



COMP 4981 ASSIGNMENT 3

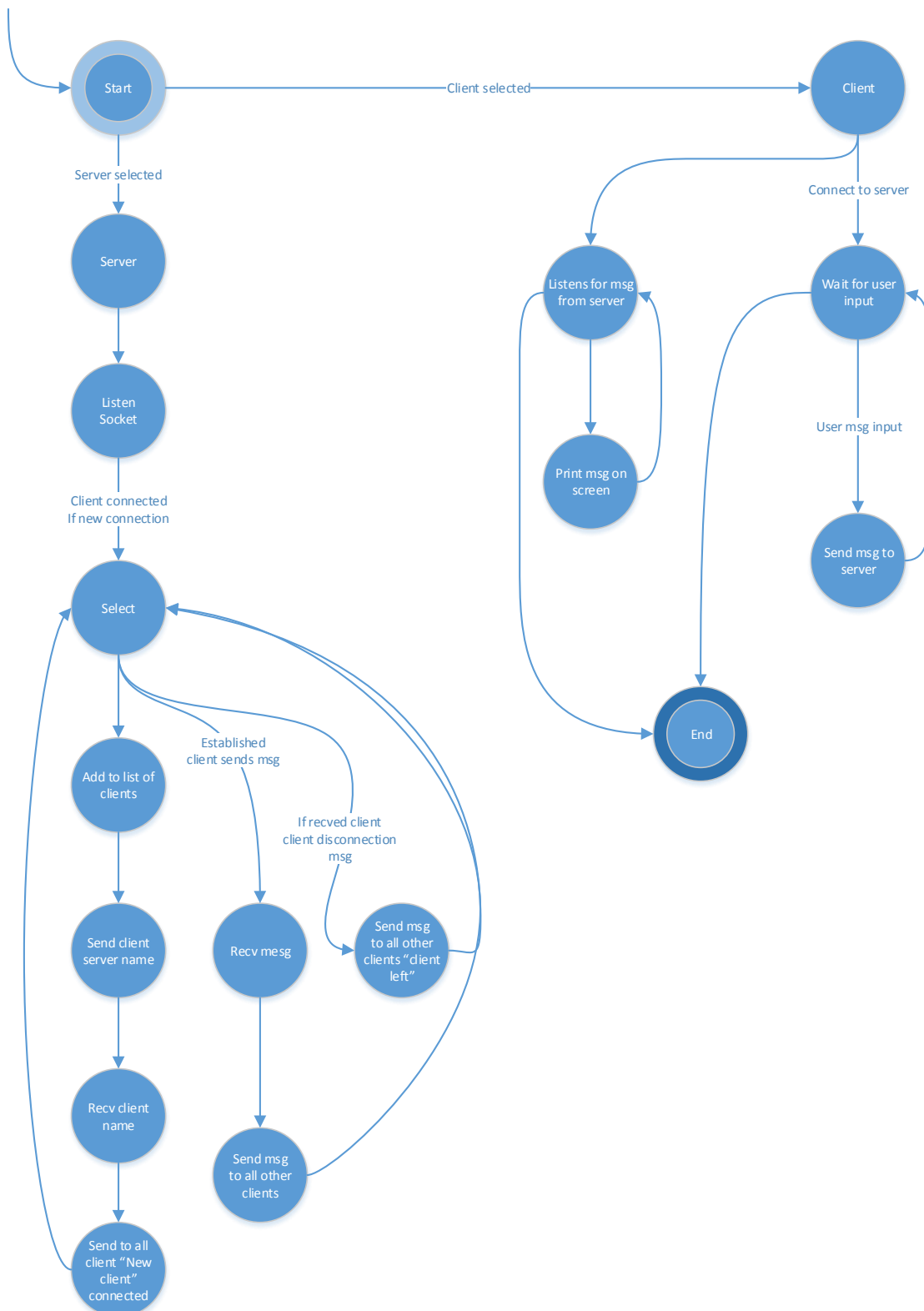
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Design



Function Prototypes

```
void exit_message();  
void startClient(char* username, char* ip, int port);  
void startServer(int port);  
void listen_socket(int *listen_sd, struct sockaddr_in *server, int port);  
int addClient(int pos, int sock, char r, char *name, char *addr);  
int removeClient(int sock);  
char *getName(char *str);  
char *trim(char *str);  
void print_clients();  
void catch_int(int signo);  
void catch_int_server(int signo);
```

Pseudo Code

```
main()
{
    get arguments from command line set by users

    if Server is selected
        startServer()

    if Client is selected
        startClient()
}

startServer()
{
    set up a set amount of clients in array to be used as sockets

    set up socket to listen on
    bind the socket
    listen to the socket

    set up all clients sockets to be set as -1

    while loop
        select API call

        if new client connection
            add client to current client list
            send server name to clients that "this" client has connected

        check for all clients for data
            if any data that came in
                read data

                check what the data is to determine what to do with the data
                send data to all data connected
}

startClient()
{
    use information of ip and port set by user

    create socket
    connect to socket
```

```
switch(fork())
if 0:
    while loop
        recv data from server
        print out data onto screen

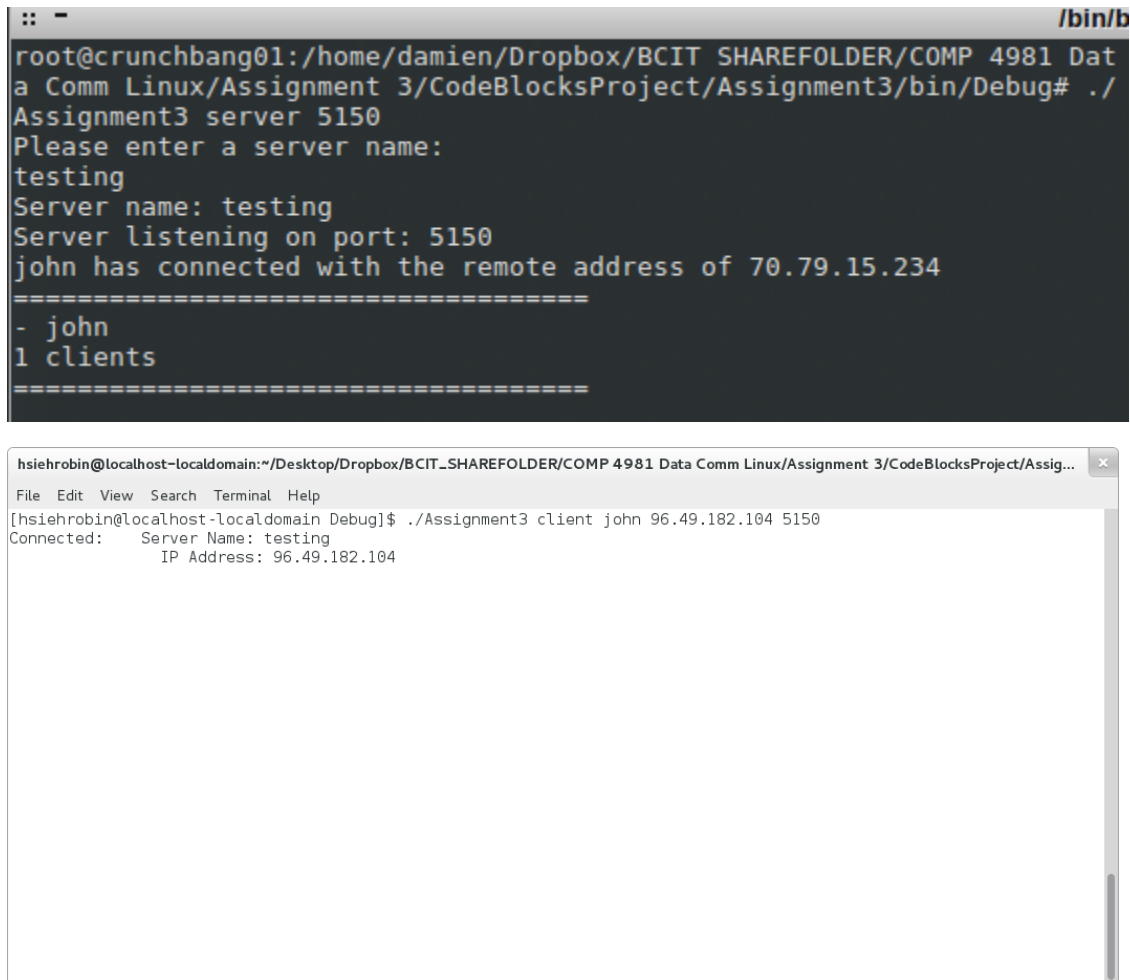
if 1:
    while loop
        get user input from keyboard

        send user input data to socket
}
```

Test Documents

Test	Test Description	Expected Result	Pass/Fail	Screen Shot
1	Start server	Server started properly	Pass	Figure 1
2	One client connection	One client able to connect	Pass	Figure 1
3	Multiple clients connection	Multiple clients able to connect	Pass	Figure 2
4	Clients can disconnect from server	Client disconnects from server	Pass	Figure 3
5	Server shows user list as they join	Server shows user list as they join	Pass	Figure 4
6	Client sending messages	Clients can see each other's messages	Pass	Figure 5
7	Client receiving messages	Clients can see each other's messages	Pass	Figure 5
8	Able to save to file	Client able to specify when to log the chat to file	Pass	Figure 6

Figure 1



```
root@crunchbang01:/home/damien/Dropbox/BCIT SHAREFOLDER/COMP 4981 Data Comm Linux/Assignment 3/CodeBlocksProject/Assignment3/bin/Debug# ./Assignment3 server 5150
Please enter a server name:
testing
Server name: testing
Server listening on port: 5150
john has connected with the remote address of 70.79.15.234
=====
- john
1 clients
=====
```

```
hsiehrobin@localhost-localhost:~/Desktop/Dropbox/BCIT_SHAREFOLDER/COMP 4981 Data Comm Linux/Assignment 3/CodeBlocksProject/Assignment3/bin/Debug$ ./Assignment3 client john 96.49.182.104 5150
Connected:      Server Name: testing
               IP Address: 96.49.182.104
```

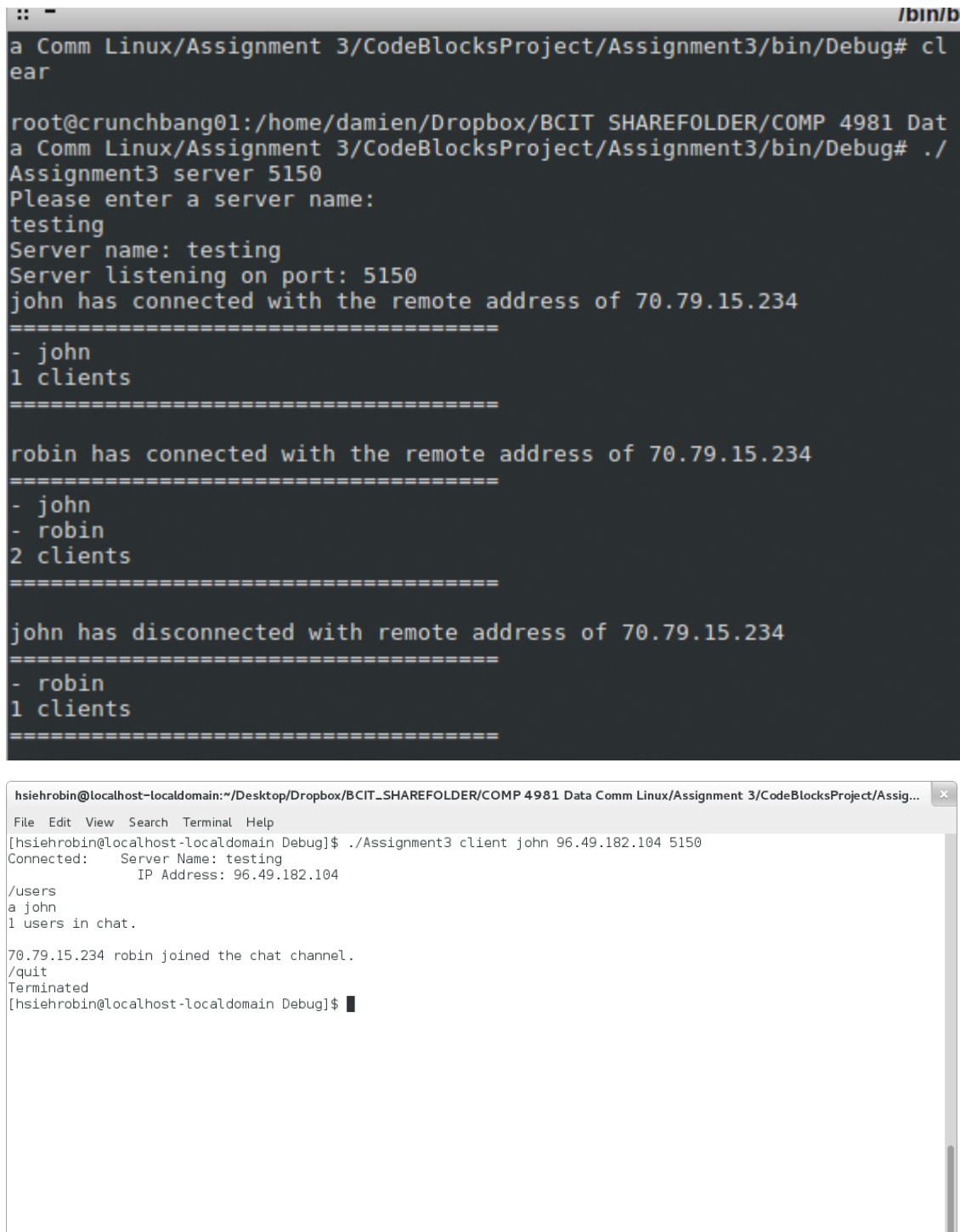

Figure 2

```
=====
- john
- tim
- tomato
- robin
4 clients
=====

damien has connected with the remote address of 127.0.0.1
=====
- john
- tim
- tomato
- robin
- damien
5 clients
=====

bob has connected with the remote address of 70.79.15.234
=====
- john
- tim
- tomato
- robin
- damien
- bob
6 clients
=====
```

Figure 3



The figure consists of two terminal screenshots. The top screenshot shows a server-side view of a chat application. It starts with a prompt to clear the screen, followed by running the server on port 5150. The server name is set to 'testing'. It then shows two clients, 'john' and 'robin', connecting from the remote address 70.79.15.234. The client list updates from 1 to 2 clients. Finally, 'john' disconnects, leaving 1 client ('robin'). The bottom screenshot shows the client-side view. A user named 'hsiehrobin' runs the client application, connecting to the server 'testing' at IP 96.49.182.104 on port 5150. The client shows the current users ('john'), receives a message from '70.79.15.234 robin' stating 'robin joined the chat channel.', and then terminates.

```
root@crunchbang01:/home/damien/Dropbox/BCIT SHAREFOLDER/COMP 4981 Data Comm Linux/Assignment 3/CodeBlocksProject/Assignment3/bin/Debug# clear

root@crunchbang01:/home/damien/Dropbox/BCIT SHAREFOLDER/COMP 4981 Data Comm Linux/Assignment 3/CodeBlocksProject/Assignment3/bin/Debug# ./Assignment3 server 5150
Please enter a server name:
testing
Server name: testing
Server listening on port: 5150
john has connected with the remote address of 70.79.15.234
=====
- john
1 clients
=====

robin has connected with the remote address of 70.79.15.234
=====
- john
- robin
2 clients
=====

john has disconnected with remote address of 70.79.15.234
=====
- robin
1 clients
=====

hsiehrobin@localhost-localhost:~/Desktop/Dropbox/BCIT_SHAREFOLDER/COMP 4981 Data Comm Linux/Assignment 3/CodeBlocksProject/Assignment3/bin/Debug$ ./Assignment3 client john 96.49.182.104 5150
Connected:      Server Name: testing
               IP Address: 96.49.182.104

/users
a john
1 users in chat.

70.79.15.234 robin joined the chat channel.
/quit
Terminated
[hsiehrobin@localhost-localhost Debug]$
```

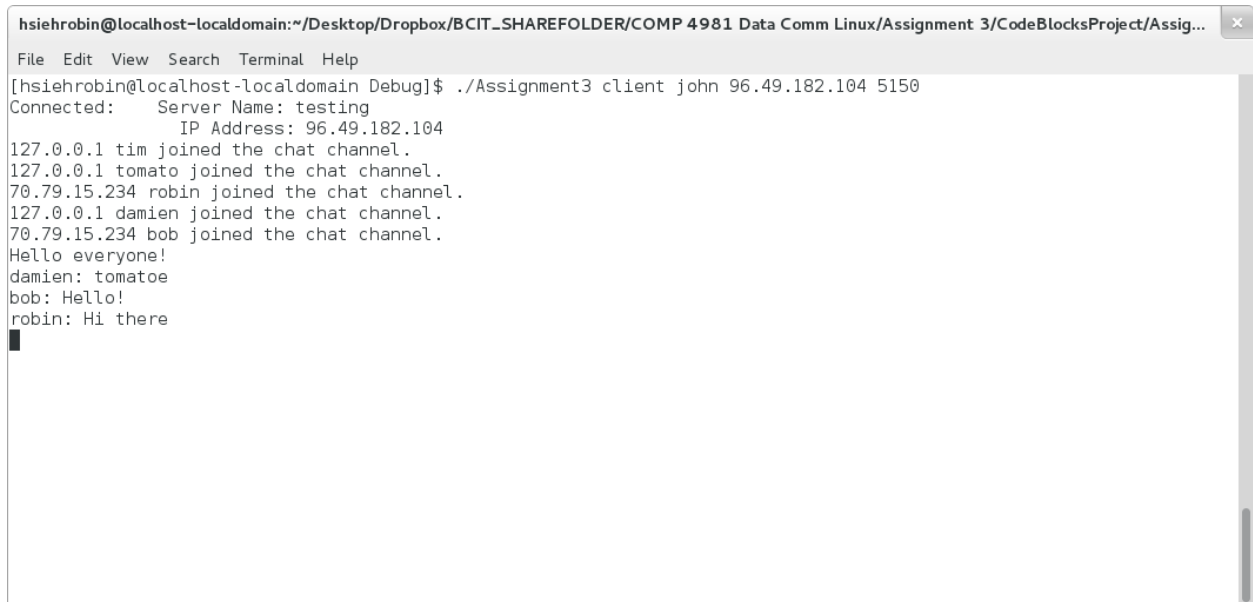
Figure 4

```
=====
- john
- tim
- tomato
- robin
4 clients
=====

damien has connected with the remote address of 127.0.0.1
=====
- john
- tim
- tomato
- robin
- damien
5 clients
=====

bob has connected with the remote address of 70.79.15.234
=====
- john
- tim
- tomato
- robin
- damien
- bob
6 clients
=====
```

Figure 5



```
hsiehrobin@localhost-localhost:~/Desktop/Dropbox/BCIT_SHAREFOLDER/COMP 4981 Data Comm Linux/Assignment 3/CodeBlocksProject/Assig...
File Edit View Search Terminal Help
[hsiehrobin@localhost-localhost Debug]$ ./Assignment3 client john 96.49.182.104 5150
Connected:      Server Name: testing
                IP Address: 96.49.182.104
127.0.0.1 tim joined the chat channel.
127.0.0.1 tomato joined the chat channel.
70.79.15.234 robin joined the chat channel.
127.0.0.1 damien joined the chat channel.
70.79.15.234 bob joined the chat channel.
Hello everyone!
damien: tomatoe
bob: Hello!
robin: Hi there
█
```

Figure 6

log.txt ✕		Connected: Server Name: adlkjadsfklkjasc IP Address: 127.0.0.1
1	tim: hi	127.0.0.1 damien joined the chat channel.
2	tim: testing	127.0.0.1 tim joined the chat channel.
3	tim: testing	tim: hi
4	damien: hi	/log
5	damien: hi	tim: testing
6	damien: /msg mari hello	damien: hi
7	*damien: hello	*damien: hello
8	tim has left the chat	this is a test
9	damien: /promote mari	tim has left the chat
10	damien: /users	/log
11	damien: /help	/promote damien
12	mari: /promote damien	hi
13	mari: hi	127.0.0.1 tim joined the chat channel.
14	tim: hi	tim: hi
15	damien: /kick tim	Server Terminated