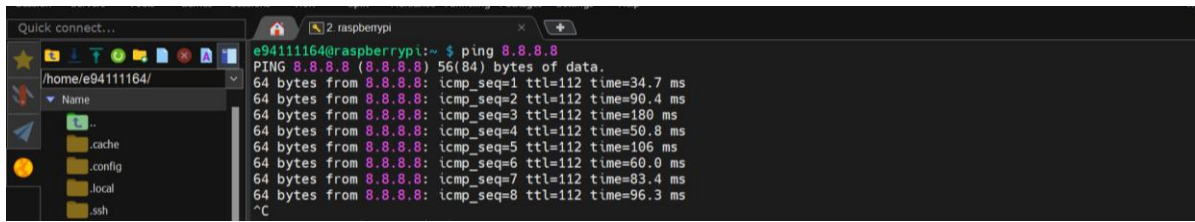
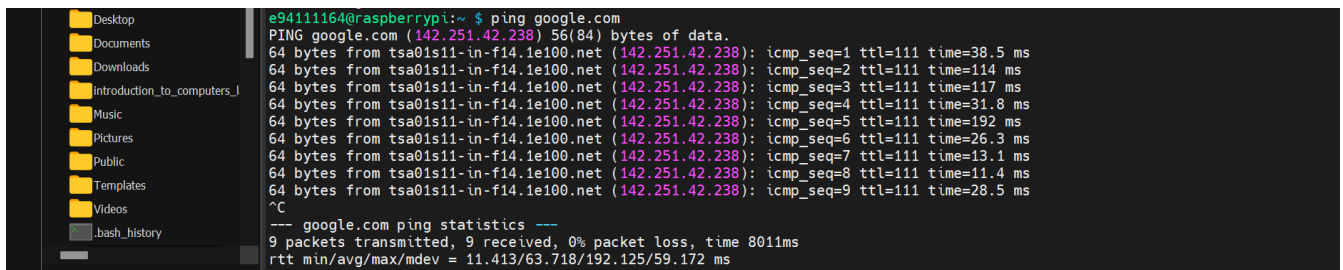


1-1.測試是否可以上網(從樹莓派輸入指令)



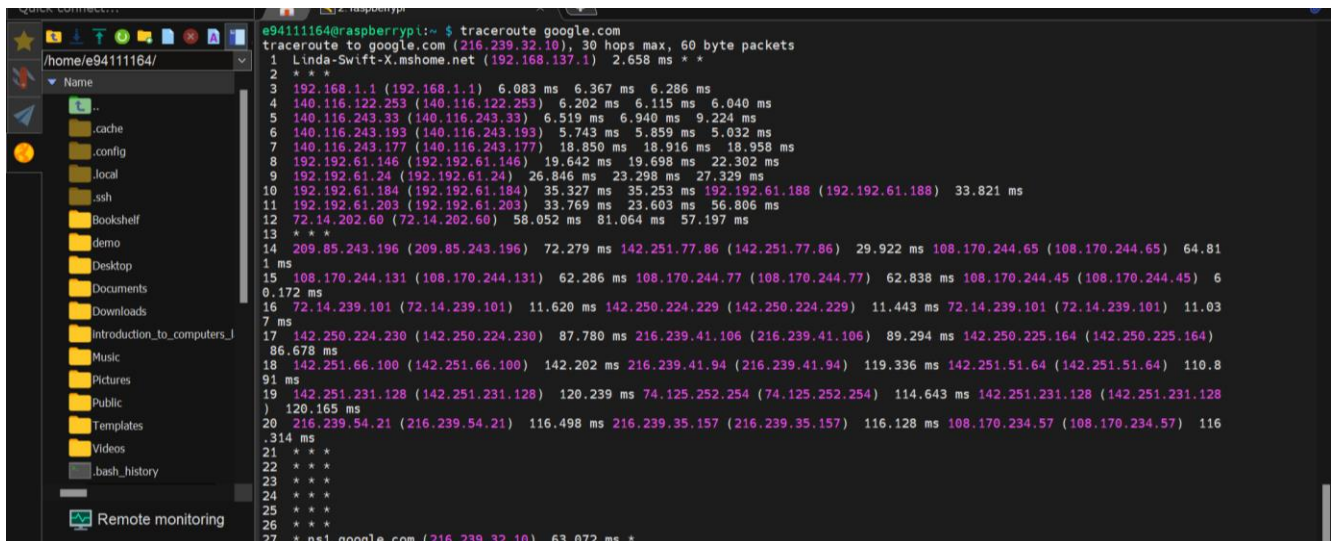
```
e94111164@raspberrypi:~$ ping 8.8.8.8
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data.
64 bytes from 8.8.8.8: icmp_seq=1 ttl=112 time=34.7 ms
64 bytes from 8.8.8.8: icmp_seq=2 ttl=112 time=90.4 ms
64 bytes from 8.8.8.8: icmp_seq=3 ttl=112 time=180 ms
64 bytes from 8.8.8.8: icmp_seq=4 ttl=112 time=50.8 ms
64 bytes from 8.8.8.8: icmp_seq=5 ttl=112 time=106 ms
64 bytes from 8.8.8.8: icmp_seq=6 ttl=112 time=60.0 ms
64 bytes from 8.8.8.8: icmp_seq=7 ttl=112 time=83.4 ms
64 bytes from 8.8.8.8: icmp_seq=8 ttl=112 time=96.3 ms
^C
```

1-2.查看隨便一個網址(e.g. google.com, apple.com, etc.)的 ip



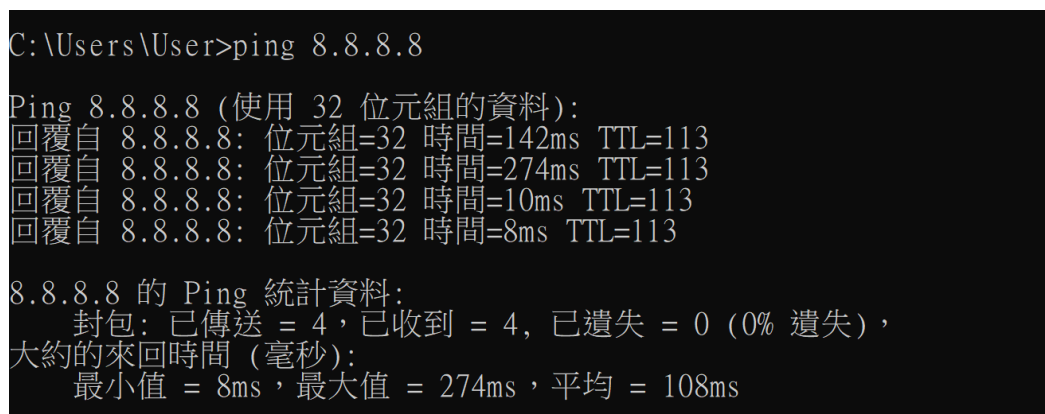
```
e94111164@raspberrypi:~$ ping google.com
PING google.com (142.251.42.238) 56(84) bytes of data.
64 bytes from tsa01s11-in-f14.1e100.net (142.251.42.238): icmp_seq=1 ttl=111 time=38.5 ms
64 bytes from tsa01s11-in-f14.1e100.net (142.251.42.238): icmp_seq=2 ttl=111 time=114 ms
64 bytes from tsa01s11-in-f14.1e100.net (142.251.42.238): icmp_seq=3 ttl=111 time=117 ms
64 bytes from tsa01s11-in-f14.1e100.net (142.251.42.238): icmp_seq=4 ttl=111 time=31.8 ms
64 bytes from tsa01s11-in-f14.1e100.net (142.251.42.238): icmp_seq=5 ttl=111 time=192 ms
64 bytes from tsa01s11-in-f14.1e100.net (142.251.42.238): icmp_seq=6 ttl=111 time=26.3 ms
64 bytes from tsa01s11-in-f14.1e100.net (142.251.42.238): icmp_seq=7 ttl=111 time=13.1 ms
64 bytes from tsa01s11-in-f14.1e100.net (142.251.42.238): icmp_seq=8 ttl=111 time=11.4 ms
64 bytes from tsa01s11-in-f14.1e100.net (142.251.42.238): icmp_seq=9 ttl=111 time=28.5 ms
^C
--- google.com ping statistics ---
9 packets transmitted, 9 received, 0% packet loss, time 801ms
rtt min/avg/max/mdev = 11.413/63.718/192.125/59.172 ms
```

1-3.查看到那個網頁的路徑



```
e94111164@raspberrypi:~$ traceroute google.com
traceroute to google.com (216.239.32.10), 30 hops max, 60 byte packets
 1  Linda-Swift-X.mshome.net (192.168.137.1) 2.658 ms * *
 2  * * *
 3  192.168.1.1 (192.168.1.1) 6.083 ms 6.367 ms 6.286 ms
 4  140.116.122.253 (140.116.122.253) 6.202 ms 6.115 ms 6.040 ms
 5  140.116.243.33 (140.116.243.33) 6.519 ms 6.940 ms 9.224 ms
 6  140.116.243.193 (140.116.243.193) 5.743 ms 5.859 ms 5.032 ms
 7  140.116.243.177 (140.116.243.177) 18.850 ms 18.916 ms 18.958 ms
 8  192.192.61.146 (192.192.61.146) 19.642 ms 19.698 ms 22.302 ms
 9  192.192.61.24 (192.192.61.24) 26.846 ms 23.298 ms 27.329 ms
10  192.192.61.184 (192.192.61.184) 35.327 ms 35.253 ms 192.192.61.188 (192.192.61.188) 33.821 ms
11  192.192.61.203 (192.192.61.203) 33.769 ms 23.603 ms 56.806 ms
12  72.14.202.60 (72.14.202.60) 58.052 ms 81.064 ms 57.197 ms
13  * * *
14  209.85.243.196 (209.85.243.196) 72.279 ms 142.251.77.86 (142.251.77.86) 29.922 ms 108.170.244.65 (108.170.244.65) 64.81
15  108.170.244.131 (108.170.244.131) 62.286 ms 108.170.244.77 (108.170.244.77) 62.838 ms 108.170.244.45 (108.170.244.45) 6
16  72.14.239.101 (72.14.239.101) 11.620 ms 142.250.224.229 (142.250.224.229) 11.443 ms 72.14.239.101 (72.14.239.101) 11.03
17  142.250.224.230 (142.250.224.230) 87.780 ms 216.239.41.106 (216.239.41.106) 89.294 ms 142.250.225.164 (142.250.225.164)
18  142.251.66.100 (142.251.66.100) 142.202 ms 216.239.41.94 (216.239.41.94) 119.336 ms 142.251.51.64 (142.251.51.64) 110.8
19  142.251.231.128 (142.251.231.128) 120.239 ms 74.125.252.254 (74.125.252.254) 114.643 ms 142.251.231.128 (142.251.231.128)
20  216.239.54.21 (216.239.54.21) 116.498 ms 216.239.35.157 (216.239.35.157) 116.128 ms 108.170.234.57 (108.170.234.57) 116
21  * * *
22  * * *
23  * * *
24  * * *
25  * * *
26  * * *
27  ns1.google.com (216.239.32.10) 63.072 ms *
```

2-2 測試是否可以上網(從電腦輸入指令)



```
C:\Users\User>ping 8.8.8.8

Ping 8.8.8.8 (使用 32 位元組的資料):
回覆自 8.8.8.8: 位元組=32 時間=142ms TTL=113
回覆自 8.8.8.8: 位元組=32 時間=274ms TTL=113
回覆自 8.8.8.8: 位元組=32 時間=10ms TTL=113
回覆自 8.8.8.8: 位元組=32 時間=8ms TTL=113

8.8.8.8 的 Ping 統計資料:
    封包: 已傳送 = 4, 已收到 = 4, 已遺失 = 0 (0% 遺失),
    大約的來回時間 (毫秒):
        最小值 = 8ms, 最大值 = 274ms, 平均 = 108ms
```

2-3 將手機連上 AP，測試是否可以連到手機

Expire time	MAC Address	IP Address	Host name	Client ID
1669601289	fa:4d:0a:a4:29:d3	10.3.141.217	*	01:fa:4d:0a:a4:29:d3
1669597590	14:5a:fc:6b:03:eb	10.3.141.227	Linda-Swift-X	01:14:5a:fc:6b:03:eb

(手機 ip)

```
C:\Users\User>ping 10.3.141.217

Ping 10.3.141.217 (使用 32 位元組的資料):
回覆自 10.3.141.217: 位元組=32 時間=389ms TTL=64
回覆自 10.3.141.217: 位元組=32 時間=348ms TTL=64
回覆自 10.3.141.217: 位元組=32 時間=126ms TTL=64
回覆自 10.3.141.217: 位元組=32 時間=336ms TTL=64

10.3.141.217 的 Ping 統計資料:
    封包: 已傳送 = 4, 已收到 = 4, 已遺失 = 0 (0% 遺失),
    大約的來回時間 (毫秒):
        最小值 = 126ms, 最大值 = 389ms, 平均 = 299ms
```

2-4 給電腦設定一個固定 IP:10.3.141.xx(與原本 DHCP 配發的 IP 相同即可)

Server settings

Advanced



Static Leases

Client list

Logging

Static leases

Clients with a particular hardware MAC address can always be allocated the same IP address. This option adds `dhcp-host` entries to the dnsmasq configuration.

14:5a:fc:6b:03:eb	10.3.141.227	Linda-Swift-X	
MAC address	IP address	Optional comment	

Restrict access

2-5 查看從此電腦(10.3.141.xx)到 google.com 的路徑為何

```
C:\Users\User>tracert google.com

在上限 30 個躍點上
追蹤 google.com [172.217.160.110] 的路由:

 1    4 ms    19 ms    3047 ms  10.3.141.1
 2    1 ms     1 ms     1 ms    140.116.122.253
 3   137 ms    4 ms     1 ms    140.116.243.33
 4    10 ms   47 ms   136 ms  140.116.243.193
 5    69 ms    2 ms     3 ms    140.116.243.177
 6   197 ms    3 ms     3 ms    192.192.61.146
 7    87 ms    7 ms     7 ms    192.192.61.32
 8    20 ms    8 ms     8 ms    192.192.61.188
 9    13 ms    7 ms    12 ms   192.192.61.203
10   158 ms    9 ms     7 ms    72.14.202.60
11    10 ms    9 ms    24 ms   72.14.233.233
12   167 ms   13 ms   10 ms   216.239.48.135
13     8 ms   151 ms    7 ms   tsa03s06-in-f14.1e100.net [172.217.160.110]

追蹤完成。
```