18K41A04F7.

Assignment-1

x	y
0.2	3.4
0.4	3.8

step1:- epochs = 2, m = 1, c = -1, $\epsilon_m = \epsilon_c = 0$

$\eta = 0.0001$, $c = 10^{-8}$, $\gamma = 0.9$

step2:- itr = 0

step3: sample = 0

step4:- $g_m = -(y_i - mx_i - c)x_i = -0.84$

$g_c = -(y_i - mx_i - c) = -4.2$

step5:- $\epsilon_m = \gamma \epsilon_m + (1-\gamma)(g_m)^2 = 0.07056$

$\epsilon_c = \gamma \epsilon_c + (1-\gamma)(g_c)^2 = 1.764$

step6: $\Delta m = \frac{-\eta}{\sqrt{\epsilon_m + \epsilon}} g_m = 0.000316$

$\Delta c = \frac{-\eta}{\sqrt{\epsilon_c + \epsilon}} g_c = 0.000316$

step7:- $m = m + \Delta m = 1.000316$

$c = c + \Delta c = -0.999683$

Step 8 :- samp = samp + 1 = 0 + 1 = 1

Step 9 :- if (samp < ns) (step 4)

Step 10 :- $g_m = -(y_i - mx_i - c)x_i = -1.7598$

$g_c = -(y_i - mx_i - c) = -4.399955$

Step 11 :- $g_m = -(y_i - mx_i - c)\,x_i = -1.759822$

$g_c = -(y_i - mx_i - c) = -4.399557$

Step 12 :- $E_m = \gamma E_m + (1-\gamma)(g_m)^2 = 0.37320$

$E_c = \gamma E_c + (1-\gamma)(g_c)^2 = 3.523210$

Step 13 :- $\Delta m = \frac{-\eta}{\sqrt{E_m + \epsilon}} g_m = 0.000288$

$\Delta c = \frac{-\eta}{\sqrt{E_c + \epsilon}} g_c = 0.00023439$

Step 14 :- $m = m + \Delta m = 1.000604$

$c = c + \Delta c = -0.999944$

Step 15 samp = 2

Step 16 if (samp < ns)

Step 17 :- it = it + 1 = 1

Step 18 :- if (it < epoch)

Step 19 :- samp = 0

Step20 :- $g_m = -(y_i - m x_i - c) x_i = -0.643986$

$g_c = -(y_i - m x_i - c) = -4.19932$

step21 :- $\epsilon_m = \gamma \epsilon_m + (1-\gamma)(g_m)^2 = 0.440641$

$\epsilon_c = \gamma \epsilon_c + (1-\gamma)(g_c)^2 = 4.93432$

Step22 :- $\Delta m = \frac{-\eta}{\sqrt{\epsilon_m + \epsilon}} g_m = 0.00013174$

$\Delta c = \frac{-\eta}{\sqrt{\epsilon_m + \epsilon}} g_c = 0.0001890$

Step23 :- $m = m + \Delta m = 1.000736$

$c = c + \Delta c = -0.999260$

Step24 : sampl = 1

step25 : if (sampl < n)

step26 :- $g_m = -(y_i - m x_i - c) x_i = -1.759586$

$g_c = -(y_i - m x_i - c) = -4.398965$

Step27 :- $\epsilon_m = \gamma \epsilon_m + (1-\gamma)(g_m)^2 = 0.675391$

$\epsilon_c = \gamma \epsilon_c + (1-\gamma)(g_c)^2 = 6.375982$

Step28 :- $\Delta m = \frac{-\eta}{\sqrt{\epsilon_m + \epsilon}} g_m = 0.0002141$

$\Delta c = \frac{-\eta}{\sqrt{\epsilon_c + \epsilon}} g_c = 0.0001742$

Step29) m = m + Δm = 1.0009504

c = c + Δc = -0.9990861

Step30 Sample = 2

Step31 If (Sample < ns)

Step32 : it = 2

step33 If (it < epochs)

step32 : print (m, c)