CS447 – Networks and Data Communications  
Fall 2023

Exercise Questions on Sep. 21st, 2023 (PART I)

EXERCISE #1:

- A 100-Mbps connection between A and B
- Packet size = 120 bytes
- Signal propagation delay is 20µs

What is the link-utilization, if stop-and-wait flow-control is used?  
Should your work.

EXERCISE #2:

In the figure below, frames (packets) are generated at node A and sent to node C through node B. Determine the sliding window size so that the buffer at node B will not overflow, based on the following conditions:

- The data rate between A and B is 100 Mbps (M = 10^6)
- The data rate between B and C is 200 Mbps
- The propagation delay is 20µs and 5µs for link A-B and B-C, respectively.
- The links are both full-duplex links.
- All data frames are 400 bits long; ACK messages are separate frames of negligible length (frame transmission delay = 0).
- For link A-B, sliding window flow control is used.
- For link B-C, stop-and-wait flow control is used.
- Assume no error.

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