Week 3 Discussion
Homework 1
By Daniel Knapp
Problem 5

- Sliding Window Protocol useful in keeping the pipe full between sender and receiver while benefiting from reliable delivery, in-order delivery, and some flow control for the sender.
Sliding Window Protocol

- Definitely look back at Lecture 5’s Flow Control slides/podcast for examples
- For this problem 5 specifically
  - Fast retransmission- a frame/packet is retransmitted before timeout due to receiving one duplicate acknowledgement
  - Selective retransmission- don’t reset window entirely upon timeout, just resend what timed out
Sliding Window Protocol Example

- SWS = RWS = 3
- Timeout = 2.5 * RTT
- Assume fast retransmission and selective retransmission as described in problem 5
- Sender will send frames/packets with sequence numbers 1-6
- Assume only frame 3 is lost on the first transmission
Sliding Window Protocol Example Answer
Problem 6

- Learning bridges are a simple way to separate LANs into different collision domains.
- Basic idea is the bridge learns where hosts exist based upon frames it receives and which port it received the frame.
- When forwarding frames it does a table lookup:
  - If it knows where the destination is it forwards just to that port.
  - If it doesn’t know it floods everywhere.
Learning Bridge Example

1. For each part list the hosts that will see/receive the sent frame
   a. F sends a frame to G
   b. G sends a frame to F
   c. C sends a frame to G
   d. D sends a frame to E
   e. E sends a frame to D
Learning Bridge Example Answer

1. For each part list the hosts that will see/receive the sent frame

   a. F -> G … all hosts
   b. G -> F … only F
   c. C -> G … D, E, and G
   d. D -> E … all hosts
   e. E -> D … only D
Problem 7

- It’s beneficial to have redundancy or loops when connecting bridges to LANs to handle cases of failure and be able to auto-recover.
- Loops, however, introduce a new problem of deciding which port a bridge should forward a frame.
- As such, bridges implement a spanning tree algorithm to logically prune certain links to form a topology where there is only one path between any two hosts.
Spanning Tree Example

- Show which edges would be pruned after the spanning tree algorithm has reached a convergence
Spanning Tree Example Answer

- Link between B2 and D will be pruned
- Both links for B4 will be pruned