8(A)

Day1 (x)	Day2 (y)
5551.82208	4983.17184
4983.17184	4888.3968

Step-1 $\gamma = 0.9$, $\eta = 0.1$, epochs $= 1$, $m=1$, $c=-1$, $v_0^m = 0$, $v_0^c = 0$

Step-2 iteration $= 1$

Step-3 sample $= 1$

Step-4 $\left.\dfrac{\partial L}{\partial m}\right|_{m = m_0 + \gamma v_0^m} = -\left[y_i^q - (m_0 + \gamma v_0^m) x_i^q - (c_0 + \gamma v_0^c)\right] x_i^a$

$= -(5551.82208 - (1+(0.9)(0))$

$= -\left[4983.17184 - (1+(0.9)(0))(5551.82208)\right.$
$\left. - (-1 + (0.9)(0))\right](5551.82708)$

$= 3151493.136$

$\left.\dfrac{\partial L}{\partial c}\right|_{c = c_0 + \gamma v_0^c} = -(y_i^q - (m_0 + \gamma v_0^m) x_i^q - (c_0 + \gamma v_0^c))$

$= -(4983.17184 - (1 + (0.9)(0))(5551.82208)$
$- (-1 + (0.9)(0))] \epsilon$

$= 567.65024$

Step-5

$\Delta m = \gamma v_0^m - \eta \dfrac{\partial L}{\partial m} (m_0 + \gamma v_{t-1})$

$= (0.9)(0) - (0.1)(3151493.136)$

$= -315149.3136$

Scanned with CamScanner

$$\Delta c = \gamma^\circ v_0^c - n \frac{\partial L}{\partial x}(c_0 + \gamma v_0^c)$$

$$= (0.9)(0) - (0.1)(567.65024)$$

$$= -56.765024$$

step-6

$$m = m_0 + \Delta m$$

$$= 1 + (-315149.3136)$$

$$= -315148.3136$$

$$c = c_0 + \Delta c$$

$$= -1 + (-56.765024)$$

$$= -57.765024$$

step-7   sample

$$i = i+1 = 2$$

$$2 \le \text{epochs}$$

goto step-4

step-4

$$\frac{\partial L}{\partial m} = -\Big[4888.3968 - (-315148.3136 + (0.9)(0)) \\ (4983.17184) \\ - (-57.765024 + (0.9)(0))\Big](4983.17184)$$

$$= -7.8257 \times 10^{12}$$

$$\frac{\partial L}{\partial c} = -\Big[4888.3968 - (-315148.3136 + (0.9)(0)) \\ - (-57.765024 + (0.9)(0))\Big]$$

$$= -1520443148$$

Step-5 $\quad \Delta m = (0.9)(0) - (0.1)(-7.8257 \times 10^{12})$

$\qquad = 7.8257 \times 10^{11}$

$\quad \Delta c = (0.9)(0) - (0.1)(-1570443148)$

$\qquad = 157044314.8$

Step-6 $\quad m = m_0 + \Delta m$

$\qquad = -315148.3136 + 7.8257 \times 10^{11}$

$\qquad = 7.825696849 \times 10^{11}$

$\quad c = -57.765024 + 157044314.8$

$\qquad = 157044257$