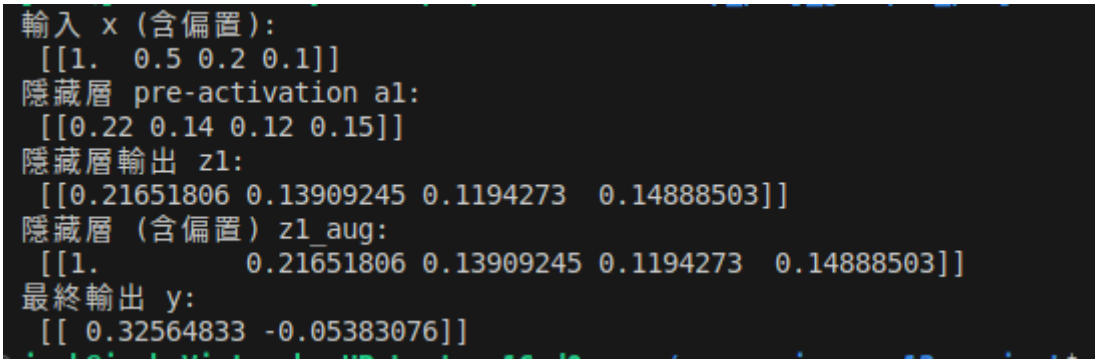
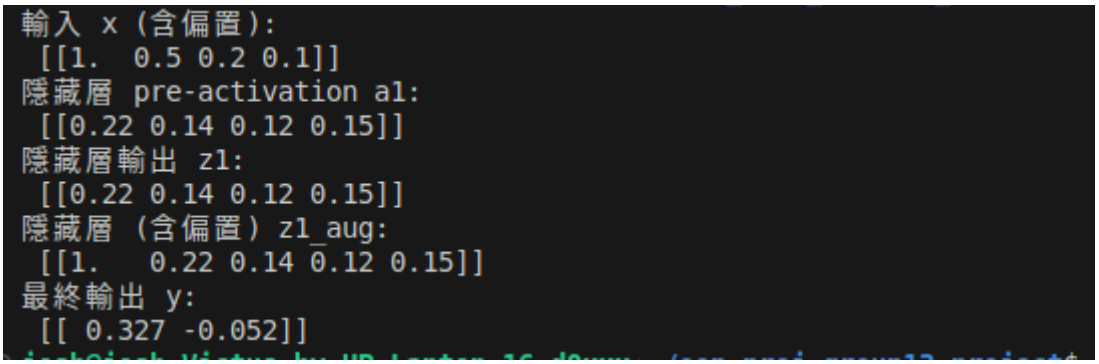
LAB3_inclass

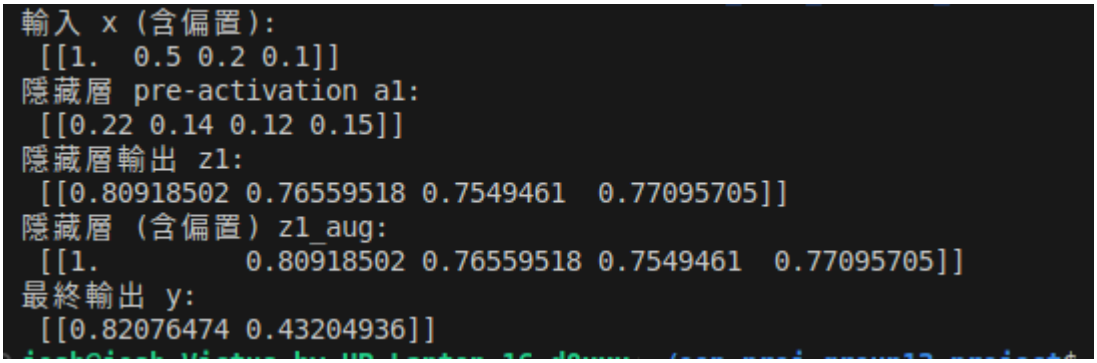
tanh:



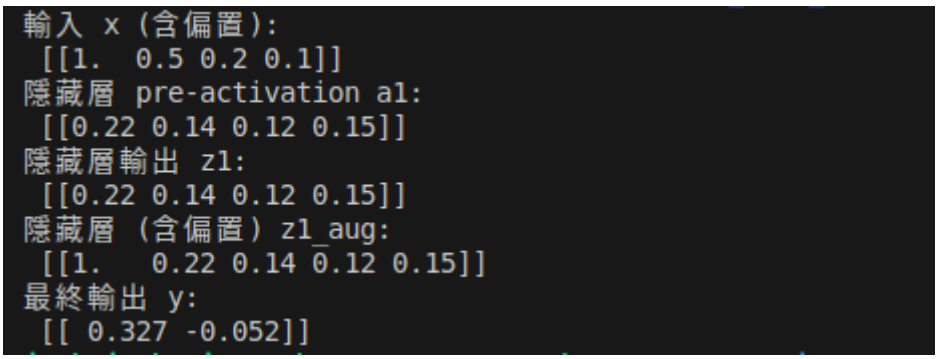
hard_tanh:



softplus



relu && leaky_relu



calculate tanh:
x=[1.0 0.5 0.2 0.1]^T

a1 =[0.1 0.1 0.2 0.3

0.2 -0.3 0.4 0.1

0.05 0.2 -0.2 0.1

0.0 0.3 -0.1 0.2]

W=a1 *x

a(1,1)=(0.1×1.0)+(0.1×0.5)+(0.2×0.2)+(0.3×0.1) =0.1+0.05+0.04+0.03=0.22

a(2,1)=(0.2×1.0)+(−0.3×0.5)+(0.4×0.2)+(0.1×0.1) =0.2−0.15+0.08+0.01=0.14

a(3,1)=(0.05×1.0)+(0.2×0.5)+(−0.2×0.2)+(0.1×0.1) =0.05+0.1−0.04+0.01=0.12

a(4,1)=(0.0×1.0)+(0.3×0.5)+(−0.1×0.2)+(0.2×0.1) =0+0.15−0.02+0.02=0.15

tanh(x)=$\frac{e^x-e^{-x}}{e^x+e^{-x}}$

z1=[0.2163 0.1391 0.1194 0.149] ^T

add bias :

z1 aug=[1.0 0.2163 0.1391 0.1194 0.1494] ^T

W2 =[0.2 0.3 -0.1 0.5 0.1

-0.2 0.4 0.3 -0.1 0.2]

y= W2 * z1 aug =[0.3256 −0.0538] ^T