COSC 264 Assignment

Phillip Kim – 63083227

# Client.py

**import** **socket**

**import** **sys**

**import** **os.path**

**if** len(sys.argv) != **4**:

**print**("parameter error")

sys.exit(**0**)

HOST = str(sys.argv[**1**])

PORT = int(sys.argv[**2**])

FILENAME = str(sys.argv[**3**])

**def** **readdata**(sock):

initdata = bytearray(sock.recv(**1024**))

bytecount = **0**

**if** (initdata[**0**] << **8**) | initdata[**1**] != **0x497E**:

**print**("Magic number error.")

sys.exit(**0**)

**elif** initdata[**2**] != **2**:

**print**("Packet type error.")

sys.exit(**0**)

**elif** initdata[**3**] != **1**:

**print**("file not found.")

sys.exit(**0**)

**else**:

contentlen = ((initdata[**4**] << **24**) | (initdata[**5**] << **16**) | (initdata[**6**] << **8**) | initdata[**7**])

content = initdata[**8**:]

bytecount += len(initdata)

data = bytearray(sock.recv(**1024**))

**while** len(data) != **0**:

bytecount += len(data)

content += data[**8**:]

data = bytearray(sock.recv(**1024**))

**print**("Received data")

**if** len(content) != contentlen:

**print**("file length does not match the length.")

**return** -**1**

**else**:

**print**(bytecount, "bytes received.")

**return** content

**def** **client**(host, port, filename):

**try**:

info = socket.getaddrinfo(host, port, proto=socket.IPPROTO\_TCP)

ipv4 = info[-**1**]

ipport = ipv4[-**1**]

ip, num = ipport

**except**:

**print**("invalid address.")

sys.exit(**0**)

**if** port <= **1024** **or** port >= **64000**:

**print**("Invalid port number.")

sys.exit(**0**)

**elif** os.path.exists(filename):

**print**("File already exists.")

sys.exit(**0**)

**else**:

**try**:

csock = socket.socket(socket.AF\_INET, socket.SOCK\_STREAM)

csock.settimeout(**2**)

**except**:

**print**("Socket creation failed.")

sys.exit(**0**)

**try**:

csock.connect((host, port))

**print**("connected")

**except**:

csock.close()

**print**("socket error")

sys.exit(**0**)

name = bytearray(filename.encode("utf-8"))

nameleng = len(name)

**if** nameleng < **1024**:

filerequest = bytearray(((**0x497E** << (**24**)) + (**1** << (**16**)) + (nameleng)).to\_bytes(**5**, "big"))

filerequest += name

csock.sendall(filerequest)

content = readdata(csock)

**if** content != -**1**:

decoded = content.decode('utf-8')

file = open(filename, "w")

file.write(decoded)

file.close()

sys.exit(**0**)

client(HOST, PORT, FILENAME)

# Server.py

**import** **socket**

**import** **sys**

**import** **os.path**

HOST = '127.0.0.1'

PORT = int(sys.argv[**1**])

**def** **readfilerequest**(clisocket):

data = bytearray(clisocket.recv(**1024**))

**if** (data[**0**] << **8**) | data[**1**] != **0x497E**:

**print**("Magic number error.")

**return** -**1**, -**1**

**elif** data[**2**] != **1**:

**print**("Packet type error.")

**return** -**1**, -**1**

**elif** (data[**3**] << **8**) | data[**4**] > **1024**:

**print**("Name size error.")

**return** -**1**, -**1**

n = (data[**3**] << **8**) | data[**4**]

name = data[**5**:]

**while** len(name) != n:

data = bytearray(clisocket.recv(**1024**))

name += data[**5**:]

**return** name, n

**def** **openfile**(filename):

file = open(filename, 'r')

content = file.read()

file.close()

**return** content

**def** **fileresponse**(validity, sock, content=''):

**if** validity **is** True:

content = bytearray(content, "utf-8")

fileresponseheader = bytearray(((**0x497E** << **48**) + (**2** << **40**) + (**1** << **32**) + len(content)).to\_bytes(**8**, "big"))

first = True

bytecount = **0**

**while** len(content) >= **88** **or** first **is** True:

pkt = fileresponseheader + content[:**88**]

sock.sendall(pkt)

content = content[**88**:]

first = False

bytecount += len(pkt)

**if** len(content) != **0**:

pkt2 = fileresponseheader + content

sock.sendall(pkt2)

bytecount += len(pkt2)

**print**(bytecount, "bytes sent.**\n**")

**return** bytecount

**else**:

sock.sendall(bytearray(((**0x497E** << **48**) + (**2** << **40**) + (**0** << **32**) + len(content)).to\_bytes(**8**, "big")))

**print**("The file does not exist or cannot be opened.")

**def** **server**(port):

**if** port <= **1024** **or** port >= **64000**:

**print**("Invalid port number.")

sys.exit(**0**)

sock = socket.socket(socket.AF\_INET, socket.SOCK\_STREAM)

**try**:

sock.bind((HOST, port))

**except**:

**print**("Binding failed.")

sys.exit(**0**)

**try**:

sock.listen()

**except**:

**print**("Listening failed.")

sys.exit(**0**)

loop = **0**

**while** loop == **0**:

clisocket, cliip = sock.accept()

**print**("Connected to", cliip[**0**])

**try**:

dataarray, n = readfilerequest(clisocket)

**if** dataarray != -**1**:

filename = dataarray.decode("utf-8")

**print**("File name", filename)

**if** len(dataarray) != n:

**print**("Data does not match the actual name size.")

clisocket.close()

**if** os.path.exists(filename):

**print**("File found.")

content = openfile(filename)

bytecount = fileresponse(True, clisocket, content)

clisocket.close()

**else**:

**print**("file does not exist.")

fileresponse(False, clisocket)

clisocket.close()

**else**:

clisocket.close()

**except**:

fileresponse(False, clisocket)

clisocket.close()

server(PORT)

A screenshot of a cell phone

Description automatically generated