## Assignment 1 report

## Part 1 UDP Pinger

The result is in the screenshot.

In client socket, I use AF\_INET to use Internet IP Protocol. And use SOCK\_DGRAM to show the protocol is UDP. settimeuot is to setting the timeout of the socket.

In for loop, I use time.per\_counter() twice then minus them to calculate the RTT. And sendto(message.encode(), server\_address) use to send the encoded message('ping') to the IP address that

```
PING 1 50.645
Request timed out.
Request timed out.
PING 4 52.531
PING 5 40.303
PING 6 39.202
Request timed out.
Request timed out.
PING 9 40.044
Request timed out.
Result:
Average RTT 44.54514984972775
Packet loss rate 0.5
```

store in server\_address. recv(1024).decode('utf-8') is to receive the data that UDP send back then decode it with utf-8, and can read at most 1024 bytes.

I faced some problem while print the message. At first, when I receive the message by recv(1024) then print out, the ping message would look like b'PING'. Then I search for many solution on the Internet. Finally knew that I should use utf-8 to decode it!

## Part 2 ICMP messages

The result is in the screenshot.

In client socket, I use AF\_INET to use Internet IP Protocol. And use SOCK\_DGRAM to show the protocol is

```
ICMP Info: type=3, code=3, message: destination port unreachable. ICMP Info: type=3, code=3, message: destination port unreachable.
```

UDP. settimeuot is to setting the timeout of the socket.

In r, I use AF\_INET to use Internet Protocol, SOCK\_RAW to send and receive message without specific protocol, IPPROTO\_ICMP to use Internet Control Message Protocol.

In for loop, sendto(message.encode(), server\_address) use to send the encoded message to the IP address. Use recvfrom(1024) to receive the message packet, 1024 means can read at most 1024 bytes. The message packet included the source IP in packet[0:20], and the packet[20:28] is the ICMP Header. And the type is in icmpHeaderPacket[0], code in icmpHeaderPacket[1]. Finally, according to the type and message, we have different message to print.

I faced some problem when print the message. At first, I think the destination port unreachable can be print by ICMP Header. So I spent lots of time to solve. Finally I saw the discussion on the eeclass...