ASSIGNMENT - 4

step-1: Real dataset $[x_i, y_i]$ (n=2)

$x_1^1 = 7.6$	$y_i^1 = 157$
$x_1^2 = 7.1$	$y_i^2 = 174$

let $\eta = 0.1$, epoch = 1, $m = 1$, $i = 1$

step-2: set iter = 1

step-3: set sample = 1

step-4: calculate Y using;

$$y = mx_1^i + c \quad \text{---(1)}$$

$$y_1 = 1(7.6) - 1 = 6.6$$

step-5:

$$\frac{dE}{dm} = -(y_i - mx_i - c)x_i$$

$$= -(157 - 1(7.6) - 1)7.6$$

$$= -1127.84$$

$$\frac{dE}{dc} = -(y_i - mx_i - c) = -148.4$$

step-6:

$$\Delta m = -\eta \frac{dE}{dm} = -0.1(-1127.84) = 112.781$$

$$\Delta c = -\eta \frac{dE}{dm} = 14.84$$

step-7:

$$m = m + \Delta m = 1 + 112.78 = 113.78$$

$$c = c + \Delta c = -1 + 14.84 = 13.81$$

step-8: Sample $i = i+1 = 2$

$i < n$; $2 < 2$ goto 4

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step-4: $y = mx_i + c = (13.78)(7.1) + 13.84$

$y_2 = 821.678$

step-5: calculate error

$$\frac{df}{dm} = -(174 - (13.78(7.1) - 13.84))7.1$$

$$= 4598.5132$$

$$\frac{df}{dm} = -(y_i - mx_i - c)$$

$$= 647.678$$

step-6: $\Delta m = -\eta \frac{df}{dm} = -0.1(4598.513)$

$$= -459.8513$$

$$\Delta c = -\eta \frac{df}{dm} = -0.1(647.678)$$

$$= -64.7692$$

step-7: $m = m + \Delta m = -346.07$

$c = c + \Delta c = -50.929$

step-8: $i = i + 1 = 2 + 1 = 3$

$(i < ns) \Rightarrow 3 < 2 \rightarrow$ next step

step-9: $iter = iter + 1 = 1 + 1 = 2$ (iter > epo

$2 > 1 \rightarrow$ next step.

step-10: End, print m & c.

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