

Socket Programming - Report

Question 1 :

(1) Feature in Client

→ We have added the feature sending multiple messages from client to server which was not present earlier.

Explanation: as shown in the figure, the client can send two messages at a time

```
Activities Terminal Mon Nov 25, 20:41
adarsh@adarsh-HP-Pavilion-Notebook: ~/Desktop/CN/Assignment/Problem 1/featu...
adarsh@adarsh-HP-Pavilion-Notebook: ~/Desktop/CN/Assignment/Problem 1/featu...
File Edit View Search Terminal Help
adarsh@adarsh-HP-Pavilion-Notebook:~/Desktop/CN/Assignment/Problem 1/featu
re_in_server$ ls
TCPEchoServer4.c
adarsh@adarsh-HP-Pavilion-Notebook:~/Desktop/CN/Assignment/Problem 1/featu
re_in_server$ gcc TCPEchoServer4.c
adarsh@adarsh-HP-Pavilion-Notebook:~/Desktop/CN/Assignment/Problem 1/featu
re_in_server$ gcc TCPEchoServer4.c -o server
adarsh@adarsh-HP-Pavilion-Notebook:~/Desktop/CN/Assignment/Problem 1/featu
re_in_server$ ./server 12345
----
Handling client 192.168.105.136 44756
hi
hello

adarsh@adarsh-HP-Pavilion-Notebook:~/Desktop/CN/Assignment/Problem 1/featu
re_in_client$ ls
TCPEchoClient.c
adarsh@adarsh-HP-Pavilion-Notebook:~/Desktop/CN/Assignment/Problem 1/featu
re_in_client$ gcc TCPEchoClient.c -o client
adarsh@adarsh-HP-Pavilion-Notebook:~/Desktop/CN/Assignment/Problem 1/featu
re_in_client$ ./client 192.168.105.136 12345 "hi" "hello"
Received: hi
Received: hello
adarsh@adarsh-HP-Pavilion-Notebook:~/Desktop/CN/Assignment/Problem 1/featu
re_in_client$
```

(2) Feature in server

→ If bye is sent from the client to server then communication terminates i.e, the server will go to the off state.

```

adarsh@adarsh-HP-Pavillon-Notebook: ~/Desktop/CN/Assignment/Problem 1/feature_in_s...
File Edit View Search Terminal Help

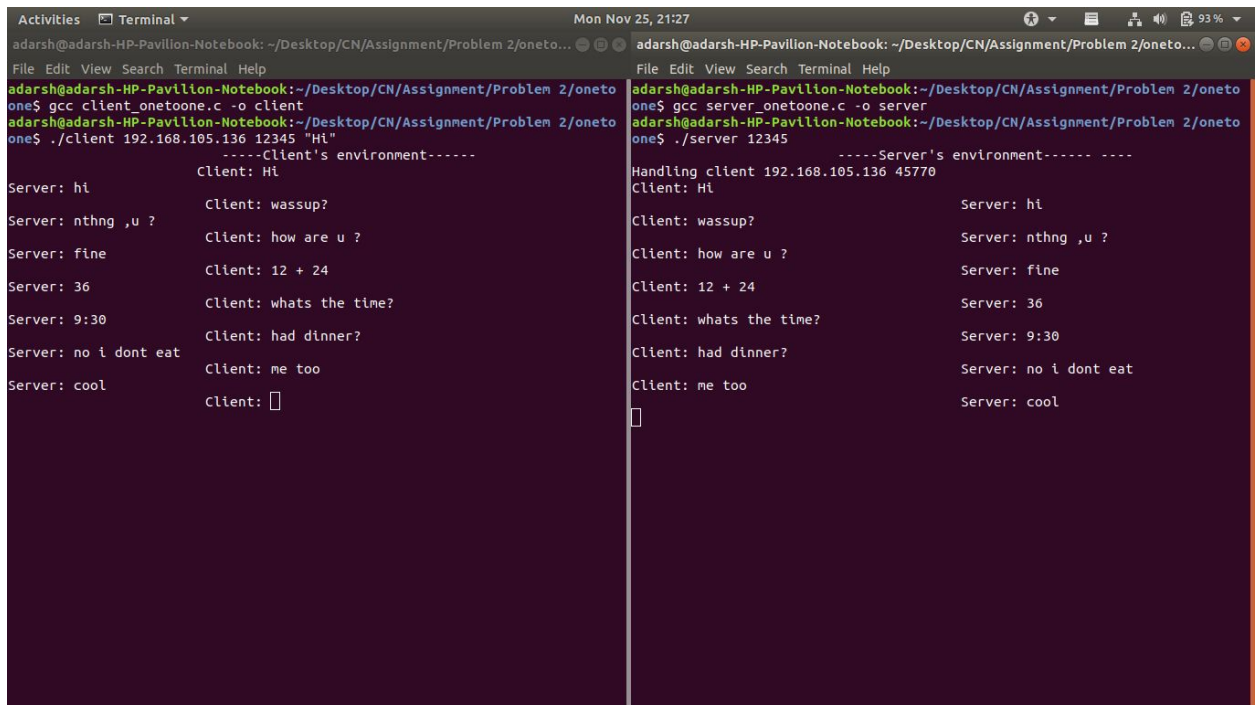
adarsh@adarsh-HP-Pavillon-Notebook:~/Desktop/CN/Assignment/Problem 1/feature_in_s...
server$ gcc TCPEchoServer4.c -o server
adarsh@adarsh-HP-Pavillon-Notebook:~/Desktop/CN/Assignment/Problem 1/feature_in_s...
server$ ./server 12345
----
Handling client 192.168.105.136 45344
hi
----
Handling client 192.168.105.136 45360
hello
----
Handling client 192.168.105.136 45368
time is 9pm
----
Handling client 192.168.105.136 45370
bye
client has sent bye so connection is closed
adarsh@adarsh-HP-Pavillon-Notebook:~/Desktop/CN/Assignment/Problem 1/feature_in_s...
server$

```

Question 2 :

1) 1 server and 1 client

→ The chat between 1server and 1client is done as shown



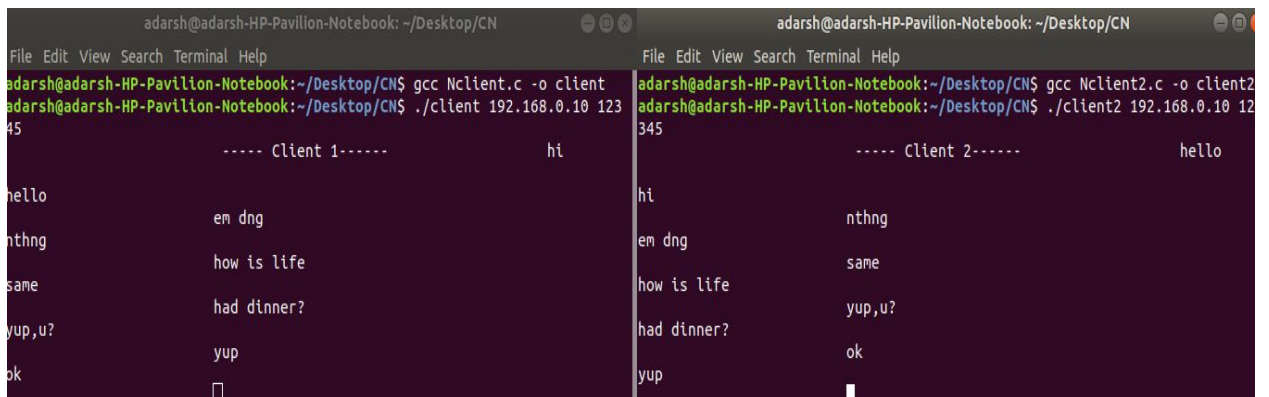
The image shows two terminal windows side-by-side. The left window is the client's terminal, and the right window is the server's terminal. Both show the execution of a C program for a simple chat system. The client's terminal shows the client's environment and the server's responses. The server's terminal shows the server's environment and the client's messages.

```
adash@adarsh-HP-Pavillon-Notebook: ~/Desktop/CN/Assignment/Problem 2/onetone$ gcc client_onetone.c -o client
adash@adarsh-HP-Pavillon-Notebook:~/Desktop/CN/Assignment/Problem 2/onetone$ ./client 192.168.105.136 12345 "Hi"
-----Client's environment-----
Client: Hi
Server: hi
Client: wassup?
Server: nthng ,u ?
Client: how are u ?
Server: fine
Client: 12 + 24
Server: 36
Client: whats the time?
Server: 9:30
Client: had dinner?
Server: no i dont eat
Client: me too
Server: cool
Client: 
```

```
adash@adarsh-HP-Pavillon-Notebook:~/Desktop/CN/Assignment/Problem 2/onetone$ gcc server_onetone.c -o server
adash@adarsh-HP-Pavillon-Notebook:~/Desktop/CN/Assignment/Problem 2/onetone$ ./server 12345
-----Server's environment-----
Handling client 192.168.105.136 45770
Client: Hi
Server: hi
Client: wassup?
Server: nthng ,u ?
Client: how are u ?
Server: fine
Client: 12 + 24
Server: 36
Client: whats the time?
Server: 9:30
Client: had dinner?
Server: no i dont eat
Client: me too
Server: cool
```

2) 1 server and 2 client

→ Messages are sent from client 1 to client 2 and vice-versa which are connected to a single server



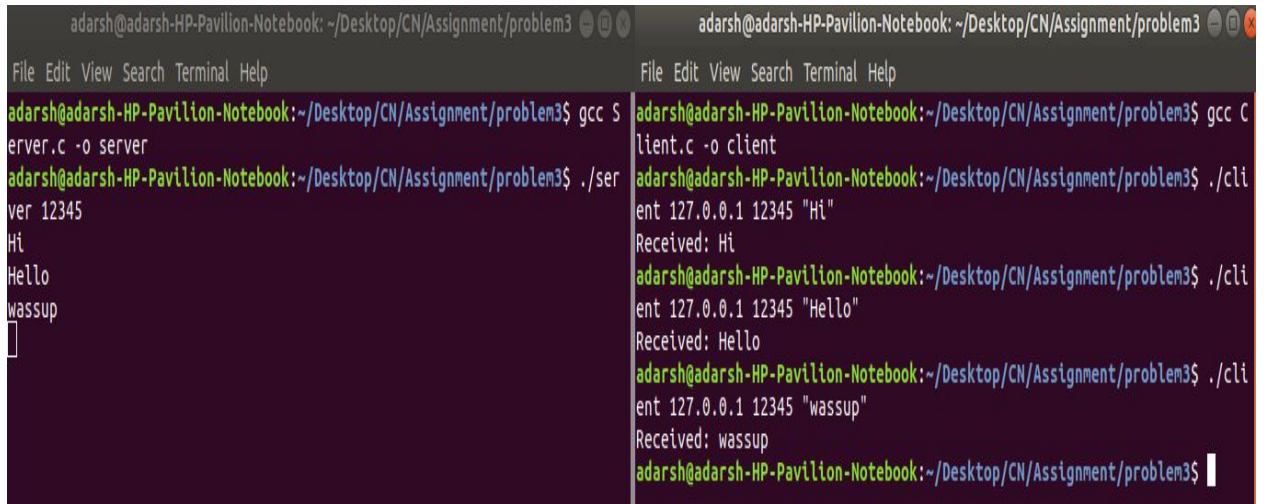
The image shows two terminal windows side-by-side. The left window is Client 1's terminal, and the right window is Client 2's terminal. Both show the execution of a C program for a simple chat system. The client's terminal shows the client's environment and the server's responses. The server's terminal shows the server's environment and the client's messages.

```
adash@adarsh-HP-Pavillon-Notebook:~/Desktop/CN$ gcc Nclient.c -o client
adash@adarsh-HP-Pavillon-Notebook:~/Desktop/CN$ ./client 192.168.0.10 12345
----- Client 1-----
Client: hi
Server: hello
Client: en dng
Server: nthng
Client: how is life
Server: same
Client: had dinner?
Server: yup,u?
Client: yup
Server: ok
Client: 
```

```
adash@adarsh-HP-Pavillon-Notebook:~/Desktop/CN$ gcc Nclient2.c -o client2
adash@adarsh-HP-Pavillon-Notebook:~/Desktop/CN$ ./client2 192.168.0.10 12345
----- Client 2-----
Client: hello
Server: hi
Client: nthng
Server: em dng
Client: same
Server: how is life
Client: yup,u?
Server: had dinner?
Client: ok
Server: yup
```

Question 3

In our regular (given in class) the communication supports only for IPV4. But the code written for Problem 3 (see code) it supports both IPV4 and IPV6 addresses



```
adarsh@adarsh-HP-Pavilion-Notebook: ~/Desktop/CN/Assignment/problem3
File Edit View Search Terminal Help
adarsh@adarsh-HP-Pavilion-Notebook:~/Desktop/CN/Assignment/problem3$ gcc S
erver.c -o server
adarsh@adarsh-HP-Pavilion-Notebook:~/Desktop/CN/Assignment/problem3$ ./ser
ver 12345
Hi
Hello
wassup
█

adarsh@adarsh-HP-Pavilion-Notebook: ~/Desktop/CN/Assignment/problem3
File Edit View Search Terminal Help
adarsh@adarsh-HP-Pavilion-Notebook:~/Desktop/CN/Assignment/problem3$ gcc C
lient.c -o client
adarsh@adarsh-HP-Pavilion-Notebook:~/Desktop/CN/Assignment/problem3$ ./cli
ent 127.0.0.1 12345 "Hi"
Received: Hi
adarsh@adarsh-HP-Pavilion-Notebook:~/Desktop/CN/Assignment/problem3$ ./cli
ent 127.0.0.1 12345 "Hello"
Received: Hello
adarsh@adarsh-HP-Pavilion-Notebook:~/Desktop/CN/Assignment/problem3$ ./cli
ent 127.0.0.1 12345 "wassup"
Received: wassup
adarsh@adarsh-HP-Pavilion-Notebook:~/Desktop/CN/Assignment/problem3$ █
```

Note: In the demonstration, one terminal acts as a server and other terminal acts as a client on the same computer.