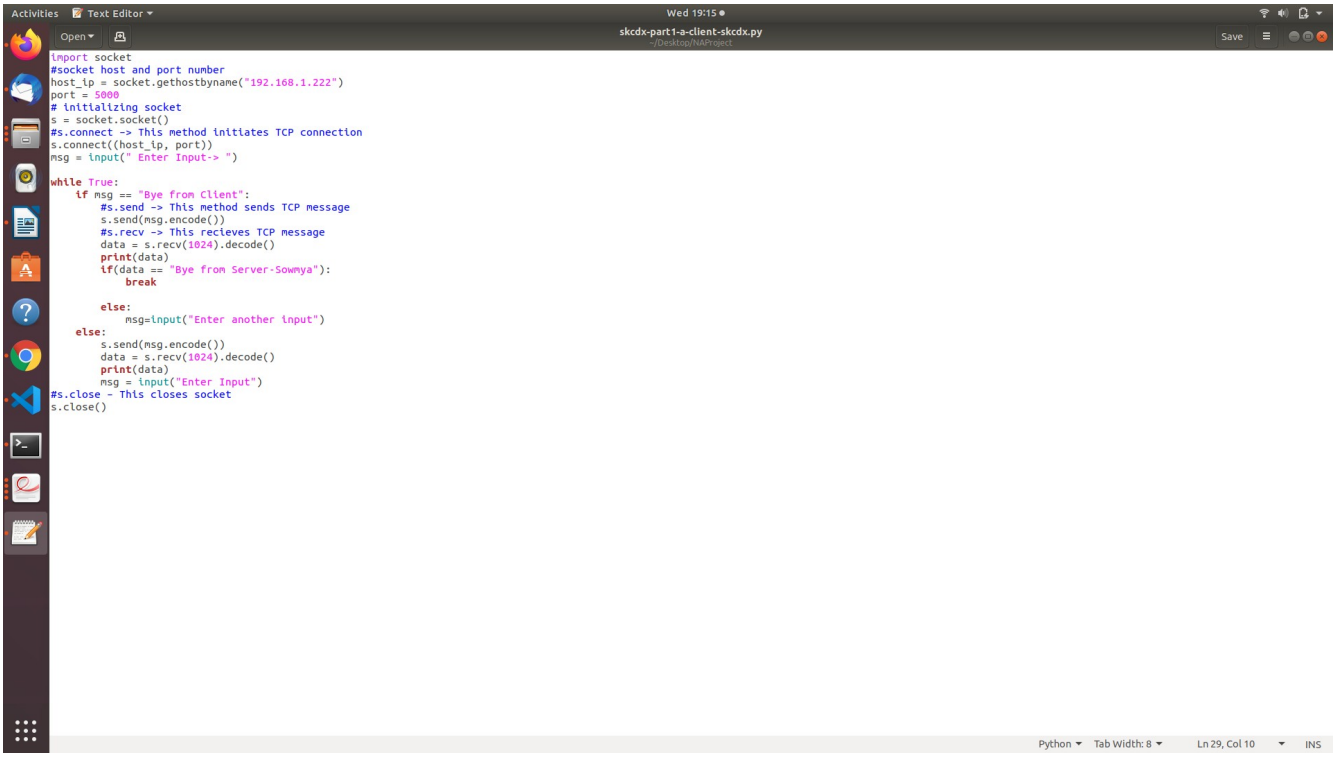
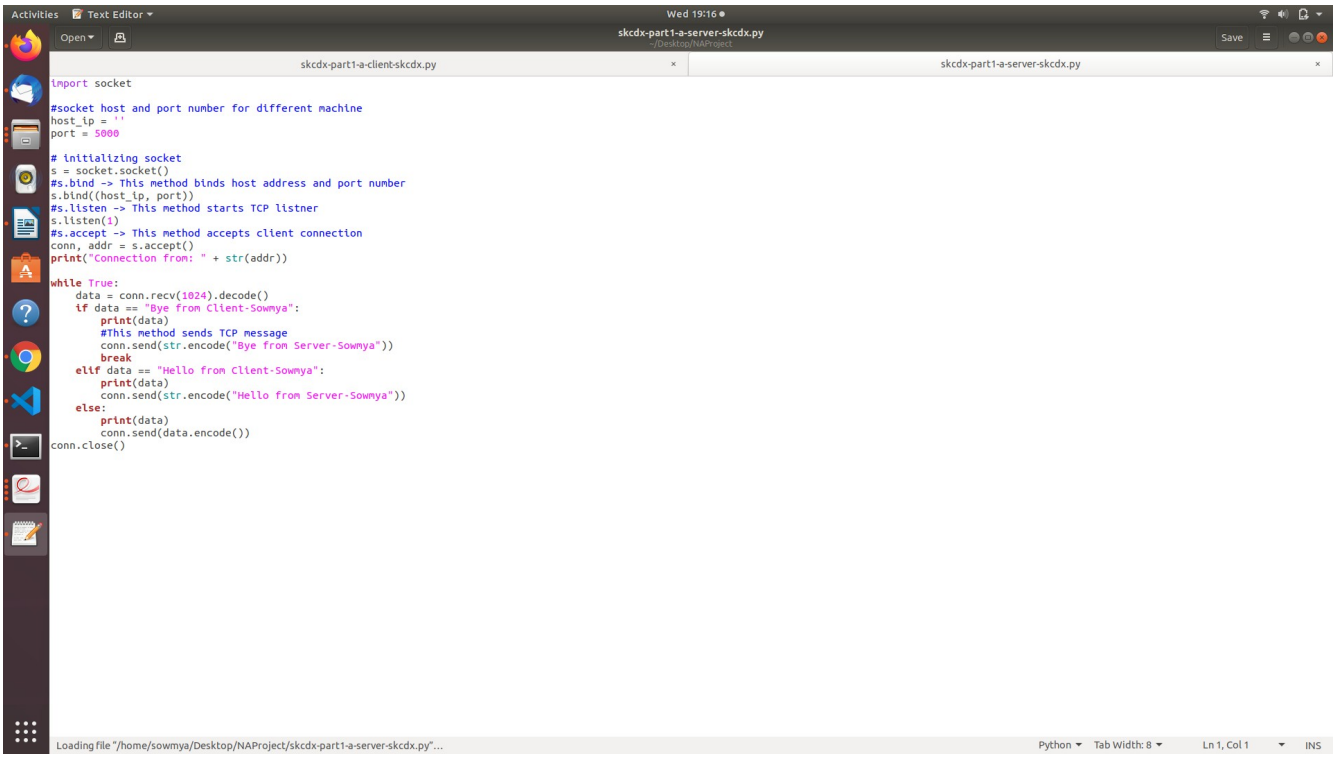
Github Link :https://github.com/sowmyareddy14/NAProjectpart1
PART 1 :
(a) Client server communication with two different machines
Code :
Client :

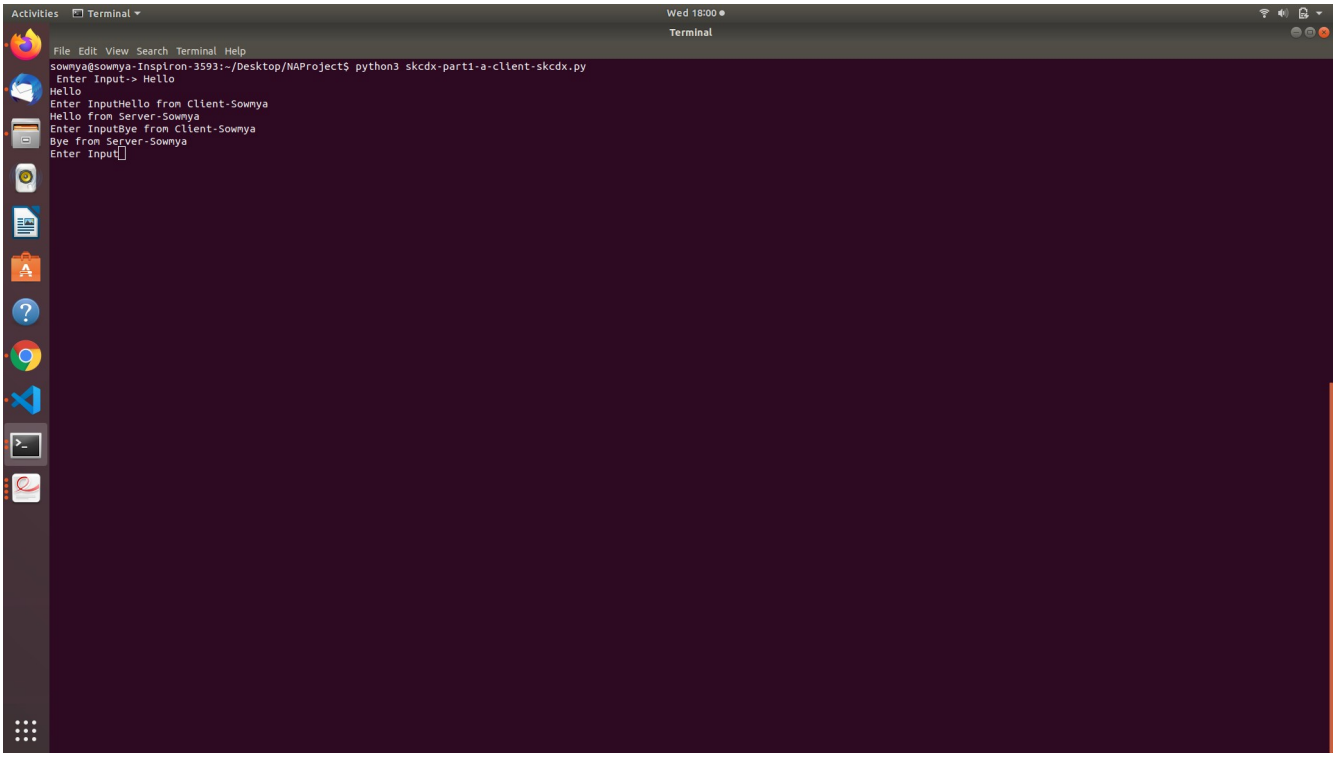


Server Side :

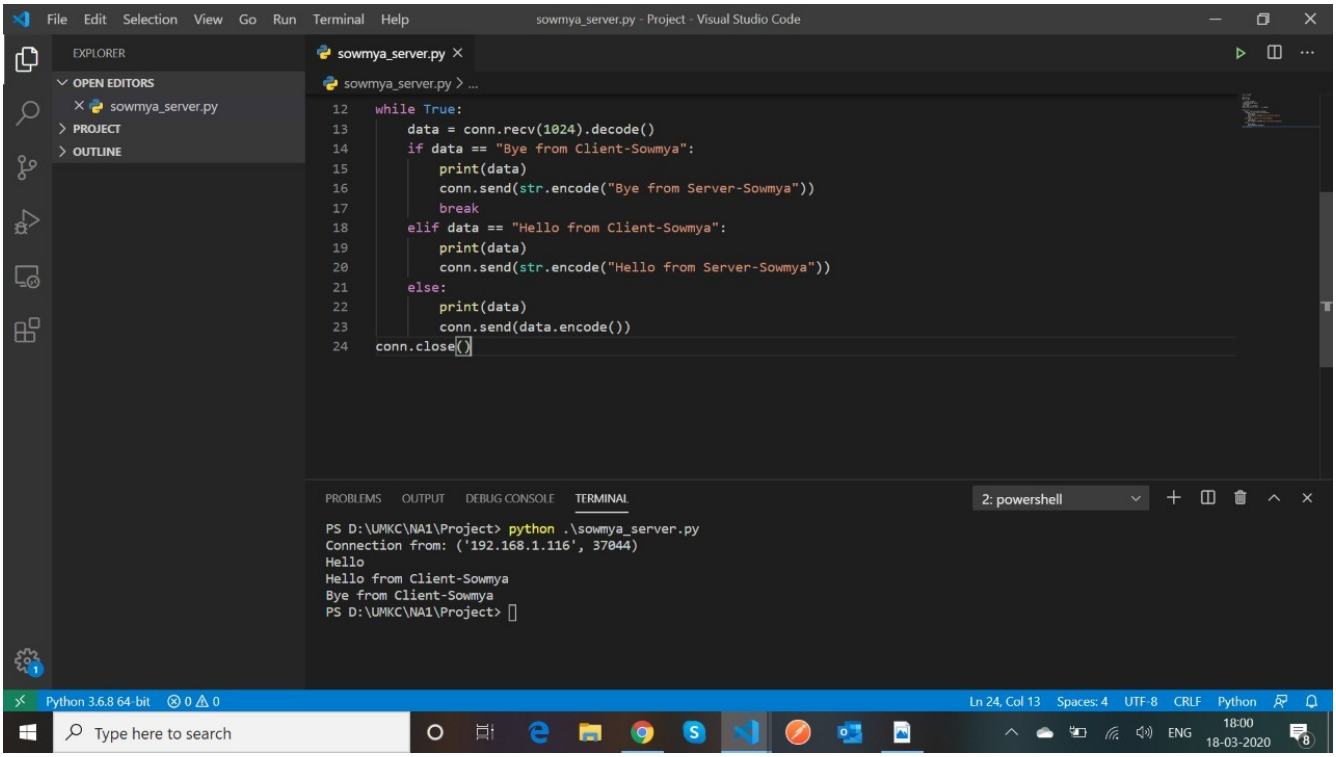


Outputs :

Client side :

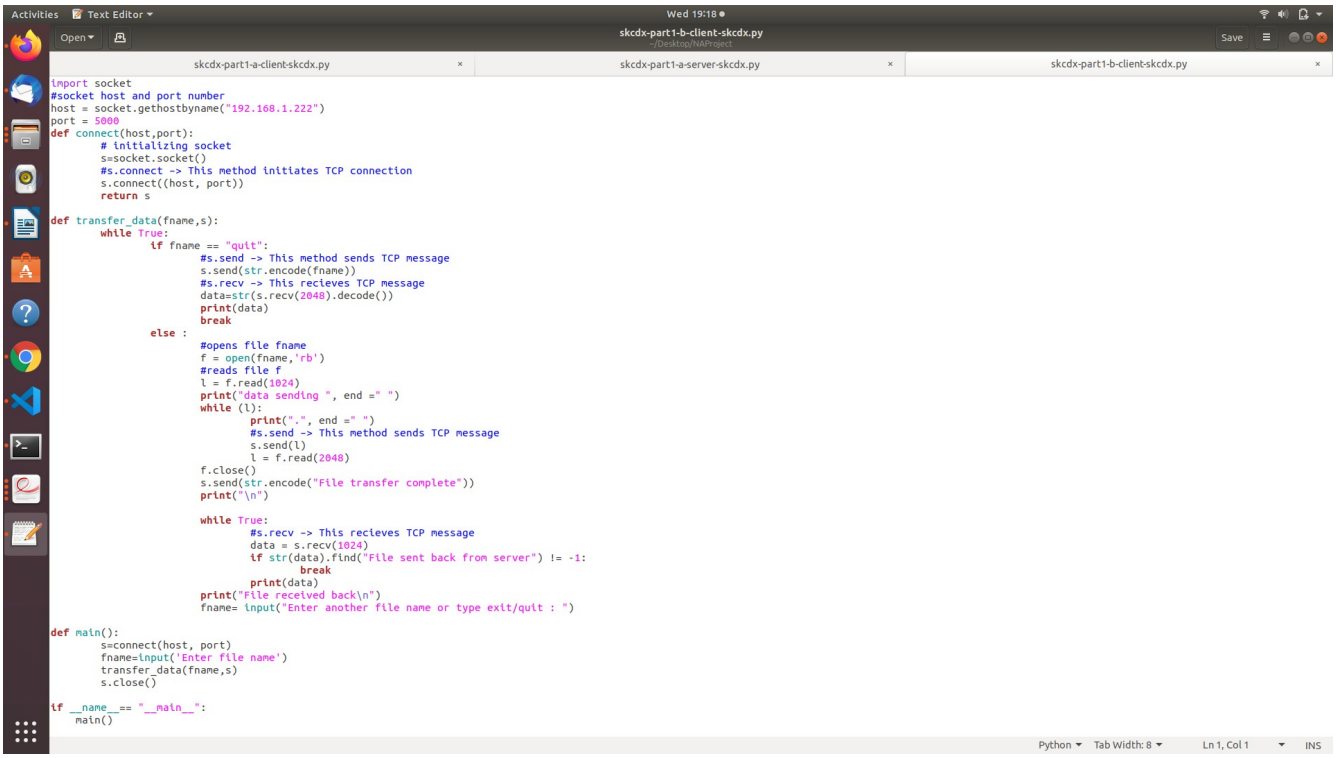


Server side :



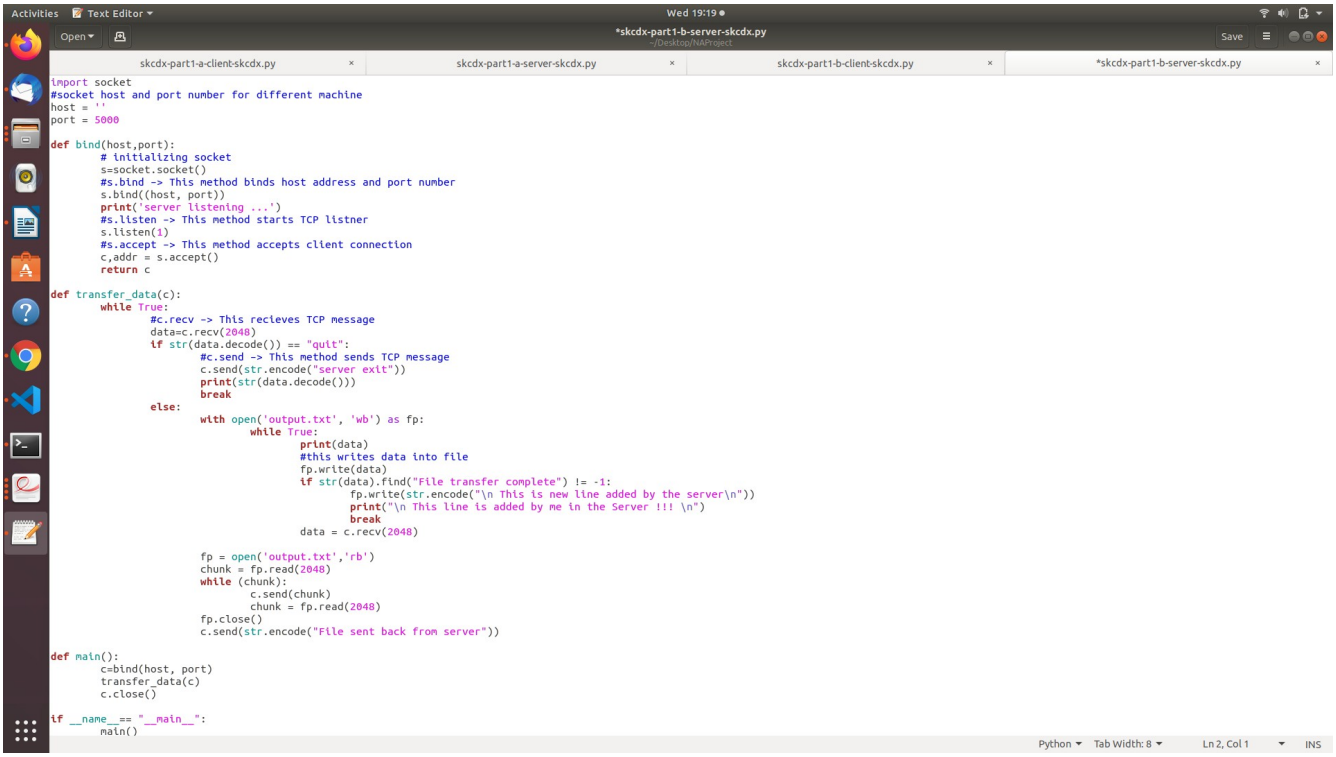
(b) File Transfer :
Code :

Client Side :



```python
import socket
#socket host and port number
host = socket.gethostbyname("192.168.1.222")
port = 5000
def connect(host,port):
        # initializing socket
        s=socket.socket()
        #s.connect -> This method initiates TCP connection
        s.connect((host, port))
        return s

def transfer_data(fname,s):
        while True:
                if fname == "quit":
                        #s.send -> This method sends TCP message
                        s.send(str.encode(fname))
                        #s.recv -> This recieves TCP message
                        data=str(s.recv(2048).decode())
                        print(data)
                        break
                else :
                        #opens file fname
                        f = open(fname,'rb')
                        #reads file f
                        l = f.read(1024)
                        print("data sending ", end =" ")
                        while (l):
                                print(".", end =" ")
                                #s.send -> This method sends TCP message
                                s.send(l)
                                l = f.read(2048)
                        f.close()
                        s.send(str.encode("File transfer complete"))
                        print("\n")

                        while True:
                                #s.recv -> This recieves TCP message
                                data = s.recv(1024)
                                if str(data).find("File sent back from server") != -1:
                                        break
                                print(data)
                        print("File received back\n")
                        fname= input("Enter another file name or type exit/quit : ")

def main():
        s=connect(host, port)
        fname=input('Enter file name')
        transfer_data(fname,s)
        s.close()

if __name__== "__main__":
    main()
```

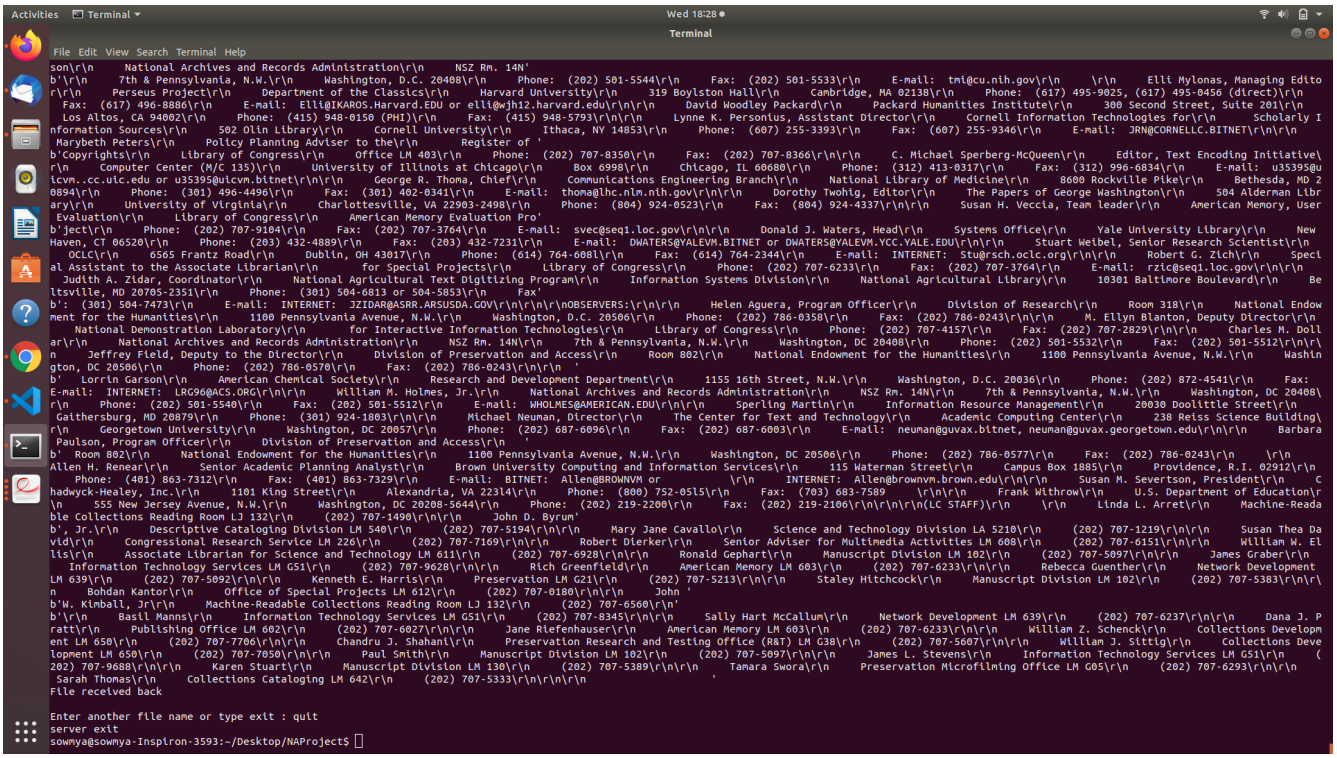
Server Side :



```python
import socket
#socket host and port number for different machine
host = ''
port = 5000

def bind(host,port):
        # initializing socket
        s=socket.socket()
        #s.bind -> This method binds host address and port number
        s.bind((host, port))
        print('server listening ...')
        #s.listen -> This method starts TCP listner
        s.listen(1)
        #s.accept -> This method accepts client connection
        c,addr = s.accept()
        return c

def transfer_data(c):
        while True:
                #c.recv -> This recieves TCP message
                data=c.recv(2048)
                if str(data.decode()) == "quit":
                        #c.send -> This method sends TCP message
                        c.send(str.encode("server exit"))
                        print(str(data.decode()))
                        break
                else:
                        with open('output.txt', 'wb') as fp:
                                while True:
                                        print(data)
                                        #this writes data into file
                                        fp.write(data)
                                        if str(data).find("File transfer complete") != -1:
                                                fp.write(str.encode("\n This is new line added by the server\n"))
                                                print("\n This line is added by me in the Server !!! \n")
                                                break
                                        data = c.recv(2048)

                        fp = open('output.txt','rb')
                        chunk = fp.read(2048)
                        while (chunk):
                                c.send(chunk)
                                chunk = fp.read(2048)
                        fp.close()
                        c.send(str.encode("File sent back from server"))

def main():
        c=bind(host, port)
        transfer_data(c)
        c.close()

if __name__== "__main__":
        main()
```

Outputs :

Client side :



Server Side :