partial c} = \frac{-1}{bs}\sum_{i=1}^{bs}(y_i^a - mx_i^a - c)$$

$$= \frac{-1}{2}\left[221900. = \frac{-1}{2}(223081 + 54057)\right.$$

$$= \frac{-1}{2}(763652)$$

$$= -381826$$

5) ~~$m' = m + \Delta m$~~

$$\Delta m = -\eta \cdot \frac{\partial E}{\partial m}$$

$$= -(0.01)(-826251525)$$

$$= 8262515.25.$$

$$\Delta c = -\eta \cdot \frac{\partial E}{\partial c}$$

$$= -(0.01)(-381826)$$

$$= 3818.26.$$

$m = m + \Delta m$

$= -1 + 8262515.25$

$= 8262514.25.$

$c = c + \Delta c$

$= -1 + 3818.26$

$= 3817.26.$

batch = batch + 1

$= 2.$

for batch-2

Batch-2

x_i^a	y_i^a
770	180000
1960	604000

$$\frac{\partial E}{\partial m} = \frac{-1}{bs} \sum_{i=1}^{bs} (y_i^a - mx_i^a - c)(x_i^a)$$

$$= \frac{-1}{2} \left[\left((180000 - (8262514.25)(770) - (3817.26) \right) (770) \right.$$

$$\left. + (604000 - (8262514.25)(1960) - (3817.26)) (1960) \right]$$

$$= \frac{-1}{2} \left[(180000 - 6362135973 - 3817.26)(770) \right.$$

$$\left. + 604000 - 1.619452793 \times 10^{10} \right.$$