Assignment - 11

find global minimum point and value for function $f(x,y) = x^2+y^2+10$

→ step 1 : $x=-1$ $y=+1$ $n=0.1$ epoches = 2

step 2 : iter = 1

step 3 : $\frac{\partial f}{\partial x} = 2x = -2$ $\frac{\partial f}{\partial y} = 2y = 2$

step 4 : $dx = -n\,df/dx = -2(-0.1) = 0.2$

step 5 : $\Delta y = -n\,df/dy = -(0.1)(2) = -0.2$

step 5 : $x = x + \Delta x = -1 + 0.2 = -0.8$

$y = y + \Delta y = 1 - 0.2 = 0.8$

step 6 : iter = iter + 1 = 1 + 1 = 2

step 7 : if (iter > epochs)

go to step8

else

go to step 3

step 3 : $df/dx = 2x = 2(-0.8) = -1.6$

step : $df/dy = 2y = 2(0.8) = 1.6$

step 4 : $\Delta x = -n\,df/dx$

$= -(0.1)(-1.6) = 0.16$

$\Delta y = -n\frac{df}{dy} = -(0.1)(1.6) = -0.16$

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

$= -0.8 + 0.16 \Rightarrow -0.64$

$y = y + \Delta y$

$= 0.8 - 0.16 \Rightarrow 0.64$

step 6: $itr = itr + 1 = 2 + 1 = 3$

step 7: if ($itr > epochs$)

$3 > 2$

go to step 8

else: go to step 3

step 8: $x = -0.64$

$y = 0.64$

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

$= (-0.64)^2 + (0.64)^2 + 10$

$= 10.8$