Computer Networks Lab Report – Assignment 6

TITLE

Name – Sourav Dutta
Roll – 001610501076
Class – BCSE 3rd year
Group – A3
Assignment Number – 6

Problem Statement –

1. **Implement a file transfer application using TCP socket.**
2. **Implement a DNS server using UDP socket.**

Deadline – 29/03/2019
Submission date – 01/04/2019

IMPLEMENTATION

1. FILE TRANSFER APPLICATION USING TCP SOCKET

Code Snippet of server.py:

```
import socket
def getextension(str):
      idx = -1
      for i in range(len(str)-1):
            if str[i] == '.':
                  idx = i
                  break
      return str[idx+1:]

if __name__ == '__main__':
      host = '127.0.0.1'
      port = 8080
      totalclient = int(input('Enter number of clients: '))

      sock = socket.socket(socket.AF_INET, socket.SOCK_STREAM)
      sock.bind((host,port))
      sock.listen(totalclient)
      connections = []
      print('Initiating clients')
      for i in range(totalclient):
            conn = sock.accept()
            connections.append(conn)
            print('Connected with client',i+1)
      #print('Connected with all clients')
      fileno = 0
      idx = 0
      for conn in connections:
            idx += 1
            data = conn[0].recv(1024).decode()
            if not data:
                  continue
            ex = getextension
            filename = 'output'+str(fileno)+'.txt'
            fileno += 1
            fo = open(filename, "w")

            while data:
                  if data == "exit":
                        break
                  fo.write(data)
                  data = conn[0].recv(1024).decode()
            print()
            print('Receiving file from client',idx)
            print()
            print('Received successfully! New filename is:',filename)
            fo.close()

      for conn in connections:
            conn[0].close()
```

Code Snippet of client.py:

```
import socket

if __name__ == '__main__':
```

```
	host = '127.0.0.1'
	port = 8080

	sock = socket.socket(socket.AF_INET, socket.SOCK_STREAM)
	sock.connect((host, port))

	while True:
		filename = input('Input filename you want to send: ')
		try:
			fi = open(filename,"r")
			data = fi.read()
			if not data:
				break
			while data:
				sock.send(data.encode())
				data = fi.read()
			data = "exit"
			sock.send(data.encode())
			fi.close()
		except IOError:
			print('You entered an invalid filename! Please enter a valid
name')
```

2. DNS SERVER USING UDP SOCKET

Code Snippet of server.py:

```
import socket


if __name__ == '__main__':
	host = '127.0.0.1'
	port = 8080

	sock = socket.socket(socket.AF_INET, socket.SOCK_DGRAM)
	sock.bind((host,port))

	while True:
		print('------------------------------------')
		data, ip = sock.recvfrom(1024)
		data = data.decode()
		if data == 'q':
			break
		print('Received domain name:',data)
		print('Searching the domain name...')

		sendmsg = 'not found'
		try:
			fi = open('domains.txt',"r")
			domname = fi.readline().split(' ')
			flag = 0
			while domname[0]:

				#print(domname)
				if data == domname[0]:
					sendmsg = domname[1]
					flag = 1
					break
				domname = fi.readline().split(' ')
			if flag == 0:
				print('Domain not found!')
			else:
```

```
                        print('Domain found! Sending its corresponding IP
address')
            except IOError:
                  print('File does not exist!')

            sock.sendto(sendmsg.encode(),ip)
```

Code Snippet of client.py:

```
import socket

if __name__ == '__main__':
      host = '127.0.0.1'
      port = 8080

      sock = socket.socket(socket.AF_INET, socket.SOCK_DGRAM)

      while True:
            print('-----------------------------------')
            domain = input('Enter domain name: ')

            sock.sendto(domain.encode(),(host,port))
            if domain == 'q':
                  break

            recvmsg,ip = sock.recvfrom(1024)
            recvmsg = recvmsg.decode()
            print()
            if recvmsg == 'not found':
                  print('The domain could not be found!!')
            else:
                  print('IP address of domain',domain,'is:',recvmsg)
```

TEST CASES

FILE TRANSFER APPLICATION USING TCP SOCKET:

Server.py :

```
C:\Users\SOURAV\Desktop\comp-networks-lab\ass6\tcp>python tcp-server.py
Enter number of clients: 2
Initiating clients
Connected with client 1
Connected with client 2

Receiving file from client 1

Received successfully! New filename is: output0.txt

Receiving file from client 2

Received successfully! New filename is: output1.txt
```

Client.py (1st client):

```
C:\Users\SOURAV\Desktop\comp-networks-lab\ass6\tcp>python tcp-client.py
Input filename you want to send: file1.txt
Input filename you want to send:
```

Client.py (2nd client):

```
C:\Users\SOURAV\Desktop\comp-networks-lab\ass6\tcp>python tcp-client.py
Input filename you want to send: file2.txt
Input filename you want to send:
```

DNS SERVER USING UDP SOCKET:

Server.py:

```
C:\Users\SOURAV\Desktop\comp-networks-lab\ass6\udp>python dns-server.py
---------------------------------------
Received domain name: google.com
Searching the domain name...
Domain found! Sending its corresponding IP address
---------------------------------------
Received domain name: facebook.com
Searching the domain name...
Domain found! Sending its corresponding IP address
---------------------------------------
Received domain name: book.co.in
Searching the domain name...
Domain not found!
---------------------------------------
Received domain name: network.org
Searching the domain name...
Domain not found!
---------------------------------------
Received domain name: yahoo.com
Searching the domain name...
Domain found! Sending its corresponding IP address
```

Client.py (1st client):

C:\Users\SOURAV\Desktop\comp-networks-lab\ass6\udp>python client.py
----
Enter domain name: google.com

IP address of domain google.com is: 127.65.13.5

Enter domain name: facebook.com

IP address of domain facebook.com is: 152.54.46.41

Enter domain name: book.co.in

The domain could not be found!!

Enter domain name:

Client.py (2nd client):

C:\Users\SOURAV\Desktop\comp-networks-lab\ass6\udp>python client.py
----
Enter domain name: network.org

The domain could not be found!!

Enter domain name: yahoo.com

IP address of domain yahoo.com is: 154.165.55.45

Enter domain name:

COMMENTS

This assignment has helped me in learning TCP socket and UDP socket, and how it can be used to implement a File Transfer application and DNS server.