

# [ 2018 Advanced Computer Networks Homework 3 ]

## Rules

1. Please do your homework by using C language and ensure your homework can be compiled under **Ubuntu 18.04**.
2. You have to upload your own **Makefile** to compile your program.
3. Deducting points if you do not follow above restrictions.
4. Do not copy assignment from anyone. **All participants will get ZERO.**
5. We will notice your demonstration time later by email.
6. You can ask TAs any questions about this assignment except debugging.

TAs email: **net\_ta@net.nsysu.edu.tw**

Lab: Network & System Laboratory-**EC5018** (11:00 ~ 17:00)

## Upload

Please compress your homework to zip or tar and upload to National Sun Yat-Sen Cyber University.

Name your homework to **“Student ID\_TCPIP\_HW3”**.

Example: **M043040032\_TCPIP\_HW3.zip**

Deadline: **2018/10/16 (Tue.) 23:59**

Please **use TCP Socket** to implement a chat room **on the mininet** ◦

**Server: ( 70% )**

**Usage: ./server <port number>**

1. Use multi-thread to handle requests from clients.
2. List all the members and chat room online, client can choose which room to join.
3. Handle clients request:
  - Send messages to the member who in the same group ◦
  - Decide person or group to receive the messages

## **Client:** (15%)

**Usage:** `./client <Server IP> <Port number>`

Connect to server.

Handle input:

`<Message>`

Send the messages to the group

`/W <Name or room> <Message>`

Decide person or group to receive the messages

Bye

Disconnection

Enviroment:

You can practice construct 4 host on the mininet and they can “ping” each other.

**Example:** h1 is server

h2 h3 h4 is client

```
mininet> pingall
*** Ping: testing ping reachability
h1 -> h2 h3 h4
h2 -> h1 h3 h4
h3 -> h1 h2 h4
h4 -> h1 h2 h3
*** Results: 0% dropped (12/12 received)
mininet> net
h1 h1-eth0:s1-eth1
h2 h2-eth0:s1-eth2
h3 h3-eth0:s1-eth3
h4 h4-eth0:s1-eth4
s1 lo: s1-eth1:h1-eth0 s1-eth2:h2-eth0 s1-eth3:h3-eth0 s1-eth4:h4-eth0
c0
```

## Sample output:

You don't need show the same output by follow, but you need make same functions in your homework.

```
"Node: h1"
root@shawn-OptiPlex:~/ACN# ./server 63028
Waiting for clients on port 63028...
client [Cindy] log in room [room1]
client [Tom] log in room [room1]
client [Sam] log in room [room2]
client [Sam] leave.
[]

"Node: h2"
root@shawn-OptiPlex:~/ACN# ./client 10.0.0.1 63028
[ Welcome! ]
Please enter your name: Cindy
[ Member List ]
Null
-----
Please enter group name(if doesn't exist,then create): room1
Usage: <Message>
/W <Name or room> <Message>
Bye
-----
Cindy > [note : client [Tom] log in room [room1]]
Cindy > [note : client [Sam] log in room [room2]]
Cindy > Hello
Cindy > Cindy : Hello"
Cindy > [note : client [Sam] leave.]
Cindy > []

"Node: h3"
root@shawn-OptiPlex:~/ACN# ./client 10.0.0.1 63028
[ Welcome! ]
Please enter your name: Tom
[ Member List ]
Cindy [room1]
-----
Please enter group name(if doesn't exist,then create): room1
Usage: <Message>
/W <Name or room> <Message>
Bye
-----
Tom > [note : client [Sam] log in room [room2]]
Tom > "Cindy : Hello"
Tom > /W Sam Hi
Tom > [note : client [Sam] leave.]
Tom > []

"Node: h4"
root@shawn-OptiPlex:~/ACN# ./client 10.0.0.1 63028
[ Welcome! ]
Please enter your name: Sam
[ Member List ]
Cindy [room1]
Tom [room1]
-----
Please enter group name(if doesn't exist,then create): room2
Usage: <Message>
/W <Name or room> <Message>
Sam
-----
Sam > "Tom : Hi"
Sam > Bye
root@shawn-OptiPlex:~/ACN# []
```