Assignment-2 18K41A05A5.

Manual Calculations for two iterations

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

Step1: $x=-1,\ y=+1,\ \eta=0.1,$ epoches $=2$

Step2: itr $=1$.

Step 3: $\frac{\partial f}{\partial x} = 2x = 2(-1) = -2$

$\frac{\partial f}{\partial y} = 2y = 2(1) = 2$

Step 4: $\Delta x = -\eta \cdot \frac{\partial f}{\partial x} = -2(-0.1) = 0.2$

$\Delta y = -\eta \cdot \frac{\partial f}{\partial y} = -(0.1)(2)$

$= -0.2$

Step5: $x = x+\Delta x = -1+0.2 = -0.8$

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

Step 6: itr $= 1+1 = 2$

Step 7: if (itr > epochs). (2>2)

false.

Go to step 3.

Step 3: $\frac{\partial f}{\partial y} = 2x = 2(-0.8) = -1.6.$

$\frac{\partial f}{\partial y} = 2(0.8) = 1.6.$

Step 4: $\Delta x = -(0.1)(-1.6) = 0.16$

$\Delta y = -(0.1)(1.6)$

$= -0.16$

Step 5: $x = -0.8 + 0.16$ $\quad y = 0.8 - 0.16$

$= -0.64,$ $\quad = 0.64$

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

Step 7: $3 > 2$

true

goto step 8.

Step 8: $x = -0.64$

$y = 0.64$

$f(x, y) = (-0.64)^2 + (0.64)^2 + 10$

$= 0.4 + 0.4 + 10$

$= 10.8$