

# Data Structure Result Report

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## 1. 編譯

輸入 `gcc main.c -o main.out`

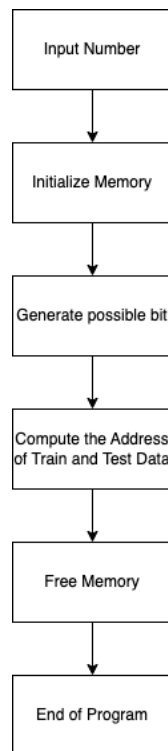
```
~/Downloads/assignment_1-AquaCW24/src / on main at 18:45:27
$ gcc main.c -o main.out
~/Downloads/assignment_1-AquaCW24/src / on main 71 at 18:45:34
$
```

## 2. 執行

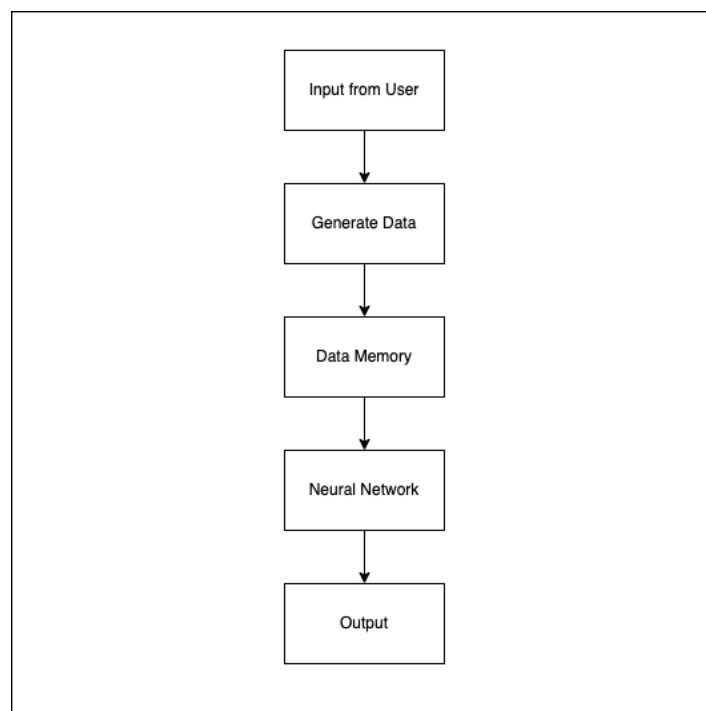
輸入 `./main.out`

```
~/Downloads/assignment_1-AquaCW24/bin / on main at 18:46:14
$ ./main.out
epoch 0, sample 0, loss 0.579871
epoch 0, sample 1, loss 0.484000
epoch 0, sample 2, loss 0.114593
epoch 0, sample 3, loss 0.316824
epoch 5, sample 0, loss 0.116713
epoch 5, sample 1, loss 0.290830
epoch 5, sample 2, loss 0.113511
epoch 5, sample 3, loss 0.277402
epoch 10, sample 0, loss 0.112773
epoch 10, sample 1, loss 0.276971
epoch 10, sample 2, loss 0.109583
epoch 10, sample 3, loss 0.263070
epoch 15, sample 0, loss 0.110848
epoch 15, sample 1, loss 0.268286
epoch 15, sample 2, loss 0.106658
epoch 15, sample 3, loss 0.255273
epoch 20, sample 0, loss 0.109443
epoch 20, sample 1, loss 0.261942
epoch 20, sample 2, loss 0.104719
epoch 20, sample 3, loss 0.250278
epoch 25, sample 0, loss 0.108202
epoch 25, sample 1, loss 0.257113
epoch 25, sample 2, loss 0.103408
epoch 25, sample 3, loss 0.246869
epoch 30, sample 0, loss 0.107009
epoch 30, sample 1, loss 0.253355
epoch 30, sample 2, loss 0.102470
epoch 30, sample 3, loss 0.244473
epoch 35, sample 0, loss 0.105806
epoch 475, sample 0, loss 0.000000
epoch 475, sample 1, loss 0.000000
epoch 475, sample 2, loss 0.000000
epoch 475, sample 3, loss 0.000000
epoch 480, sample 0, loss 0.000000
epoch 480, sample 1, loss 0.000000
epoch 480, sample 2, loss 0.000000
epoch 480, sample 3, loss 0.000000
epoch 485, sample 0, loss 0.000000
epoch 485, sample 1, loss 0.000000
epoch 485, sample 2, loss 0.000000
epoch 485, sample 3, loss 0.000000
epoch 490, sample 0, loss 0.000000
epoch 490, sample 1, loss 0.000000
epoch 490, sample 2, loss 0.000000
epoch 490, sample 3, loss 0.000000
epoch 495, sample 0, loss 0.000000
epoch 495, sample 1, loss 0.000000
epoch 495, sample 2, loss 0.000000
epoch 495, sample 3, loss 0.000000
epoch 500, sample 0, loss 0.000000
epoch 500, sample 1, loss 0.000000
epoch 500, sample 2, loss 0.000000
epoch 500, sample 3, loss 0.000000
input: (0.000, 0.000) output: (0.000) ground_truth: (0.000)
input: (0.000, 1.000) output: (1.000) ground_truth: (1.000)
input: (1.000, 0.000) output: (1.000) ground_truth: (1.000)
input: (1.000, 1.000) output: (-0.000) ground_truth: (0.000)
~/Downloads/assignment_1-AquaCW24/bin / on main at 18:46:30
$
```

## 3. 流程



#### 4. 架構



#### 5. 分析

在一開始的訓練中前面幾個 epoch 都還有 loss，到大約 340 的 epoch 時，訓練的

成果幾近完美，loss 降為 0。訓練出來的結果也跟一般我們認知的 XOR 結果是相符合的。