

# Assignment-13

18K41A04F7

Step 1:-  $\eta = 0.1$ , epochs = 2,

$m = 1$ ,  $c = 1$ ,  $G_m = G_c = 0$ ,  $\epsilon = 10^{-8}$

$\{x, y\}$

$x$	$y$
0.2	3.4
0.4	3.8

Step 2:-  $l_{tu} = 0$

Step 3:-  $\text{samp} = 0$

Step 4:-  $g_m = -(y_i - mx_i - c)x_i = -0.44$

$$g_c = -(y_i - mx_i - c) = -2.2$$

Step 5:-  $G_m = G_m + (g_m)^2 = 0.1936$

$$G_c = G_c + (g_c)^2 = 4.84$$

Step 6:-  $\Delta m = \frac{-\eta}{\sqrt{G_m + \epsilon}} g_m = 0.1$

$$\Delta c = \frac{-\eta}{\sqrt{G_c + \epsilon}} g_c = 0.1$$

Step 7:-  $m = m + \Delta m = 1.1$

$$c = c + \Delta c = 1.1$$

Step 8:-  $\text{samp} + 1 = 1$

Step 9:- If  $(\text{samp} < \text{no of samples})$  (step 4)

Step 10:-  $g_m = -(y_i - mx_i - c)x_i = -0.904$

$$g_c = -(y_i - mx_i - c) = -2.26$$

Step 11:-  $G_m = G_m + (g_m)^2 = 1.010$

$G_c = G_c + \cancel{G_m}(g_c)^2 = 9.9476$

Step 12:-  $\Delta m = \frac{-n}{\sqrt{G_m + E}} \quad g_m = 0.089915$

$\Delta c = \frac{-n}{\sqrt{G_c + E}} \quad g_c = 0.07165$

Step 13:-  $m = m + \Delta m = 1.18991$   
 $c = c + \Delta c = 1.171655$

Step 14:- Sample + 1 = 2

Step 15:- If (sample < no. of sample)

Step 16:-  $iter = iter + 1 = 0 + 1 = 1$  (step 3)

Step 17:- Sample = 0

Step 18:-  $g_m = -(y_i - mx_i - c)x_i = -0.39807$

$g_c = -(y_i - mx_i - c) = -1.99036$

Step 19:-  $G_m = G_m + (g_m)^2 = 1.16927$

$G_c = G_c + (g_c)^2 = 13.90913$

Step 20:-  $\Delta m = \frac{-n}{\sqrt{G_m + E}} \quad g_m = 0.036813$

$\Delta c = \frac{-n}{\sqrt{G_c + E}} \quad g_c = 0.053368$

Step 21 :-  $m = m + \Delta m = 1.226728$   
 $c = c + \Delta c = 1.225023$

Step 22 :-  $\text{sample} = \text{sample} + 1 = 0 + 1 = 1$

Step 23 :-  $\text{if } (\text{sample} < \text{no. of samples})$  (Step 24)

Step 24 :  $g_m = -(y_i - mx_i - c) x_i = -0.833$

$g_c = -(y_i - mx_i - c) = -2.084285$

Step 25 :-  $\Delta m = g_m = 1.864356$

$\Delta c = g_c = 18.25338$

Step 26 :-  ~~$m = m + \Delta m$~~   $\Delta m =$   
 ~~$c = c + \Delta c$~~

$\Delta m = -\frac{n}{\sqrt{g_m + f}} \quad g_m = 0.061059$

$\Delta c = -\frac{n}{\sqrt{g_c + f}} \quad g_c = 0.04878$

Step 27 :-  $m = m + \Delta m = 1.28778$

$c = c + \Delta c = 1.27380$

Step 28 :-  $\text{sample} = \text{sample} + 1 = 1 + 1 = 2$

Step 29 :-  $\text{if } (\text{sample} < \text{no.})$  Step 30

Step 30  $\text{itc} = \text{itc} + 1 = 2$

Step 31 :  $\text{if } (\text{itc} < \text{epoch})$

Step 32 :- print (m, c)

m = 1.28778

c = 1.273808