**COMP9331 lab4 answer**

Exercise 1: Understanding TCP using Wireshark

***Question 1*. What is the IP address of gaia.cs.umass.edu? On what port number is it sending and receiving TCP segments for this connection? What are the IP address and TCP port numbers used by the client computer (source) that is transferring the file to gaia.cs.umass.edu?**

**[picture]**

The IP address of gaia.cs.umass.edu is 192.168.1.102(edit).

The port number is 1161(edit).

The IP address is 128.119.245.12 (edit) and the TCP port numbers is 80(edit).

***Question 2.*What is the sequence number of the TCP segment containing the HTTP POST command?**

**[picture]**

**The sequence number is** 232129013(edit).

***Question 3.***

1. What are the sequence numbers of the first six segments in the TCP connection (including the segment containing the HTTP POST) sent from the client to the webserver (Do not consider the ACKs received from the server as part of these six segments)?
2. At what time was each segment sent? When was the ACK for each segment received? Given the difference between when each TCP segment was sent and when its acknowledgement was received, what is the RTT value for each of the six segments?
3. What is the *EstimatedRTT*value (see relevant parts of Section 3.5 or lecture slides) after receiving each ACK? Assume that the initial value of *EstimatedRTT*is equal to the measured RTT (*SampleRTT*) for the first segment and then is computed using the *EstimatedRTT*equation for all subsequent segments. Set alpha to 0.125.

### Exercise 2: TCP Connection Management

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### ***Question 1*.**What is the sequence number of the TCP SYN segment that is used to initiate the TCP connection between the client computer and server?

### The sequence number is 2818463618.

***Question 2.***What is the sequence number of the SYNACK segment sent by the server to the client computer in reply to the SYN? What is the value of the Acknowledgement field in the SYNACK segment? How did the server determine that value?

The sequence number is: 1247095790.

The value of the Acknowledgement field is 2818463619.

Plus 1 to value of the previous client sequence number to determine the value.

**Question 3 .**What is the sequence number of the ACK segment sent by the client computer in response to the SYNACK? What is the value of the Acknowledgment field in this ACK segment? Does this segment contain any data?

The sequence number is: 2818463619.

The value of the Acknowledgement field is 1247095791.

No, this segment does not contain any data because the previous ACK is equal to the sequence number.

**Question 4 .**Who has done the active close? Is it the client or the server? How you have determined this? What type of closure has been performed? 3 Segment (FIN/FINACK/ACK), 4 Segment (FIN/ACK/FIN/ACK) or Simultaneous close?

Both the client and the server complete the active close. simultaneous close

**Question 5 .**How many data bytes have been transferred from the client to the server and from the server to the client during the whole duration of the connection? What relationship does this have with the Initial Sequence Number and the final ACK received from the other side?

The data is the sequence number of No304 – the sequence number of No295, which is 2818463652 – 2818463618 = 33 bytes.