```python
import socket
import sys

host = ''
port = 8888

try:
        s = socket.socket(socket.AF_INET, socket.SOCK_DGRAM)
        print('Socket created')
except socket.error, msg:
        print('failed to create socket. Error code: ' + str(msg[0]) + ' message ' + msg[1])
        sys.exit()

try:
        s.bind((host, port))
except socket.error, msg:
        print('bind failed. error code: ' + str(msg[0]) + ' message ' + msg[1])

print('Socket bind complete')

while True:
        d = s.recvfrom(1024)
        data = d[0]
        addr = d[1]

        if not data:
                break

        reply = 'OK...' + data

        s.sendto(reply, addr)
        print('Message[' + addr[0] + ':' + str(addr[1]) + '] - ' + data.strip())

s.close()
```

```
mininet@mininet-vm:~/5$ netcat -vv localhost 8888 -u\
>
Connection to localhost 8888 port [udp/*] succeeded!
OK...XOK...XOK...XOK...XOK...X
```

```
mininet@mininet-vm:~/5$ python server.py
Socket created
Socket bind complete
Message[127.0.0.1:36511] - X
Message[127.0.0.1:36511] - X
Message[127.0.0.1:36511] - X
Message[127.0.0.1:36511] - X
Message[127.0.0.1:36511] - X
```

# Scenario 1

```
  ⌀ / ▻ /mnt/c/users/scott/0/De/F/16/5 / git  main !1
└ python3 client.py
Enter message to send. Press enter to exit: message 1
Message[Client] —
                        Packet: 0,message 1,÷F
                        Data: message 1
                        Ack: 0
Message[Server] —
                        Packet: 0,OK...message 1,
                        Data: OK...message 1
                        Ack: 0
Enter message to send. Press enter to exit: hello world
Message[Client] —
                        Packet: 1,hello world,<Ù
                        Data: hello world
                        Ack: 1
Message[Server] —
                        Packet: 1,OK...hello world,(È
                        Data: OK...hello world
                        Ack: 1
Enter message to send. Press enter to exit: message 3
Message[Client] —
                        Packet: 0,message 3,õF
                        Data: message 3
                        Ack: 0
Message[Server] —
                        Packet: 0,OK...message 3,
                        Data: OK...message 3
                        Ack: 0
Enter message to send. Press enter to exit: |
```

```
  ⌀ / ▻ /mnt/c/users/scott/OneDrive/Desktop/Fall 2022/164/5 / git  main !1
└ python3 server.py
Socket created
Socket bind complete
Message[44745 to 127.0.0.1] —
                        Packet: 0,message 1,÷F
                        Data: message 1
                        Seq: 0
Message[127.0.0.1 to 44745] —
                        Packet: 0,OK...message 1,
                        Data: OK...message 1
                        Ack: 0
Message[44745 to 127.0.0.1] —
                        Packet: 1,hello world,<Ù
                        Data: hello world
                        Seq: 1
Message[127.0.0.1 to 44745] —
                        Packet: 1,OK...hello world,(È
                        Data: OK...hello world
                        Ack: 1
Message[44745 to 127.0.0.1] —
                        Packet: 0,message 3,õF
                        Data: message 3
                        Seq: 0
Message[127.0.0.1 to 44745] —
                        Packet: 0,OK...message 3,
                        Data: OK...message 3
                        Ack: 0
|
```

# Scenario 2

```
□ ⊲ / ⊳ /mnt/c/users/scott/O/De/F/16/5 / git ⅄ main !1
└ python3 client.py
Enter message to send. Press enter to exit: message 1
Message[Client] —
                        Packet: 0,message 1,÷F
                        Data: message 1
                        Ack: 0
Message[Server] —
                        Packet: 0,OK...message 1,
                        Data: OK...message 1
                        Ack: 0
Enter message to send. Press enter to exit: hello world
Message[Client] —
                        Packet: 1,hello world,<Ù
                        Data: hello world
                        Ack: 1
DEMO PART 2: PACKET LOSS
Corrupting packet 1,hello world,<Ù...
Timeout reached for packet "1,hello world,<Ù". resending.
..
Message[Server] —
                        Packet: 1,OK...hello world,(È
                        Data: OK...hello world
                        Ack: 1
Enter message to send. Press enter to exit: hello world
Message[Client] —
                        Packet: 0,hello world,=Ù
                        Data: hello world
                        Ack: 0
Message[Server] —
                        Packet: 0,OK...hello world,)È
                        Data: OK...hello world
                        Ack: 0
Enter message to send. Press enter to exit: helo world
Message[Client] —
                        Packet: 1,helo world,Ñ°
                        Data: helo world
                        Ack: 1
DEMO PART 2: PACKET LOSS
Corrupting packet 1,helo world,Ñ°...
Timeout reached for packet "1,helo world,Ñ°". resending..
.
Corrupting packet 1,helo world,Ñ°...
Timeout reached for packet "1,helo world,Ñ°". resending..
.
Message[Server] —
                        Packet: 1,OK...helo world,]
                        Data: OK...helo world
                        Ack: 1
Enter message to send. Press enter to exit: |
```

```
□ ⊲ / ⊳ /mnt/c/users/scott/OneDrive/Desktop/Fall 2022/164/5 / git ⅄ main !1
└ python3 server.py
Socket created
Socket bind complete
Message[53227 to 127.0.0.1] —
                        Packet: 0,message 1,÷F
                        Data: message 1
                        Seq: 0
Message[127.0.0.1 to 53227] —
                        Packet: 0,OK...message 1,
                        Data: OK...message 1
                        Ack: 0
Message[53227 to 127.0.0.1] —
                        Packet: 1,hello world,<Ùl
                        Data: hello world
                        Seq: 1
Message[53227 to 127.0.0.1] —
                        Packet: 1,hello world,<Ù
                        Data: hello world
                        Seq: 1
Message[127.0.0.1 to 53227] —
                        Packet: 1,OK...hello world,(È
                        Data: OK...hello world
                        Ack: 1
Message[53227 to 127.0.0.1] —
                        Packet: 0,hello world,=Ù
                        Data: hello world
                        Seq: 0
Message[127.0.0.1 to 53227] —
                        Packet: 0,OK...hello world,)È
                        Data: OK...hello world
                        Ack: 0
Message[53227 to 127.0.0.1] —
                        Packet: 1,helo world,Ñ°l
                        Data: helo world
                        Seq: 1
Message[53227 to 127.0.0.1] —
                        Packet: 1,helo world,Ñ°l
                        Data: helo world
                        Seq: 1
Message[53227 to 127.0.0.1] —
                        Packet: 1,helo world,Ñ°
                        Data: helo world
                        Seq: 1
Message[127.0.0.1 to 53227] —
                        Packet: 1,OK...helo world,]
                        Data: OK...helo world
                        Ack: 1
|
```

# Scenario 3

```
⊲ / ▷ /mnt/c/users/scott/O/De/F/16/5 / git ⑂ main !2
  python3 client.py
Enter message to send. Press enter to exit: message 1
Message[Client] —
                        Packet: 0,message 1,÷F
                        Data: message 1
                        Ack: 0
Timeout reached for packet "0,message 1,÷F". resending...
Timeout reached for packet "0,message 1,÷F". resending...
Message[Server] —
                        Packet: 0,OK...message 1,
                        Data: OK...message 1
                        Ack: 0
Enter message to send. Press enter to exit: hello world
Message[Client] —
                        Packet: 1,hello world,<Ù
                        Data: hello world
                        Ack: 1
Message[Server] —
                        Packet: 1,OK...hello world,(È
                        Data: OK...hello world
                        Ack: 1
Enter message to send. Press enter to exit: hi
Message[Client] —
                        Packet: 0,hi,;j
                        Data: hi
                        Ack: 0
Timeout reached for packet "0,hi,;j". resending...
Timeout reached for packet "0,hi,;j". resending...
Message[Server] —
                        Packet: 0,OK...hi,ºÅ
                        Data: OK...hi
                        Ack: 0
Enter message to send. Press enter to exit: |
```

```
⊲ / ▷ /mnt/c/users/scott/OneDrive/Desktop/Fall 2022/164/5 / git ⑂ main !1
  python3 server.py
Socket created
Socket bind complete
DEMO PART 3: TIMEOUT
Message[48483 to 127.0.0.1] —
                        Packet: 0,message 1,÷F
                        Data: message 1
                        Seq: 0
Message[127.0.0.1 to 48483] —
                        Packet: 0,OK...message 1,
                        Data: OK...message 1
                        Ack: 0
Message[48483 to 127.0.0.1] —
                        Packet: 0,message 1,÷F
                        Data: message 1
                        Seq: 0
Message[48483 to 127.0.0.1] —
                        Packet: 0,message 1,÷F
                        Data: message 1
                        Seq: 0
Message[48483 to 127.0.0.1] —
                        Packet: 1,hello world,<Ù
                        Data: hello world
                        Seq: 1
Message[127.0.0.1 to 48483] —
                        Packet: 1,OK...hello world,(È
                        Data: OK...hello world
                        Ack: 1
DEMO PART 3: TIMEOUT
Message[48483 to 127.0.0.1] —
                        Packet: 0,hi,;j
                        Data: hi
                        Seq: 0
Message[127.0.0.1 to 48483] —
                        Packet: 0,OK...hi,ºÅ
                        Data: OK...hi
                        Ack: 0
Message[48483 to 127.0.0.1] —
                        Packet: 0,hi,;j
                        Data: hi
                        Seq: 0
Message[48483 to 127.0.0.1] —
                        Packet: 0,hi,;j
                        Data: hi
                        Seq: 0
```