Name : Md. Sohag Hossain

ID : IT-17060

Lab report no : 04

Name of the Lab report : Echo protocol

Objectives:

1. Learn eco TCP server
2. Learn eco TCP client
3. Learn eco UDP server
4. Learn eco UDP client

Theory:

Python's socket module provides an interface to the Berkeley sockets API. The primary socket API functions and methods in this module are:

- socket()

- bind()

- listen()

- accept()

- connect()

- connect_ex()

- send()

- recv()

- close()

Working with TCP Sockets:

Simple Server Program:

```python
import socket

s = socket.socket()
host = socket.gethostname()
port = 9999

s.bind((host,port))

print("Waiting for connection...")
s.listen(5)

while True:
    conn,addr = s.accept()
    print('Got Connection from', addr)
    conn.send('Server Saying Hi')
    conn.close()
```

after run the TCP_server.py we get the below output

"C:\Users\sohag\PycharmProjects\
Waiting for connection...

```python
import socket

s = socket.socket()
host = socket.gethostname()
port = 9999
```

```
s.connect((host,port))
print (s.recv(1024))

s.close()
```

Below is the TCP_client.py program. The client tries to connect to server's port, 9999(well defined port). The code line, s.connect((host, port)) opens up a TCP connection to the hostname on the port 9999.

Output:

```
"C:\Users\sohag\PycharmProjects\computer ne
 Waiting for connection...
 Got Connection from ('192.168.56.1', 55205)
```

Working with UDP Sockets

UDP_server.py

```
import socket
sock = socket.socket(socket.AF_INET,socket.SOCK_DGRAM)
udp_host = socket.gethostname()
udp_port = 12345
sock.bind((udp_host,udp_port))
while True:
    print("Waiting for client...")
    data,addr = sock.recvfrom(1024)
    print("Received Messages:",data," from",addr)
```

after run the TCP_server.py we get the below output

"C:\Users\sohag\PycharmProjects\
Waiting for connection...

```python
import socket
sock = socket.socket(socket.AF_INET,socket.SOCK_DGRAM)
udp_host = socket.gethostname()
udp_port = 12345
msg = "Hello Python!"
print("UDP target IP:", udp_host)
print("UDP target Port:", udp_port)
sock.sendto(msg,(udp_host,udp_port))
```

"C:\Users\sohag\PycharmProjects\
UDP target IP: DESKTOP-PMMMNGF
UDP target Port: 12345

Conclussion:

I have successfully run all program. At the beginning I got puzzled because of I run the server.py but not run the client.py. Then I search it and finally I have overcome the problem.