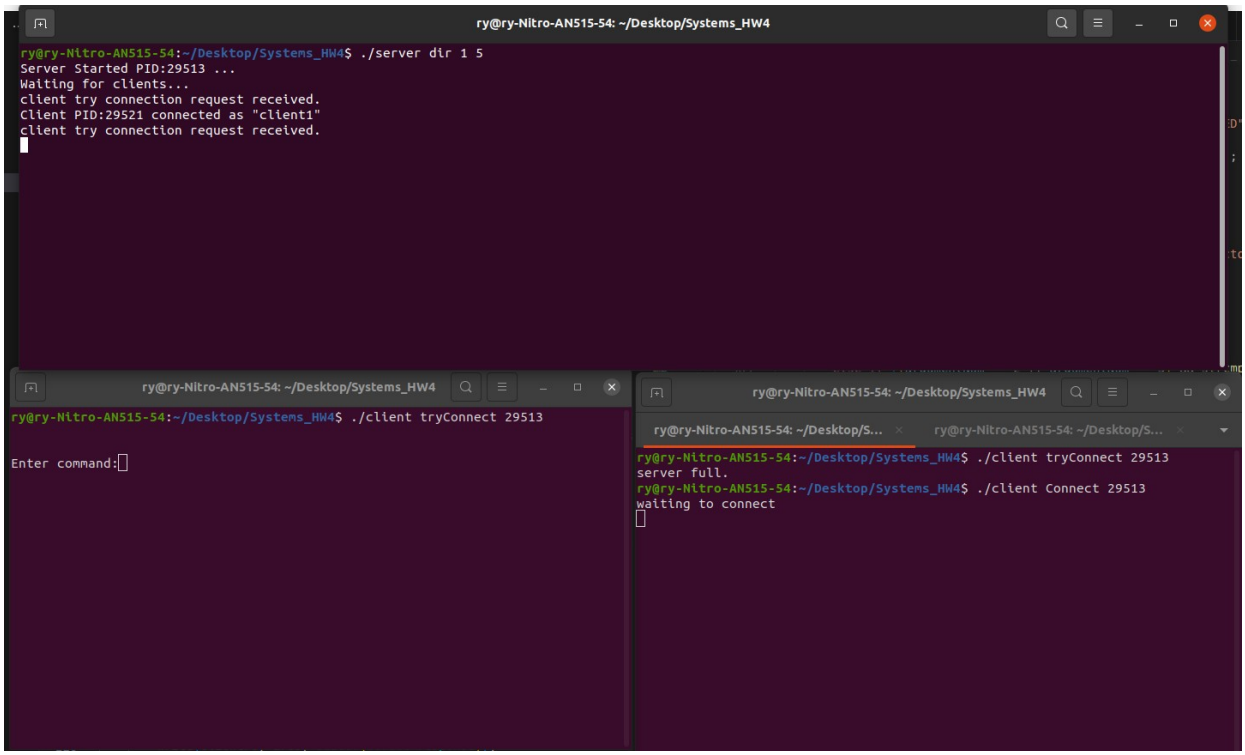
HW4 REPORT

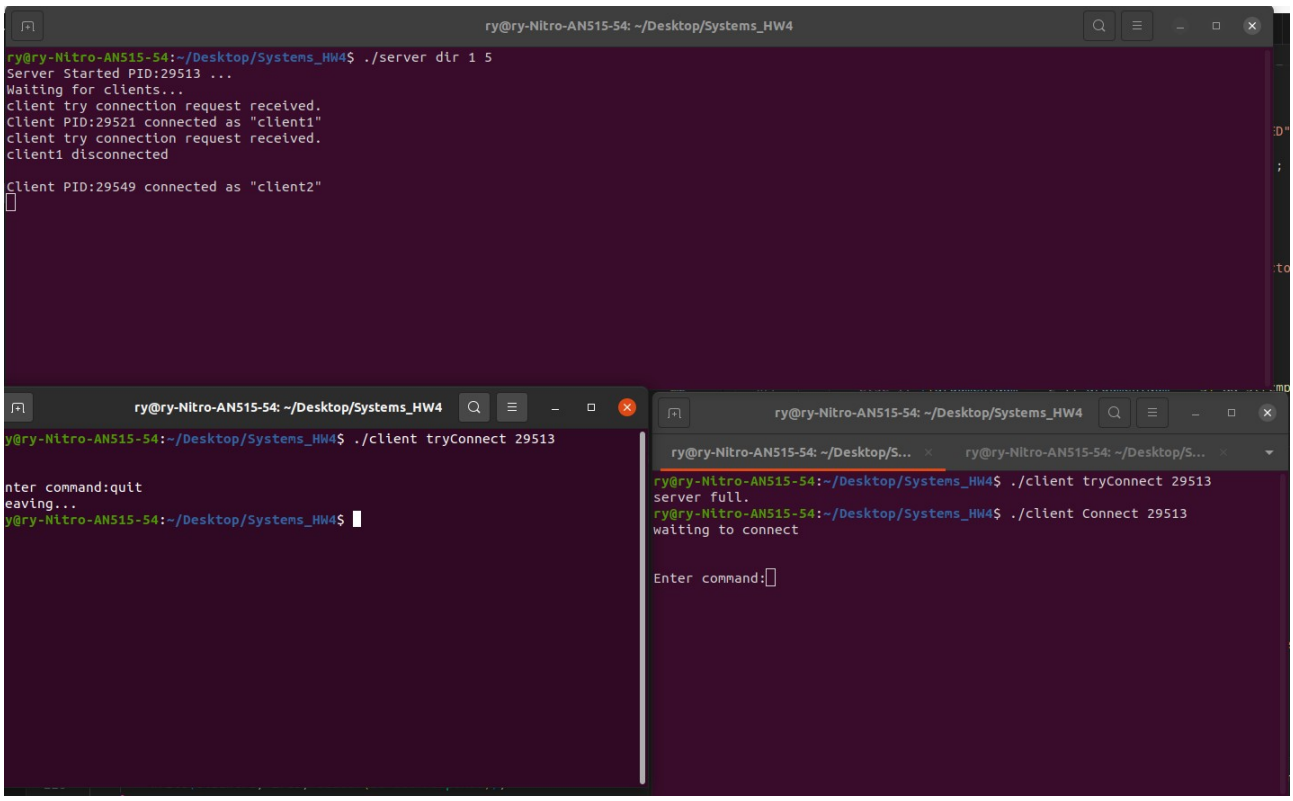
In this homework, I used some part of the midterm’s code but the code structure is a little bit different from midterm because I used FIFO for inter process communication. Also, to synchronize write and read operations on files, when a file is read or written then the writer or reader count of the file is increased and blocked with semaphores as we saw in the lecture.

Besides all these, the difference of this homework is threads. Threads are used instead of creating child processes. To my understanding, a thread pool should be created with given size, when there is a request from a connected client, a thread should be assigned to the request and give response to the request, then the thread should be able to handle another request. In my program, thread pool is created instantly and clients send their requests to server, server stores the requests in a queue and notifies the threads that a task is added to queue,(as a structure Task which consist of message and pid of the client) meantime one of the free threads gets the task and sends response to the client. Because of this implementation, even if server does not have as much threads as connected client, server can still serve maybe slower but it is better than nothing.

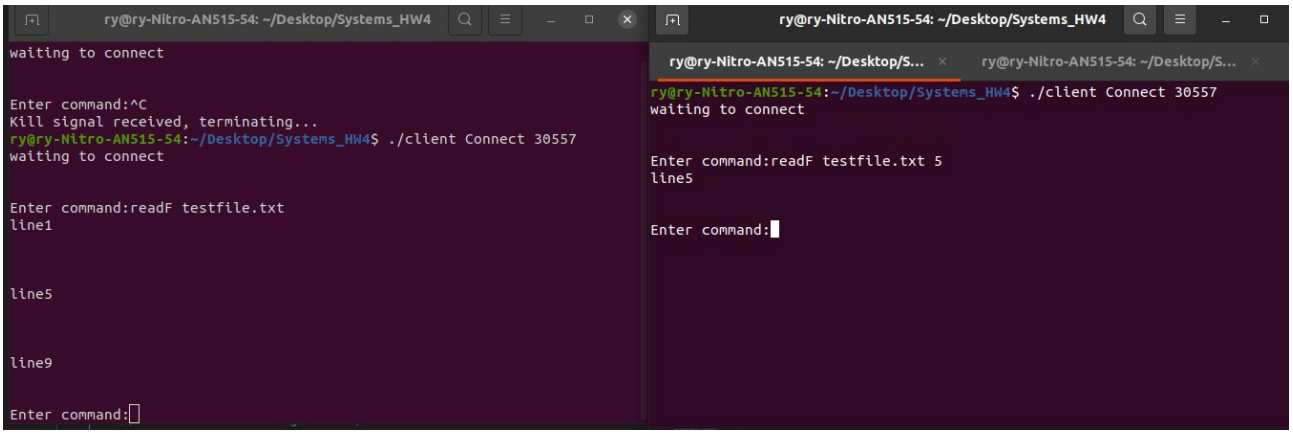
Screen Shots Of Tests



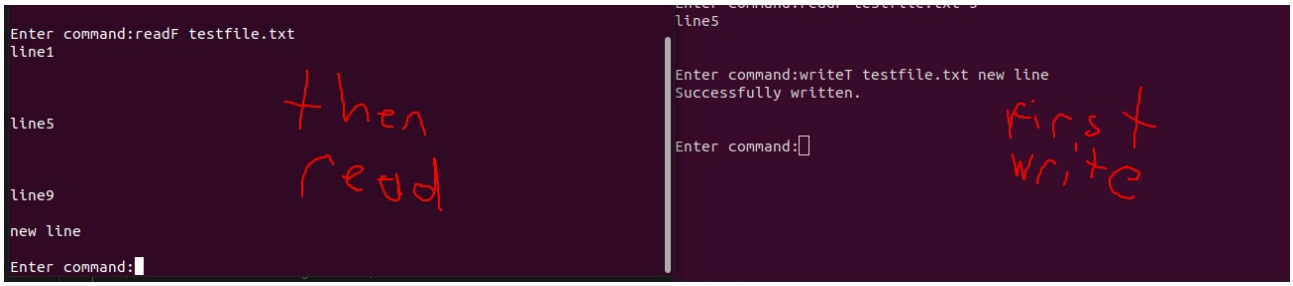
This shows that tryConnect and Connect options works, when there is a place tryConnect connects, otherwise immediately leaves the program, but Connect waits till there is a place available.



This shows when a client waits and someone leaves the server, waiting client connects to server.



ReadF reads whole file or requested line.



WriteT writes to end of the file if no line number is given.

```
Enter command:readF testfile.txt 7
line 7

Enter command:
111         if (FrontOfPidQueue() != -1)
```

```
Enter command:writeT testfile.txt 7 line 7
Successfully written.

Enter command:
```

If line number is specified, writeT writes to that line.

```
SYSTEMS_HW4
.vscode
{} settings.json
dir
bg.jpeg
log_31408
testfile.txt
bg.jpeg
bg2.jpeg
client
client.c
client.o
file.txt
functions.h
makefile
myconst.h
mytypes.h
pidqueue.h
server
server.c
server.o
taskqueue.h
```

```
Enter command:download bg.jpeg
Download finished successfully.
```

first try

```
Enter command:download bg.jpeg
```

try again

```
File exists in your directory.Try changing the filename or use overwr
ite option.
new file name usage: download <filename> <newfilename>
overwrite usage: download <fileName> -ow
```

```
Enter command:download bg.jpeg -ow
Download finished successfully.
```

overwrite

```
Enter command:download bg.jpeg bg2.jpeg
Download finished successfully.
```

change name

```
Enter command:
```

```
SYSTEMS_HW4
.vscode
{} settings.json
dir
background.jpeg
backgroundv2.jpeg
log_31408
testfile.txt
background.jpeg
client
client.c
client.o
file.txt
functions.h
makefile
myconst.h
mytypes.h
pidqueue.h
server
server.c
server.o
taskqueue.h
```

```
Enter command:upload background.jpeg
File uploaded
```

first try

```
Enter command:upload background.jpeg
File with this name exists in server directory.
```

try again

```
Enter command:upload background.jpeg -ow
File uploaded
```

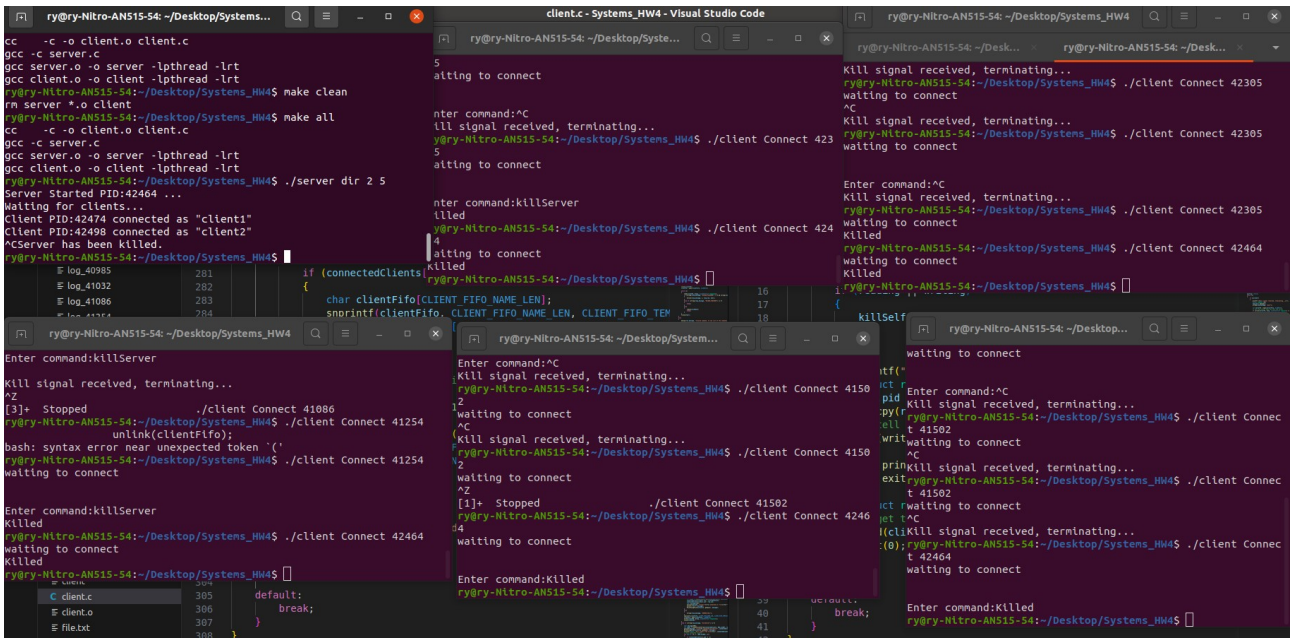
overwrite

```
Enter command:upload background.jpeg backgroundv2.jpeg
File uploaded
```

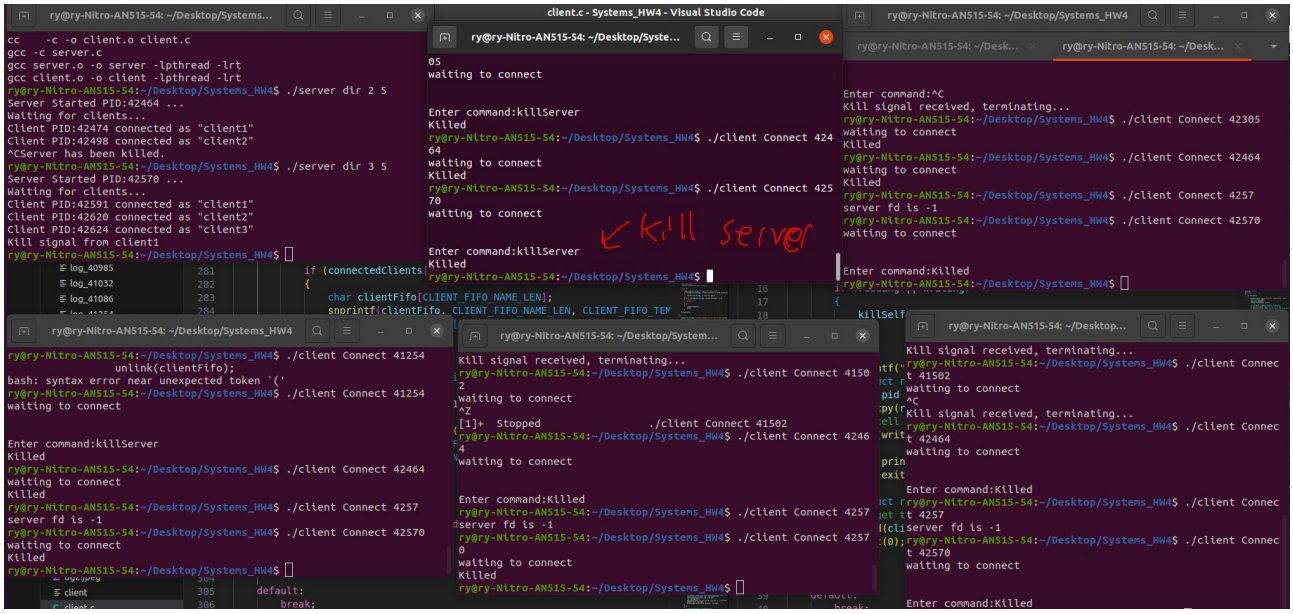
Change name

```
Enter command:
```

Download and upload works, when name conflict occurs, then error is shown. But if -ow is given as third argument then the file is overwritten. Also new file name can be given as third parameter to change the downloaded or uploaded file name.



When ctrl-c (SIGINT) is received on server side, then all the clients and server is killed.



When killServer command is received, all the clients and server is killed.

```
Client PID:42919 connected as "client1"
Client PID:42940 connected as "client2"
Client PID:42943 connected as "client3"
Client PID:42947 connected as "client4"
Client PID:42951 connected as "client5"
client1 requested:help
client2 requested:list
client4 requested:readF testfile.txt
client5 requested:readF bg.jpeg 2
client5 requested:quit
client5 disconnected

client4 requested:quit
client4 disconnected

Client PID:42998 connected as "client6"
Client PID:43002 connected as "client7"
client6 requested:writeT file.txt newly created file
client6 requested:quit
client6 disconnected

client1 requested:writeT fff.txt this is created now
client1 requested:download bg.jpeg bg3.jpeg
client1 requested:quit
client1 disconnected

client2 requested:killServer
```

Log file consists of client connection info and commands.