

# 商用資料通訊 第一次作業

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1. 向目標 host 送一個 ICMP request 並等待回應，有收到回應表示 host 正在運作且之間的路徑是暢通的，如果沒有回應表示 host 沒有開啟、網路不通或禁止訪問等其他原因。

```
C:\Users\user>ping www.iim.nctu.edu.tw

Pinging www.iim.nctu.edu.tw [140.113.72.2] with 32 bytes of data:
Reply from 140.113.72.2: bytes=32 time=6ms TTL=57
Reply from 140.113.72.2: bytes=32 time=4ms TTL=57
Reply from 140.113.72.2: bytes=32 time=4ms TTL=57
Reply from 140.113.72.2: bytes=32 time=4ms TTL=57

Ping statistics for 140.113.72.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 4ms, Maximum = 6ms, Average = 4ms
```

2. 利用 TTL，當 TTL 等於 0，收到的 host 便會回傳一個 ICMP 的封包。所以只要將每次送出封包的 TTL 加一，就可以知道從 host 到 host 之間所經過的路徑。

```
C:\Users\user>tracert www.iim.nctu.edu.tw

Tracing route to www.iim.nctu.edu.tw [140.113.72.2]
over a maximum of 30 hops:

  1      1 ms      1 ms      1 ms  192.168.100.1
  2      2 ms      1 ms      1 ms  XiaoQiang [192.168.31.1]
  3  2716 ms    14 ms    14 ms  f10hc254.RAS.nctu.edu.tw [140.113.10.254]
  4      4 ms      5 ms      6 ms  192.168.211.2
  5      6 ms      4 ms      4 ms  not-a-legal-address [140.113.0.77]
  6      6 ms      8 ms      4 ms  140.113.3.245
  7      7 ms      8 ms      6 ms  140.113.3.217
  8   923 ms    13 ms    22 ms  mis.iim.nctu.edu.tw [140.113.72.2]

Trace complete.
```

3. 在 linux 環境下執行 網頁名稱 title.html

```
$ javac web_crawler.java
```

```
$ java web_crawler
```

```
[ksjhang60523@linux1 ~]$ javac web_crawler.java
[ksjhang60523@linux1 ~]$ java web_crawler
<title>首頁 | 國立交通大學資訊管理研究所</title>
```



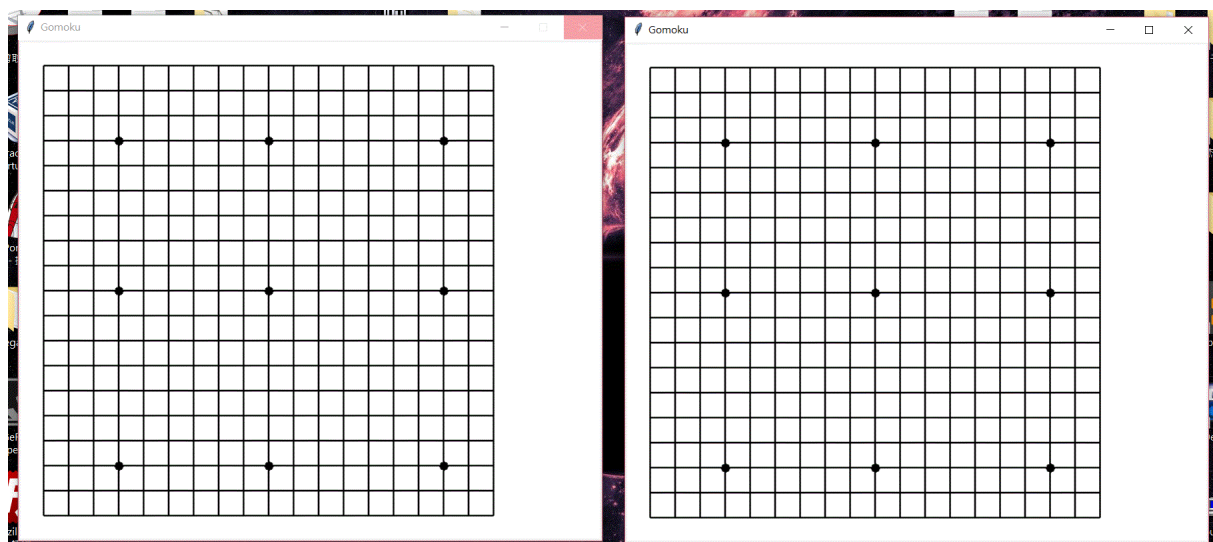
4. 在安裝 python 的環境下執行  
先執行 server : \$ python server.py

```
C:\ 命令提示字元 - python server.py
Microsoft Windows [Version 10.0.17134.706]
(c) 2018 Microsoft Corporation. ㊦ ㊦ ㊦ ㊦ ㊦ ㊦ ㊦ ㊦ ㊦ ㊦ ㊦ ㊦ ㊦ ㊦ ㊦ ㊦
C:\Users\user>cd Desktop
C:\Users\user\Desktop>python server.py
```

再執行 client : \$ python client.py

```
C:\ 命令提示字元 - python client.py
Microsoft Windows [Version 10.0.17134.706]
(c) 2018 Microsoft Corporation. ㊦ ㊦ ㊦ ㊦ ㊦ ㊦ ㊦ ㊦ ㊦ ㊦ ㊦ ㊦ ㊦ ㊦ ㊦ ㊦
C:\Users\user>cd Desktop
C:\Users\user\Desktop>python client.py
```

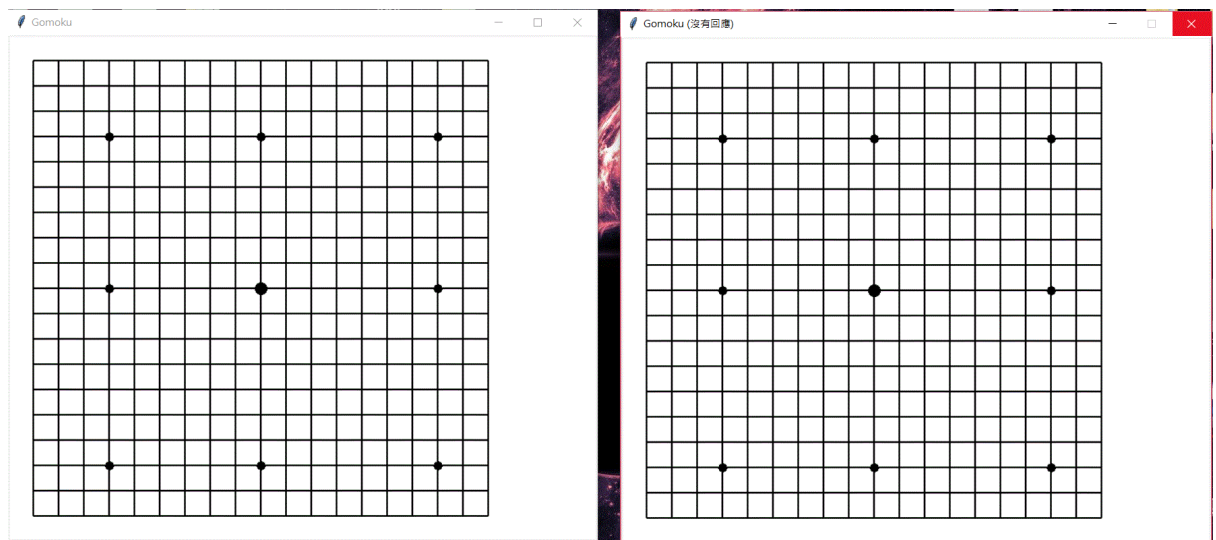
當執行第二個 client 時 server 會判斷有兩個 client 便會出現棋盤，且告知兩個 client 是執哪個顏色，也會通知是該誰下棋。一開始會有一個是沒有回應的，先下有回應的那個，然後輪流下棋。(如果連續一直按會 crash)



```
C:\Users\user\Desktop>python client.py
You are black
```

```
C:\Users\user\Desktop>python client.py
You are white
```

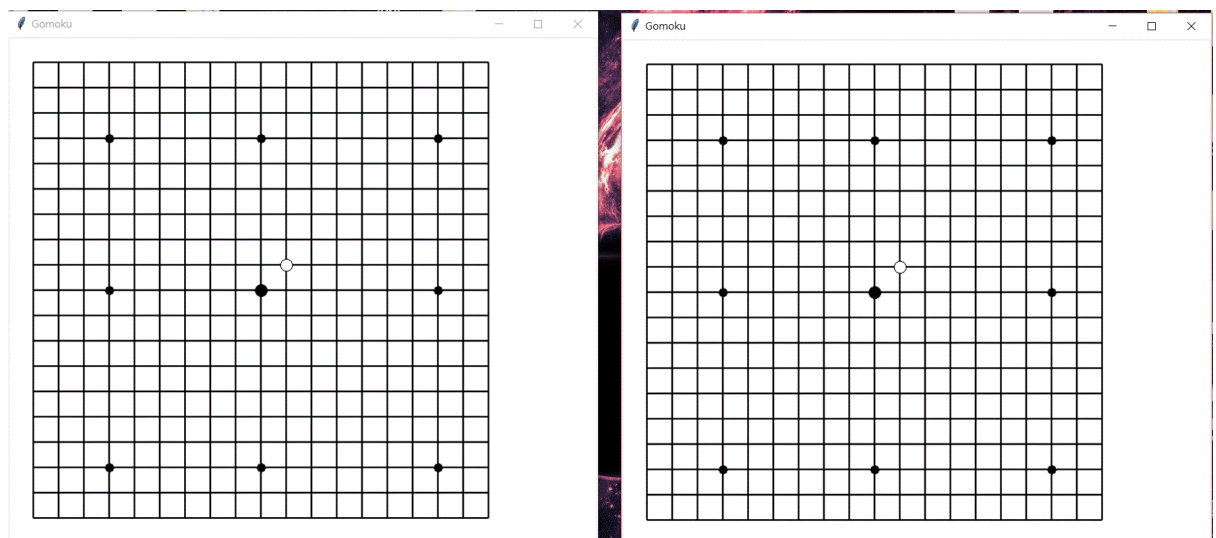
下了棋後 下的 client 會傳位置訊息給 server 由 server 判斷是否合法，如果合法便會傳“OK”的訊息並同步更新雙方棋盤，server 會再作進一步判斷是否有人勝利，如果沒有便會傳“Continue”的訊息。



```
C:\Users\user\Desktop>python client.py
You are black
Your turn
OK
Continue
```

```
C:\Users\user\Desktop>python client.py
You are white
10 10 black
Continue
```

```
C:\Users\user\Desktop>python server.py
302 304
```



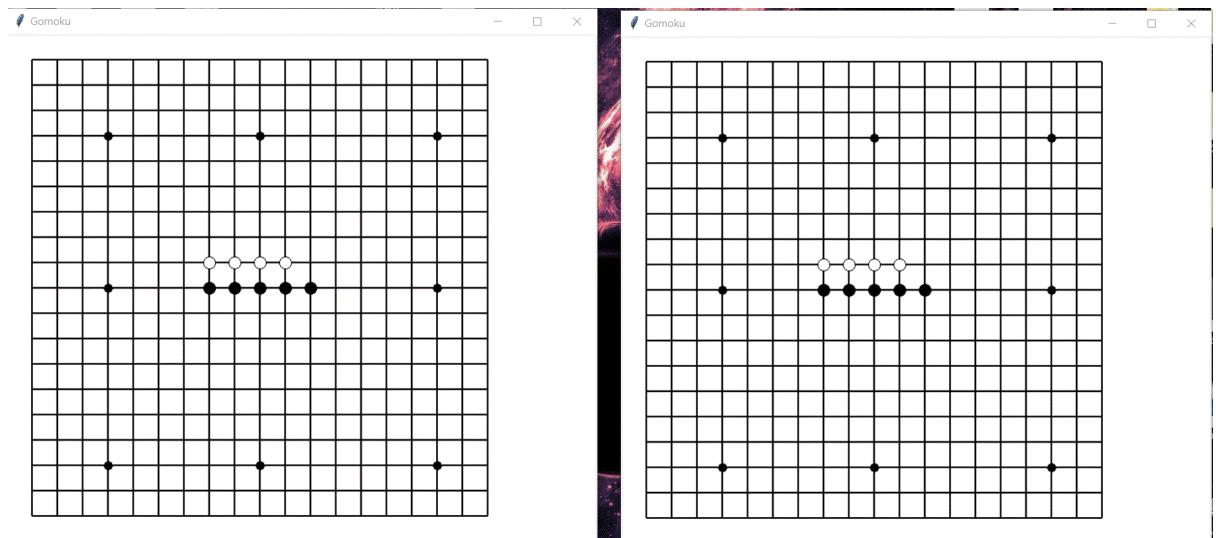
```
C:\Users\user\Desktop>python client.py
You are black
Your turn
OK
Continue
Continue
```

```
C:\Users\user\Desktop>python client.py
You are white
10 10 black
Continue
Your turn
OK
Continue
```

```
C:\Users\user\Desktop>python server.py
302 304
296 269
```



當有人勝利後，server 便會傳訊息告知誰輸誰贏，並斷開連結。



```
C:\Users\user\Desktop>python server.py
302 304
296 269
328 302
331 270
272 297
274 271
241 301
244 273
358 299
```

```
C:\Users\user\Desktop>python client.py
You are black
Your turn
OK
Continue
Continue
Your turn
OK
Continue
Continue
Your turn
OK
Continue
Continue
Your turn
OK
Continue
Continue
Your turn
OK
You win
```

```
C:\Users\user\Desktop>python client.py
You are white
10 10 black
Continue
Your turn
OK
Continue
Continue
Your turn
OK
Continue
Continue
Your turn
OK
Continue
Continue
Your turn
OK
Continue
You lose
```