Wireshark Lab 3: TCP

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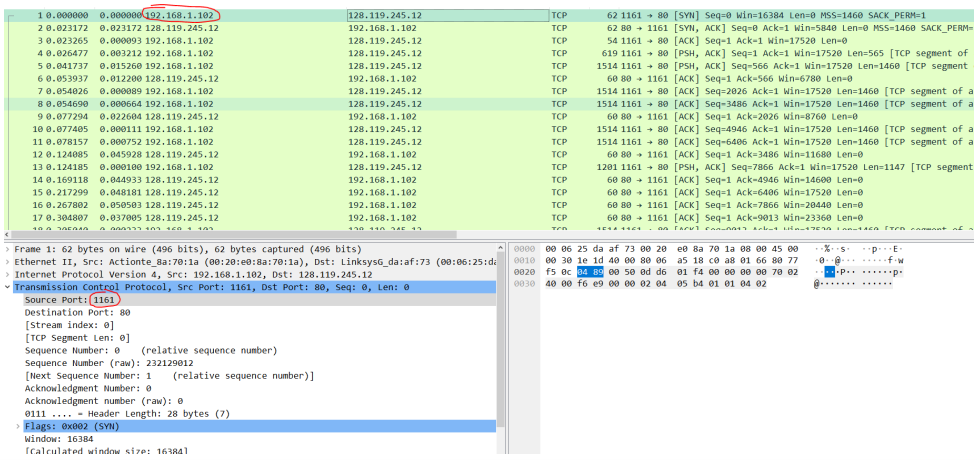
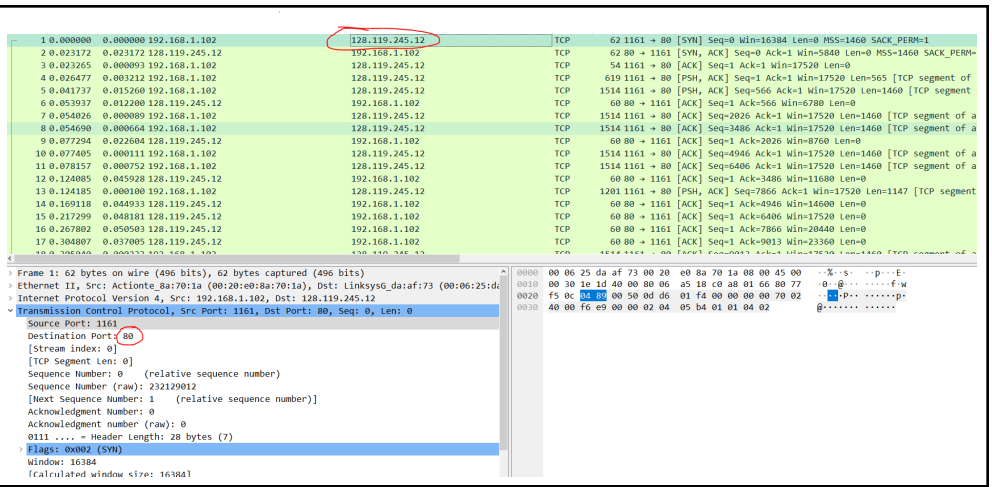
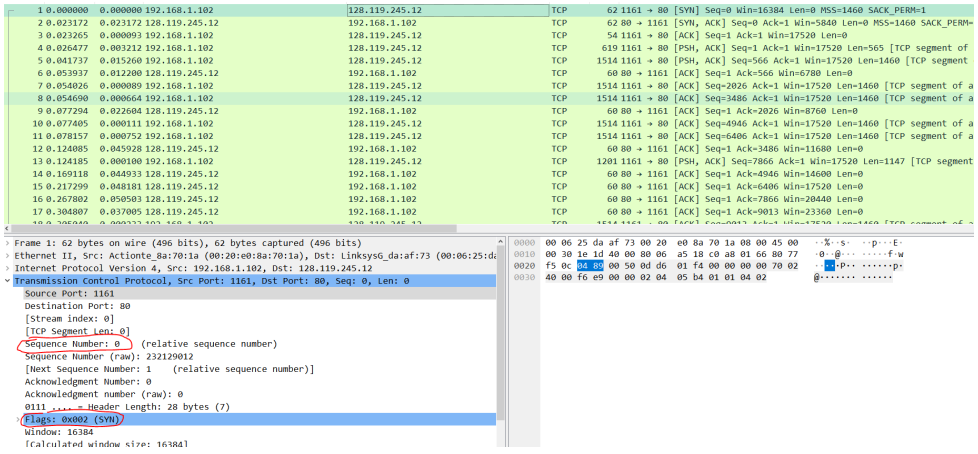
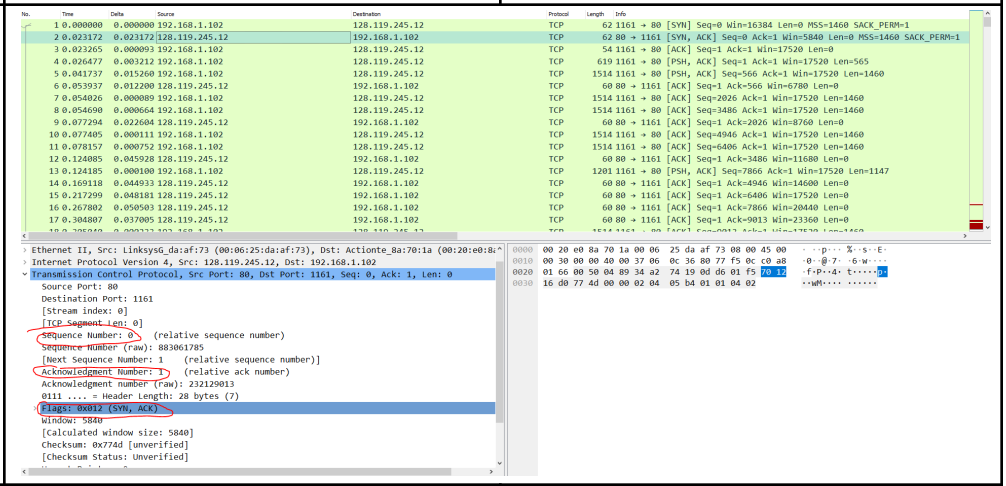
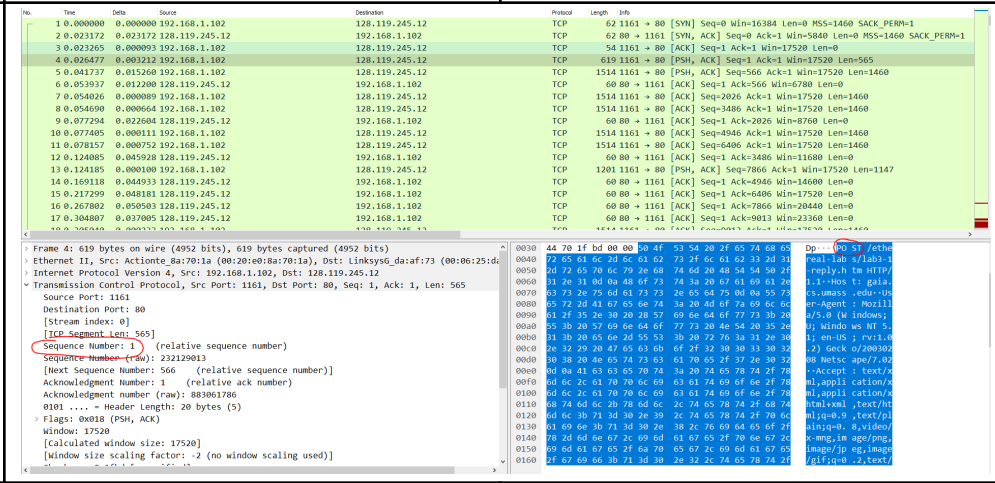
Mark:

	Question	Answer
1	What is the IP address and TCP port number used by your client computer (source) that is transferring the file to gaia.cs.umass.edu?	The address of the client is IP: 192.168.1.102 PORT: 1161
Annotated Screenshots (if needed)		
2	What is the IP address of gaia.cs.umass.edu? On what port number is it sending and receiving TCP segments for this connection?	The IP address of server: 128.119.245.12 port:80

Annotated Screenshots (if needed)		
Question 3 omitted		
4	What is the sequence number of the TCP SYN segment that is used to initiate the TCP connection between the client computer and gaia.cs.umass.edu? What is it in the segment that identifies the segment as a SYN segment?	sequence number is 0 syn flag is set to 1
Annotated Screenshots (if needed)		
5	What is the sequence number of the SYNACK segment sent by gaia.cs.umass.edu to the client computer in reply to the SYN? What is the value of the ACKnowledgement field in the SYNACK segment? How did gaia.cs.umass.edu determine that value? What is it in the segment that identifies the segment as a	sequence number is 0 ACK number is 1, since the server received the sequence number from client is 0, it will send ACK=1 to request next segment SYN & ACK flag is set to 1

	SYNACK segment?	
Annotated Screenshots (if needed)		
6	What is the sequence number of the TCP segment containing the HTTP POST command?	sequence number is 1
Annotated Screenshots (if needed)		
7	Consider the TCP segment containing the HTTP POST as the first segment in the TCP connection. What are the sequence numbers of the first six segments in the TCP connection (including the segment containing the HTTP POST)? 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	

segment number	sequence number	time Sent	time ACK received	Estimated RTT
1	1	0.02647	0.053937	0.027467
2	566	0.041737	0.077294	0.028477825

<table>
<tr>
<td></td>
<td>received, what is the RTT value for each of the six segments? What is the EstimatedRTT value after the receipt of each ACK?</td>
<td>
<table>
<tr><td>3</td><td>2026</td><td>0.05
4026</td><td>0.12
4085</td><td>0.0336
7584</td></tr>
<tr><td>4</td><td>3486</td><td>0.05
4690</td><td>0.16
9118</td><td>0.0437
6986</td></tr>
<tr><td>5</td><td>4946</td><td>0.07
7405</td><td>0.21
7299</td><td>0.0557
8538</td></tr>
<tr><td>6</td><td>6406</td><td>0.07
8157</td><td>0.26
7802</td><td>0.0725
1783</td></tr>
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</tr>
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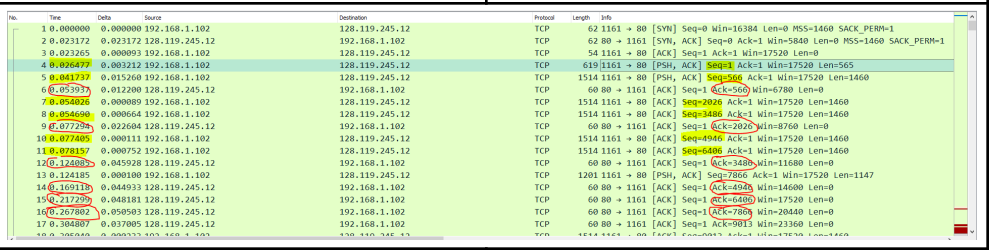
<td>Annotated Screenshots (if needed)</td>
<td colspan="2">  </td>
</tr>
<tr>
<td>8</td>
<td>What is the length of each of the first six TCP segments?</td>
<td>
<table>
<tr><td>segment number</td><td>Lens</td></tr>
<tr><td>1</td><td>565</td></tr>
<tr><td>2</td><td>1460</td></tr>
<tr><td>3</td><td>1460</td></tr>
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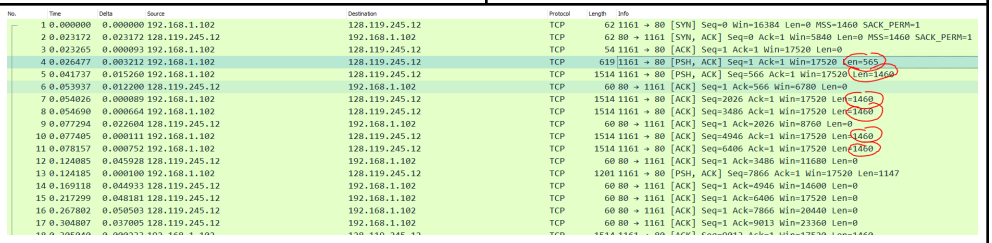
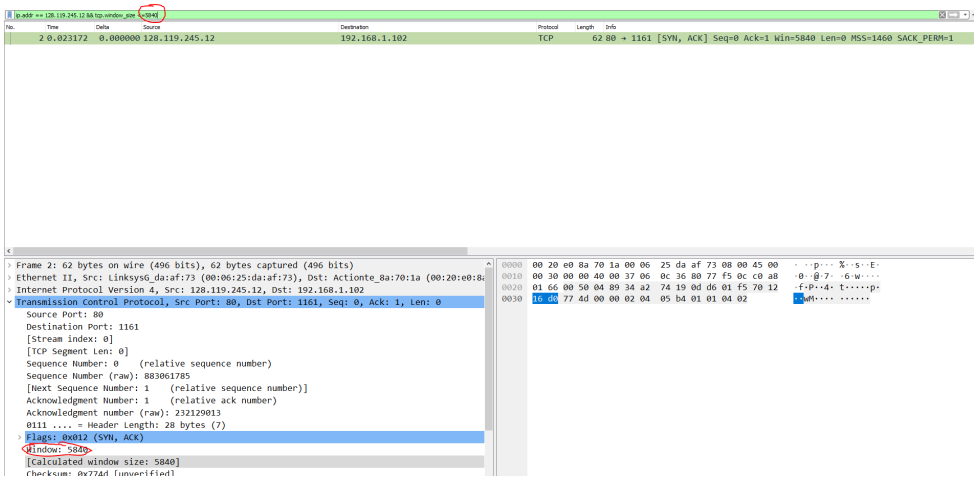
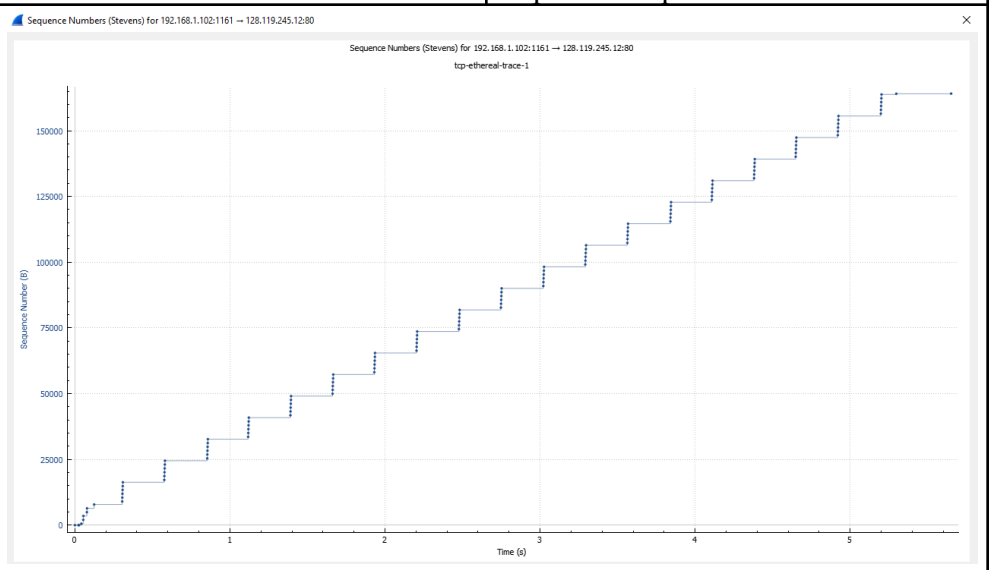
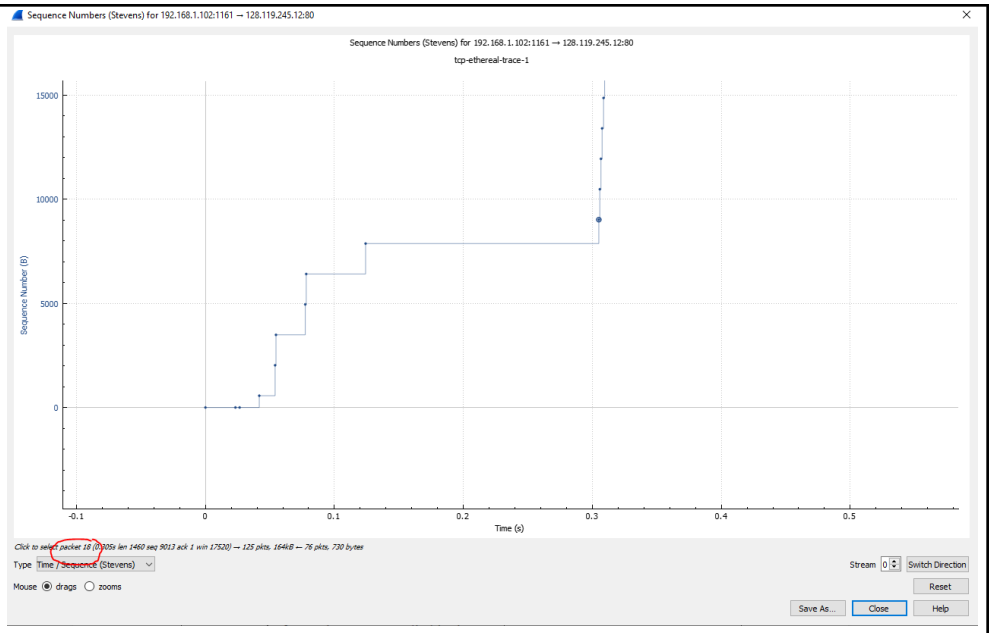
<td colspan="2">  </td>
</tr>
<tr>
<td>9</td>
<td>What is the minimum amount of available buffer space advertised at the received
for the entire trace? Does the lack of</td>
<td>minimum available buffer is 5860 at the time when transferring start.

No</td>
</tr>
</table>

	receiver buffer space ever throttle the sender?	
Annotated Screenshots (if needed)	
10	Are there any retransmitted segments in the trace file? What did you check for (in the trace) in order to answer this question?	No Check the duplicated sequence number, we can see that the graph is strictly increasing, so there is no duplicate sequence
Annotated Screenshots (if needed)	
11	How much data does the receiver typically acknowledge in an ACK? Can you identify cases where the receiver is ACKing every other received segment	MSS: 1460 Arrival of out-of order segments, the receiver send duplicate ACK to request the sender to retransmit the lost segment

Annotated Screenshots (if needed)		
12	What is the throughput (bytes transferred per unit time) for the TCP connection? Explain how you calculated this value.	throughput = Total data/Total time it transfer=160490 bytes/5.46s=29394 byte/s
Annotated Screenshots (if needed)		
13	Use the Time-Sequence-Graph (Stevens) plotting tool to view the sequence number versus time plot of segments being sent from the client to the gaia.cs.umass.edu server. Can you identify where TCP's slowstart phase begins and ends, and where congestion avoidance takes over? Comment on ways in which the measured data differs from the idealized behavior of TCP that we've studied in the text. **Tip: if your time sequence doesn't look like the one in the handout, try pressing the Switch Direction button.**	At the 18th packet the TCP ends the slow start and enters the congestion avoidance. In the wireshark the number of segments stay the same when entering the congestion avoidance, but ideal, the number of segments will increase by one in congestion avoidance

Annotated Screenshots (if needed)	
Question 14 omitted	