**Network Programming for Engineers (ECE 5650)**

**Lab 2**

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**Source Code(s):**

**Source code for Client:**

#!/usr/bin/python

# -\*- coding: UTF-8 -\*-

# File Name：TCPEchoAppClient.py

# Created: 9/16/2020

# Author: Li Lin

from socket import \*

serverName = 'localhost'

serverPort = 12000

with socket(AF\_INET, SOCK\_STREAM) as clientSocket:

    #Setup connection with server

    clientSocket.connect((serverName,serverPort))

    isContinue = True

    while isContinue:

        #Ask user to input message

        message =input('Input lowercase sentence:')

        #Send message to server

        clientSocket.send(message.encode())

        #Receive message from server

        modifiedMessage = clientSocket.recv(1024)

        print('From Server:', modifiedMessage.decode())

        messageNum = clientSocket.recv(1024)

        print('From Server:', messageNum.decode())

        #User input confirmation

        while True:

            Yes\_No =input('Do you want to send more message? Y/N  ')

            if (Yes\_No == 'Y') or (Yes\_No == 'y'):

                break

            elif (Yes\_No == 'N') or (Yes\_No == 'n'):

                isContinue = False

                break

            else:

                print('Please type Y or N only！')

**Source code for Server:**

#!/usr/bin/python

# -\*- coding: UTF-8 -\*-

# File Name：TCPEchoAppServer.py

# Created: 9/16/2020

# Author: Li Lin

from socket import \*

serverPort = 12000

with socket(AF\_INET, SOCK\_STREAM) as serverSocket:

    #bind with server address and port

    serverSocket.bind(('',serverPort))

    #Start to monitor

    serverSocket.listen(1)

    print('The server is ready to receive...')

    #wait for client's connection

    connectionSocket,addr = serverSocket.accept()

    with connectionSocket:

        while True:

            #Receive message from client

            message = connectionSocket.recv(1024)

            print('Received:' + message.decode() + ';Length = ' + str(len(message)))

            #Change all letters to Upper case

            modifiedMessage = message.decode().upper()

            #Count the number of received message

            messageNum = 'Received number: ' + str(len(message))

            #Send uppder case letters to Client

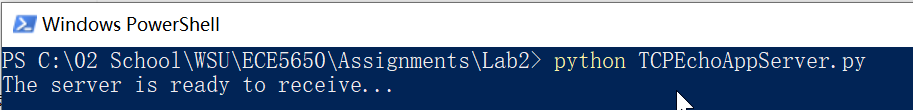
            connectionSocket.send(modifiedMessage.encode())

            #Send message number to Client

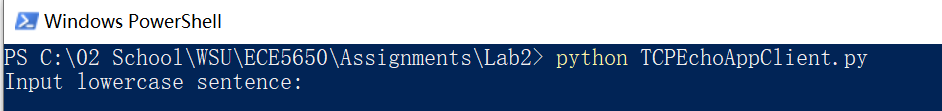
            connectionSocket.send(messageNum.encode())

**Testing Procedure, including Description of Inputs**

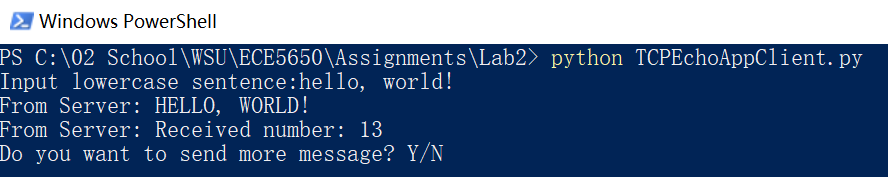
1. **Open a terminal, run server program;**

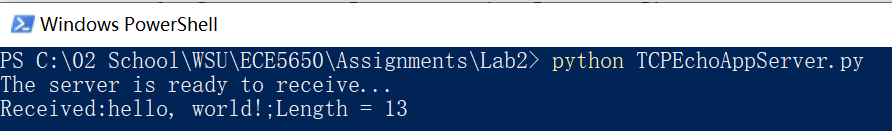


1. **Open another terminal, run client program;**

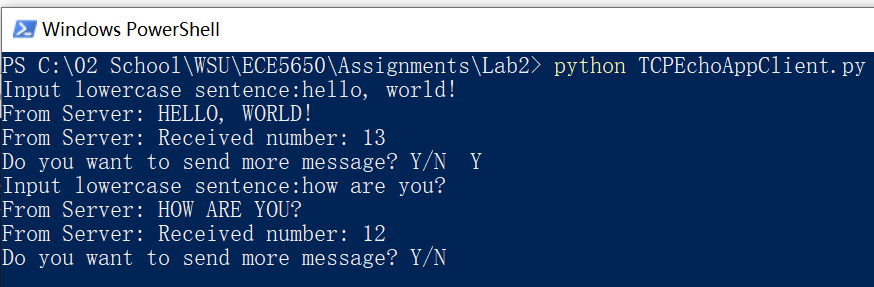


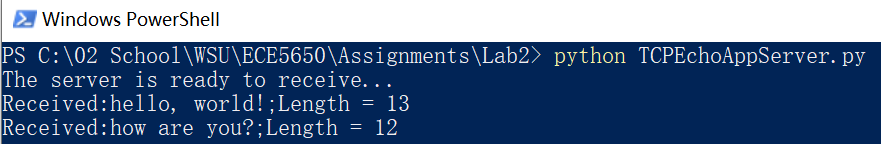
1. **In client terminal, type “hello, world!”**



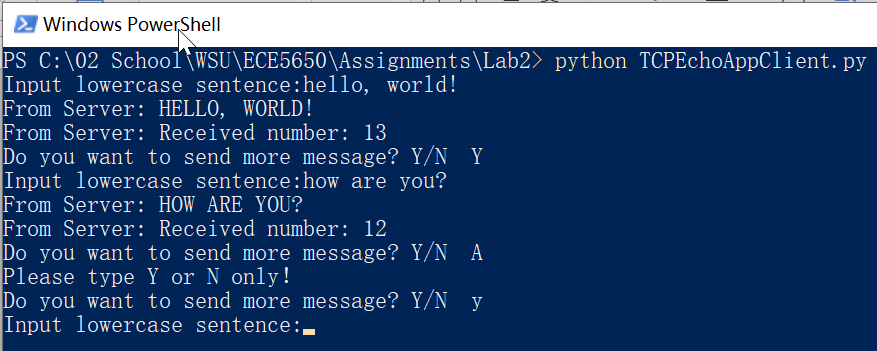


1. In Client terminal, type “Y”, then input”how are you?”

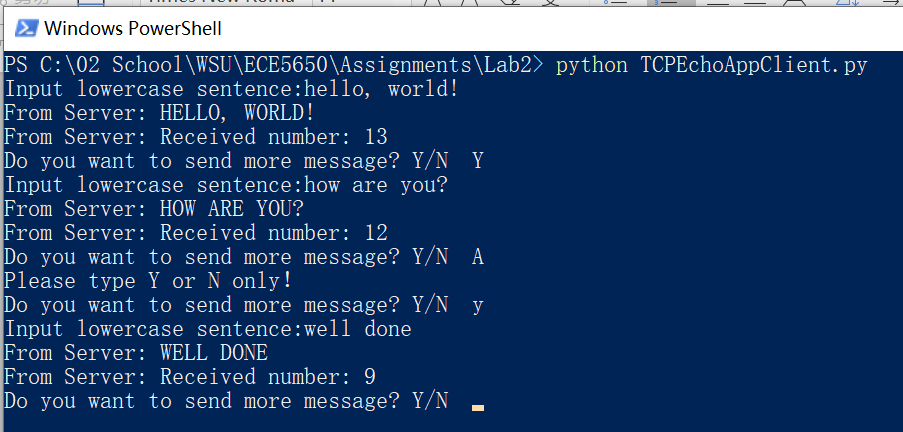


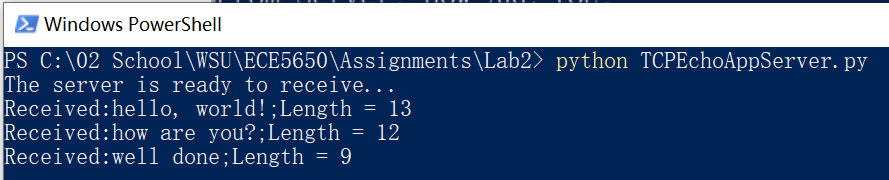


1. In Client terminal, type “A”, then type “y”

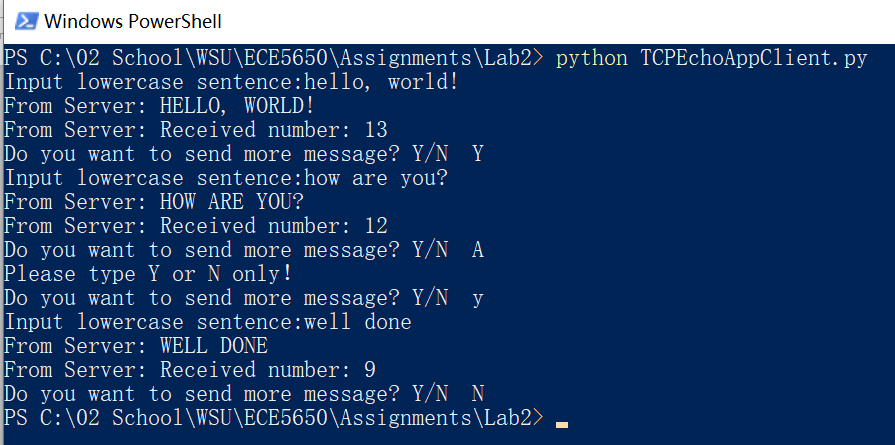


1. In Client terminal, input”well done”





1. In client terminal, type”N”



**Screenshots and Their Explanations:**

**Completion Status and Self-Critique:**

For program Client:

* Does your program meet all requirements? If not, explain the problem.
* Does the program run correctly all the time? If not, explain the problem.
* Did you adequately test the program? If not, specify.
* Is the program well documented?

For program Server:

* Does your program meet all requirements? If not, explain the problem.
* Does the program run correctly all the time? If not, explain the problem.
* Did you adequately test the program? If not, specify.

Is the program well documented?