Homework 6 (UDP and TCP)

Concepts

- Connectionless vs Connection-oriented communication
- What is inside a UDP datagram?
- What is TCP?
- How TCP connection is set up and taken down?

UDP

- Make a copy of your solution to the online solutions of User Datagram Client and Server the two files, `udpclient.py` and `udpserver.py` .
- If you are running the Python code on your laptop using `localhost` , then start Wireshark with a capture filter `host 127.0.0.1` . Just capture the packets via the loopback interface "lo0"
- Stop Wireshark when the Python scripts stop.

1. Examine the first UDP packet, how many fields in the UDP datagram?
2. How many bytes are in the UDP **payload**? Check it against your `udpclient.py` code.
3. What is the **protocol number** of UDP?
4. Examine two UDP packets, one from the client and one from the server. What are the port numbers used in the client and in the server packets?

TCP

- Make a copy of your solution to TCP/IP Client and Server the two files, `tcpclient.py` and `tcpserver.py` .
- If you are running the Python code on your laptop using `localhost` , then start Wireshark with a capture filter `host 127.0.0.1` . Just capture the packets via the loopback interface "lo0"
- Stop Wireshark when the Python scripts stop.

5. What are the packet numbers correspond to `connect` request?
6. What are being exchanged after a TCP connection is established?

- sequence number,

- acknowledgement sequence number,
- MSS,
- window sizes

7. What is the **source** port number of the client when the **client** is sending?
8. What is the **source** port number of the server when the **server** is responding?
9. How many non-empty data packets does the server send back to the client during communication, i.e., after connection is made and before it is closed? What are their packet numbers?
10. What are the sequence and acknowledgement numbers of the client when the client finally closes the connection?