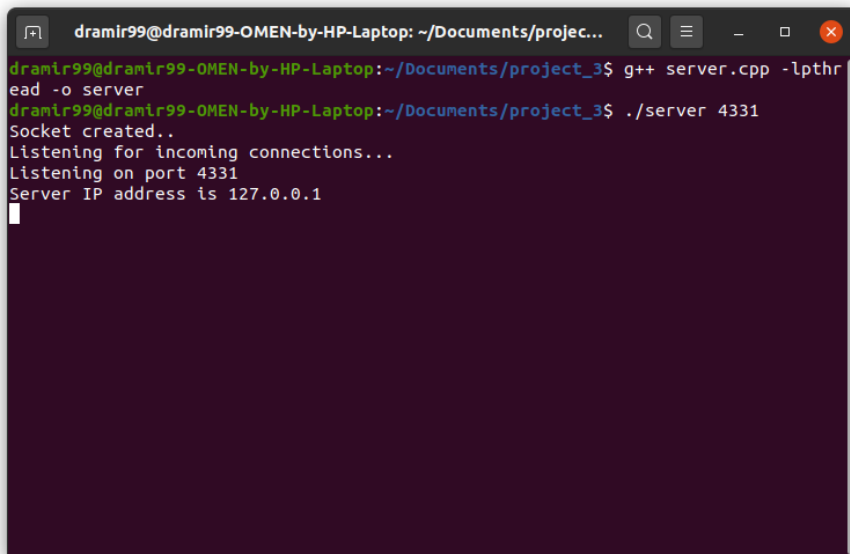


# Technical report

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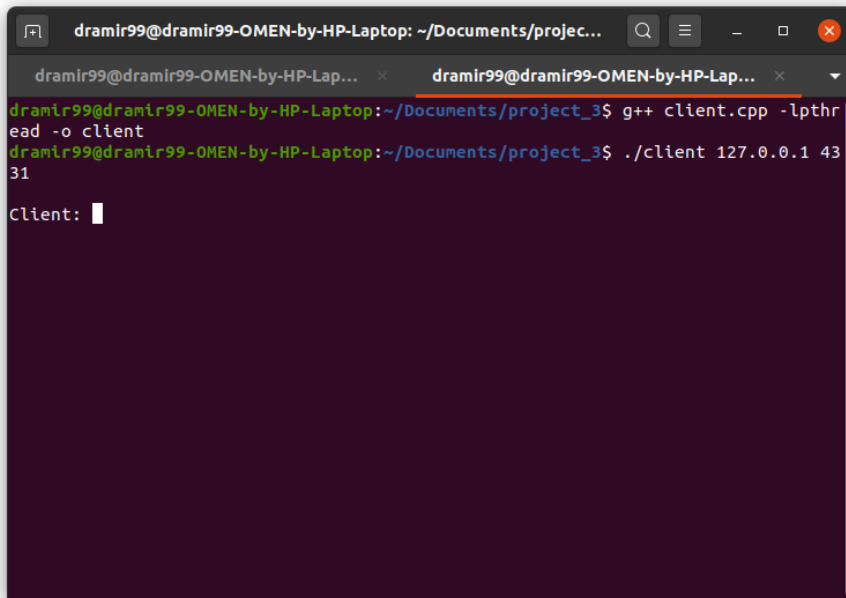
## 1. Basic Client-Server:

- First compile and launch server1



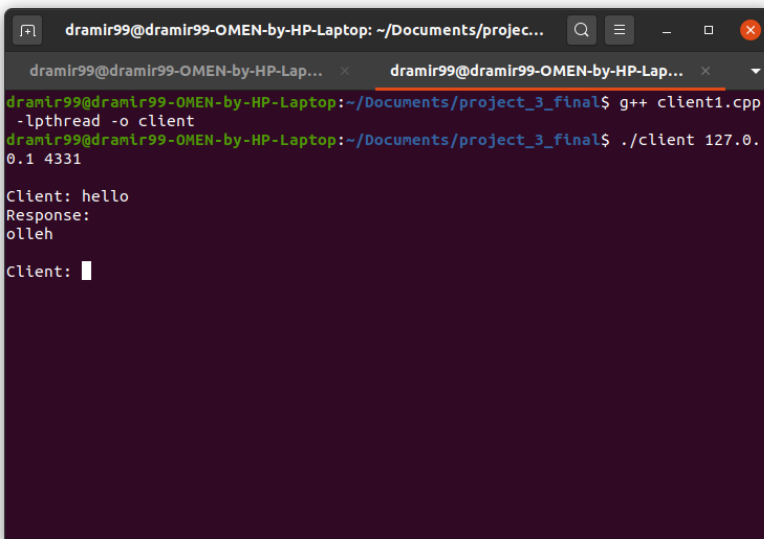
```
dramir99@dramir99-OMEN-by-HP-Laptop: ~/Documents/projec...
dramir99@dramir99-OMEN-by-HP-Laptop:~/Documents/project_3$ g++ server.cpp -lpthread -o server
dramir99@dramir99-OMEN-by-HP-Laptop:~/Documents/project_3$ ./server 4331
Socket created..
Listening for incoming connections...
Listening on port 4331
Server IP address is 127.0.0.1
```

- Then compile and launch client1
  - In order to connect the client and server, in the client compile you must type in the argument from the server so for this example the port address i typed in is 4331 and ip address was set by default as 127.0.0.1



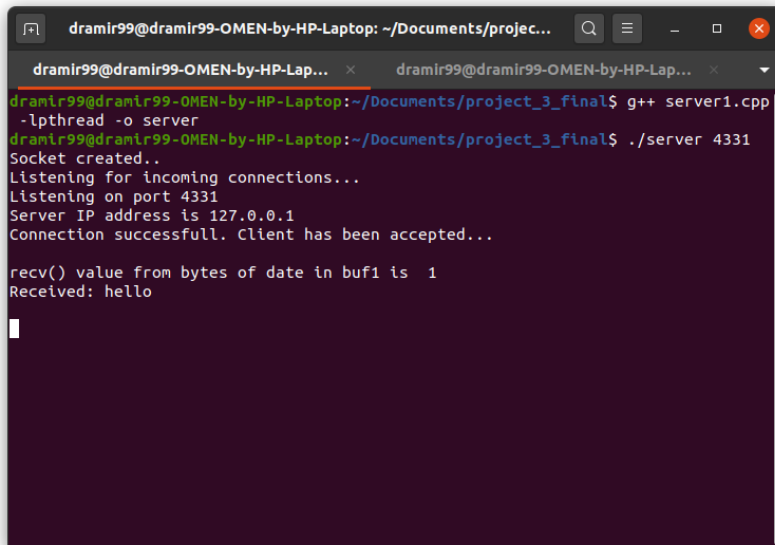
```
dramir99@dramir99-OMEN-by-HP-Laptop: ~/Documents/projec...
dramir99@dramir99-OMEN-by-HP-Laptop: ~/Documents/project_3$ g++ client.cpp -lpthread -o client
dramir99@dramir99-OMEN-by-HP-Laptop: ~/Documents/project_3$ ./client 127.0.0.1 4331
Client: 
```

Now that you are in the client and server , in the client if you type a word in it will return the word reversed as shown



```
dramir99@dramir99-OMEN-by-HP-Laptop: ~/Documents/projec...
dramir99@dramir99-OMEN-by-HP-Laptop: ~/Documents/project_3_final$ g++ client1.cpp -lpthread -o client
dramir99@dramir99-OMEN-by-HP-Laptop: ~/Documents/project_3_final$ ./client 127.0.0.1 4331
Client: hello
Response:
olleh
Client: 
```

The server will show that it received the word

A terminal window with a dark purple background and white text. The window title is 'dramir99@dramir99-OMEN-by-HP-Laptop: ~/Documents/projec...'. The terminal shows the compilation of 'server1.cpp' using 'g++' with flags '-lthread -o server'. It then runs './server 4331', which outputs 'Socket created..', 'Listening for incoming connections...', 'Listening on port 4331', and 'Server IP address is 127.0.0.1'. A connection is accepted, and it prints 'recv() value from bytes of date in buf1 is 1' and 'Received: hello'.

```
dramir99@dramir99-OMEN-by-HP-Laptop: ~/Documents/projec...  
dramir99@dramir99-OMEN-by-HP-Laptop:~/Documents/project_3_final$ g++ server1.cpp  
-lthread -o server  
dramir99@dramir99-OMEN-by-HP-Laptop:~/Documents/project_3_final$ ./server 4331  
Socket created..  
Listening for incoming connections..  
Listening on port 4331  
Server IP address is 127.0.0.1  
Connection successfull. Client has been accepted..  
  
recv() value from bytes of date in buf1 is 1  
Received: hello  
█
```

## 2. Directory listing server:

First compile and run server2

```
cmendo67@cmendo67-Nitro-AN515-53: ~/Desktop/cs4440/projects/Assignment3
cmendo67@cmendo67-Nitro-AN515-53:~/Desktop/cs4440/projects/Assignment3$ g++ server2.cpp -lpthread -o server2
cmendo67@cmendo67-Nitro-AN515-53:~/Desktop/cs4440/projects/Assignment3$ ./server2 4322
Socket created..
Listening for incoming connections...
Listening on port 4322
Server IP address is 127.0.0.1
```

Then run and compile client1

```
cmendo67@cmendo67-Nitro-AN515-53: ~/Desktop/cs4440/projects/Assignment3
cmendo67@cmendo67-Nitro-AN515-53:~/Desktop/cs4440/projects/Assignment3$ g++ client1.cpp -o client1
cmendo67@cmendo67-Nitro-AN515-53:~/Desktop/cs4440/projects/Assignment3$ ./client1 127.0.0.1 4322
Client:
```

Server displays “Connection successful. Client has been accepted...” when client connects to server.

```
cmendo67@cmendo67-Nitro-AN515-53: ~/Desktop/cs4440/projects/Assignment3
cmendo67@cmendo67-Nitro-AN515-53:~/Desktop/cs4440/projects/Assignment3$ g++ server2.cpp -lpthread -o server2
cmendo67@cmendo67-Nitro-AN515-53:~/Desktop/cs4440/projects/Assignment3$ ./server2 4322
Socket created..
Listening for incoming connections...
Listening on port 4322
Server IP address is 127.0.0.1
Connection successfull. Client has been accepted...
```

Client has connected to server. You can open terminal and do the same. Multiple clients can connect.

Now, If you enter a word in client, the server receives it and returns the input in reverse order. First problem works in problem 2 as well.

```
cmendo67@cmendo67-Nitro-AN515-53: ~/Desktop/cs4440/projects/Assignment3
cmendo67@cmendo67-Nitro-AN515-53:~/Desktop/cs4440/projects/Assignment3$ g++ client1.cpp -o client1
cmendo67@cmendo67-Nitro-AN515-53:~/Desktop/cs4440/projects/Assignment3$ ./client1 127.0.0.1 4322

Client: cs 4440 OPERating System
Response:
metsyS gnitarePO 0444 sc

Client:
```

```
cmendo67@cmendo67-Nitro-AN515-53: ~/Desktop/cs4440/projects/Assignment3
cmendo67@cmendo67-Nitro-AN515-53:~/Desktop/cs4440/projects/Assignment3$ g++ server2.cpp -lpthread -o server2
cmendo67@cmendo67-Nitro-AN515-53:~/Desktop/cs4440/projects/Assignment3$ ./server2 4322
Socket created..
Listening for incoming connections...
Listening on port 4322
Server IP address is 127.0.0.1
Connection successfull. Client has been accepted...
recv() value from bytes of date in buf1 is 1
Received: cs 4440 OPerating System
```

Now, when you insert ls from client side, it lists all the information from current folder. The server gets the output and returns output to client.

```
cmendo67@cmendo67-Nitro-AN515-53: ~/Desktop/cs4440/projects/Assignment3
Listening on port 4322
Server IP address is 127.0.0.1
Connection successfull. Client has been accepted...
recv() value from bytes of date in buf1 is 1
Received: cs 4440 OPerating System

recv() value from bytes of date in buf1 is 1
Received: ls

client1
client1.cpp
Directory.h
MainDirectory.h
Makefile.txt
myFile.h
server1.cpp
server2
server2.cpp
server3 .cpp
server4.cpp
server5.cpp
test.txt
```

```
cmendo67@cmendo67-Nitro-AN515-53: ~/Desktop/cs4440/projects/Assignment3
cmendo67@cmendo67-Nitro-AN515-53:~/Desktop/cs4440/projects/Assignment3$ g++ client1.cpp -o client1
cmendo67@cmendo67-Nitro-AN515-53:~/Desktop/cs4440/projects/Assignment3$ ./client1 127.0.0.1 4322

Client: cs 4440 0Perating System
Response:
metsyS gnitareP0 0444 sc

Client: ls
Response: client1
client1.cpp
Directory.h
MainDirectory.h
Makefile.txt
myFile.h
server1.cpp
server2
server2.cpp
server3.cpp
server4.cpp
server5.cpp
test.txt

Client: 
```

### 3) Basic Disk Storage System

First compile and run server.

```
g++ server3.cpp -lpthread -o server3
```

```
./server3 <port Number> <Track to Track Time> <Cylinder> <Sectors> <File Name>
```

```
cmendo67@cmendo67-Nitro-AN515-53: ~/Desktop/cs4440/projects/Assignment3
cmendo67@cmendo67-Nitro-AN515-53:~/Desktop/cs4440/projects/Assignment3$ g++ server3.cpp -lpthread -o server3
cmendo67@cmendo67-Nitro-AN515-53:~/Desktop/cs4440/projects/Assignment3$ ./server3 7680 1 5 5 test.txt
test.txt
SUCCESS IN CREATING DISKSocket created..
Listening for incoming connections...
Listening on port 7680
Server IP address is 127.0.0.1
Num of cylinders: 5
Num of blocks: 25
```

Then compile and run client1 to connect to server.



```
cmendo67@cmendo67-Nitro-AN515-53: ~/Desktop/cs4440/projects/Assignment3
cmendo67@cmendo67-Nitro-AN515-53:~/Desktop/cs4440/projects/Assignment3$ g++ server3.cpp -lpthread -o server3
cmendo67@cmendo67-Nitro-AN515-53:~/Desktop/cs4440/projects/Assignment3$ ./server3 7680 1 5 5 test.txt
test.txt
SUCCESS IN CREATING DISKSocket created..
Listening for incoming connections...
Listening on port 7680
Server IP address is 127.0.0.1
Num of cylinders: 5
Num of blocks: 25
Connection successfull. Client has been accepted...
```

```
cmendo67@cmendo67-Nitro-AN515-53: ~/Desktop/cs4440/projects/Assignment3
cmendo67@cmendo67-Nitro-AN515-53:~/Desktop/cs4440/projects/Assignment3$ g++ client1.cpp -o client1
cmendo67@cmendo67-Nitro-AN515-53:~/Desktop/cs4440/projects/Assignment3$ ./client1 127.0.0.1 7680
Client:
```

Now, if you enter I -

- I: information request. The disk returns two integers representing the disk geometry: the number of cylinders, and the number of sectors per cylinder.

```
cmendo67@cmendo67-Nitro-AN515-53: ~/Desktop/cs4440/projects/Assignment3
cmendo67@cmendo67-Nitro-AN515-53:~/Desktop/cs4440/projects/Assignment3$ g++ client1.cpp -o client1
cmendo67@cmendo67-Nitro-AN515-53:~/Desktop/cs4440/projects/Assignment3$ ./client1 127.0.0.1 7680

Client: I
Response:
Cylinders: 5
Sectors: 5

Client: █
```

```
cmendo67@cmendo67-Nitro-AN515-53: ~/Desktop/cs4440/projects/Assignment3
cmendo67@cmendo67-Nitro-AN515-53:~/Desktop/cs4440/projects/Assignment3$ g++ server3.cpp -lpthread -o server3
cmendo67@cmendo67-Nitro-AN515-53:~/Desktop/cs4440/projects/Assignment3$ ./server3 7680 1 5 5 test.txt
test.txt
SUCCESS IN CREATING DISKSocket created..
Listening for incoming connections...
Listening on port 7680
Server IP address is 127.0.0.1
Num of cylinders: 5
Num of blocks: 25
Connection successfull. Client has been accepted...

recv() value from bytes of date in buf1 is  1
Received: I

Info Request Sent
```

Now, if you run `W c s data` - : write request for cylinder `c` sector `s`. `I` is the number of bytes being provided, with a maximum of 128. The data is those `I` bytes of data. The disk returns '1' to the client if it is a valid write request (legal values of `c`, `s` and `I`), or returns a '0' otherwise.

```
cmendo67@cmendo67-Nitro-AN515-53: ~/Desktop/cs4440/projects/Assignment3
cmendo67@cmendo67-Nitro-AN515-53:~/Desktop/cs4440/projects/Assignment3$ g++ client1.cpp -o client1
cmendo67@cmendo67-Nitro-AN515-53:~/Desktop/cs4440/projects/Assignment3$ ./client1 127.0.0.1 7680

Client: I
Response:
Cylinders: 5
Sectors: 5

Client: R 1 1
Response: 0

Client: W 1 1 5 hello
Response:
Wrote to cylinder 1 and sector 1

Client: █
```

```
cmendo67@cmendo67-Nitro-AN515-53: ~/Desktop/cs4440/projects/Assignment3
Server IP address is 127.0.0.1
Num of cylinders: 5
Num of blocks: 25
Connection successfull. Client has been accepted...

recv() value from bytes of date in buf1 is 1
Received: I

Info Request Sent
recv() value from bytes of date in buf1 is 1
Received: R 1 1

Read Block: 1
Reading from block: 1
Read Successful
recv() value from bytes of date in buf1 is 1
Received: W 1 1 5 hello

Data given hello

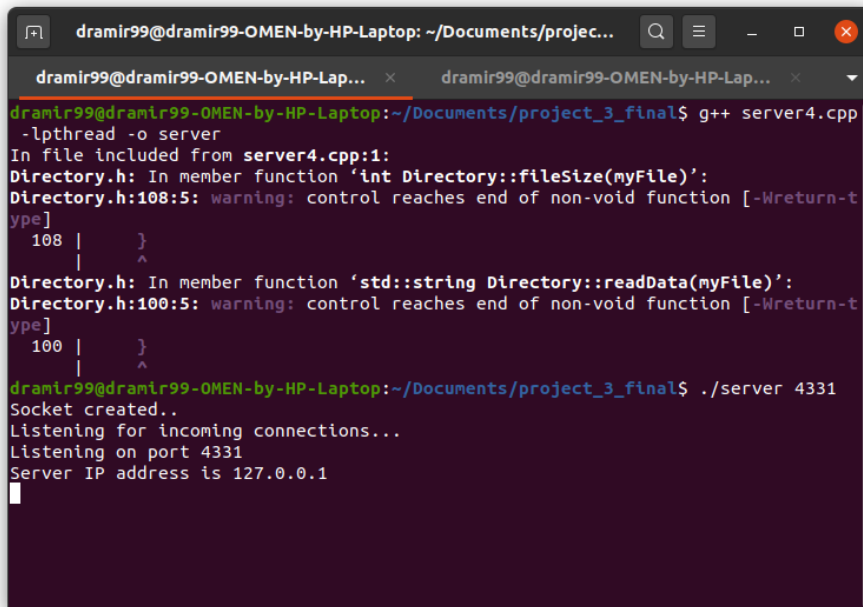
Written successful
Data written to cylinder 1 and sector 1
Sent data
```

Now if you run R c s - This will return whatever data happens to be on the disk in a given sector, even if nothing has ever been explicitly written there before.)



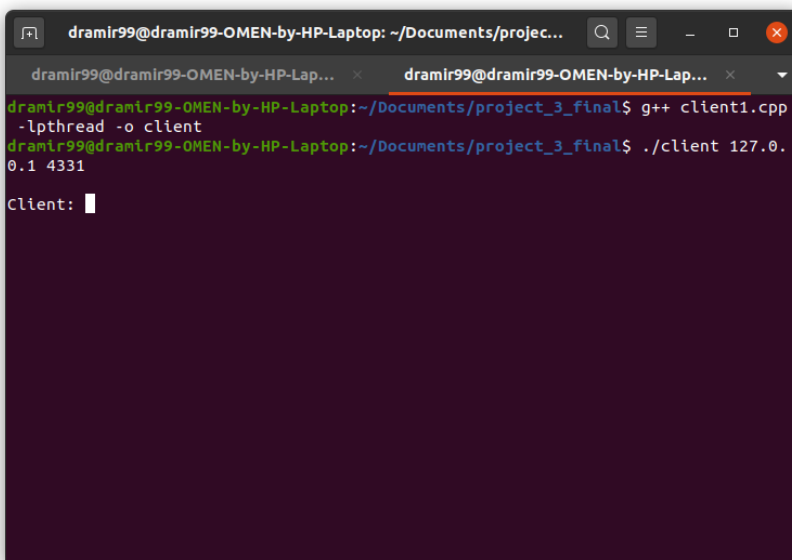
## 4. File System Server:

- First compile and launch server4



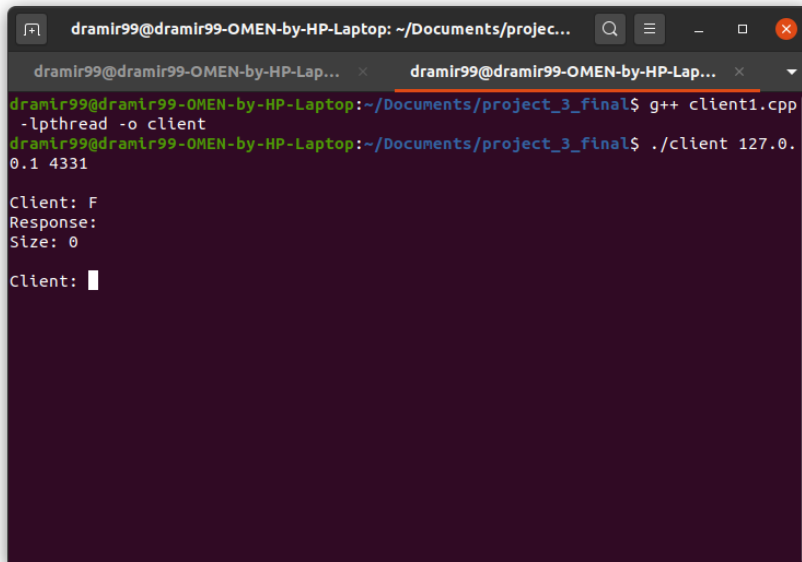
```
dramir99@dramir99-OMEN-by-HP-Laptop: ~/Documents/project_3_final$ g++ server4.cpp
-lpthread -o server
In file included from server4.cpp:1:
Directory.h: In member function 'int Directory::fileSize(myFile)':
Directory.h:108:5: warning: control reaches end of non-void function [-Wreturn-type]
  108 |     }
      |     ^
Directory.h: In member function 'std::string Directory::readData(myFile)':
Directory.h:100:5: warning: control reaches end of non-void function [-Wreturn-type]
  100 |     }
      |     ^
dramir99@dramir99-OMEN-by-HP-Laptop:~/Documents/project_3_final$ ./server 4331
Socket created..
Listening for incoming connections...
Listening on port 4331
Server IP address is 127.0.0.1
```

- Then compile and launch client1
  - In order to connect the client and server, in the client compile you must type in the argument from the server so for this example the port address i typed in is 4331 and ip address was set by default as 127.0.0.1



```
dramir99@dramir99-OMEN-by-HP-Laptop: ~/Documents/project_3_final$ g++ client1.cpp
-lpthread -o client
dramir99@dramir99-OMEN-by-HP-Laptop:~/Documents/project_3_final$ ./client 127.0.0.1 4331
Client:
```

Now that you are in the client and server , in the client if you type 'F' you will get the size

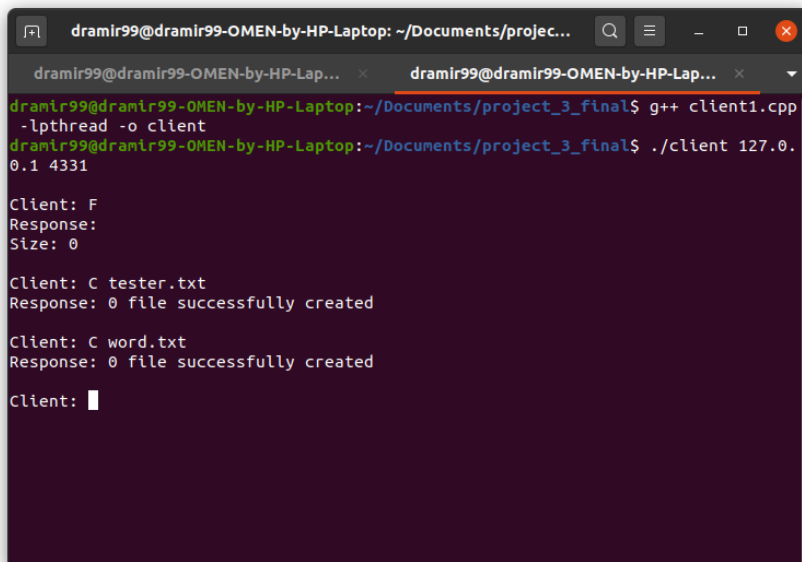


```
dramir99@dramir99-OMEN-by-HP-Laptop: ~/Documents/project_3_final$ g++ client1.cpp
-lpthread -o client
dramir99@dramir99-OMEN-by-HP-Laptop:~/Documents/project_3_final$ ./client 127.0.
0.1 4331

Client: F
Response:
Size: 0

Client: 
```

Then you can create a file in the fileSystem by typing 'C <name of file>' for this example i put in 'C tester.txt' and 'C word.txt'



```
dramir99@dramir99-OMEN-by-HP-Laptop: ~/Documents/project_3_final$ g++ client1.cpp
-lpthread -o client
dramir99@dramir99-OMEN-by-HP-Laptop:~/Documents/project_3_final$ ./client 127.0.
0.1 4331

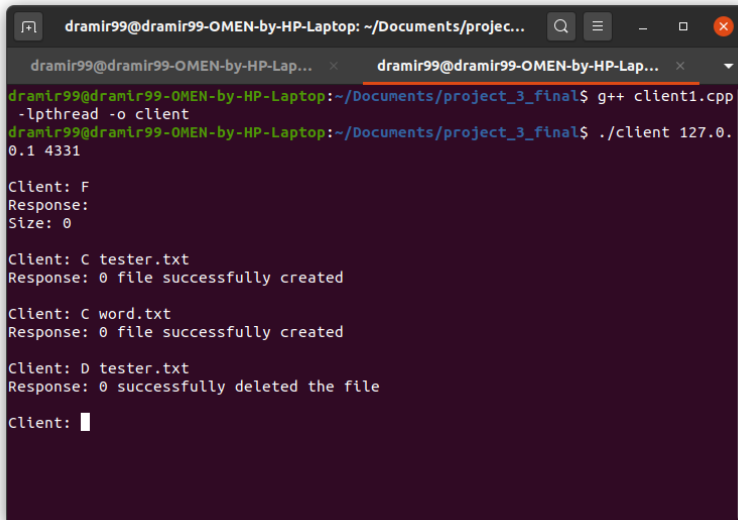
Client: F
Response:
Size: 0

Client: C tester.txt
Response: 0 file successfully created

Client: C word.txt
Response: 0 file successfully created

Client: 
```

Then you can delete a file in the fileSystem by typing 'D <name of file>' for this example i put in 'D tester.txt'

A terminal window with a dark purple background. The title bar shows the user 'dramir99' on a laptop. The prompt is 'dramir99@dramir99-OMEN-by-HP-Laptop: ~/Documents/project\_3\_final\$'. The user has compiled 'client1.cpp' with 'g++' and is running './client 127.0.0.1 4331'. The client sends 'F' and receives 'Response: Size: 0'. Then it sends 'C tester.txt' and receives 'Response: 0 file successfully created'. Next, it sends 'C word.txt' and receives 'Response: 0 file successfully created'. Finally, it sends 'D tester.txt' and receives 'Response: 0 successfully deleted the file'. The prompt 'Client: ' is followed by a cursor.

```
dramir99@dramir99-OMEN-by-HP-Laptop: ~/Documents/project_3_final$ g++ client1.cpp -lpthread -o client
dramir99@dramir99-OMEN-by-HP-Laptop: ~/Documents/project_3_final$ ./client 127.0.0.1 4331

Client: F
Response:
Size: 0

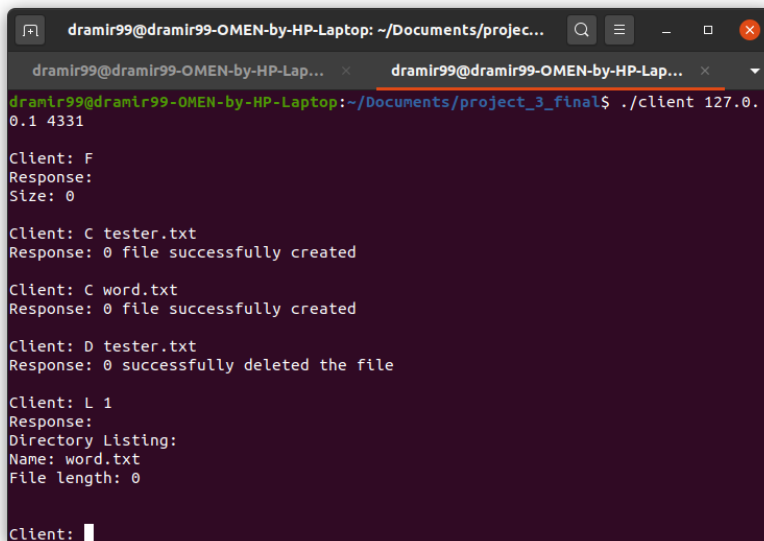
Client: C tester.txt
Response: 0 file successfully created

Client: C word.txt
Response: 0 file successfully created

Client: D tester.txt
Response: 0 successfully deleted the file

Client: 
```

Then you can see the directory in the fileSystem by typing 'L 1' or 'L 0' depending if you want to see the name of the files or name of the files and the size of the file

A terminal window with a dark purple background. The title bar shows the user 'dramir99' on a laptop. The prompt is 'dramir99@dramir99-OMEN-by-HP-Laptop: ~/Documents/project\_3\_final\$'. The user has compiled 'client1.cpp' with 'g++' and is running './client 127.0.0.1 4331'. The client sends 'F' and receives 'Response: Size: 0'. Then it sends 'C tester.txt' and receives 'Response: 0 file successfully created'. Next, it sends 'C word.txt' and receives 'Response: 0 file successfully created'. Finally, it sends 'D tester.txt' and receives 'Response: 0 successfully deleted the file'. The prompt 'Client: ' is followed by a cursor. Then the client sends 'L 1' and receives 'Response: Directory Listing: Name: word.txt File length: 0'. The prompt 'Client: ' is followed by a cursor.

```
dramir99@dramir99-OMEN-by-HP-Laptop: ~/Documents/project_3_final$ ./client 127.0.0.1 4331

Client: F
Response:
Size: 0

Client: C tester.txt
Response: 0 file successfully created

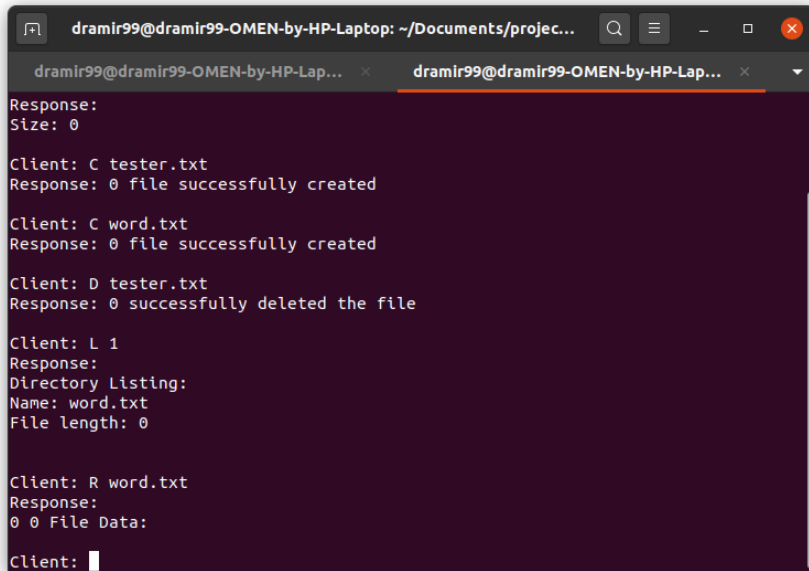
Client: C word.txt
Response: 0 file successfully created

Client: D tester.txt
Response: 0 successfully deleted the file

Client: L 1
Response:
Directory Listing:
Name: word.txt
File length: 0

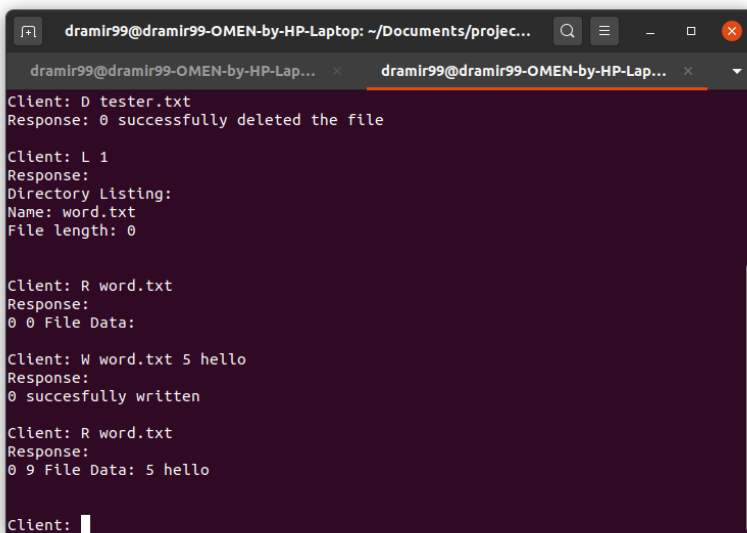
Client: 
```

Then you can read a file in the fileSystem by typing 'R <name of file>' for this example i put in 'R word.txt'



```
dramir99@dramir99-OMEN-by-HP-Laptop: ~/Documents/projec...
dramir99@dramir99-OMEN-by-HP-Lap... x dramir99@dramir99-OMEN-by-HP-Lap... x
Response:
Size: 0
Client: C tester.txt
Response: 0 file successfully created
Client: C word.txt
Response: 0 file successfully created
Client: D tester.txt
Response: 0 successfully deleted the file
Client: L 1
Response:
Directory Listing:
Name: word.txt
File length: 0
Client: R word.txt
Response:
0 0 File Data:
Client: 
```

Then you can write to a file in the fileSystem by typing 'W <name of file> <size of the text> <text>' for this example i put in 'W word.txt 5 hello'



```
dramir99@dramir99-OMEN-by-HP-Laptop: ~/Documents/projec...
dramir99@dramir99-OMEN-by-HP-Lap... x dramir99@dramir99-OMEN-by-HP-Lap... x
Client: D tester.txt
Response: 0 successfully deleted the file
Client: L 1
Response:
Directory Listing:
Name: word.txt
File length: 0
Client: R word.txt
Response:
0 0 File Data:
Client: W word.txt 5 hello
Response:
0 succesfully written
Client: R word.txt
Response:
0 9 File Data: 5 hello
Client: 
```



## 5. Directory Structure

First run and compile server 5.

```
cmendo67@cmendo67-Nitro-AN515-53: ~/Desktop/cs4440/projects/Assignment3
cmendo67@cmendo67-Nitro-AN515-53:~/Desktop/cs4440/projects/Assignment3$ g++ server5.cpp -lpthread -o server5
^[[In file included from MainDirectory.h:1,
    from server5.cpp:1:
Directory.h: In member function 'int Directory::fileSize(myFile)':
Directory.h:108:5: warning: control reaches end of non-void function [-Wreturn-type]
   108 |     }
       |     ^
Directory.h: In member function 'std::string Directory::readData(myFile)':
Directory.h:100:5: warning: control reaches end of non-void function [-Wreturn-type]
   100 |     }
       |     ^
In file included from server5.cpp:1:
MainDirectory.h: In member function 'int MainDirectory::getNewPos(Directory)':
MainDirectory.h:48:5: warning: control reaches end of non-void function [-Wreturn-type]
    48 |     }
       |     ^
^[[cmendo67@cmendo67-Nitro-AN515-53:~/Desktop/cs4440/projects/Assignment3$ ./server5 8567
Socket created..
Listening for incoming connections...
Listening on port 8567
Server IP address is 127.0.0.1
```

Now, compile and run client1 to connect to server.

```
cmendo67@cmendo67-Nitro-AN515-53: ~/Desktop/cs4440/projects/Assignment3
cmendo67@cmendo67-Nitro-AN515-53:~/Desktop/cs4440/projects/Assignment3$ g++ server5.cpp -lpthread -o server5
In file included from MainDirectory.h:1,
    from server5.cpp:1:
Directory.h: In member function 'int Directory::fileSize(myFile)':
Directory.h:108:5: warning: control reaches end of non-void function [-Wreturn-type]
   108 |     }
       |     ^
Directory.h: In member function 'std::string Directory::readData(myFile)':
Directory.h:100:5: warning: control reaches end of non-void function [-Wreturn-type]
   100 |     }
       |     ^
In file included from server5.cpp:1:
MainDirectory.h: In member function 'int MainDirectory::getNewPos(Directory)':
MainDirectory.h:48:5: warning: control reaches end of non-void function [-Wreturn-type]
    48 |     }
       |     ^
cmendo67@cmendo67-Nitro-AN515-53:~/Desktop/cs4440/projects/Assignment3$ ./server5 8567
Socket created..
Listening for incoming connections...
Listening on port 8567
Server IP address is 127.0.0.1
Connection successfull. Client has been accepted...
```

A terminal window with a dark background. The title bar shows the user 'cmendo67' on a machine named 'cmendo67-Nitro-AN515-53' at the directory '~/Desktop/cs4440/projects/Assignment3'. The terminal contains two lines of green text: 'g++ client1.cpp -o client1' and './client1 127.0.0.1 8567'. Below these, the text 'Client:' is displayed in white.

```
cmendo67@cmendo67-Nitro-AN515-53: ~/Desktop/cs4440/projects/Assignment3
cmendo67@cmendo67-Nitro-AN515-53:~/Desktop/cs4440/projects/Assignment3$ g++ client1.cpp -o client1
cmendo67@cmendo67-Nitro-AN515-53:~/Desktop/cs4440/projects/Assignment3$ ./client1 127.0.0.1 8567
Client:
```

Now, if you enter `mkdir - dirname` : create a directory of name `dirname`.

```
cmendo67@cmendo67-Nitro-AN515-53: ~/Desktop/cs4440/projects/Assignment3
cmendo67@cmendo67-Nitro-AN515-53:~/Desktop/cs4440/projects/Assignment3$ g++ client1.cpp -o client1
cmendo67@cmendo67-Nitro-AN515-53:~/Desktop/cs4440/projects/Assignment3$ ./client1 127.0.0.1 8567

Client: mkdir file2
Response:
0 Directory successfully created

Client:
```

```
cmendo67@cmendo67-Nitro-AN515-53: ~/Desktop/cs4440/projects/Assignment3
Directory.h: In member function 'int Directory::fileSize(myFile)':
Directory.h:108:5: warning: control reaches end of non-void function [-Wreturn-type]
  108 |     }
      |     ^
Directory.h: In member function 'std::string Directory::readData(myFile)':
Directory.h:100:5: warning: control reaches end of non-void function [-Wreturn-type]
  100 |     }
      |     ^
In file included from server5.cpp:1:
MainDirectory.h: In member function 'int MainDirectory::getNewPos(Directory)':
MainDirectory.h:48:5: warning: control reaches end of non-void function [-Wreturn-type]
   48 |     }
      |     ^
^[[A^[[Acmendo67@cmendo67-Nitro-AN515-53:~/Desktop/cs4440/projects/Assignment3$ g++ server5.cpp -lpthread -o server
./server5 8567
Socket created..
Listening for incoming connections...
Listening on port 8567
Server IP address is 127.0.0.1
Connection successfull. Client has been accepted...
recv() value from bytes of date in buf1 is  1
Received: mkdir file2
```

Now, if you enter `cd - dirname` : change current working directory to dirname

```
cmendo67@cmendo67-Nitro-AN515-53: ~/Desktop/cs4440/projects/Assignment3
cmendo67@cmendo67-Nitro-AN515-53:~/Desktop/cs4440/projects/Assignment3$ g++ client1.cpp -o client1
cmendo67@cmendo67-Nitro-AN515-53:~/Desktop/cs4440/projects/Assignment3$ ./client1 127.0.0.1 8567

Client: mkdir file2
Response:
0 Directory successfully created

Client: cd file2
Response:
0 CURRENT DIRECTORY HAS BEEN CHANGED

Client: pwd
Response:
file2

Client: █
```

```
cmendo67@cmendo67-Nitro-AN515-53: ~/Desktop/cs4440/projects/Assignment3
In file included from server5.cpp:1:
MainDirectory.h: In member function 'int MainDirectory::getNewPos(Directory)':
MainDirectory.h:48:5: warning: control reaches end of non-void function [-Wreturn-type]
   48 |     }
      |     ^
^[[A^[[[cmendo67@cmendo67-Nitro-AN515-53:~/Desktop/cs4440/projects/Assignment3$ g++ server5.cpp -lpthread -o server
./server5 8567
Socket created..
Listening for incoming connections...
Listening on port 8567
Server IP address is 127.0.0.1
Connection successfull. Client has been accepted...
recv() value from bytes of date in buf1 is  1
Received: mkdir file2

recv() value from bytes of date in buf1 is  1
Received: cd file2

main
file2
recv() value from bytes of date in buf1 is  1
Received: pwd
```

Now if you enter pwd, : print the working directory name.

```
cmendo67@cmendo67-Nitro-AN515-53: ~/Desktop/cs4440/projects/Assignment3
Listening for incoming connections...
Listening on port 8567
Server IP address is 127.0.0.1
Connection successfull. Client has been accepted...
recv() value from bytes of date in buf1 is  1
Received: mkdir file2

recv() value from bytes of date in buf1 is  1
Received: cd file2

main
file2
recv() value from bytes of date in buf1 is  1
Received: pwd

recv() value from bytes of date in buf1 is  1
Received: cd main

file2
main
recv() value from bytes of date in buf1 is  1
Received: pwd
```

```
cmendo67@cmendo67-Nitro-AN515-53: ~/Desktop/cs4440/projects/Assignment3
cmendo67@cmendo67-Nitro-AN515-53:~/Desktop/cs4440/projects/Assignment3$ g++ client1.cpp -o client1
cmendo67@cmendo67-Nitro-AN515-53:~/Desktop/cs4440/projects/Assignment3$ ./client1 127.0.0.1 8567

Client: mkdir file2
Response:
0 Directory successfully created

Client: cd file2
Response:
0 CURRENT DIRECTORY HAS BEEN CHANGED

Client: pwd
Response:
file2

Client: cd main
Response:
0 CURRENT DIRECTORY HAS BEEN CHANGED

Client: pwd
Response:
main

Client: 
```

Now, if you enter `rmdir - dirname`: remove the directory given. Throw an error if it is not present.

```
cmendo67@cmendo67-Nitro-AN515-53: ~/Desktop/cs4440/projects/Assignment3
Connection successfull. Client has been accepted...
recv() value from bytes of date in buf1 is  1
Received: mkdir file2

recv() value from bytes of date in buf1 is  1
Received: cd file2

main
file2
recv() value from bytes of date in buf1 is  1
Received: pwd

recv() value from bytes of date in buf1 is  1
Received: cd main

file2
main
recv() value from bytes of date in buf1 is  1
Received: pwd

recv() value from bytes of date in buf1 is  1
Received: rmdir file2
```

```
cmendo67@cmendo67-Nitro-AN515-53: ~/Desktop/cs4440/projects/Assignment3
Response:
0 Directory successfully created

Client: cd file2
Response:
0 CURRENT DIRECTORY HAS BEEN CHANGED

Client: pwd
Response:
file2

Client: cd main
Response:
0 CURRENT DIRECTORY HAS BEEN CHANGED

Client: pwd
Response:
main

Client: rmdir file2
Response:
0 DIRECTORY HAS BEEN DELETED

Client:
```

# Technical Design

3.

For the design disk we need the foundation of question 1 since we need to talk to the server and client, the design disk was designed using the fopen in order to read and write to the file then using the given formula to create the size of the cylinder and sector. We initialize the char with 128 bytes and the user will be able to manipulate the data depending on what the user does

4 and 5

For the algorithm we used was a vector in order to hold the list of files. We created 3 classes which were Directory and Main Directory and myFile each was used for the foundation in order to visualize the linux system. myFile was used to replicate a file. The Director was used to hold multiple files. The Main Directory was used to hold multiple Directories. We used the vector algorithm since we need to be able to get to each element.