Computer Network (LAB-SESSION 9)

Q-1) UDP Pinger

A) Create a UDP Client and a UDP Server. UDP client will ping UDP server 10 times. UDP Server will reply to the ping message as soon as it receives it. If the reply for the ping message does not come within one second, you can consider the packet as a lost packet (you can implement this scenario by not sending a reply for some random client ping)

B) After receiving reply from server for each ping message, UDP client will calculate and print the RTT time (time between sending the ping and receiving the reply) for each response.

C) After the cycle of 10 pings, client will analyze all 10 response times and will print maximum RTT, minimum RTT and average RTT.

➢

UDP Server

```
from socket import *
from time import sleep

host = 'localhost'
port = 4444

socketserver = socket(AF_INET,SOCK_DGRAM)  #UDP
socketserver.bind((host,port))

data = []

for i in range(10):
   value = socketserver.recvfrom(1024)
   ip = value[1]

   data.append(value[0].decode())
   if data[i] == "3" or data[i] == "6":
      sleep(3)
   send = socketserver.sendto(data[i].encode(),ip)
   sleep(2)
print("Connection Address of server:",ip)
```

Output:

```
Connection Address of server: ('127.0.0.1', 51280)
```

UDP Client

```
from socket import *
from time import *

host = 'localhost'
port = 4444

socketserver = socket(AF_INET,SOCK_DGRAM) # UDP
ip = (host,port)
lst = []
seq = 10
i = 0
while i < seq:
   i += 1
   srttime = time()
   socketserver.sendto(str(i).encode("utf-8"),ip)
   rec = socketserver.recvfrom(1024)
   rtt = time() - srttime
   tm = localtime(rtt)
   lst.append(tm.tm_sec)
   if(tm.tm_sec <=1):
      print("Responce from server with in.....",tm.tm_sec)
   else:
      print("Responce time out.....")
   sleep(0.5)
print("All timing for response",lst)
n1 = sum(lst)
n2 = len(lst)
avg = n1/n2
print("Total RTT Time",str(n1))
print("Maximum RTT Time",str(max(lst)))
print("Minimum RTT Time",str(min(lst)))
print("Average RTT Time",str(avg))
```

Output:

```
Responce from server with in..... 0

Responce from server with in..... 1

Responce time out.....

Responce from server with in..... 1

Responce from server with in..... 1

Responce time out.....

Responce from server with in..... 1
```

Responce from server with in..... 1

Responce from server with in..... 1

Responce from server with in..... 1

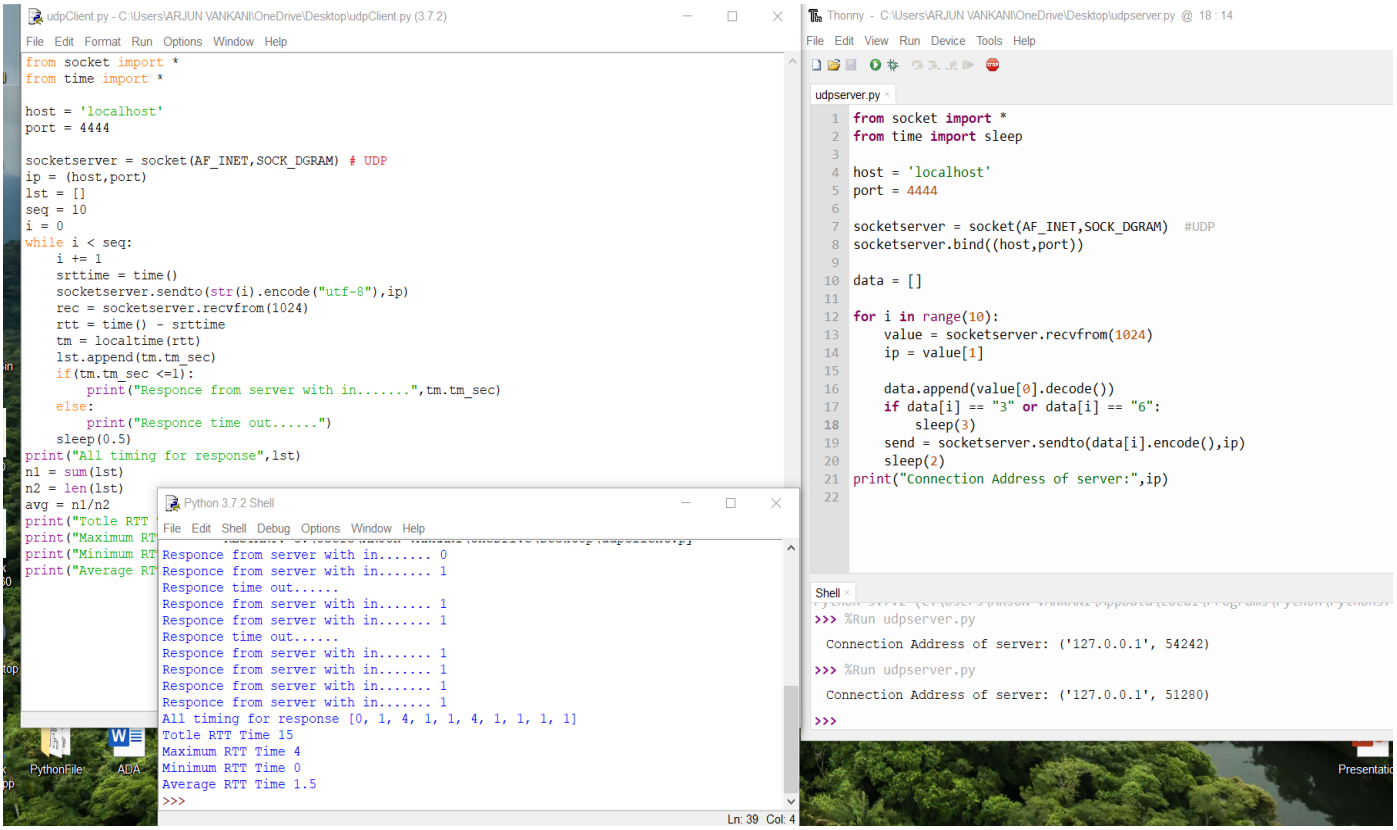
All timing for response [0, 1, 4, 1, 1, 4, 1, 1, 1, 1]

Total RTT Time 15

Maximum RTT Time 4

Minimum RTT Time 0

Average RTT Time 1.5



2.TCP Chatbot

An airline company wants you to implement a chatbot that helps them automate the process of new ticket booking, cancellation of previous bookings and status inquiry for the current booking.

A) Once a client connects with the server, the server chatbot will ask user to enter one of the three possible choices (1, 2or 3).

B) If the client enters 1, it means client wants to book a new ticket. The chatbot will 2 one by one ask three information for booking i.e. Name, Source and Destination. It then generates a random booking ID and stores these details with the booking ID in its database. It also displays the booking confirmation to the user and gives him his booking ID.

C) If the user enters 2, it means that the user wants to delete the booking made by him. Server chatbot asks for the booking ID from the client and once it receives the booking ID, it checks in the database for the booking information. If found, it will delete the information and confirmation will be provided to the user.

D) If the user enters 3, it means that the user wants to look into his booking details. In this case, the server chatbot will ask for the booking ID and will send the booking details back to the client if found from the database which then will be printed on the client screen.

E) Chatbot will ask the user to enter the Proper choice if the user enters anything other than the predefined choices (1,2,3).

- **TCP SERVER:**

```
from socket import *
from json import *
from random import randint

host = 'localhost'
port = 4444

serversocket = socket(AF_INET,SOCK_STREAM,0)  #tcp
serversocket.bind((host,port))

serversocket.listen(2)

con,adr = serversocket.accept()
print("Connection From:\t",adr)
Gid = {}   # gerate id
while True:
   ch = con.recv(1024).decode()
   if int(ch) == 1:
      while True:
         val = con.recv(1024).decode()
         data = loads(val)

         strid = randint(1111,9999)
         Bid = "BOOK_ID" + str(strid)  #Booking Id
         Gid[Bid] = {}
         Gid[Bid].update({"Name":data[0]})
         Gid[Bid].update({"Pick up":data[1]})
         Gid[Bid].update({"Drop ":data[2]})
```

```
            keys = []
            for i in Gid.keys():
               keys.append(i)
            con.send(Bid.encode("utf-8"))
            brdata = con.recv(1024).decode()
            if(brdata == "yes"):
               True
            else:
               break
      if(int(ch)==2):
         keys = []
         for i in Gid.keys():
            keys.append(i)
         print(keys)
         while True:
            recdatacan = con.recv(1024).decode()
            if recdatacan in keys:
               del Gid[recdatacan]
               str = "0"
               con.send(str.encode("utf-8"))
               break
            else:
               str = "1"
               con.send(str.encode("utf-8"))
         #display data
      if(int(ch)==3):
         keys = []
         for i in Gid.keys():
            keys.append(i)
         while True:
            recdata = con.recv(1024).decode()
            if recdata in keys:
               templst = []
               for i in Gid[recdata].values():
                  templst.append(i)
               st = dumps(templst)
               con.send(st.encode("utf-8"))
               break
            else:
               str = "0"
               con.send(str.encode("utf-8"))
      if(int(ch) == 0):
         break
```

OUTPUT:

Connection From: ('127.0.0.1', 3527)
['BOOK_ID2086', 'BOOK_ID8602']

TCP CLIENT

```
from socket import *
from json import *

host = 'localhost'
port = 4444

socketclient = socket(AF_INET,SOCK_STREAM,0)  #Tcp
socketclient.connect((host,port))

F = 1
while F == 1:
   print("Welcome to our Airline Service 24*7 \n")
   ans = int(input("\t 1) For Booking Your Ticket: \n\t 2) Process to cancle ticket\n\t
3)History & Cheking Conformation ticket: \n \t 0.Exit\n\t Enter Your choices :\t "))
   socketclient.send(str(ans).encode("utf-8"))
   if(ans == 1):
      while True:
         lst = []
         lst.append(input("Enter Your Name:"))
         lst.append(input("Enter Your Pick up:"))
         lst.append(input("Enter Your Drop:"))

         senddata = dumps(lst)

         socketclient.send(senddata.encode("utf-8"))
         id=socketclient.recv(1024).decode()

         print("Your Booking is Conform And Booking Id Is:",id)
         agindata = input("Do you want to book another Ticket ?\n \t  [yes/no]:")
         socketclient.send(agindata.encode("utf-8"))
         if(agindata == "yes"):
            True
         else:
            break
   if(ans == 2):
      while True:
         getid = input("Enter Your Booking Id:")
         socketclient.send(getid.encode("utf-8"))
         recdata = socketclient.recv(1024).decode()
         if (recdata != "1"):
            print("Your ticket cancle")
            break
         else:
            print("Maybe you type wrong Id or You don't book ticket right now!!")
            break
   if(ans == 3):
```

```
        while True:
            getid = input("Enter Your Booking Id:")
            socketclient.send(getid.encode("utf-8"))
            recdata=socketclient.recv(1024).decode()
            if(recdata != "0"):
                ans = loads(recdata)
                print("Booking Conform:")
                print("Your Booking id is:",getid)
                print("Your Name is:",ans[0])
                print("Your Source address:", ans[1])
                print("Your Destination address:", ans[2])
                break
            else:
                print("Maybe you type wrong Id or You don't book ticket right now!!")
    if(ans == 0):
        F = 0
```

OUTPUT:

```
        Welcome to our Airline Service 24*7

        1) For Booking Your Ticket:
        2) Process to cancle ticket
        3)History & Cheking Conformation ticket:
        0.Exit
        Enter Your choices :    1
Enter Your Name:Arjun
Enter Your Pick up:Bhavanagar
Enter Your Drop:Ahemdabad
Your Booking is Conform And Booking Id Is: BOOK_ID2086
Do you want to book another Ticket ?
        [yes/no]:yes
Enter Your Name:Arjun
Enter Your Pick up:Ahemdabad
Enter Your Drop:Broda
Your Booking is Conform And Booking Id Is: BOOK_ID8602
Do you want to book another Ticket ?
        [yes/no]:no
Welcome to our Airline Service 24*7

        1) For Booking Your Ticket:
        2) Process to cancle ticket
        3)History & Cheking Conformation ticket:
        0.Exit
        Enter Your choices :    2
Enter Your Booking Id:BOOK_ID8602
Your ticket cancle
Welcome to our Airline Service 24*7
```

1) For Booking Your Ticket:
2) Process to cancle ticket
3)History & Cheking Conformation ticket:
0.Exit
Enter Your choices : 3

Enter Your Booking Id:BOOK_ID8602
Maybe you type wrong Id or You don't book ticket right now!!
Enter Your Booking Id:BOOK_ID2086
Booking Conform:
Your Booking id is: BOOK_ID2086
Your Name is: Arjun
Your Source address: Bhavanagar
Your Destination address: Ahemdabad
Welcome to our Airline Service 24*7

1) For Booking Your Ticket:
2) Process to cancle ticket
3)History & Cheking Conformation ticket:
0.Exit
Enter Your choices: 0