Assignment -2

Find global minimum pant and value for function $f(x,$

$f(x,y) = x^2+y^2+10$

Do manual calculation for 2 iterations

step 1 :- $x=2$, $y=3$, $\eta=0.01$, epoches $=2$

step 2 :- iter $=1$

step 3 :- $\frac{\partial f}{\partial x} = 2x \Rightarrow 2(2) = 4$

$\frac{\partial f}{\partial y} = 2y = 2(3) = 6$

step 4 :- $\Delta x = -\eta \frac{\partial f}{\partial x} = -0.01 \times 4$

$= -0.04$

$\Delta y = -\eta \frac{\partial f}{\partial y} = -0.01 \times 6$

$= -0.06$

step 5 :- $x = x + \Delta x$

$= 2 - 0.04$

$x = 1.96$

$y = y + \Delta y$

$= 3 - 0.06$

$y = 2.94$

step 6 :- iter = iter+1 = 2

step 7 :- if (iter > epoches)

$2 > 2$

goto next step

else

goto step 3

step 3 :- $\frac{\partial f}{\partial x} = 2(1.96) = 3.92$

$\frac{\partial f}{\partial y} = 2(2.94) = 5.88$

step 4 :- $\Delta x = -\eta \frac{\partial f}{\partial x}$ $\Delta y = -\eta \frac{\partial f}{\partial y}$

$= -0.01 \times 3.92$ $= -0.01 \times 5.88$

$= -0.0392$ $= -0.0588$

step 5 :- $x = x + \Delta x$ $y = y + \Delta y$

$= 1.96 - 0.0392$ $= 2.94 - 0.0588$

$= 1.92$ $y = 2.881$

step 6 :- iter = 2+1 = 3

step 7 :- if (iter > epoches)

3 > 2

goto step 8

else

goto step 3

step 8 :- print m, c values

m = 1.92 c = 2.881