

Part1
Server:

```
michael@michael-virtual-machine: ~/Desktop/par...
michael@michael-virtual-machine:~/Desktop/part1&2$ make all
gcc -c udpServer.c -lm
gcc -o server udpServer.o -lm
gcc -c udpClient.c -lm
gcc -o client udpClient.o -lm
michael@michael-virtual-machine:~/Desktop/part1&2$ ./server 8080
my port : 8080

receive packet 127.0.0.1 : 34418 : SYN : SEQ=3548 : ACK=0
(add client 127.0.0.1 : 34418 : (1))
(1) connecting
(1) cwnd=1024, rwnd=524288, threshold=65536
      send packet (1) : SYN : ACK : SEQ=1385 : ACK=3549
receive packet (1) : ACK : SEQ=3549 : ACK=1386
(1) connected
(1) slow start mode
Receive packet (1) : PSH : SEQ=3549 : ACK=1386
(1) sqrt(25)
(1) try file transmission
(1) file not exist
(1) try dns lookup
(1) fail
(1) try calculation
(1) 5
      send packet (1) : PSH : ACK : SEQ=1386 : ACK=3550
receive packet (1) : ACK : SEQ=3550 : ACK=1387
Receive packet (1) : PSH : SEQ=3550 : ACK=1387
(1) hsnl.cse.nsysu.edu.tw
(1) try file transmission
(1) file not exist
(1) try dns lookup
(1) success
(1) 140.117.172.136
      send packet (1) : PSH : ACK : SEQ=1387 : ACK=3565
receive packet (1) : ACK : SEQ=3565 : ACK=1402
(1) disconnecting
      send packet : FIN : ACK : SEQ=1402 : ACK=3566
receive packet : ACK : SEQ=3566 : ACK=1403
(1) disconnected
(del client (1))

```

client:

```
michael@michael-virtual-machine: ~/Desktop/part1&2$ ./client 127.0.0.1 8080 "sqrt(25)" hsnl.cse.nsysu.edu.tw
```

```
server's ip address : 127.0.0.1
server's port       : 8080

(connecting)
    send packet : SYN : SEQ=3548 : ACK=0
    receive packet : SYN : ACK : SEQ=1385 : ACK=3549
    send packet : ACK : SEQ=3549 : ACK=1386
(connection)
(requested tasks)
(task 1 : sqrt(25))
    send packet : PSH : SEQ=3549 : ACK=1386
    receive packet : PSH : ACK : SEQ=1386 : ACK=3550
    send packet : ACK : SEQ=3550 : ACK=1387
result:
5
(task 1 end)
(task 2 : hsnl.cse.nsysu.edu.tw)
    send packet : PSH : SEQ=3550 : ACK=1387
    receive packet : PSH : ACK : SEQ=1387 : ACK=3565
    send packet : ACK : SEQ=3565 : ACK=1402
result:
140.117.172.136
(task 2 end)
(out of tasks)
(disconnecting)
    send packet : FIN : SEQ=3565 : ACK=1402
    receive packet : FIN : ACK : SEQ=1402 : ACK=3566
    send packet : ACK : SEQ=3566 : ACK=1403
(disconnected)
```

Part2:
server:

```
> ./server 8080
my port : 8080

receive packet 127.0.0.1 : 41423 : SYN : SEQ=620 : ACK=0
(add client 127.0.0.1 : 41423 : (1))
(1) connecting
(1) cwnd=1024, rwnd=524288, threshold=65536
      send packet (1) : SYN : ACK : SEQ=7864 : ACK=621
receive packet (1) : ACK : SEQ=621 : ACK=7865
(1) connected
(1) slow start mode
Receive packet (1) : PSH : SEQ=621 : ACK=7865
(1) hsnl.cse.nsysu.edu.tw
(1) try file transmission
(1) file not exist
(1) try dns lookup
(1) success
(1) 140.117.172.136
      send packet (1) : PSH : ACK : SEQ=7865 : ACK=636
receive packet (1) : ACK : SEQ=636 : ACK=7880
Receive packet (1) : PSH : SEQ=636 : ACK=7880
(1) 60/12
(1) try file transmission
(1) file not exist
(1) try dns lookup
(1) fail
(1) try calculation
(1) 5
      send packet (1) : PSH : ACK : SEQ=7880 : ACK=637
receive packet (1) : ACK : SEQ=637 : ACK=7881
(1) disconnecting
      send packet : FIN : ACK : SEQ=7881 : ACK=638
receive packet : ACK : SEQ=638 : ACK=7882
(1) disconnected
(del client (1))
```

```
receive packet 127.0.0.1 : 41423 : SYN : SEQ=620 : ACK=0
(add client 127.0.0.1 : 41423 : (2))
(2) connecting
(2) cwnd=1024, rwnd=524288, threshold=65536
    send packet (2) : SYN : ACK : SEQ=7669 : ACK=621
receive packet (2) : ACK : SEQ=621 : ACK=7670
(2) connected
(2) slow start mode
Receive packet (2) : PSH : SEQ=621 : ACK=7670
(2) dns.google.com
(2) try file transmission
(2) file not exist
(2) try dns lookup
(2) success
(2) 8.8.4.4
    send packet (2) : PSH : ACK : SEQ=7670 : ACK=628
receive packet (2) : ACK : SEQ=628 : ACK=7677
Receive packet (2) : PSH : SEQ=628 : ACK=7677
(2) 2^3
(2) try file transmission
(2) file not exist
(2) try dns lookup
(2) fail
(2) try calculation
(2) 8
    send packet (2) : PSH : ACK : SEQ=7677 : ACK=629
receive packet (2) : ACK : SEQ=629 : ACK=7678
(2) disconnecting
    send packet : FIN : ACK : SEQ=7678 : ACK=630
receive packet : ACK : SEQ=630 : ACK=7679
(2) disconnected
(del client (2))
```


client1:

```
> ./client 127.0.0.1 8080 hsnl.cse.nsysu.edu.tw "60/12"
server's ip address : 127.0.0.1
server's port       : 8080

(connecting)
    send packet : SYN : SEQ=620 : ACK=0
    receive packet : SYN : ACK : SEQ=7864 : ACK=621
    send packet : ACK : SEQ=621 : ACK=7865
(connection)
(requested tasks)
(task 1 : hsnl.cse.nsysu.edu.tw)
    send packet : PSH : SEQ=621 : ACK=7865
    receive packet : PSH : ACK : SEQ=7865 : ACK=636
    send packet : ACK : SEQ=636 : ACK=7880
result:
140.117.172.136
(task 1 end)
(task 2 : 60/12)
    send packet : PSH : SEQ=636 : ACK=7880
    receive packet : PSH : ACK : SEQ=7880 : ACK=637
    send packet : ACK : SEQ=637 : ACK=7881
result:
5
(task 2 end)
(out of tasks)
(disconnecting)
    send packet : FIN : SEQ=637 : ACK=7881
    receive packet : FIN : ACK : SEQ=7881 : ACK=638
    send packet : ACK : SEQ=638 : ACK=7882
(disconnected)
```

client 2:

```
> ./client 127.0.0.1 8080 dns.google.com "2^3"
server's ip address : 127.0.0.1
server's port       : 8080

(connecting)
    send packet : SYN : SEQ=620 : ACK=0
    receive packet : SYN : ACK : SEQ=7669 : ACK=621
    send packet : ACK : SEQ=621 : ACK=7670
(connection)
(requested tasks)
(task 1 : dns.google.com)
    send packet : PSH : SEQ=621 : ACK=7670
    receive packet : PSH : ACK : SEQ=7670 : ACK=628
    send packet : ACK : SEQ=628 : ACK=7677
result:
8.8.4.4
(task 1 end)
(task 2 : 2^3)
    send packet : PSH : SEQ=628 : ACK=7677
    receive packet : PSH : ACK : SEQ=7677 : ACK=629
    send packet : ACK : SEQ=629 : ACK=7678
result:
8
(task 2 end)
(out of tasks)
(disconnecting)
    send packet : FIN : SEQ=629 : ACK=7678
    receive packet : FIN : ACK : SEQ=7678 : ACK=630
    send packet : ACK : SEQ=630 : ACK=7679
(disconnected)
```