ASSIGNMENT-6

step-1: Read data

X	Y
7.6	157
7.1	174

step-2: Data Preprocessor using normalization

X	Y
0.428	0.537
0.190	0.612

step-3: initialization $m_1 = 1; m_2 = 1; c = -1$

max iter = 1000, eta = 0.1, epoch = 1.

step-4: set iter = 1;

step-5: set sample (i) = -1

step-6: $\frac{dE}{dm_1} = -1(y - m_1 * x * x - m_2 * x - c) * x * x$

$= -0.1552$

$\frac{dE}{dm_2} = -1 * (y * m_1 * x * x - m_2 * x - c) * x$

$= -0.388$

$\frac{dE}{dw_2} = -1 * (y - m_1 * x * x - m_2 * x - c)$

$= -0.97$

Step-7 : $\Delta w_1 = -\eta \frac{dE}{dw_1} = 0.1(-0.155) = 0.$

$\Delta w_2 = -\eta \frac{dE}{dw_2} = -0.1(-0.388) = 0.$

$\Delta c = -\eta \frac{dE}{dc} = -0.1(0.97) = 0.09$

Step 8: $w_1 = w_1 + \Delta w_1 = 1 + 0.0155 = 1.0155$

$w_2 = w_2 + \Delta w_2 = 1 + 0.038 = 1.038$

$c = c + \Delta c = 1 + 0.97 = -0.90$

Step-9: sample(i) = i+1

$i = 1 + 1 = 2$

10: if (sample(i) $\leq$ ns)

if ($2 \leq 2$) $\rightarrow$ goto 5.

5&6 — sample = 2

6: $\frac{dE}{dw_1} = -(0.612 - 1.0155 * 0.190 * 0.190)$

$-1.038 * (0.190) + 0.903) * (0.$

$= -0.04624$

$\frac{dE}{dw_2} = -1.281$

7: $\Delta w_1 = -\eta \frac{dE}{dw_1} = 0.00402$

$\Delta w_2 = -\eta \frac{dE}{dw_2} = 0.0243$

$\Delta w_3 = -\eta \frac{dE}{dc} = 0.1281$

8: $m_1 = m_1 + \Delta m = 1.020$

$m_2 = m_2 + \Delta m_2 = 1.054$

$c = c + \Delta c = -0.775$

9: sample(i) = i+1 = i = 2+1 = 3

10: if (sample(i) ≤ ns)

if (3 ≤ 2) false - next step.

11: iter = iter + 1 = 2

12: if (iter ≤ epoch)

if (2 ≤ 1) next step

13: Stop.

print m & c

m = 1.020 , 1.054

c = -0.775