Assignment #1

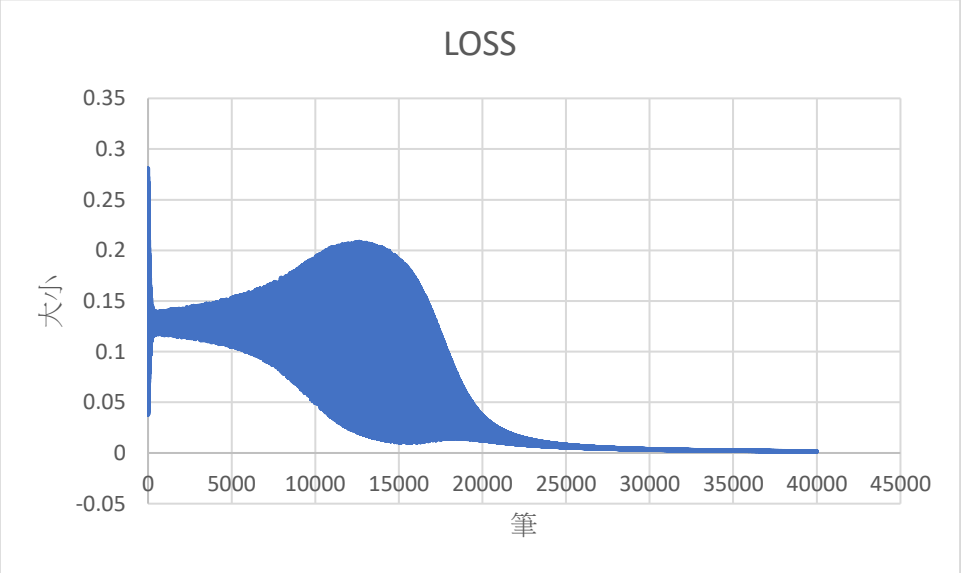
1. 編譯結果

```
sean@Sean:~/projects/HW1$ gcc -o main HW1.c -lm
sean@Sean:~/projects/HW1$
```

2. 執行結果

```
Epoch:  9996    Input: 0.000000 1.000000    Output: 0.945319    Expected Output: 1.000000    Loss: 0.001495
Epoch:  9996    Input: 0.000000 0.000000    Output: 0.058555    Expected Output: 0.000000    Loss: 0.001714
Epoch:  9997    Input: 1.000000 1.000000    Output: 0.059467    Expected Output: 0.000000    Loss: 0.001768
Epoch:  9997    Input: 1.000000 0.000000    Output: 0.945305    Expected Output: 1.000000    Loss: 0.001496
Epoch:  9997    Input: 0.000000 0.000000    Output: 0.058531    Expected Output: 0.000000    Loss: 0.001713
Epoch:  9997    Input: 0.000000 1.000000    Output: 0.945305    Expected Output: 1.000000    Loss: 0.001496
Epoch:  9998    Input: 1.000000 1.000000    Output: 0.059460    Expected Output: 0.000000    Loss: 0.001768
Epoch:  9998    Input: 1.000000 0.000000    Output: 0.945312    Expected Output: 1.000000    Loss: 0.001495
Epoch:  9998    Input: 0.000000 1.000000    Output: 0.945331    Expected Output: 1.000000    Loss: 0.001494
Epoch:  9998    Input: 0.000000 0.000000    Output: 0.058544    Expected Output: 0.000000    Loss: 0.001714
Epoch:  9999    Input: 0.000000 0.000000    Output: 0.058521    Expected Output: 0.000000    Loss: 0.001712
Epoch:  9999    Input: 1.000000 1.000000    Output: 0.059434    Expected Output: 0.000000    Loss: 0.001766
Epoch:  9999    Input: 1.000000 0.000000    Output: 0.945297    Expected Output: 1.000000    Loss: 0.001496
Epoch:  9999    Input: 0.000000 1.000000    Output: 0.945317    Expected Output: 1.000000    Loss: 0.001495
Epoch: 10000    Input: 1.000000 1.000000    Output: 0.059447    Expected Output: 0.000000    Loss: 0.001767
Epoch: 10000    Input: 0.000000 1.000000    Output: 0.945303    Expected Output: 1.000000    Loss: 0.001496
Epoch: 10000    Input: 1.000000 0.000000    Output: 0.945365    Expected Output: 1.000000    Loss: 0.001492
Epoch: 10000    Input: 0.000000 0.000000    Output: 0.058533    Expected Output: 0.000000    Loss: 0.001713
Final Hidden Weights
[ [ 3.672178 3.670992 ] [ 5.874518 5.867958 ] ]
Final Hidden Biases
[ -5.610872 -2.422974 ]
Final Output Weights[ -8.068997 7.451116 ]
Final Output Biases
[ -3.355662 ]
Please enter the first input, or enter '2' to leave.   1
Please enter the second input, or enter '2' to leave.   0
The first input:  1  The second input:  0  The predict output:  1
Please enter the first input, or enter '2' to leave.   2
sean@Sean:~/projects/HW1$
```

3. 分析



圖中可看出訓練時一共有四萬筆資料，且最後能收斂。