

Assignment 3_datagram output:

1. ONE-ONE mode:

Client 1 sends the message to the server and the server acknowledges and forwards the message to client 2 as shown. Now client 2 is ready to send a message while other clients wait to receive a message.

```
aryan@pop-os: ~/assignment/socket
aryan@pop-os:~/assignment/socket$ gcc -pthread 201801015_server_datagram.c
aryan@pop-os:~/assignment/socket$ ./a.out 1
ONE to ONE MODE
Waiting for connections...

Message from Client : hello111

aryan@pop-os:~/assignment/socket$

aryan@pop-os:~/assignment/socket$ gcc -pthread 201801015_client_datagram.c
aryan@pop-os:~/assignment/socket$ ./a.out
hello111
Acknowledged

aryan@pop-os:~/assignment/socket$

aryan@pop-os:~/assignment/socket$ ./a.out
Recieved from server: hello111
```

Client 2 sends the message to the server which is acknowledged and client 3 gets the same message from the server as shown while other clients wait to receive the message.

```
aryan@pop-os: ~/assignment/socket
aryan@pop-os:~/assignment/socket$ gcc -pthread 201801015_server_datagram.c
aryan@pop-os:~/assignment/socket$ ./a.out 1
ONE to ONE MODE
Waiting for connections...

Message from Client : hello111
Message from Client : hello222

aryan@pop-os:~/assignment/socket$

aryan@pop-os:~/assignment/socket$ gcc -pthread 201801015_client_datagram.c
aryan@pop-os:~/assignment/socket$ ./a.out
hello111
Acknowledged

aryan@pop-os:~/assignment/socket$

aryan@pop-os:~/assignment/socket$ ./a.out
Recieved from server: hello222

aryan@pop-os:~/assignment/socket$

aryan@pop-os:~/assignment/socket$ ./a.out
Recieved from server: hello111
hello222
Acknowledged
```

Similarly, client 3 sends the message to the server which is acknowledged and received by client 1 completing 1 iteration of messages as shown.

The screenshot displays four terminal windows arranged in a 2x2 grid, all titled 'aryan@pop-os: ~/assignment/socket'. The top-left window shows the server's perspective: it has compiled and run '201801015_server_datagram.c', entered 'ONE to ONE MODE', and is 'Waiting for connections...'. It has received three messages from clients: 'hello111', 'hello222', and 'hello333'. The top-right window shows the first client's perspective: it has compiled and run '201801015_client_datagram.c', sent 'hello111', received 'Acknowledged' from the server, and then received 'hello333' from the server. The bottom-left window shows the second client's perspective: it has run './a.out', received 'hello222' from the server, sent 'hello333', received 'Acknowledged', and then received 'hello111' from the server. The bottom-right window shows the third client's perspective: it has run './a.out', received 'hello111' from the server, sent 'hello222', received 'Acknowledged', and then received 'hello333' from the server.

The next snap is of complete iteration 2 of the same procedure as indicated by the arrows. We start with client 1 again and follow the same cycle as before.

This screenshot shows the same four terminal windows after a second iteration of the message cycle. The top-left window (server) has received six messages from clients: 'hello111', 'hello222', 'hello333', 'client1', 'client2', and 'client3'. The top-right window (client 1) has sent 'hello111', received 'Acknowledged', received 'hello333' from the server, sent 'client1', received 'Acknowledged', and received 'client3' from the server. The bottom-left window (client 2) has run './a.out', received 'hello222' from the server, sent 'hello333', received 'Acknowledged', received 'client2' from the server, sent 'client3', received 'Acknowledged', and then received 'client1' from the server. The bottom-right window (client 3) has run './a.out', received 'hello111' from the server, sent 'hello222', received 'Acknowledged', received 'client1' from the server, sent 'client2', received 'Acknowledged', and then received 'client3' from the server.

2. BROADCAST MODE:

Similarly all 4 procedures for broadcast mode:

Client 1 sends hi111 and remaining clients also get it via the server which has already acknowledged client 1

```
aryan@pop-os: ~/assignment/socket
aryan@pop-os:~/assignment/socket$ gcc -pthread 201801015_server_datagram.c
aryan@pop-os:~/assignment/socket$ ./a.out 2
BROADCAST MODE
Waiting for connections...
Message from Client : hi111

aryan@pop-os:~/assignment/socket$ ./a.out
Recieved from server: hi111

aryan@pop-os:~/assignment/socket$ gcc -pthread 201801015_client_datagram.c
aryan@pop-os:~/assignment/socket$ ./a.out
hi111
Acknowledged

aryan@pop-os:~/assignment/socket$ ./a.out
Recieved from server: hi111
```

Client 2 sends hi222 and remaining clients also get it via the server which has already acknowledged client 2

```
aryan@pop-os: ~/assignment/socket
aryan@pop-os:~/assignment/socket$ gcc -pthread 201801015_server_datagram.c
aryan@pop-os:~/assignment/socket$ ./a.out 2
BROADCAST MODE
Waiting for connections...
Message from Client : hi111
Message from Client : hi222

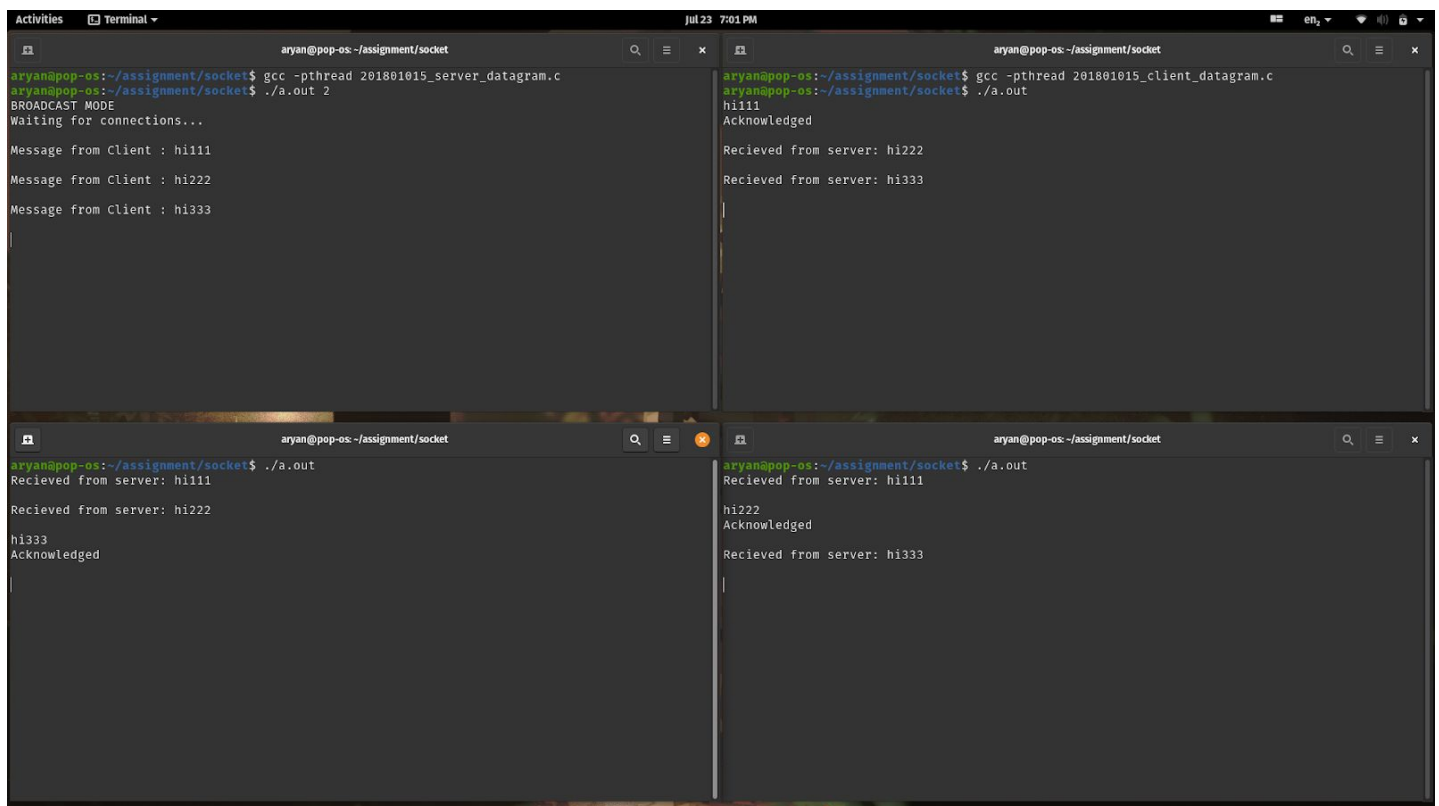
aryan@pop-os:~/assignment/socket$ ./a.out
Recieved from server: hi111
Recieved from server: hi222

aryan@pop-os:~/assignment/socket$ gcc -pthread 201801015_client_datagram.c
aryan@pop-os:~/assignment/socket$ ./a.out
hi111
Acknowledged
Recieved from server: hi222

aryan@pop-os:~/assignment/socket$ ./a.out
Recieved from server: hi111
Recieved from server: hi222

aryan@pop-os:~/assignment/socket$ ./a.out
hi111
Acknowledged
```

Client 3 sends hi333 and remaining clients also get it via the server which has already acknowledged client 3, completing one iteration.



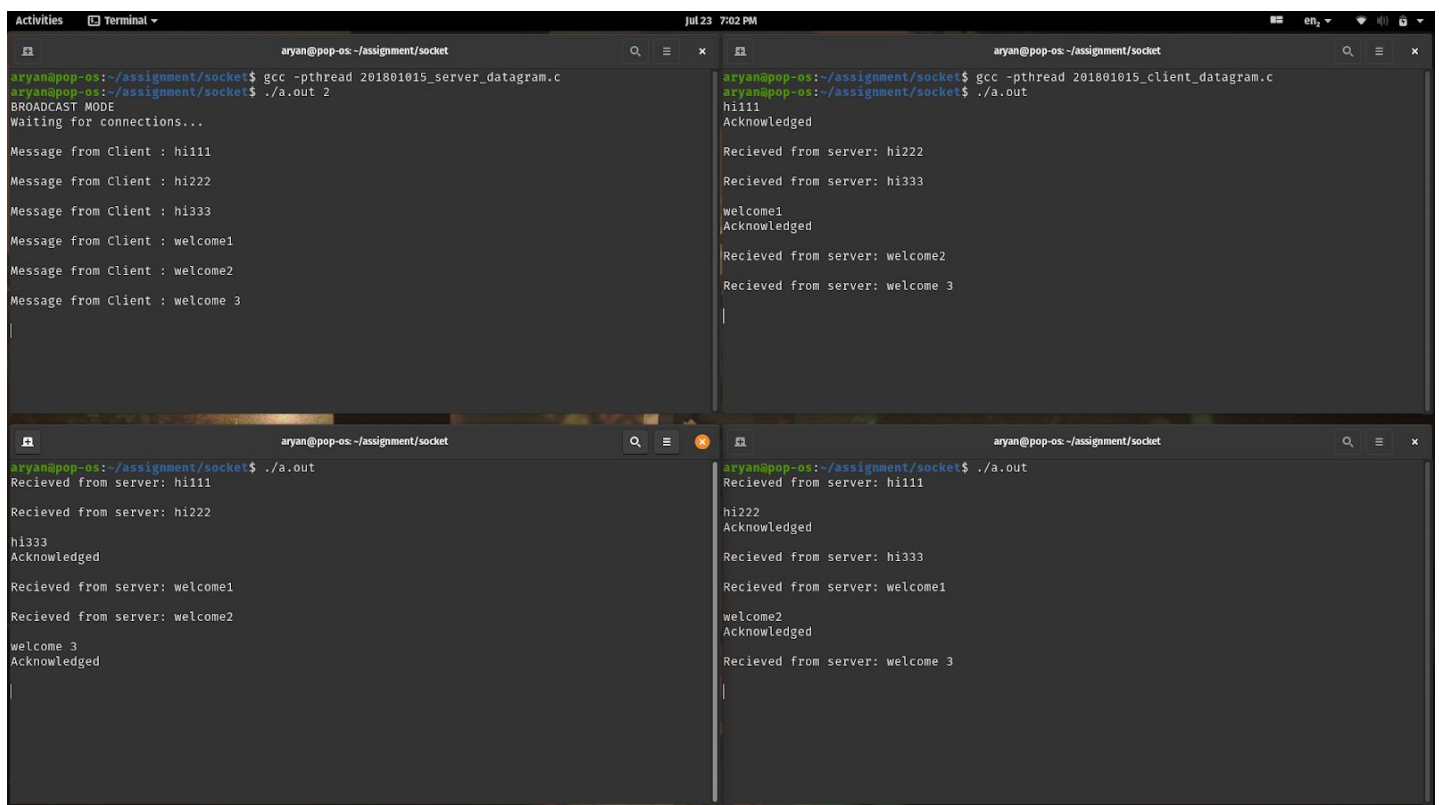
```
aryan@pop-os: ~/assignment/socket
aryan@pop-os:~/assignment/socket$ gcc -pthread 201801015_server_datagram.c
aryan@pop-os:~/assignment/socket$ ./a.out 2
BROADCAST MODE
Waiting for connections...
Message from Client : hi111
Message from Client : hi222
Message from Client : hi333
|

aryan@pop-os:~/assignment/socket
aryan@pop-os:~/assignment/socket$ gcc -pthread 201801015_client_datagram.c
aryan@pop-os:~/assignment/socket$ ./a.out
hi111
Acknowledged
Recieved from server: hi222
Recieved from server: hi333
|

aryan@pop-os:~/assignment/socket
aryan@pop-os:~/assignment/socket$ ./a.out
Recieved from server: hi111
Recieved from server: hi222
hi333
Acknowledged
|

aryan@pop-os:~/assignment/socket
aryan@pop-os:~/assignment/socket$ ./a.out
Recieved from server: hi111
hi222
Acknowledged
Recieved from server: hi333
|
```

Next, we see another complete iteration of BROADCAST messages working in the similar manner as before.



```
aryan@pop-os: ~/assignment/socket
aryan@pop-os:~/assignment/socket$ gcc -pthread 201801015_server_datagram.c
aryan@pop-os:~/assignment/socket$ ./a.out 2
BROADCAST MODE
Waiting for connections...
Message from Client : hi111
Message from Client : hi222
Message from Client : hi333
Message from Client : welcome1
Message from Client : welcome2
Message from Client : welcome3
|

aryan@pop-os:~/assignment/socket
aryan@pop-os:~/assignment/socket$ gcc -pthread 201801015_client_datagram.c
aryan@pop-os:~/assignment/socket$ ./a.out
hi111
Acknowledged
Recieved from server: hi222
Recieved from server: hi333
welcome1
Acknowledged
Recieved from server: welcome2
Recieved from server: welcome3
|

aryan@pop-os:~/assignment/socket
aryan@pop-os:~/assignment/socket$ ./a.out
Recieved from server: hi111
Recieved from server: hi222
hi333
Acknowledged
Recieved from server: welcome1
Recieved from server: welcome2
welcome3
Acknowledged
|

aryan@pop-os:~/assignment/socket
aryan@pop-os:~/assignment/socket$ ./a.out
Recieved from server: hi111
hi222
Acknowledged
Recieved from server: hi333
Recieved from server: welcome1
welcome2
Acknowledged
Recieved from server: welcome3
|
```