Assignment 1

1. 編譯結果

```
janethhc@Janet-NB:~/assignment_1$ gcc -o assignment_1 layer.c main.c neuron.c -lm
janethhc@Janet-NB:~/assignment_1$
```

2. 執行結果

```
janethhc@Janet-NB:~/assignment_1$ ./assignment_1
Enter the number of Layers in Neural Network:
4
Enter number of neurons in layer[1]:
2
Enter number of neurons in layer[2]:
4
Enter number of neurons in layer[3]:
4
Enter number of neurons in layer[4]:
1

Created Layer: 1
Number of Neurons in Layer 1: 2
Neuron 1 in Layer 1 created
Neuron 2 in Layer 1 created

Created Layer: 2
Number of Neurons in Layer 2: 4
Neuron 1 in Layer 2 created
Neuron 2 in Layer 2 created
Neuron 3 in Layer 2 created
Neuron 4 in Layer 2 created

Created Layer: 3
Number of Neurons in Layer 3: 4
Neuron 1 in Layer 3 created
Neuron 2 in Layer 3 created
Neuron 3 in Layer 3 created
Neuron 4 in Layer 3 created

Created Layer: 4
Number of Neurons in Layer 4: 1
Neuron 1 in Layer 4 created
```

```
Initializing weights...
0:w[0][0]: 0.963075
1:w[0][0]: 0.766618
2:w[0][0]: 0.875736
3:w[0][0]: 0.110355
0:w[0][1]: 0.696739
1:w[0][1]: 0.652591
2:w[0][1]: 0.953114
3:w[0][1]: 0.215374
0:w[1][0]: 0.187026
1:w[1][0]: 0.182961
2:w[1][0]: 0.507410
3:w[1][0]: 0.034799
0:w[1][1]: 0.871931
1:w[1][1]: 0.364027
2:w[1][1]: 0.359935
3:w[1][1]: 0.772725
0:w[1][2]: 0.958199
1:w[1][2]: 0.632079
2:w[1][2]: 0.577686
3:w[1][2]: 0.272326
0:w[1][3]: 0.334921
1:w[1][3]: 0.612680
2:w[1][3]: 0.533510
3:w[1][3]: 0.597605
0:w[2][0]: 0.252769
0:w[2][1]: 0.741539
0:w[2][2]: 0.776802
0:w[2][3]: 0.326199
Neural Network Created Successfully...

Enter the learning rate (Usually 0.15):
0.15

Enter the number of training examples:
4

Enter the Inputs for training example[0]:
0 0

Enter the Inputs for training example[1]:
0 1

Enter the Inputs for training example[2]:
1 0

Enter the Inputs for training example[3]:
1 1

Enter the Desired Outputs (Labels) for training example[0]:
0

Enter the Desired Outputs (Labels) for training example[1]:
1

Enter the Desired Outputs (Labels) for training example[2]:
1
```

```
Enter the Desired Outputs (Labels) for training example[3]:
0

Enter input to test:
0 0
Output: 0

Enter input to test:
1 0
Output: 1

Enter input to test:
0 1
Output: 1

Enter input to test:
1 1
Output: 0
```

3. 分析

Loss Function 在經過 Neuron Network 後誤差趨近於 0