Assignment -2   18K91A04F6

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

Step-1: x = 6, y = 4, η = 0.1, epoch = 2

Step-2: iter = 1

Step-3: $\dfrac{\partial f}{\partial x} = 2x = 2(6) = 12$

$\dfrac{\partial f}{\partial y} = 2y = 2(4) = 8$

Step-4: $\Delta x = -\eta \cdot \dfrac{\partial f}{\partial x} = -0.1 \times 12 = -1.2$

$\Delta y = -\eta \cdot \dfrac{\partial f}{\partial y} = -0.1 \times 8 = -0.8$.

Step-5: $x = x + \Delta x = 6 - 1.2 = 4.8$.

$y = y + \Delta y = 4 - 0.8 = 3.2$

Step-6: ih = ih + 1 = 1 + 1 = 2

Step-7: if (iter > epochs)

2 ≯ 2

goto step-3

8 Step-3: $\dfrac{\partial f}{\partial x} = 2x = 2(4.8) = 9.6$

$\dfrac{\partial f}{\partial y} = 2y = 2(3.2) = 6.4$

Step-4: $\Delta x = -\eta \cdot \dfrac{\partial f}{\partial x} = -0.1 \times 9.6 = -0.96$.

$\Delta y = -\eta \cdot \dfrac{\partial f}{\partial y} = -0.1 \times 6.4 = -0.64$.

Step-5: $x = x + \Delta x = 4.8 - 0.96 = 0.56$.

$y = y + \Delta y = 3.2$

Step-5: $x = x + \Delta x = 4.8 - 0.96 = 3.84$

$y = y + \Delta y = 3.2 - 0.64 = 2.56$

step-6: $iter = iter + 1 = 2 + 1 = 3$

Step-7: if (iter > epochs)

$3 > 2$,

goto next step

~~$x = 4.8, y =$~~ $x = 3.84, \quad y = 2.56$