CSE421: Assignment 2- Transport Layer

Total points 19/30

CSE421: Assignment 2-Transport Layer: Flow Control and Congestion Control
Fall 2025
Deadline: 11:55pm, 30/11/2025

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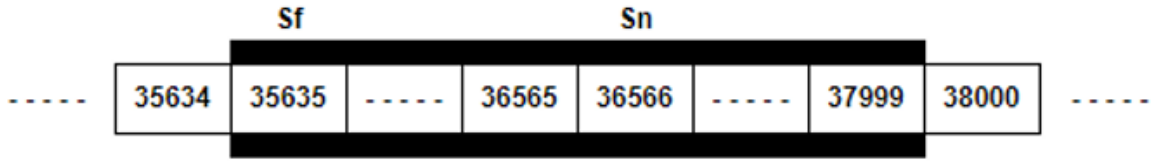
Q1. Consider the following figure as Client's Sliding Window and asnwer the follwoing questions:



✓ a) What's the window size? * 2/2

2365 ✓

✗ b) The receiver sends a segment with ACK=36001. Identify the updated Sn value ···/2

.....

✗

Correct answer

36566

✓ c) The receiver sends a segment with ACK=36001. Identify the updated Sf value 1/1

36001 .....

✓

✓ Q2. Given, a scenario where two clients are exchanging data via a server in between them. Identify the source and destination port types of the packet:
(a) leaving client A *1/1

- ○ Source: Well Known / Registered; Destination: Private
- ◉ Destination: Well Known / Registered; Source: Private ✓
- ○ Both source and destination: Well Known / Registered
- ○ Both source and destination: Private
- ○ None of the above

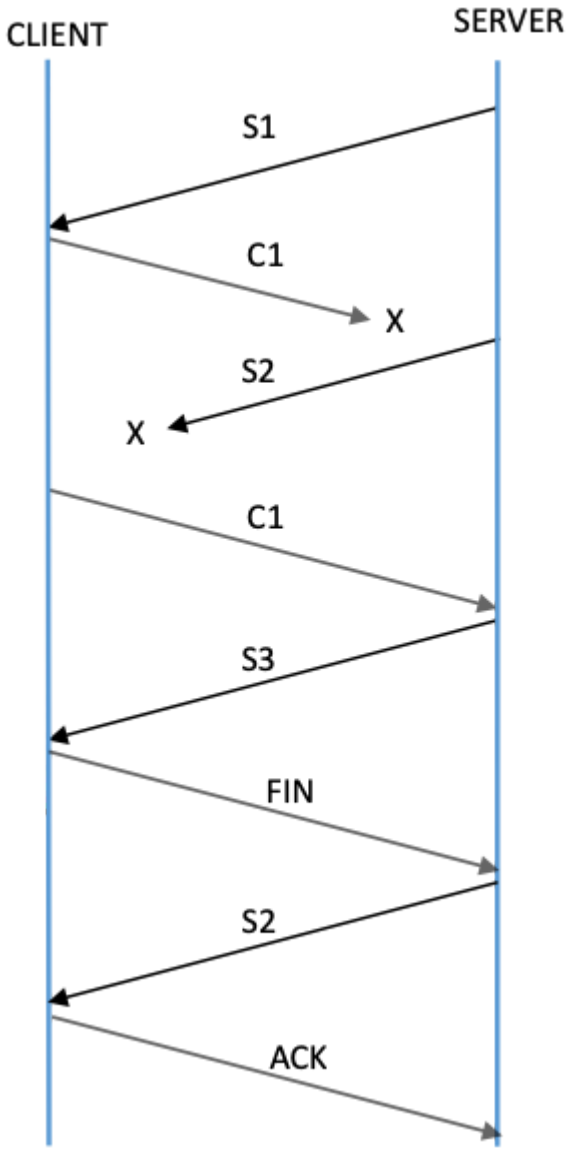
✓ Continuing from previous question, (b) leaving client B and going towards the server 1/1

- ○ Source: Well Known / Registered; Destination: Private
- ◉ Destination: Well Known / Registered; Source: Private ✓
- ○ Both source and destination: Well Known / Registered
- ○ Both source and destination: Private

✓ Q3. If the ISN of the client is x, what would be the sequence number after the three way handshake? *Assume data was sent along with the third step of the three way handshake.* 1/1

- ○ x-1
- ○ x
- ○ x+1
- ◉ x+sizeOfData ✓
- ○ None of the above

Q4. Referring to the picture below, consider that at *a given moment, the server has sent the S1 segment with the sequence number 8742 and the acknowledgment number 4531. The rwnd of the client is 12000 bytes, and the rwnd of the server is 14000 bytes before the S1 segment is transmitted. The Client and the Server are using the* ***Go-Back-N protocol*** *to send data. The size of the segments C1, S1, S2, and S3 are 191, 532, 320 and 160 bytes respectively.*



✗ a) *Find the sequence number and the acknowledgment number of the S3 segment.* 2/4

9754, 4722 ✗

Feedback

sequence = 8742 + 532 + 320 = 9594
acknowledgement = 4531 + 191 = 4722

✓ b) *Find the sequence number and the acknowledgment number of the FIN segment.* 4/4

4722, 9274 ✗

Feedback

sequence = 4531 + 191 = 4722
acknowledgement = 9274 (because, did not receive S2)

✗ c) *Calculate the acknowledgment number of the ACK segment sent by the client.* 1/2

9595 ✗

Correct answer

9594

Feedback

acknowledgement = 8742+532+320 = 9594

✗ d) *Calculate the **rwnd** of the server after receiving the ACK segment from the client.* ···/2

9278 ✗

Correct answer

13809

Feedback

r = 14000-191 = 13809

✗ e) Consider that *the Client and the Server are using the **Selective - Repeat protocol** to send data. Now, what would be the acknowledgment number of the ACK segment sent by the client.* 1/2

9755 ✗

Correct answer

9754

Feedback

Same as (c) above.

Q5. A file transfer starts at MSS=1; ssthresh=15; round=0. The system faces a time-out at around 7 and then a 3-dup-ack on round 10.

✓ i) Identify the cwnd on round 13. 2/2

7 MSS ✗

Correct answer

7

✗ ii) Total of how many bytes were sent till round 13 if each MSS held 2 bytes of data? ···/2

190 ✗

Correct answer

184

✗ iii) Draw this example in a graph where round is in x axis and cwnd is in y axis. 3/4

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Add file

Upload your calculation of Q1 and Q4. *

cse421-A02-Q1-4...

Add file